



PICK & SHOVEL

September 2016, Volume 59, Issue 1

Editor: Sharon Marburger

The purpose of this corporation shall be to study, promote an interest in, and disseminate knowledge of lapidary and various Earth Sciences including but not necessarily limited to Geology, Paleontology and Mineralogy. It shall be a particular purpose of the corporation to provide education in these fields to its members and the general public, especially to youth and student groups.

BOARD OF DIRECTORS

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2016 MEETINGS AND ACTIVITIES

Regular monthly meetings are held at 7:00 p.m. at the Bethany Park Shelter House. Youth activities begin at 6:00 p.m. Board Meetings begin at 6:30 p.m.

Thursday, Sep. 15

Thursday, Oct. 20

Thursday, Nov. 17 (Annual Business Meeting)

Sunday, Dec. 4 (Christmas Party & Awards)

Board

Wednesday, October 5
Marburger Residence

Activities

No September Rock Party
(unless someone offers to host one after the General Meeting)

Roadside Clean-up
At the September General Meeting, we will
select a date in **October** for the clean-up
Rock Party will follow at the Marburgers'

NEBRASKA ROCKS!

LGMC's Annual Show
is scheduled for
April 1 and 2, 2017
at the Lancaster Event Center
in Lincoln, Nebraska!
Mark your calendars!
Contact Show Chairman,
Jayne Beer, for information.
jbeer60070@aol.com

SEPTEMBER BIRTHDAYS

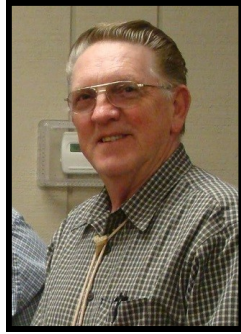
Vera Lyman
Brad Nielsen

HAPPY
BIRTHDAY



PRESIDENT'S MESSAGE

by Ed Dvorak



This is a good month! This is when we get to see all of our friends again and see what was collected over the summer. Also, I am sure there will be some tall stories; if not, I have a few! Check your Pick & Shovel for the times and places of meetings and activities.

We had a good turnout at the ice-cream social. **THANK YOU TO ALL THAT SHOWED UP!** We need to try the best we can to participate in our Club activities to keep it going. If we lose attendance at our meetings and activities, our club will surely go downhill and this would be a very bad thing to happen. I am willing to hear all suggestions and ideas that will help to promote our Club.

Thank you, be safe, and stay happy.

CALIFORNIA ROCKHOUNDING TRIP

By Ed Dvorak

Since I was in the Navy, I have always liked to get back to the Pacific Ocean, to refresh my memories of California. In the 1960s, it was a great place to be for a 19-year-old from the "out in the sticks of Nebraska." The other reason to be there was jade and other "pretty" rocks.

From Las Vegas, Nevada, where Pat was done with her fun for awhile, and I was just beginning, we headed down Interstate 15 to get to the coast close to San Simeon (Hearst Castle). This is where Jade Cove is located. If you drive Highway 1 from the south to get to Jade Cove, you will see many places where veins of jade and nephrite cross the road and down into the ocean. Most of these places have no trails down to the coastline. At Jade Cove, the trail now is a lot smaller than it was a few years ago, when I was there for the first time. There is only one small sign now marking the trail. The foot path down to the coastline is nice until you come to the edge of the cliff. From there, erosion of the rough steps of concrete made it very difficult to navigate. After the steps, the path zigzags back and forth until you're about 50 feet above the shoreline. At this point, a rope is anchored to a steel post and lies on the path down to large boulders on the shoreline. There is no way to make it up or down past this area of the path without this rope!!! The path is steep enough that crawling on hands and knees would not work, and if your shoes are wet, there is no way out. You would have to cut your own steps into the bank of hard dirt and rock, and the

CALIFORNIA TRIP—CONT'D

California Parks state "no digging above high tide line!" (YOU CHECK OUT THE ROPE!!) Once you're on the boulders on the shoreline, you are about 175 feet below the top of the cliff. Now you make your way over the car-sized boulders to an area where you look for jade. When the tide is low, there is an area about 20 feet wide and 100 feet long. Half of this area is covered with kelp two feet deep. If you dig a hole through the kelp, you can find some nice pieces of jade in the gravel, then a big wave comes in and your hole is full of kelp again. Keep track of how much your collection weighs. Remember, you have a 175 foot climb back to your car. As with much of my timing lately, I got there at just about high tide, had about 20 minutes of collecting, then had to head for the rope to get out.

