

BEEHIVE ROCK & GEM CLUB
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BEEHIVE ROCK
AND GEM CLUB

P.O. BOX 1011
OGDEN, UTAH 84402

VOL. 39 No. 7

Website: <http://www.beehiverockandgem.com>

July 2011

**MEMBER OF UTAH FEDERATION OF MINERALOGICAL SOCIETIES
ROCKY MOUNTAIN FEDERATION OF MINERALOGICAL SOCIETIES
AMERICAN FEDERATION OF MINERALOGICAL SOCIETIES**

The Beehive Rock & Gem Club began in April of 1970.

The purpose of our club is: To collect, cut and polish rocks, to gather fossils, mineral specimens, to discuss and impart our knowledge of the different phases of collecting, polishing and displaying-

To promote, organize and hold meetings, outings, trips, and similar events. To enjoy and protect our natural resources.

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**USUAL DATE FOR MEETING – FOURTH THURSDAY – 7 PM
OGDEN HINKLEY AIRPORT TERMINAL, 3900 S & AIRPORT ROAD
November, December have changes. Maybe others.
Call any Board member for current information.**

BOARD OF DIRECTORS OF THE BEEHIVE ROCK & GEM CLUB FOR 2011

President & Board Chair	Joe Kent	801-771-8184
Vice President	Steve Smith	801-731-4216
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Calling Committee Chairs	Sherm & Ricky Thomson	435-760-1362
Calling Committee Chairs		

FEDERATION REPRESENTATIVES

Rocky Mountain Federation Delegate -----President
 Utah Federation Delegate -----TBA
 Public Land Advisory Committee ----- Jim Alexander

DUES

Due: October 1
 Single - \$11
 Couple or
 Family - \$16
 Junior - \$5
 Overdue: January 1

Beehive Rock & Gem Meeting Program – July 28, 2011

- Guest vendor/craftsperson shows how to do inlays in cab pieces
- Guest craftsperson with creative nature display
- Short DVD by club member on successful methods for rock hounding at Topaz
- Mineral of the month

“Rocky “ Ray, Program Chairman



Note: August Meeting is our annual picnic. Details in August newsletter.

Presidents Message

July 13, 2011

We all join organized groups for different reasons. Personally I like to get out into the back country and see if I can get my vehicle somewhere that someone else can't get to. My wife thinks that that is a total bore. So the off-road clubs are out. So we settled on joining a group of rock hounds.

The first club that we joined was Golden Spike. It like many clubs was aging. During the first few meetings we went to, the presentation from the Sunshine Committee was anything but sunny. Many obituaries were read. As time went on we joined several other clubs. Many we joined because you weren't welcome on their trips unless you were a member of their club. I don't think that is the case as much anymore.

Because our daughter, Erika, lives in Twin Falls we joined the club up there. We have met many wonderful folks there and been on several trips with them. They have some wonderfully different agates there. I'm most interested in them because of my newfound love for making jewelry.

It was through this interest that I've met Dick Morris a wonderful craftsmen and experienced collector who lives in Buhl, ID. This gentleman has inspired me to look harder for the special and unusual plume and tube agates found around Challis, Arco, Carey and McCall Idaho. Though he isn't up to collecting any more, he is going to share the locations of his collecting sites. I hope to be able to share some treasures with you soon.

As for my original love of off road adventures, thanks to Dick Woodward and Ray Law I spent all of yesterday morning cleaning the mud out of the front rotors and disk brakes on my truck. I would rather have been working rock or silver! Those of you who slept in missed a good trip to the Last Chance Ranch area. We found lots of agate and mud. Later in the day the sleepers collected Queen Stone. Thanks to Ray Law for his leadership.

Rock On

Joe Kent, President

April Meeting

June 23, 2011

Vice President Steve opened the meeting by welcoming new members Frank and Shela. A new board position has been approved for Mike Woolsey as map maker.

The Golden Spike club is having a trip to find septarian on the 25th and 26th. The Cash club is meeting in Eureka on the 25th. Anyone wanting more details can contact these clubs or VP Steve.

