

Place: **Union Hall**
Meyers Street
Next to Campus Life
In Kettle Falls



Time: 7:00 PM
Third Tuesday
Each Month
(Jan.-Nov.)

The Panorama Prospector

May 2010

Panorama Gem and Mineral Club Minutes for April 20th 2010

By Ginger Pitman

The meeting started with the program first, a DVD entitled "Gems of Russia", a history of the gems of the Ural Mts. It was almost an overload of the fantastic jewelry of the government of Russia. Very informative and beautiful; Bev bought the program at the Tucson show.

Allens gave the treasurer's report and Bill did a complete show report, things cost more this year; while our advertising cost was down it seemed to do just as good a job. We can put the show away till next year.

Brian gave a report on the Stone Rose dig. The next planned trip is to Saddle Mt at Mattawa, WA on May 2. One of the reasons for Sunday trips is that the club shop is open on the 1st and 3rd Saturdays.

Scott and Steve gave the shop report, giving Brian thanks for helping to get the 18 inch saw cutting good again. The committee may need to meet and do some fine tuning of the prices, and how things are going. Dan Lundy donated a clock to the shop, very useful.

The next show that is nearby will be the North Idaho show at the fair grounds in Coeur d' Alene, ID on June 5-6. Some of us will be helping with set up and take down and some will be dealers. Hope everyone can get to that show.

The last of the scholarship applications will be picked up after May first and given to the committee to select the winners.

A five person committee was appointed to look into a different meeting place. Even if it costs a fee every month we need a bigger and nicer place to meet. The committee will report next month.

Bev gave us a report on the mid-year Northwest Federation meeting. The NFMS Convention and Annual Meeting will be Sept 17-19; at the Washington Co. Fairgrounds in Hillsboro, OR.

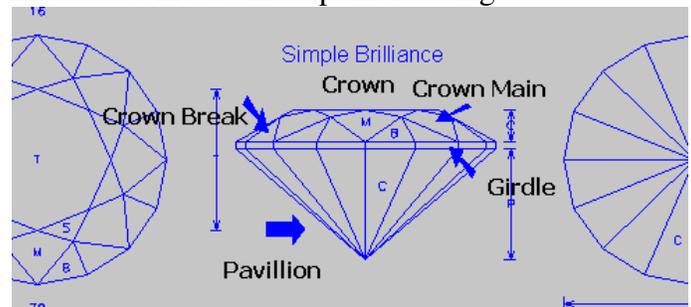
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Fascinating Faceting

Photos and Story by Joe Barreca



Terry Davis likes clear stones. That is a big C in the four Cs with him. Color, Clarity, Carats and Cut. But cut is a big C too and he has spent some serious time and money getting that part right. We got together in April and he introduced me to "meet point faceting".



This is a kind of faceting that we are all familiar with, though the terms may be new. The essential idea is to cut a gem so that light coming into it is reflected back out in ways that highlight its color and clarity. The perfect cut and angles will depend on a particular stone's index of refraction. That is for instance the angle that light is bent when it enters water. Because the index of refraction is different for different colors of light, you get a rainbow from a prism. But I digress.

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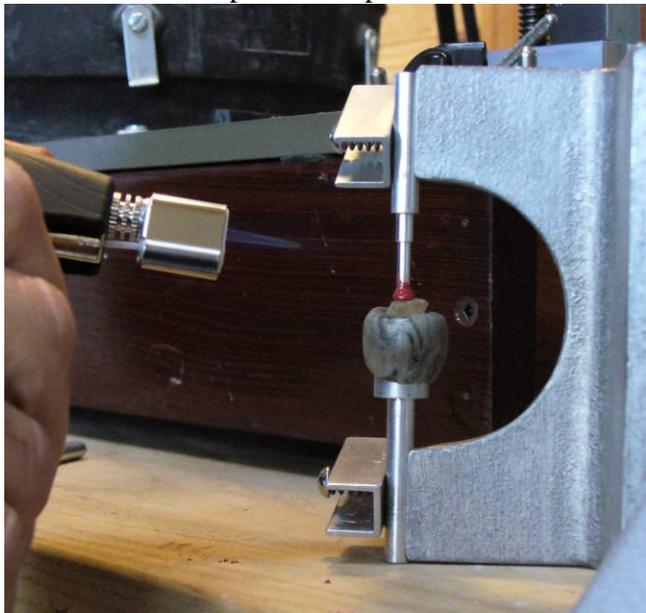
Steve announced that the boy scouts had asked if they could have a program on gold panning, he suggested they pan for garnets (same process) some time the end of June. He asked for help and pans so he had enough for all. There were a number of volunteers.

