Rock Hounding & Carving Tools
By Harley Waterson, Richmond Rock & Gem Club.

Last fall I was asked to provide a program/discussion at a recent society meeting on Rock Hounding tools.

Most of the members present were long time (chiseled??) members, most of which already have their own set of tools, and wish list for next Christmas. Since there are a number of new members the following article may be of interest.

Basic tool set for a trip out to the Fraser River bars
a) Rock hammer: not actually used for hammering on rocks very often. Mostly used for digging or prying something interesting out of the sand, or for extending your reach out into the water. With only one exception, every rock in the Fraser River is exactly the same on the inside as on the outside. The only exception is the Nickel Silicate that is downstream from Emory Creek which looks like a rusty chunk of crud. Suggested item: get a hammer holster that hangs onto your belt. This will help keep the hammer out of your hand and reduce unnecessary smacking of rocks.

b) Squirt bottle: This can be most helpful as some parts of the Fraser River bars have a thin coating of fine silt on the rocks. Use an old Windex bottle, or buy a 1 liter spray bottle from somewhere like a nursery.

c) Something to carry your treasures: I use a heavy canvas army surplus backpack. You can use just about anything, even a plastic bucket. Whatever you use will need to be fairly tough as the rocks are heavy, and dirty. Nylon backpacks do not last too long.

d) Audubon Reference guide: For the new rockhound, my recommendation for a rock identification guide with lots of pictures would be the Audubon guide. Many reference books are available, and as you pick a specialty, or need more in depth information there are many reference books available in the club library or for sale from the society book department. (Check with Sharon Hamelin if you need something)

e) Clothing: when heading out on a collecting trip, it would be wise to wear clothing that you do not mind getting dirty. You should also take a change of clothes just in case of severe dirtness, or wetness from one step too many from shore, or rain. The Fraser River area is often windy so wear clothing or head protection for wind. The Yale bar for example is almost always in the shade, and is very windy. Dress in layers so that the cold does not spoil an otherwise fun day rock hunting.

f) Rain wear: Be ready for rain. (Just in case you did not know that we live in a rain forest area)
Again, your rain wear is likely to get dirty / muddy while rock hunting, so bring rain gear that is not your Sunday best favorite raincoat. If you do not want to spend money for one of those stylish bright yellow jackets and flood pants, just bring along a fresh ( unused ) garbage bag, and a sharp knife.
In a pinch this can keep a major portion of you dry. Just cut a pair of armholes, and a hole for your head and you have low cost disposable rain protection. For my first few years of Fraser River expeditions I had a real cheap yellow plastic raincoat that lasted a number of rainstorms before it needed replacing. They can start as low as $20.
If you have a dislike for rubber and plastic rainwear, especially in the ever stylish bright yellow, check out the oil skin jackets. These will “breathe” better than the plastic ones, yet are still very wind resistant. The only drawback is that they are most often a dark brown color, which is not such a good idea to be wearing out in the bush during hunting season. Wear a bright red hat. If you cannot find one at your regular shopping haunts, try a store that caters to outdoors or equestrian customers.

g) Footwear: Good hiking boots. No street shoes, no runners, no fooling. Get proper footwear.
Walking around on the rocks is somewhat dangerous. It is easy to twist an ankle, or slip on wet rocks.
Good hiking boots provide better traction, ankle support, and better deflection of rocks when they fall near your toes.

h) Gloves: bring a couple of pairs. My favorites are the cloth back/leather palm& finger style.
In the cold of winter, I use lined leather mitts. With the mitts, all four fingers are together and they keep each other warmer providing a longer hunt before cold hands sends you back to the car for a warm-up.

i) Lunch: funny how the farther you are from civilization ( ie a restaurant ) the better a home made sandwich tastes. Bring some food, fruit, and warm beverage of your choice. If you need to buy a thermos, I would suggest NOT using the glass type, spring for the stainless steel type. When you drop a rock in your backpack and it hits your thermos, the glass type have a high rate of self destruction.

j) Wheels: a nice new Explorer would be great. If you prefer more room, spring for the Excursion.
Whatever car or truck you have, keep in mind that the tools and rocks you collect will probably be muddy or at least somewhat dirty. Protect your trunk or backseat appropriately. An extra box or bucket for rocks is handy if you like to pick up lots of rocks.