Julie Edwards gave a short presentation on topaz. She has been out to topaz mountain to dig several times and has lots of crystals.

Members brought in samples of rocks collected on trips in 2011 to share. There were samples from Quartzsite, Az, Dog Valley, Ut, Joy and Topaz mtn, Ut, Oregon, Blue forest, Wy, and Albert Creek, Wy.

Each member shared when they had collected the samples and a little bit about their trips. It was an interesting evening and made us all want to go once again.

Norine Ramos, Secretary

Board Notes

July 5, 2011

Discussed the exploring trips that did and didn't have good results. The good ones will be considered for club field trips. Suggestions are welcomed and needed. September is being considered for a trip to the Wams/Haystack Mtn area in Wyoming. Several kinds of material, turitella fossils and other things that Joe found. August is open. Hopefully we can find a cooer place to go.

Rocky Rutledge has some good programs planned for the Summer. Don't miss them. July 28th is the meeting. August is the Potluck Picnic.

Leora Alexander, Associate Editor

Field Trip Report

At the last board meeting, the August and September field trips were discussed and the decision was made to cancel them. This was due to concerns about the heat. What we will do is a series of short, exploratory trips to areas of interest that will not necessarily support a full club, multi day trip. I will send out e-mail messages announcing the details to those members who wish to participate as the trips are planned. Those who are interested can either call me or send an email.

Roger Bush, Field Trip Coordinator

Phone: 801-775-0147

Email: r.bush2003@comcast.net

Show Dates

July

29-31 — CHEHALIS, WA: Northwest Federation of Mineralogical Societies Show, Southwest Washington Fairgrounds, 2555 N. National Avenue, Fri 10am - 6pm; Sat 10am - 6pm; Sun 10am - 5pm. Chairman: Chuck Sonner, csonner2011@gmail.com

August

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 Tunncliff, 1130 Francis St. #7010, Longmont, CO 80501, (720) 938-4194; e-mail: ctunncliff@comcast.net; Web site: www.coloradorocks.org

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

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

Traveling this Summer?

Check www.rockngem.com/showdates for shows scheduled around the country/

*A Rockhound is a kind of nut
Whose mind is slightly undercut.
He swings a pick and drives a jeep,
And dreams of agate in his sleep.
He'll pick up any kind of stone,
Or piece of glass, or even bone.
If he can't name it, he'll assert
That he has found a piece of chert!*

From Ghost Sheet, June 1988, via SCRIBE #1, V14-90,
via Magic Valley Gem News, July 2011

August Birthdays & Anniversaries



BIRTHSTONE — Peridot – for Friendship and Married Happiness. Moh's Scale hardness of 6.5-7. Peridot is a transparent gem form of olivines. It is composed mostly of magnesium and iron silicates. Color ranges from olive to lime green. The shade of green is caused by iron – Some very pretty green gems are called “evening emeralds” and have been treasured over the ages.

Peridot is among the oldest known gemstones. The “topaz” on the breastplate of Aaron, High Priest of the Hebrews in the Old Testament was believed to actually be period. Via Magic Valley Gem News 8/08



ANNIVERSARY — Alternate to topax for 16th.

Sardonyx – For protection from Loneliness and Unhappiness – silicon dioxide – a chalcedony variety of quartz. Hardness of 7 on Moh's scale.

Sardonyx – has a banded appearance because it is constructed by tiny layers which are stacked on top of each other. The bands vary in color from translucent to opaque. The stone itself varies in color from white to gray with a few colored shades. The most common sardonyx contains flat banded, white and brownish-red bands. The name Sardonyx comes from the Greek word, sard “reddish brown: and Onyx “veined gem”.

ANNIVERSARY — Agate for the 12th, the sardonyx will fit that nicely.

FLOWERS — Gladiolus or Poppy. Both bring a variety of colors to a summer garden.



My Rant: Bring Back the Old Days 40 Years of Collecting

By Dick Stata

I have tramped and dug in the bush and pounded rocks in quarries for over the last forty years. I have been a member of various clubs, I now belong to 5.