I headed north on Highway 1 and before reaching Big Sur, there is a paved road called Highway 198 which will connect you with Highway 101. This road takes you over, across, up and down, and around the Coast Ranges. It is a very beautiful sightseeing short cut. If you're not at the very top of a ridge with a 1,000 foot drop on either side, you're on the side of a hill with a dropoff only on one side. All the pulloffs are gravel and no guardrails to stop you. Pat did not like that and I was always driving too fast. It was on this road that I found out just how much of what I thought was jade, was actually nephrite. Every road cut had wide veins of green coming out of the hill. The best looking veins along the road never had a good place to stop and collect; there were very deep ditches, or it was on a hill or curve in the road. Then you always think there will be a better spot up ahead, which never happens.

The reason Pat and I went to central California and north was to get to the National Parks. We went to Yosemite and Sequoia Parks. I got to drive our car through a tree that was 2,400 years old and 300 feet tall, and still growing! The biggest tree we found was outside the parks on one of our shortcuts. I guessed it at 25 feet across the base.

From the National Parks we headed for Lake Tahoe and Reno, Nevada, then, back into California. Just above San Francisco on Highway 1, I did some beach collecting all the way up to the Oregon border. Some of the beaches were covered with nephrite, jadeite, serpentine, agates, and jasper, and others were totally void of pretty stones, but they had sand dollars and other shells.

This concluded my trip in California, but I had Oregon, Washington, Idaho, Montana, Wyoming, Colorado, and Nebraska to go yet before we were home. This was another one of our 27-day trips and over 6,000 miles.

GENERAL MEETING MINUTES

(REPRINTED FROM JUNE PICK & SHOVEL)

General Meeting Minutes for May 12, 2016
Bethany Park Shelter House
James Marburger

- ◆ Meeting called to order at 7:00 p.m. by President Ed Dvorak.
- ◆ Attendance: Junior members - 8
Adult Members - 24
- ◆ Pledge of Allegiance recited.
- ◆ Minutes of the last meeting were published in the Pick and Shovel. Motion to accept by Bob Gruit, second by Jim Atkins. PASSED.
- ◆ Treasurer Report furnished by Vera and read by Ed. Motion to accept by Charles Wooldridge, second by Pat Dvorak. PASSED.

OLD BUSINESS:

- ◆ Roadside clean up is scheduled for Saturday, May 14 at 1 p.m. Meet at the old Rest Area on Hickman Road.
- ◆ Rock Party to follow at the Marburgers in Hickman. We will eat at 4 p.m. for those who do not make the clean-up. Everyone is welcome.
- ◆ July 10 is the Grinding Party at Pioneers Park Nature Center, Prairie Building. Setup at 12 noon and open to public from 1-4 p.m. Picnic in the park afterwards. Everyone is welcome to both events. If you have never attended, please come out and see what the club is doing and partake in the fun. Many members make it fun and it shows support for the club.
- ◆ June 24 – 26 is the Rock Campout at Big Indian Recreation Area. There will be field trips each day

and campfire story telling each night with food and fun. More information will be coming.

NEW BUSINESS:

- ◆ The MWF Convention is August 19 -21 in South Bend, Indiana. We are allowed one delegate and one alternate for the meeting. If anyone would like to be a delegate or alternate, please step forward. Sharon might be able to be a delegate since she has given up the Editorship. Jim M. is a committee member so he is not able to be a delegate.
- ◆ Motion by Charles Wooldridge to pay a \$50 stipend to the delegate and alternate for travel expenses. Second by Paul Ashmore.
- ◆ The 2017 proposed Show Budget was presented. Motion to accept by Wooly, second by Andrew. PASSED.