After a discussion about land use and what is going on in Washington DC it was decided that our club would join the American Land Access Association to have a little say in what is decided. Also in your March NFMS newsletter there is a list of Senators for our region that you can write to individually and voice your opinion.

End of Minutes

Faceting Continued from page 1

The meet point is the point where all the facets come together. In most cases, that is the tip of the pavillion as shown in the above illustration. It is also the first thing you try to create when you begin cutting a stone. It takes a good eye to pick out the best meet point on a particular stone.



Terry gave me the chance to do that on a small sunstone that I brought with me. The first thing to do is mark the proposed meet point and then stick it in some mildly tacky adhesive to hold it while you put dop on the opposite side. In the picture above, Terry is heating the dop, the mandrel and the stone with a small torch to obtain maximum adhesion when the dop hardens. The mandrel has a groove in its shaft that fits into the faceting machine and allows you to rotate the shaft an exact number of degrees over and over. When the mandrel is locked into the rotating arm

of the faceting machine, you adjust the height of the arm and the angle that it falls down toward the flat lap wheel so that it cuts to the proposed meet point at an exact angle, in our case, 45°. This sounds complicated, but really it is pretty intuitive. Faceting is just like grinding any other stone. You drip water with a little soap in it to break the surface tension on to the flat lap wheel, start the wheel spinning fairly slowly at first and press down on the stone to start grinding.

Of course I blew it in pretty short order. You need to hold the stone tightly and use the dop shaft as a guide, not as the main grip on the stone. I was just pushing the stone down into the 600 grit wheel with one finger and with just a wee bit too much pressure it popped right off. To be fair, Terry had held the sunstone pretty much the same way, as seen in the first picture. It turns out that it is much easier to do larger stones because you can get a grip on them. So we put on a light green quartz crystal that Terry had already started to work on.

When you have that first facet ground down to a perfect 45°, you have the height you want on the arm and need to dial that in as the zero point for the rest of the operation. Now you can rotate the stone a full 180° and start grinding down the face opposite of the first one. When the arm is down to a perfect 45° again, the zero point, you have a meet point. Since both side are 45°, the resulting angle is 90° at the tip of the pavillion. (See the illustration on the first page to identify the parts of the cut as we go through them.)

The genius of this faceting machine is that it has a little dial on it that tells you within 1000th of an inch when you have ground a facet down to the meet point. Terry's machine is a 30 year old UltraTec Mark II with a dial calibration upgrade. Still he has about \$2500 invested in the machine, wheels of different grits, supplies and accessories. New, these things are \$3000 to \$4000 just for the machine. As long as we are looking at economics, consider that you are going to pay someone for stones of a certain color, size and clarity, but you can multiply their value many times by cutting them accurately with fairly minimal cost per stone with a faceting machine.

Terry actually buys quartz crystal of good color and clarity very inexpensively at the Quartzite rock show. It cuts quickly with little

financial risk and looks great. I really like the one we cut even though it has a flaw in it.

So, back to business. Once you have the first two cuts on the pavillion, you work your way around the stone at a set increment of degrees bringing each side down to the meet point. Then, just like in any grinding process, you go to a higher grit. Terry has a couple of used 1200 grit wheels, that act like a little bit finer grit. They can be purchased used at a big discount. These are cerium oxide, but there are also tin oxide and carborundum disks and other varieties. You need to clean and spin dry the disks each time you change them so they won't build up dirt and rust. Then you put a flexible polishing disk over the rigid steel disk for the final buff. Now the pavillion is all cut and polished and it is time to cut the girdle at 90°.

Some cuts don't have a girdle, but it is handy when you go to line the mandrel up for the top cuts. The stone is still lined up with original rotation but the zero point is readjusted for a 90° angle. You can work your way through the rotation of facets and grits fairly quickly. Experts can cut a whole stone in 30 minutes.