In Ontario and the U.S. there has been a gradual change in how we can collect, not many of them are to my liking. These changes have many reasons, some are fair, others a real detriment to the hobby. In Ontario we have Crown Land, public property owned by the government that we as Rockhounds could go and collect on a small scale without much government interference. The last 10 years or so has seen a land grab of old collecting site property, mostly by City people just buying up any country property they can get their hands on, so many old sites are now off limits. The Ontario Government now seems to be ruled by the environmental lobby, large tracks of Crown Land are now being turned into Provincial parks where all collecting is banned (York River Scarn Zone outside Bancroft is a fine example). The quarries in Ontario allow some access on an annual or semi-annual basis for organized groups, but there always seems to be some joker out there that won't follow the safety guidelines and does his darndest to get us kicked out. The trouble is that the majority of the Quarries are owned by the same company's get kicked out of one, we get banned in all of them. A lot of this seems to spawn from litigations, fears of lawsuits over injuries and damage done to equipment, stealing Copper wiring, chisels ending up in crushers, unsafe collecting, trespassing .

Most if not all old quarries and mine dumps have to be reclaimed and returned to original condition, taking

away another group of collecting spots. Underground mine operations now hardly produces any specimens, as a lot of mines crush underground so there are no dumps and don't allow the miners time to collect and bring it out in lunch pails.

The problems are different in the United State's, everything down there is worth a buck; so if a decent collecting site is found someone will claim it and if your lucky it will become a fee site, if not, you will have to buy specimens at some show, The mineral rights are owned by big companies like Dodge Phelps they own huge chunks of prime collecting areas of some states and collecting is not tolerated. BLM lands are being turned into Wildlife Preserves, and Heritage sites, no collecting allowed, there may be a fee coming soon just to go on public lands.

I guess I have to assume that my glory days of collecting are behind me, the old places are gone, long picked over. Now we long for a new road to be built, hoping by chance something interesting turns up, but usually when it does, it soon gets mined out by a dealer. The highway crews get tired of picking chunks of rock off the roadway or having cars parked on the shoulders blocking traffic and get collecting banned and the road-cut grassed over

I guess it's all not doom and gloom, for at the big shows you can buy a worlds worth of fine crystals, so someone must be finding them, but for the lowly rockhound finding that world class specimen, is becoming a thing of the past.


Via SCRIBE, April-June 2011

AMERICAN LANDS ACCESS ASSOCIATION (ALAA)

is a 501c(4) organization. Its purpose is to promote and ensure the right of amateur hobby fossil and mineral collecting, recreational prospecting and mining, and the use of public and private lands for educational and recreational purposes; and to carry the voice of all amateur collectors and hobbyists to our elected officials, government regulators and public land managers. Your annual membership fee of \$25.00 helps support their activities.

www.amlands.org

Via Magic Valley Gem News, July 2011



Please Take TWO MINUTES To Send a Letter Supporting HR758

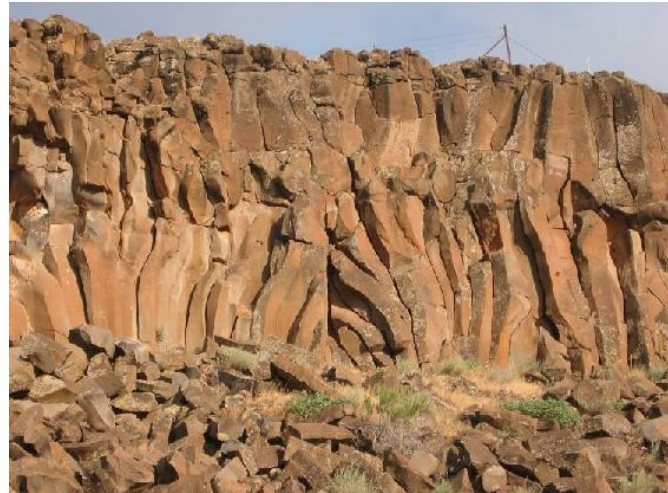
It has been pretty rare of late that Congress has produced reasonable bills-and this is one of those rare times. Sandra do not miss your opportunity to SUPPORT Legislation to STOP the ABUSE of this Presidential Proclamation loophole.