Your total outlay for the above is about $27,000. If you like the Excursion option, add another $15,000.
As an expanded tool set for rock hunting and boulder bashing, you can pick up the following items:

a) 4-5lb cracking hammer. This can help break open those other rocks that may contain something interesting. Add chisels for working cracks open. My preference for hammers is a solid metal handle rather than a wood handle. Check out the Estwing rock hammers, and cracking hammers.

b) Heavy metal chisels can assist in breaking open rocks with more control than whacking away with a hammer. Keep the “mushroom” heads from forming by grinding down the mushroom. Some chisels are available with handy plastic shields for your hand. I have indeed whacked my hand when I missed the chisel. Check out flea markets for low cost chisels.

c) Backpack: great for carrying your rocks, lunch, beverages, and rain gear while leaving both hands free for picking up more rocks. Check army surplus places, and if you visit Kamloops or Vernon, check out Surplus Herby’s.

d) Magnet: Handy on the Fraser River. The serpentine in the Fraser river has a significant amount of iron. Jade does not have enough iron to be attracted to the magnet. This can help identify the rock as being serpentine, rather than jade. It will not help you distinguish some other green piece of crap from jade.

e) Pocket Knife: other than the usual uses, it can help be used to try and scratch an unknown rock. Depending on the hardness of the sample, the knife will either scratch, or will leave a streak of metal on the stone. Also helpful for cleaning dirt out from under fingernails.

f) Maps & geological information: If you are going exploring off the beaten path you should arm yourself with detailed maps so that you know where you are, and how to retreat back home. Keeping track of where you are can also allow you to find that special spot at a later date. Hunting and fishing type maps will have excellent coverage on back roads. I have also found some BC maps that have elevation contour lines and virtually every road and skidder trail ever pushed though the trees. I’ve always said that you don’t need to start worrying about the road until it turns into two wheel tracks with grass growing in the middle. Geological maps will show the geological features so that you can identify likely areas for prospecting. Granitic areas will be different than sedimentary, and volcanic.

g) Sliding pipe hammer: The ultimate boulder basher. This is like a 4 foot long chisel. Insert the chisel into a 3-1/2 foot long pipe that has a solid piece of metal on one end of the pipe. Place the tip of the chisel on the boulder, and bash away. Much safer, and much more controllable compared to a sledge hammer.

h) Shovel: what can I say?

i) Pick: ditto
j) Gold pan: I like the plastic ones. Not so cold to hold onto, and they weigh less. The black plastic also shows the gold flecks a little better. At a club meeting, we had Yukon Dan provide a program on gold panning. He had some additional suggestions for gold pans: Clean your pan well before use. Any oil residue in the gold pan will cause the gold flakes to float, and wash out of your pan. Even oils from your skin are a contaminant, so wear gloves at all times when panning, and never touch the pan with bare hands. If you have a nice shiny metal pan, you need to “blue” the pan by heating it in a campfire to burn away the finish. After the heat treatment the oily finish from the factory will no longer float the gold flakes.

k) “GemScoop” Estwing makes this handy doo-dad. It is about the length of a walking stick with an oversized ice cream scoop at the end. Use this for retrieving rocks out of the creek, or for standing at the bottom of a rubble pile. Use the scoop to search the rubble for goodies without needing to bend over, or kneel. Can also be used for picking potatoes.

l) Notebook: essential if your brain is full and will not store any additional information, such as the exact location of that new find. For the high tech geek, get a personal GPS system.

m) Boxes & wrapping paper. If you are collecting fragile specimens, take something that can safely protect them until you get home. Try not to use newspaper as the black ink easily can transfer to your specimen.

n) Streak plate: basically unglazed tile. Rub an unidentified specimen on the tile, and the color of the resultant streak can be one of the tests to identify the sample. Check your Audubon book. Most descriptions in the book include the streak color.

o) Sifting screen: On a couple of rock hunts we were screening sandy gravel for loose crystals. A ¼” mesh screen did the trick.

p) Probing bar: Sometimes Agates & Jaspers are hiding in sand. If you have a slender piece of metal, you can probe the sand. When you contact an agate or jasper the metal will “ping” distinctively. Switch to item “G” above.

q) Film canisters: handy for the flakes of gold from your gold pan. If the canister is too small for the amount of gold you’re’ panning, give me a call. If you are picking up small items such as sapphires, put the top on the canister, and use an exacto knife to cut an “X” in the lid. Push the sapphires into the canister through the “X”. If you drop the canister, you won’t spill the contents.

r) Camping gear: My idea of camping is a motel with a café within easy walking distance. For those of you who will venture out tenting you already have a good idea of the gear needed.
s) File/rasp & sandpaper: If you are out in an area where you may find soapstone, use the rasp to smooth a small area and sand to see what the color & texture are like. Some soapstones will be chock full of gritty particles, or hard spots that would suggest leaving them right where they are.

t) Saws, old beater chainsaw: for cutting the soapstone down to size. Bring a file for sharpening the chainsaw blade.

u) Estwing makes a tool belt just handy for a rockhound. Includes several pockets, a spot for a beverage, hammer holster, and buttons for suspenders to keep the weight off of your hips.

v) Come along and rope. Hand winch for winching those jade boulders up to the truck. Not that it would ever happen to me, but this could be used to pull a stuck vehicle.