ANNOUNCEMENTS:

- ◆ The Norfolk Gem Club show will be May 14 & 15.
- ◆ Invitation to Corey Beer's graduation hog roast party was made to all LGMC members. Paper copies are on the table with a map and directions to the event.
- ◆ Motion to adjourn at 7:30 p.m. by Wooly, second by Andrew. PASSED.

Meeting adjourned to refreshments and program. The program was unable to be seen due to technical problems, so happy discussions happened.

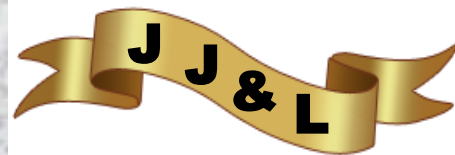
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the hobby for
40 years

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TIPS ON CUTTING OPAL

Editor's Note: Wooly recently ran across the following write-up. After some discussion, it was determined to have been authored by Pappy Waddle, circa 1980. Although the passing of time has brought about different ways of doing things, the basic information contained herein is still good.

By Pappy Waddle

The following tips are offered to help you produce more beautiful gem stones from the opal you have purchased.

In selecting the opal, your first concern is the quality of the stone that can be produced. Many times the opal will contain considerable waste, and you will be tempted to discard it. Consider, however, the value of the finished opal against the waste, and in most cases the value will exceed the cost of the waste.

After your selection has been made, remove excess potch using your 220 grit wheel, WET. This may take a bit longer but it is safer. TAKE YOUR TIME. You may find the reverse side contains more color than the front. When you have determined which side to use, proceed with the preforming. Rough out the opal if it is large enough, PRIOR to putting it on the dop.

The next step is where so many spoil their stones. Opal will not stand too much heat, so be careful. I recommend a metal plate over your alcohol burner. Place the opal on the back of the plate and allow it heat slowly. At the same time, prepare your dop stick. As soon as the wax is soft enough, remove the opal from the plate and secure it to the dop.

You are now ready to cut your stone. If you have a template, mark the opal to the desired size. As you shape the stone, keep on the outside of the mark. The final size can be worked when you reverse the opal. Now, here is the most important step in cutting. As you will note, color in opal will vary. Some pieces will have one or more bars of color running through the stone, while in other pieces, the colors will be solid or spotty. Where you have a heavy bar through the opal, it is advisable to cut a LOW, FLAT CAB. Utilize as much of the bar surface as possible. So many times the cutter shapes a high cab and loses most of the color. Where the color is more or less solid, a high cab can be cut. If you are doing your own jewelry work, favor a FREE FORM in your shaping of the opal. There is less loss and you will save much of the opal.

The following are steps I find most satisfactory, after finishing on the 220 wheel. Use a fairly well worn 220 wet sander, either flat or drum type. After you have removed most of the rough scratches, change to a 400 wet sander. Remove the remaining scratches

and finish off on a well-worn 600 wet sander. Between each operation, be sure your stone is washed and also your hands. Course grits left on the stone or hands can contaminate the next operation. A fairly good polish will be noted at the end of the 600 sanding operation. You are now ready to polish.

My best polish is attained on a soft leather buff with cerium oxide or a mixture of cerium and tin. I find the cerium has a tendency to remove the fine little scratches that may have been overlooked in the last sanding process. You cannot, however, expect to remove noticeable scratches in polishing. They will only show up more in the finished stone. DO NOT USE A FELT BUFF TO POLISH OPAL. There is too much of a chance of burning your stone.

To remove the opal from the dop stick, hold the stick over the burner so that the heat gradually softens the wax until the opal can be slipped from the stick. Wash the opal in alcohol. DO NOT PUT AN OPAL THE REFRIGERATOR to get it off the dop stick. The sudden change in temperature may crack the opal.