<http://www.savethetrails.us/Default.aspx?PetitionID=51>

Take Action NOW and support keeping your public lands open to all.

Please check the [List of Co Sponsors](#) to see if your Congressman is supporting this bill. If not then please contact them and urge their support

Via Strata Gem Jul/Aug 2011



Free Geology Courses On the Internet

<http://geology.about.com/od/nutshells/u/pathbasics.htm>

MIT has some great stuff in their open courseware:

<http://ocw.mit.edu/courses/earth-atmospheric-and-planetary-sciences/>

Free Gemology course based more around Geology:

<http://www.bwsmigel.info/>

Some more geology course stuff from University of Texas:

<http://www.geo.utexas.edu/courses/default.htm>

One more gemology course, but more technical around geology:

<http://www.gemsociety.org/>

From Jamey Swisher, R.G. on the Rockhounds list.

Via SCRIBE, April-June 2011

Field Trips ARE a Recruiting Tool

by Kreigh Tomaszewski

Our 'Prez' recently wrote about the need to promote club shows outside of the rockhounding community. You can't fulfill your club's education goal if you are not reaching out to the general public. The whole point of your club show is to reach out to the public.

Our 'Prez' also talked about the need to promote field trips to the club and give folks an idea of what they would be able to collect.

I beg to differ.

Club field trips should be widely promoted, not just shared with the club. At an absolute minimum you should be sharing the invitation with the Trip Chair of every club within a two-three hour driving radius. Good things happen when members of multiple clubs interact on a trip.

But club trips also need to be promoted to the general public.

Note the not so fine print that you need to join an AFMS affiliated club to go on the trip. I'm quite happy to take your membership application, cash your check for dues, and sign you up for my next trip.

I'll probably see you at more than one club meeting, and with a little luck you will renew and become a regular. If not, I've still had a chance to share our rockhounding world and educate the public.

You should be sending out press releases about every field trip. How cool would it be to see your club on the 11 pm news? It won't happen if you don't give the media advance notice. It might take years of trying, but you are going to hit a slow news day (and write a better than average announcement) eventually.

Your club members should be sharing every trip opportunity with their friends and acquaintances.

Marketing the club, and our hobby, is the responsibility of every club member; it only happens if everyone is engaged in the hobby.

You should be disappointed if every field trip does not add at least a couple new members to your club.

Via SCRIBE, April-June 2011

Full-Figured!

I finally figured out why I am so full-figured! As I was conditioning my hair in the shower this morning, I took time to read my shampoo bottle. I am in shock! The shampoo I use in the shower that runs down my entire body says "for extra volume and body"! Seriously, why have I not noticed this before? Tomorrow I am going to start using "Dawn" dish soap! It says right on the bottle, "dissolves fat that is otherwise difficult to remove". It pays to read the warning labels my friends!

Via Strata Gem Jul/Aug 2011

Leora Alexander, Associate Editor says:

"Sorry to say I have used "Dawn" for years. Hasn't done anything for me yet!"

History of Rockhounding Jose Santamaria



"You're darn right it's strang...
I planted garnets!"

Rock Rattler 8/94, via Roadrunner 8/94,
via The Burro Express 12/01. via Strata Gem 7-8/11

Let's Make Some Alum Crystals (And Consider Some Garnets)

Zeb William Rike III



Pyrope

Alum crystals are among the easiest crystals to grow. But in order to make alum crystals, we first need alum. Last time I looked for alum, planning a club project (*) of crystal growing, I found it hard to get economically (\$8.00 per pound). So what do we do?