w) Water glass: A water soluble glue: Use to temporarily glue things together, and dissolve the glue by soaking in water overnight. I use this to glue ½ nuggets to a block of wood so that I can hold onto the block of wood in my saw’s vise.

x) Oils: (Besides the ones as a saw lubricant) Some oils when drops are used on a piece of rough can assist in finding the chatoyant areas in star stones. Facetors also can use oils to examine rough materials for flaws as these special oils will match the refractive index of the materials.

y) Methyl Hydrate: fuel for the little alcohol lamp used for dopping stones. Methyl Hydrate is also very good for cleaning stones prior to dopping, or to remove fingerprints, sticky label goo, etc. P.S. If you buy a litre of Methyl Hydrate, never buy gasoline anti-freeze for your car again. It’s the same stuff. It just costs more in the handy little 4 ounce bottles.

Carving Tools:

I have taken an interest in carving and have done a couple of soapstone, limestone, and hard rock carvings over the last few years.

**Soapstone:** Regular hand tools work just fine. Hacksaw, rasp, files, and wet/dry sand papers are all you need to get started. If you get hooked, then you will want to add more files to your collection of different sizes and profiles. Next you will want rifflers which are detail files which have a number of shapes and curves for detail work. Hard to describe without a picture. See a Lee Valley Tools catalog.

**Limestone:** Limestone is harder than soapstone, but still workable with hand tools. Limestone is very often worked with a hammer and chisel, with finishing done with files, and sand papers. There are special sets of chisels for limestone start at about
$75. They are not the same ones used for boulder bashing. Diamond handpads are a nice option for sanding. These are basically described as a 3x5 block of foam with a diamond grit on one side. Many grit sizes are available, and they can be used wet or dry. Check the back cover of a Lapidary Journal for the Crystalite advertisement. Rectangular and round handpads are also in the picture. $15-20 each.

**Marble:** A little harder yet than limestone, with a very nice polished surface compared to the matte look of limestone. Chisels can be used (as they have for thousands of years), however, I have an insatiable urge to use power tools.

**Hard rock:** anything: quartz, rhodonite, granite, jade, opal, etc. For this you will want power tools, and diamond abrasives. Use a diamond saw for roughing in, and a flex shaft Dremel, or Foredom type of machine for detail work. Hammers & chisels can also be used, but I like to finish things before the next century rolls around. Depending on the size or details you need, an angle grinder may also assist. Diamond blades are available for both 4-1/2” and 7” angle grinders. After using the saw for roughing in, change over to a hook & loop backing plate, and attach hook & loop diamond sand papers for finishing. If you want to do a lot of this work, there are a couple of special edition angle grinders that have a water attachment that keeps the blade or sandpaper wet at all times. Big $. Hook & loop silicon carbide sanding papers are also available at lower prices than diamond.

As you are working on your carving, you will often end up turning it over, laying it on its side while you work the piece. Rather than risk damage by working on a hard surface, use sandbags to support your piece. Make a set of sandbags our of heavy cloth, like denim. For larger sizes just cut the leg off of an old pair of jeans and sow up one end. Fill with sand, and seal it up. Use more than one to safely support the carving while you work on it.

If your carvings are small enough, you may be able to do your roughing in work on a trim saw, and then move to your regular lapidary grinding system with carving wheels. For your Genie, or other grinder setup, several wheel manufacturers sell diamond carving wheels that do not have the usual flat front face, they have rounded faces, with widths of ¼’, ½, and 1”. Nice for roughing details. Check the Diamond Pacific catalog, or the Crystallite catalog. When using a Genie, normally each side had three wheels. When using a carving wheel only one is installed providing more room to work with your carving. You will have about 4-5” of room for your work piece. A Titan (similar to a Genie except larger with 8” wheels) will provide more room.

**Safety equipment:**
No discussion on tools and equipment is complete without the safety discussion.

Rockhounds are constantly in danger of nicks, cuts, abrasions, and even more serious injuries as we are always doing things with hammers, flame throwers, and rotating
power tools. We make dust, flying chips, carbon monoxide, plus we handle noxious chemicals and flammable liquids.

Wear proper footwear while hunting, and while working in the shop.

Protect your eyes with good safety glasses. Don’t buy the cheap goggles. They don’t fit, they fog up, and become a bother and you end up not wearing them. Spend the extra few dollars for a better fitting comfortable set or two. If you cannot find some, at your favorite store, try Lee Valley Tools. Stop whacking rocks with your hammer. Most rocks are exactly the same on the inside.

If doing some serious boulder bashing, wear a face shield.

If you are using an angle grinder for carving, use the full face shield, leather apron, and do your shirt up to the top button.

Ever get sunburned on that little “V” below your neck? Sure as heck that flying chip will strike you just above the shirt, and below the face shield. Generating dust? Wear a dust mask. Even better, use a respirator mask with replaceable filters. Again, they will fit better, be more comfortable, and if you use the respirators with the two side filters, they will be less likely to fog your safety glasses.