Terry has the cutest little jig for turning the stone over very exactly to cut the top. The mandrels snap into grooves on the top and bottom and the bars are spring-loaded to twist into position to grip the mandrels in perfect alignment. With this jig, you can then heat some more dop and set the pavillion into the bottom mandrel. A little heat to the top dop, and you can release that

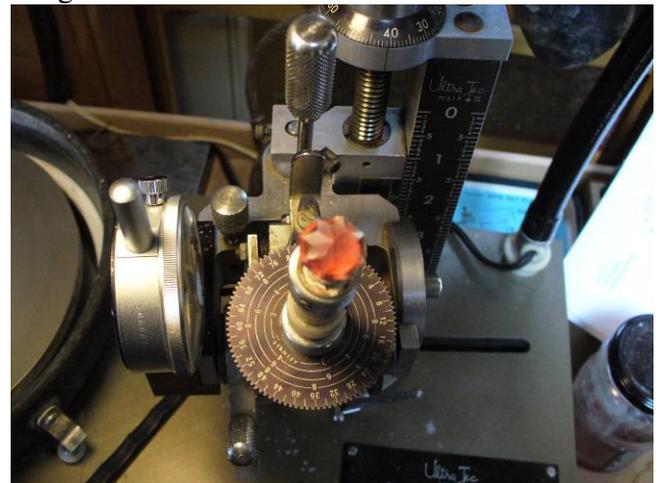
one. You might need to clean off extra dop with denatured alcohol.

With the new mandrel loosely inserted in the faceting machine head, you can lower the head down to the lap wheel, the arm still at 90° till one face of the girdle sits square on the wheel, then tighten it down and you are exactly lined up with the previous rotation.

Faceting is all about being exact. Try not to clench your jaw while moving through all these steps. It's an occupational hazard. Be sure to exhale. The crown breaks are cut exactly above the facets on the bottom pavillion, so all the rotation angles are the same. Even the angle at which the stone strikes the wheel is the same, 45°.

But when you are ready to cut the next facets, the crown mains, all of the rotational angles are moved over half a rotation so that they come down on the ridges left by the crown breaks. We were doing eight sides to each set of facets, so at the end of this part we had 8 pavillion facets, 8 girdle facets, 8 crown breaks and 8 crown mains. Each had been cut and polished as we went.

The final cut is the crown. For that we used a special 45° extension that turned our previous 45° angle into a direct vertical cut on the wheel. We cut and polished a crown that was half as wide as the stone itself. Making 33 facets altogether.



This is the stone before we cut the crown. (The dop makes it look red.) I was pretty proud of all this work until I started looking at the number of facets in designs on the Internet. Our cut was simpler than anything else I found! Obviously there is a whole lot more to faceting. You might really like it, or it could drive you totally bonkers. If you made it through this article, you might be cut out for the job.

Notes from the Pres..

By Johnie Pitman

What a busy time of the year Spring is with yards to mow and gardens to plant, firewood to get and many other chores that have been accumulating through the winter. The muscles get sore and stiff so work into the labor intensive job slowly and make time to do a little rock hounding for relaxation. [Cheryl Barreca, massage therapist, is offering discounts to club members, 684-2755.]

It was exciting to see so many people at the last meeting, WOW!! That just confirmed the idea that we need a larger place to meet. Our 'relocation committee' met and selected a more centrally located site which is the Arden Community Center located about two blocks east of highway 395 at Arden. Hopefully we will have maps available at the next meeting if that location is accepted. It's really nice. Details will be discussed at the next meeting.

This years scholarship applications will have been picked up from the schools and in the hands of the trustees to choose the recipients before you get this newsletter.

Coming up on June 29th will be the "Bill Wright Memorial/Benefit Concert" from noon till 9:00 PM at the Colville City Park, so please mark your calendars and plan on attending. Bill wrote and sang many songs, and in case you didn't know his wife Nena is a member of our club. I'm asking you to support her in any way that you can.

Ginger and I will be on our way to Alaska at the time of our next meeting, so Bob Bristow will be in charge of the meeting and he will also be presenting the program. Thanks Bob!!

Johnie

BLM to Revise Resource Management Plan

Scott Pavey (509) 536-1200

The Bureau of Land Management is in the process of updating it's 23 year old management plan. They now control 445,000 acres in Washington State, 100,000 more than in 1987. Five "scoping" meetings are scheduled to discuss the issues. The closest is at the Tonasket High School on Thursday May 27th from 6-8 PM. If any club members make it to this meeting, please let us know what you find out.

Rocks Continued: Sedimentary

By Stephen Fox

(Editor's Note – Steven has been so good about contributing to this newsletter that I am going to include this article and leave out one on Mattawa since I took too much space on faceting.)