Maybe make the alum first. And as we think about alum, we will find that the same principles that we will discuss also apply to garnets; we can grow alum crystals at home but growing garnet crystals requires high temperature and pressure miles within the earth. (If we melted a crucible full of small garnets and allowed it to cool, garnet would not form, but a mixture of minerals stable at low pressure)



Almandine

What is Alum? (I)

Alum is both a specific compound and a class of compounds. If we bought 'alum' for making pickles, potassium aluminum alum is what we would get. As a class, Alum is a double sulfate salt with two metals, of formula $AB(SO_4)_2 \cdot 12H_2O$. A is a univalent metal ion such as Na^+ , K^+ , Rb^+ , Cs^+ , Tl^+ , and various compound ions like NH_4^+ , NH_3OH^+ , $CH_3NH_3^+$, $N_2H_5^+$. B is a trivalent metal and can be Al^{+3} , Cr^{+3} , Ti^{+3} , Mn^{+3} , V^{+3} , Fe^{+3} , Co^{+3} , as well as others. Not all the combinations of A & B will fit in the crystal lattice to make an alum; the only sodium alum is $NaAl(SO_4)_2 \cdot 12H_2O$.

To stay away from the alums with toxic heavy metals, I am looking at crystallizing ammonium aluminum alum, $NH_4Al(SO_4)_2 \cdot 12H_2O$ (it occurs naturally as the rare mineral Tschermigite). After making a number of inquiries for alum by phone and internet, I found suppliers that had "alum" for sale (very reasonably priced) in 50# bags, but on further questioning

found that what they had was aluminum sulfate—which is incorrectly called “alum” in the trade.(2)

Recently I bought some “nitrogen fertilizer” which has an assay of 21% nitrogen, 24% sulfur. That sounds like ammonium sulfate, $(\text{NH}_4)_2\text{SO}_4$, (3) and the composition would indicate it is the anhydrous salt.(4) So the proper proportions of ammonium sulfate and aluminum sulfate, dissolved separately and mixed would give ammonium alum. That is worth considering. If we could get potassium sulfate, we could as easily make potassium aluminum alum. I will pursue making alum for crystal growing.



Spessartite

Minerals and Chemicals

As a chemist, I find minerals both *exasperating* and fascinating—both features because a mineral is not a pure chemical compound like what I have been used to buying and using. Minerals are ‘messy’, not of a fixed composition, have approximate and variable compositions and vary in physical properties depending on how much of one metal has substituted for another in the crystal. In addition, some minerals have identical compositions but vary widely in crystal structure and properties depending on the temperature and pressure under which they formed.



Andradite

The alum family is similar in having variable composition, and illustrates some important principles of mineral chemistry. We can grow either aluminum sulfate or ammonium sulfate crystals from water—but a combination in the same solution will produce alum, as it has a lower solubility than either of the individual sulfates.(5) Alums are isomorphous with each other, meaning that if you have a solution containing perhaps K^+ , NH_4^+ , Al^{+3} , Cr^{+3} , and Fe^{+3} along with sulfate, when crystals form, you will not get pure crystals of each of several different metal sulfates or alums, but a mixed alum with all the ions present. It is even possible to begin growing a (mixed) alum with enough Cr^{+3} to give a nice purple, then suspend it in a colorless solution of aluminum alum and grow a clear, colorless crystal around the purple core.

We see this kind of thing in many minerals with two of the spectacular examples being tourmaline and

garnet—color zones in a crystal caused by change in composition of the liquid from which it had grown during the formation of the crystal.

Garnet Group(6)

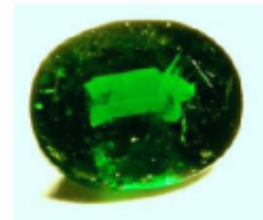
Garnets are hard, tough and heavy minerals with high refractive index coming in virtually all colors; they have been used as gemstones since before recorded history. Exactly what are garnets and how do they relate to what we have discussed before? Garnets make up two families with general formula being $\text{A}_3\text{B}_2(\text{SiO}_4)_3$ where the A is a divalent metal ion, usually Ca^{+2} , Mg^{+2} , or Fe^{+2} and B is a trivalent metal ion, usually Al^{+3} , Fe^{+3} , or Cr^{+3} in a particular crystal structure; a number of other ions may substitute partially or completely for A & B [or even for the $(\text{SiO}_4)^{-4}$ ion!]. Garnets are high pressure minerals and presence of certain garnets indicates the pressure at which the crystal formed. Two main garnet solid-solution series are: the Pyrospite garnets, pyrope-almandinespessartite (Al^{+3} as B) and Ugrandite garnets, uvarovite grossular-andradite (Ca^{+2} as A). These garnets are as follows, with some of the colors due to partial substitution of some other metal ion for A or B;