Hearing protection. Wear when using power tools that are loud, and/or annoying. Also a good excuse for ignoring the phone while you’re in your workshop.

Ventilation: if you are using chemicals that have fumes, or something with a flame such as a torch, ensure that there is sufficient fresh air flowing to prevent carbon monoxide buildup. Be wary of breezes if working outside. Do not sneak up on someone who is running a power tool, or a flame thrower. You may startle them.

Outdoor safety:
Wear proper footwear.
Do not climb across embankments where people are below you.
Don’t just wear dark green or brown clothing. Especially good recommendation during hunting season.

Miscellaneous items

a) Cushioned floor mat: if you stand for lengths of time, your feet will appreciate a nice spongy fatigue mat. Ugly black ones from Princess Auto cost me $10. At a low cost, you will not be so worried about spilling oil, or rock dust on them. May also save that specimen when it falls from your hands on the concrete floor.
b) Pick up a copy of the “Gem Cutting Shop Helps” book printed by the Lapidary Journal a few years back. This book is chock full of handy tips for lapidary enthusiasts. Originally printed in 1964 and now out of print. I saw one sold by a dealer at the Richmond show just recently. Keep an eye out!

c) Epoxy. Can be used to glue clear quartz to opals, or other materials. For best results, use the Epoxy 330, as it dries clear without any cloudiness or yellowing. If you have heat sensitive materials you need to dop, use epoxy instead of heating the stone and dop wax. If you have a need to remove something that you have epoxied together, such as a quartz cap on an opal because of a crack in the quartz, place the stones in room temperature water. After about a week the epoxy will separate, and you can re-try a new quartz cap without any damage to the sensitive opal. I have also used epoxy to glue soapstone back together. Clean breaks will be almost invisible after gluing.

d) Saw oil. Ask 10 rockhounds, and you’ll likely get at least 7 different answers about what to use. I use an oil from Shell called “Pella”. Not available at every Shell station. I have had success buying this at the Shell Station at the south end of Boundary Road (at Marine Way). I had to help the fellow behind the counter find it in the back.

e) Peel-n-Stick glue: Sometimes called Lapidary Cement. Used to temporarily hold sandpaper on a backing material. When the sandpaper wears out, just peel off, and slap on a fresh one.

As with just about anything in this world, you get what you pay for. There are lots of mediocre tools out there, and there are also good to exceptional. If you are unsure if you are going to enjoy soapstone carving, then only buy the minimum of tools. If you like it, then start to accumulate more tools, and buy more upscale tools. They will last longer, be better balanced, etc, etc. This philosophy works for other tools as well. I have seen electric angle grinders for sale at $40. Would the $120 name brand model last three times as long? Most likely, plus it will have a useable warranty and someplace where I can get it fixed. I avoid used power tools, but I have bought a number of hand tools (used and new) at Flea markets.

Where can you pick up these things??????

There is not one single place that has everything, and it is unlikely you will need everything at once.

Here’s my list of places I would check for things.

a) Flea market: sometimes hand tools show up, such as rock hammers, chisels, saws, etc. Personally, I avoid power tools at flea markets.
b) Your favorite rock shop. Most will carry in stock the usual things, and will be happy to order things in that you may want, just ask. Some rock shops may not carry all brands or manufacturers, but they will have an option for you. Support your local rock shop, as they are rockhounds just like us, except the hobby got out of hand. Mountain Gems, Ferguson’s Rocks & Grits, Capilano, and Western Gem.

f) Pothier Enterprises specializes in abrasives, and tools for carvers. Extensive array of Silicon Carbide, diamond wheels, and abrasives. Also has electric and air tools for carvers, hand tools and limestone for carvers.

g) Gem Show dealers. Some dealers work from home, and they will show up at the shows.

h) Steveston Marine hardware: the only place I have found Water Glass.

i) Books: check with the Society book team of Arne & Sharon Hamelin.

j) Maps are available from camping stores, Tourist info centers, and Geological information from the government office of the Queen’s printer in Victoria.

l) Camping gear: Wherever. Wanna see my set of motel directories?

m) Surplus Herby’s: army surplus, camping gear, hunting & fishing supplies. Located in Kamloops and Vernon.

n) If you cannot find what you are looking for, you can also check the May edition of the Lapidary Journal, which has a list of suppliers. Most are gemstone, rough, and jewelry suppliers.

o) If you head out to Quartzsite or Tuscon in January, several dealers have tools as well. Ebersoles’ usually has a large display area, as well as Diamond Pacific.

Web Sites:

http://www.estwing.com
http://www.crystalite.com
http://www.diamondpacific.com
http://www.barrancadiamond.com
http://www.mkdiamond.com
http://lapidaryjournal.com