You can now redop the opal and finish the reverse side. Trim it down to the desired size. A slight convex back will aid in preventing the edges from getting chipped. In an opaque stone, the back does not have to be polished, but when cutting a translucent or jelly-type opal, it is advisable to polish the back for better appearance.

Take your time always ... it took the Good Lord many millions of years to create this most beautiful of all gem stones. DON'T RUIN IT IN A FEW MOMENTS OF HASTE!

BENCH TIPS

By Brad Smith

SHEET AND WIRE STORAGE

The more you work with jewelry, the more problems you have finding the piece of metal you need. My pieces of sheet were generally stored in various plastic bags, and the wire was in separate coils. Few were marked, so it often took me a while to locate that piece of 26 gauge fine sheet I bought last year, especially since I usually take my supplies back and forth to classes.

A tip from a friend helped me organize everything. I bought an expanding file folder from the office supply store (the kind that has 13 slots and a folding cover) and marked the tabs for each gauge of metal I use. Then I marked all my pieces of sheet with their gauge, put them in plastic bags, marked the gauge on

(Continued on page 8)

BOARD MEETING MINUTES

By James Marburger, Secretary

MAY BOARD MEETING, April 27, 2016

Meeting was called to order by Jayne Beer at 6:30 p.m. at The Jewelry Connection.

Ed Dvorak	Absent
Jayne Beer	Present
Jim Marburger	Present
Sharon Marburger	Present
Vera Lyman	Present
Vacant Board Member	
Carolyn Ashmore	Present
Andrew Tiedje	Absent
Charles Wooldridge	Present

In attendance: Ed Ridge

Minutes of last meeting were given out. Motion to accept the minutes by Charles, second by Sharon. PASSED: 6 yes, 0 No.

Treasurer's Report was given out. Motion to accept the report by Jim, second by Sharon. PASSED: 6 yes, 0 No.

OLD BUSINESS:

A discussion on replacement of the vacant board member. According to the By-Laws, the President will appoint someone to the vacant position and present them to the Board for approval.

The Audit Committee will look at the books for the past three years as soon as they are converted to new format from the double entry format. To be done in June, 2016.

UPCOMING EVENTS:

April 30: Wild Adventures Day at Pioneers Park
 May 1: Field trip to the Bartels Museum in Seward
 May 14: Roadside Clean-up and Rock Party at the Marburgers'
 May 15: Children's Museum
 May 21: Corey Beer Graduation – hog roast.
 June 7: St. Paul Lutheran Church – Dewitt, NE
 June 25: Big Indian Recreation Area Campout and Field Trips - 3 days
 July 13: Pioneers Park Grinding Party, 1:00-4:00 p.m. with picnic in the park afterwards
 August Rock Party to be announced.

NEW BUSINESS:

Field trips were discussed.

Club Participation was discussed.

A discussion to approach Rowdy Cropp to have a LGMC Visit Party at the Lapidary Class sometime this summer. Jim will contact him.

Vera has paid the contract deposit for the Lancaster Event Center for 2017 gem show, and extended the reservation date by one year (3 years out).

Jayne is asking for chairman volunteers to serve on the 2017 show committee.

Motion by Charles to adjourn at 8:30 p.m., second by Carolyn. PASSED: 6 yes, 0 No. Meeting Adjourned.

**Have an idea for a field trip?
Let Jim Marburger know!**

**Silversmithing classes
Tuesday Evenings
7:00 p.m. - 10:00 p.m.**

**The Jewelry Connection Ltd.
Indian Village Shopping Ctr.
13th & Arapahoe, Lincoln**

Tuition: \$120 plus \$30 supply deposit

Session 4: Aug 9 - Sep 27

Session 5: Oct 4 - Nov 22

Contact:

Jayne Beer 402-890-3307

Judith Bay 402-423-7058

or e-mail

jbeer60070@aol.com

Happy Autumn!

DENDRITIC OR PLUME AGATE?