GARNET	FORMULA	COLOR
Pyrope	$\text{Mg}_3\text{Al}_2(\text{SiO}_4)_3$	red to black
Almandine	$\text{Fe}_3\text{Al}_2(\text{SiO}_4)_3$	red
Spessartite	$\text{Mn}_3\text{Al}_2(\text{SiO}_4)_3$	orange-yellow to violet-red
Andradite	$\text{Ca}_3\text{Fe}_2(\text{SiO}_4)_3$	red, yellow, brown, green or black
Grossular	$\text{Ca}_3\text{Al}_2(\text{SiO}_4)_3$	green, cinnamon brown, red, yellow
Uvarovite	$\text{Ca}_3\text{Cr}_2(\text{SiO}_4)_3$	bright green, usually small crystals

There are many beautiful gem quality garnets with exotic names prized for their color and rarity.



Grossular



Uvarovite

FOOTNOTES

1. <http://en.wikipedia.org/wiki/Alum>
2. http://en.wikipedia.org/wiki/Alu-minium_sulfate
3. http://en.wikipedia.org/wiki/Ammo-nium_sulfate
4. To determine if the ammonium sulfate was a hydrated or anhydrous salt, I calculated the formula weight. Atomic weight of S is 32 and of N is 14; because the listed content was 21% N and 24% S, it was obvious that the formula had two atoms of N. So $(2)(14) / 0.21 = 133$, and $32/0.24 = 133$, an estimate for the formula weight. Formula weight for $(\text{NH}_4)_2\text{SO}_4$ is 132.15, so there is no room for any water with formula weight 18 each; therefore it was the anhydrous salt.
5. Solubility in grams per 100 mL water at 20°C: $\text{Al}_2(\text{SO}_4)_3 = 36.4$; $(\text{NH}_4)_2\text{SO}_4 = 74.4$; $\text{NH}_4\text{Al}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O} = 15$. See: http://en.wikipedia.org/wiki/Ammonium_aluminum_sulfate
6. [http://en.wikipedia.org/wiki/Garnet\(*\)](http://en.wikipedia.org/wiki/Garnet(*)) As a club project, I visualize buying the chemicals in bulk and supplying a pound or so (at cost) to anyone who would enjoy the thrill of seeing crystals grow at home, and would hope that everyone would be interested in trying it.

Pineywoods Rooter, 4/11

Editor's Note: Pictures are just representative of the variety of garnet. Multiple shades and colors are common for most types of garnet.

Via the Rockcollector, 4/11, via Strata Gem 7-8/11

**FOR SALE:****Water Cutting Saw**

Call Dave Harris
801-737-1266

Great for trim work, slabs and pieces. 7 inch blade which can handle fist size thicknesses. Beats the hassle of cleaning up rock from oil cutting. In excellent condition with stand and diamond blade. Sells new (on sale) for \$268 including blade & taxes.

Will sell for \$125

Shop Tips**FIRE OBSIDIAN**

Did you know that chunk of black obsidian you have just might have gold sheen, fire, or moon glow in it if you orient it correctly? Take it out into the sunshine and try to locate a spot that shows something more than just black. If your piece has a rind or skin on it, take a small chip off here and there. Then wet the piece and turn it slowly in all directions so the sun will reflect any unusual coloring. If you are fortunate enough to find color, orient it by using the Sinkankas method (a single light bulb over your head so the light just grazes your forehead). Mark your piece and saw it. Check before sawing each time to make sure that you are keeping the color on top. Fire obsidian can be so colorful you will think you are looking at black opal!