Here's a quick quiz for you. Eighty percent of the Earth's crust is igneous rock, but seventy percent of the Earth is covered in sedimentary rock. If you figured this out quick, give yourself no prize.

The surface of the Earth is constantly pounded by rain, water, and wind. This takes a toll on the rocks that are exposed to this unrelenting abuse. Then you also have to factor in heat and cold, ice, gravity, off road vehicles, tree roots, and critter effects. All of this tends to wear down what we consider to be very hard rock. The term for this abuse is erosion (for a visual confirmation just look at all the rock that falls onto all the roads over the year). As these bits and pieces collect where erosion puts them they begin to get depressed, compressed, and glued together. Compaction creates a very weak bond and so your rock will not hold together very well. When you put this type of sedimentary rock in the back of your pickup and it rains you will discover mud that you did not know existed. Gluing occurs when there is a silica, carbonate (usually in the form of calcite), an iron oxide (hemite or goethite), fine clays, or chloritic material present. We then get quite a variety of sedimentary rock types.



Conglomerates are various sized rock fragments

that are glued together. The different rocks are usually rounded by stream action but can contain angular pieces. Erosion will degrade conglomerates into coarse sandstones. The best conglomerates can be found at Kettle Falls going up the road behind K.C.'s where the big cut is. The rocks are very angular and glued with a calcium carbonate material. The rock is a reddish brown and the calcite is a dirty white. It's one of those rocks where your family and friends wonder 'why?', and rockhounds go 'cool.'

Sandstones are perhaps the most abundant of the sedimentary rock types. There is no set color to sandstones as color is usually determined by what ever is gluing it together. Usually the constituent material is a fine quartz with a whole lot of other rocks and minerals with it. As with any sandstone it really depends on what it originally was. You can't expect quartz sandstone from a lava formation. It's important to note that when a sandstone breaks it is the glue that breaks, and the minerals retain their integrity. This gives the clean surface a rough feel and a

granular look.

<- Shale is your basic mud that has been depressed and the water squeezed out. This is very



fine grained material that has a thinly laminated structure (it's layered). They are also usually the remains of a lake, pond, or swamp so you can also find various types of fossils. Mostly imprints of whatever fell into the water and was covered by the original mud. With the presence of calcite shale can grade into the limestones.

Limestone is composed essentially of calcite, CaCO_3 , and is the most abundant chemically precipitated sedimentary rock. Although limestone can be precipitated directly from sea water (the limestone formations between Marcus and Evans), most limestone is from organic precipitation.

These are the old reefs that we usually see

(Old Gold Hill behind Kettle Falls) with the fossils in them. Other organic limestones are the result of eons of sea critters dying and their hard shells piling up on the ocean floor. Compaction eventually crushes the shells and limestone formations are the result (when geologic forces push up these formations we can use them to make cement).

Travertine is a calcareous material deposited by spring action (normally by a hot spring). Yellowstone Park is full of the stuff.

Dolomite resembles limestone so closely in its appearance that it is usually impossible to distinguish between the two rock types without a chemical test. Dolomite, as a rock name, is not restricted to a material of the mineral dolomite, but may have a mixture of calcite in it. Dolomites have generally not formed as original chemical precipitates but are the result of the alteration of limestone in which part of the calcium is replaced by magnesium.

Magnesite has been formed by the almost complete replacement of calcite by magnesium in a limestone. Such magnesite rocks are found in Austria, the Ural mountains in Russia, and in Stevens County, Washington. Pretty cool, huh?

Evaporites form when a cut off body of sea water, or a saline lake, or pond dries up. The elements in solution are then precipitated. More than eighty minerals have been recorded in evaporates and most of these are chlorides, sulfates, carbonates, and borates. By far the most abundant evaporates are gypsum (mostly selenite crystals when a playa dries up), and anhydrites. The most common chloride is halite (salt).

There are other sedimentary type rocks but are very rare and so I'm not going to mention them. If I find one next to where I'm sitting on our next outing I'm likely to just ignore it anyway. Unless it's an intrusive of some sort, or erosion has placed them there, you will not find agates, opals, and other very interesting gemstones in a sedimentary rock formation.

Sources for this article: Manual of Mineralogy 19th ED., Cornelius S, Hurlbut, and Cornelis Klein; The Larousse Guide to Minerals, Rocks, and Fossils, Hamilton, Wooley, and Bishop; The Audubon Society Field Guide to Rocks and Minerals, Cherstermann and Koopf.