Borrowed from Topeka Gem and Mineral Society, Inc., *The Glacial Drifter*, Vol. 58, No. 11, November 2015



by Jan Baumeister

Agates with inclusions are some of the rarest and most beautiful agates in the world. These inclusions may be sagenitic (sagenite), plume, dendritic, or moss. They are of the quartz variety, cryptocrystalline, formula: SiO_2 silicon dioxide with hardness of 6.5-7 on the Mohs scale.

Dendrites, moss, plume and similar inclusions have added interest and value to gemstone for about as long as man has been aware of the beauty and gem potential of such "rock". But apparently up to now, man has been dependent on inclusions formed in nature. The process by which they developed in nature has been only vaguely understood and thought to require long periods of time, even in the geological concept of time. Any means, therefore, of inducing the formation of inclusions in gemstone is automatically of more than transitory interest.

It is not uncommon to see agates from West Texas labeled as dendritic, yet you see Montana agate labeled as plume agate. Some fine dendritic agates may not show a trace of dendrites when the agate is candled by passing light through it. It seems that the microcrystal of chalcedony have fiber-optic properties such that light passes in just one direction. I have seen some Montana agates that were cut and the slabs appear clear and devoid of plumes in one direction and were loaded with plumes in the other. Clarity is no sign that Montana agates will have not plumes. Some of the finer plumes come in some unlikely odd looking nodules, yet often the flat nodules will have the finer dendrites. These can also be found in the spaces between parallel bands of onyx variety of Montana agates. There is a fundamental difference between plume and dendrites.

The plumes are characterized by feathery inclusions made up of metallic sulfide minerals, usually marcasite or pyrite. Other sulfides like cinnabar, orpiment, and realgar have been seen to form plumes. It is known that minerals crystallize out of magma or lava in a given order: Olivine - Pyroxene - amphibole - Biotite, followed by feldspars, quartz, etc. The final product to crystallize is the sulfide minerals. These can crystallize in vugs formed by gasses in the magma or lava. The plumes are the first,

after the lava flows have been extruded, the highly explosive volcanic eruptions or rhyolitic lavas can deposit welded tuffs or ignimbrites over the Adestric rocks. The tuffs are excellent sources for silica. As the tuffs are weathered, the silica is leached from them and in turn is deposited in the vugs that contain the late stage plumes that crystallized in the vugs in rocks formed by previous eruptions. The plumes were first then the agate was formed around it.

Dendrites are formed by oxide minerals such as limonite, pyrolusite, and a host of other manganese and iron minerals. The dendrites form when the agate spends some time with the minerals. The dendrites are laid down in space between the bands of the agate is there first and the dendrites form within the agate. Dendritic agates have fern like patterns in them including matter deposited during agate-building include sagenitic growths (radial mineral crystals) and chunks of entrapped detritus (such as sand, ash, or mud).

Dendritic agate can be tricky to cut because the dendrite inclusions occur at various depths in the rough stone. The lapidary needs to cut the material to expose the most interesting patterns. Cutting nodules of plume agate to reveal plumes is not difficult if one remembers to cut them only in the longest, flattest direction - just as one would slice a biscuit. You can tumble the rind off these agates to get a view of what is inside or how it lays, or candle the agate by holding it above an electrical light. One method is to block up the agate in plaster or simply glue it to a board with Elmer's glue or a similar adhesive. Use a magic marker to make lines to which the cut is parallel.

References:

1. "Agate" - www.wikipedia.org/wiki/Agate - "Plume or Dendritic" by Roger Pabian, via Agate Picker, 9/1985
2. "Chemically Inducted Fusions"- www.ganoksin.com/borisat/nenam/dendrites - moss - plume.
3. "Sagenite with Inclusions" by Pat McHan - www.agateswithinclusions.com.html. (Photos - www.Bing.com)

MWF DELEGATE'S REPORT

By Sharon Marburger

The Midwest Federation (“MWF”) Convention was held August 20 and 21, 2016 in South Bend, Indiana. Jim and I made the 11-hour drive through all sorts of weather. The sun was shining, it was calm, it was windy, it was cloudy, there was a thunderstorm—and that was just day one! We spent the night in Princeton, Illinois, hoping to be fresh upon arrival at the show the next morning.