~From G.L. Nugget 4/01 Via The RockCollector 12/03,
The Calgary Lapidary Journal 2/04, Strata Gem 7-8/11

REMOVING A STUCK CABOCHON

Here's a quick, safe way to remove a cabochon that gets stuck in the bezel of a finding when grinding for a perfect fit. Don't start picking and prying. Take it to the kitchen and have a towel or washcloth handy. Put a cup or two of water into a small pan and bring to a boil. Take a pair of needle nose pliers or tweezers and dip the offender in hot water (one or two minutes is usually enough.) Remove and tap it gently with a pencil over the towel. It should drop out free and unharmed. The trick is very simple. The metal of the finding will expand more quickly than the stone, so the stone drops out.

~Author unknown, original source
MAGS Rockhound News, 12/02, via
Golden Spike News 4/04, Quarry Quips 5/05
via Strata Gem 7-8/11

Australian Mookaite

I've always thought of Mookaite as jasper, and it was of the earliest "jaspers" I collected – after Ocean Jasper®, Biggs, and Deschutes Jaspers. In fact, my first specimen was a big polished hunk of maroon, mustard, white, purple and grey Mookaite. Calvin Webb recently sent me an article by Andrew McLaren of Brisbane, Queensland, Australia that throws more light on this complex substance.

According to Mr. McLaren, the term "Mookaite" is an unofficial, locally coined name for a silicified porcelanite which forms in the weathering profile of a geological formation known as the *Windalia Radiolarite* (WR), a Lower Cretaceous siltstone that outcrops over much of the Carnarvon Basin in Western Australia. Depending on who you talk to, or which book you read, Mookaite (sometimes spelled Mookite, and often just called Mook) is variously described as chert, opalite, chalcedony, or combinations of the three. From a strictly geological perspective however, Mookaite is best defined as a silicified type of WR whose silification is opaline to chalcedonic.



Typical colors of Mookaite.
Slab from the collection of
Christine Young.

Although WR's precise age has not yet been determined, current estimates put the formation at 105 to 115 million years old. WR has been classified as a shallow-marine deposit in onshore areas and is known to have been associated with a major flooding of the Australian continent by the sea. At depth, WR is medium to dark grey in color, however, in outcrop it is often leached and exhibits irregular patches of color ranging from white through to various shades of yellow, red, purple and brown. These colors are due to differing amounts of iron and manganese contamination in the rock. Importantly, Mookaite has no cleavage and will usually break with a smooth, conchoidal fracture which makes it an ideal lithic or knapping stone, as well as a beautiful lapidary material. It has a Mohs hardness of 6 or 7 depending on the degree of silification.

Mookaite pieces occasionally contain relatively large fossils, most of which are easily identifiable. Without going into any detail, microscopic examination of Mookaite has revealed that it is a somewhat unique rock type. It consists largely of microscopic organisms known as *Radiolarians*, which possess an unusual skeletal structure made up of opaline silica. According to Morrison, "Billions of these were deposited, as

sediment, in the shallow, near shore area of ancient seas, together with remains of other sea creatures such as *forams*, *pelecypods*, *ostracods*, *ammonites* and *belemnites*. When the seas retreated, these sediments were cemented into solid rock by silica, carried in groundwater, either from the radiolarian themselves or from weathered rocks nearby. Often the calcite of the larger fossil is dissolved away, leaving only the mold to show where the organic remains had been. The type and degree of silicification varies from place to place, forming rocks now called opaline, chert and chalcedony."



Golden brecciated Mookaite.
Slab from the collection of
Christine Young.

The main, or at least best known, locality for Mookaite is on Mooka Station, a former sheep station situated at the southwestern end of Western Australia's Kennedy Range. On the station, it is known to sporadically outcrop over an area of

approximately 75 acres but the main outcrop of Mookaite forms a cliff beside a perennial creek known locally as Binhabuka or Mooka Creek.

Ron Butler put the first mineral claim over the station's Mookaite deposits in 1964/65. Since this time his son Alan and other family members have sporadically mined the station's Mookaite deposits, focusing their efforts on extracting the rock from the creek bed using backhoes. Over the years, the Butler family has sold parts of their original mining claim to other mining parties. Between these parties (two of whom are still active), hundreds of tons of Mookaite have been extracted and sold and traded all over the world.

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Information for this article came from:
<http://www.eskimon.com/~knapper/mookaite.htm>.