The second day started out okay weatherwise, however, I got a Diet Coke shower across the street from the motel when we stopped for ice to put in the cooler. There must have been a very sharp piece of ice because a can exploded and sprayed me and the inside of the car before I could get it handed off to Jim outside of the car. Typical. Most of you don't know this but Jim is notorious for opening a 20 ounce bottle of Diet Coke or Diet Pepsi, taking a sip, setting it in the cup holder of the car, then going around a corner only to have the bottle tip over and splash me with beverage. Why should this day be any different?

Jim drove for the first while, getting us through my favorite city of Joliet, Illinois. I don't like the “friendly” waves I get there. We switched drivers somewhere around the Indiana state line. I drove for a brief time, then ran into a thunderstorm at the first toll road. It was raining so hard, I could barely see the vehicle in front of me, and there was at least four inches of water on the road. Of course, being a toll road, there was nowhere to safely pull off and wait out the storm, so we waded on. Finally, we drove out of it.

Reaching South Bend was a pleasure. It was overcast, but at least there was no torrential downpour! We went to the fairgrounds where the Michiana club was holding their show in conjunction with the MWF convention. We wandered around, ogling all the wonderful items for sale and on display. I lost Jim somewhere along the way, but I found a nice dealer in the far corner who was selling slabs of Ohio flint, petrified wood, agate, and some other stuff. Heaven!

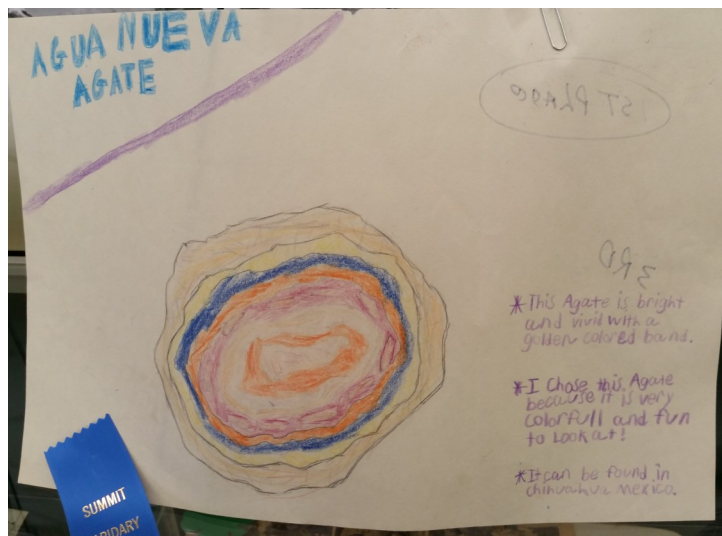
We visited with some club members at the club booth and silent auction. Wow! I have never seen such a silent auction! Table after table totally covered with items. At the club booth, we saw our old friend, E-Bear, raising money for the MWF Endowment Fund. It was great to see him again. We stopped by the youth booth to pick up some ideas to implement in our club. We took lots of pictures to share with Carolyn Ashmore and Linda Guenter.

That night (Friday), we attended the “Meet and Greet” where we swapped stories and restored old acquaintanceships.

Saturday morning were the State Director and Executive Committee meetings for the MWF. The Delegates meeting followed after lunch.

Several items were discussed. Three items specifically affect LGMC.

1. An increase in the amount to be paid for MWF Insurance was approved. The cost will be \$4.50 per person per year, for the next two years, minimally. The increase is needed because the premiums have gone up drastically. Even so, this price is a bargain in the event of a need to use the insurance. One hopes this never happens, but it is better to be covered than not.
2. Your Pick & Shovel Editor, me, has been appointed to chair the Bulletin Editors' Aids Committee. The previous chairman is no longer able to complete her duties, due to health issues. What does this mean to LGMC? This means that our bulletin can no longer be entered into the bulletin contest, at least not to the MWF. I will have to check to see if it is still eligible for the AFMS competition. I will also have to get clarification about entering any of YOUR articles, poems, and drawings. I don't think you should be penalized for my chairmanship.
3. The Youth Poster Contest winners were put on display. I was sad to see that only one of our Mineral Monkeys entered a poster this year. Come on, kiddos! Let's do it next year! As for our one contestant, let's hear it for Ian!! He won first place in his grade! Congratulations Ian!



ICE-CREAM SOCIAL

By Jim Marburger

August 27th at 1:00 on a sunny afternoon, members of the Lincoln Gem and Mineral Club started showing up at the Auld Building in Antelope Park to crash the lapidary class with an ice-cream social for the students and club members. This was a great opportunity for club members to see the lapidary class shop and to meet some of the students. Lapidary Class instructor and club member, Rowdy Cropp, along with his helper Brian (sorry I forgot his last name), were up to their armpits with students' projects. They had a serving table and chairs set up for our use. Students and club members brought drinks and additional goodies for consumption. As the class time ticked down, we had vanilla and chocolate ice cream, with malt, caramel, and strawberry toppings available. Many brownies, cookies, and root beer for floats showed up. There were about 20 club members, 4 Mineral Monkeys, and other guests that showed up for the first ice-cream social.

The tour of the lapidary class was very interesting as they have all kinds of equipment, from small trim saws to a large Hillquist slab saw that was busily cutting. Rowdy said he had just rebuilt the feed and vice unit on the saw. Parts were donated by a machinist who makes parts for old saws that are out of production. No instructions on how to replace and set up were given; just good wishes on getting it reset, and Rowdy was able to dial it in.

The class has many stations set up so each student can move from grinding to polishing as needed. Both

silicon carbide and diamond methods are available for grinding and sanding. This class, which is offered through Southeast Community College Adult Education, has been given support over the years by LGMC. We have provided many consumable items and have been trying to update and replace some of the equipment since the many hours of use have taken a toll. The club has provided an 8-inch slant diamond cabber unit, and we have plans for more additions very soon. These new additions will replace units that have worn out.

A few club members took the opportunity to do a little cutting and polishing on the equipment, but the biggest hit was the goodie table. The calorie counter was not used, and many had seconds, thirds, and fourths which was good because, as we all know, ice-cream will evaporate if left out too long!

Many tales were told and good times shared. Those going to the Crawford Swap over Labor Day weekend made coordinated plans with others that were going.

This summertime treat was very successful. If you missed it, maybe next time you can come along. Our club is very active with things like the rock parties at members' homes or businesses, roadside clean-up, field trips, and educational demonstrations, so watch your Pick & Shovel and the website for new things to do. Join in the fun and be part of the club's activities; you will learn many things while having a great time.

BENCH TIPS—CONT'D

(Continued from page 4)

the bag, and popped them into the folder. I usually store coils of wire loose in the folder, but they can also be bagged if you prefer. I use one tab for bezel wire and one for the odd, miscellaneous items. The resulting folder is really convenient when I want to take my metal out to a class or workshop, and it's colorful enough for me to easily find in the clutter of the shop!

LITTLE BALLS

I often use little balls of silver and gold as accent pieces on my designs. They can be made as needed from pieces of scrap. Cut the scrap into little pieces, put them on a solder pad and melt them with a torch. Then throw the balls into a small cup of pickle.

If you need to make all the balls the same size, you need the same amount of metal to melt each time. The

best way to do that is to clip equal lengths of wire.

But there's an easier way to get a good supply of balls. Some casting grain comes in near perfect ball form. Just grab your tweezers and pick out the ones you need. When you need larger quantities of balls, pour the casting grain out onto a baking pan, tilt the pan a bit, and let all the round pieces roll to the bottom. Bag the good ones, and pour the rest back into your bag for casting. Balls can be sorted into different sizes using multiple screens.

****The books *Bench Tips for Jewelry Making* and *Broom Casting for Jewelry* by Brad Smith are both available on Amazon.****

Editor's Note: I found this tip especially helpful at this time because some of our club members are taking the silversmithing class at The Jewelry Connection this session.

FORENSIC MINERALOGY

By Dr. Vivien Gornitz

The popularity of TV shows like CSI has spurred a growing interest in forensic science. Soil and mineral particles found at crime scenes can offer vital clues and, therefore, mineralogical analysis has become an important component of criminal investigation.

On a rainy fall day in 2002, two men sitting in an old black pickup truck were shot; one killed, the other badly wounded. The survivor pointed the police to a known drug dealer who lived in Alexandria, Virginia, 75 miles east of the crime scene. The cops kept an eye on the suspect, and when he was seen about to wash his Jeep of mud and dirt, they arrested the man and seized his vehicle for telltale evidence. A preliminary examination of mud on the Jeep suggested that it had been near water. Microscopic observations further revealed signs of cross-bedding, wellrounded sorted grains (indications of water-deposited sediments), and more importantly, the same set of minerals, including azurite and malachite, found at the murder site. It turns out the murder occurred only a half mile from a rock quarry where copper, granite, limestone, and other rocks and minerals were mined. Traces of azurite and malachite were also present in mud samples from the crime scene. The shooter is now in prison; the surviving victim was blinded in one eye.

In another murder case, bentonite, a type of clay mineral, provided the crucial clue that helped solve the crime. A man was shot three times while hunting with his wife in the mountains of Colorado in 1995. His wife's ex-husband had also been camped in the general area at the time, and therefore became a prime suspect. However, he claimed that he was out hunting with his boss far from his campsite, and furthermore he insisted his .308 rifle with cartridges had been stolen. A bullet and shell case of that caliber had been found near the body, but searches for the murder weapon had turned up nothing. The investigation continued over several summers. In a conversation during the extended search, one of the investigators happened to mention to his fellow searchers that a cattle pond near the ex-husband's camp was lined with bentonite in order to prevent seepage of water from the bottom. Another investigator later remembered seeing dried mud on the wife's clothing and her remark that she stepped into a bog near camp. Mud samples were collected from the cattle pond, another nearby pond, the bog "near the camp," and mud scraped off the wife's hunting overalls, which she had worn that day. Only the mud containing bentonite from the cattle pond matched that found on the wife's clothing. She had apparently been to the ex-husband's camp, stolen the rifle, and then killed her husband. The woman is

now serving a life's sentence without parole.

Laboratory analyses are also indispensable in solving many mining scams. Typically, a gullible investor will be told of "secret processes" that can detect gold, silver, platinum, and other precious metals that otherwise would not be detected by fire assay, the standard analytical method of assaying ores. The "inventor" is usually very tight-lipped about details of his process, "fearing that rival companies or competitors will steal his trade secrets." Often such scams are backed up by shady assayers who find much larger quantities of precious metals in the ores than those found by reputable labs, and who furthermore claim that they are "correcting" analytical errors made by other instruments. One investigation showed that if iron were not removed from the sample prior to analysis, the analytical instrument would give an erroneous reading for the platinum group metals. As an example, a U.S. nickel was analyzed without taking the proper precautions. Had it been a "sample," it would have been reported by the shady assayer "to contain 11.5 troy oz. of platinum, 5.63 troy oz. of palladium, and 5.314 troy oz. of iridium per ton." Needless to say, a U.S. nickel is actually composed of copper with some nickel.

Minerals may also figure in poisoning cases. For example, a small child in the state of Washington became seriously ill from arsenic poisoning. Forensic examination of the child's home turned up a number of mineral specimens, apparently left in the house and yard by a former occupant who was a mineral collector. Among the specimens were arsenopyrite and iron arsenic sulfide. Foul play was ruled out. The child had evidently been chewing and swallowing this mineral. Case closed!

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From: NY Mineralogical Club, March 2005
via the Gem, Lapidary, and Mineral Society of
Montgomery County MD, Inc.'s newsletter, *The Rockhounder*, March 2014

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