

# Lapidary

*"The only craft or art which answers all the following needs -- social, artistic, educational, creative manual skill, interesting -- of today's society completely is lapidary. Stamp and coin collecting are interesting hobbies but are passive hobbies, not creative. Collecting antiques is exciting, but the value of the antiques is not in what the new owner does to them. Lapidary is an active hobby, a creative hobby, and one in which the skilled artist can add significantly to the value of his material. People who stay in the hobby are those who keep learning, and whose taste for the best increases with the skills."*

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## WHAT IS LAPIDARY?

Oct 81 News Nuggets

The word lapidary is derived from the lapis or stone and means "of or pertaining to stones" or "one who cuts and polishes Stones". Not all stones are worthy of cutting and polishing and although all can be cut by one method or another the lapidary is concerned only with those stones that are capable of being polished.

The most abundant mineral in the earth's crust is quartz which is also the most common gem material. Quartz is a mineral of many names. Amethyst, citrine, smokey "topaz", agate, chalcedony, tiger eye and petrified wood are all quartz minerals and their names are derived from the color, method of formation or other characteristic.

Of these and other gem stones all but the diamond can be cut and polished with lapidary equipment, which is easily available in shops or catalogs throughout the country or by hand processes.

Essentially the lapidary process is one of shaping the material with a coarse grinding wheel or disc; then regrinding to obtain a smoother surface until a glossy surface is obtained. The polishing operation is done with various mineral oxides. Some compounds work well on one kind of stone while other compounds work on other kinds of stones.

Tumbling is lapidary treatment given to irregularly shaped stones by a mechanical process of continuous agitation or "tumbling" of the stones with a series of coarse to fine grits usually with water and culminating with the polishing of the baroque shapes. Tumble stones are inexpensive and are used in simple jewelry, as "feely" stones and for making novelty items such as key chains and "critters".

Among the many other types of treatment given gem materials the beginner usually learns first how to cut and polish a cabachon. The cabachon or for short "the cab" is a gem with a flat back, rounded or domed top. It can be round, square, rectangular, or oval in outline. Colored, opaque or patterned stone or stones displaying some interesting phenomena are usually cut as cabs. Jade, petrified wood, agate, and opal are examples of stones that are usually cut "en cabachon".

Transparent colored or colorless gems are most frequently faceted. This is characterized by a number of flat polished surfaces arranged in such a way that the stone reflects light which enters the stone through the polished surfaces, back to the viewer in hundreds of sparkles. The reflections may be colored as in a colored stone, white as in a clear stone, or in many hues as in a diamond or rutile. The rainbow colors are caused by light being broken up into its component colors within the stone.

Other lapidary treatments could be carving, flat surfaces assembled pieces or spheres.

## LAPIDARY "STEP BY STEP"

by Thomas (Bill) White, Lapidary Technical Chairman, Independence, Mo

November 1982 News Nuggets

THE ROCKY MOUNTAIN NEWS July 1982

Reprinted from: THE ROCKHOUND GAZETTE, Sep82

Volumes have been written on techniques, polishing speeds, etc. Most are very good and successful procedures. Just keep in mind that most lapidary tips are given in general terms and are not meant to be all inclusive.

Each and every step is important from selection of the rough slab, trim sawing, performing and up your ladder of progression to the final polish.

I dislike rating one step as being more important than others, but on this occasion I will pick one crucial point that applies to all types of lapidary work, faceting, cabochon, sphere, carving, etc. It is the initial performing and/or rough grinding stage of the operation. Take great care at this point. Most of your decisions should be and will be made during this procedure such as: high or low dome, bezel, curvature, table, girdle, etc.

In other words you commit yourself on the general outline and symmetry of shape. From this point on each step follows a predictable course.

Bringing a stone to its ultimate polish is the desire of all stone grinders and a very personally rewarding experience.

Where polishing agents are concerned, technique and polishing speed are quite important but the differences are more of a technical matter than a practical one to the everyday home shop craftsman.

An example problem: polishing an agate cabochon.

#1 craftsman uses tin oxide on leather convex disk turning at 800 RPM.

#2 craftsman uses cerium oxide on hard felt wheel at 1200 RPM.

The results are two very well polished cabochons that I can not detect which method was used. So settle on two or three basic procedures such as leather, canvas, felt: Linde A, tin oxide, cerium oxide and go from there. (I do 95% of my polishing on leather using tin oxide.)

Be careful with heat buildup while polishing. In some cases heat may be helpful and even desirable but strive to obtain an even distribution of heat. Some stones have the ability to transfer heat evenly throughout their area: however the best policy is to avoid any sudden thermal shock. (Keep it moving) and bring it up slowly.

This polish that we all strive to obtain can only be reached by successfully carrying out the basic fundamentals of stone work. By proceeding step by step on these fundamentals the problems of the final polish on most stones will become just a routine step.

## HOW TO HIDE A CRACK

Nov75 News Nuggets

The secret of the art of healing fractures in the cab with epoxy is to shape your stone and semi-polish it. To get rid of that nasty crack, heat the stone to 200 degrees in an oven. Mix epoxy and apply to one edge of the crack.

Gradually apply resin, working from one end of the crack to the other. **THIS IS IMPORTANT!** You will notice that the epoxy becomes very liquid when it touches the hot stone and it flows right into the crack. By applying the epoxy at one end and working toward the outside edge of the cab, the air is driven out and the epoxy replaces it. Then put the stone back in the oven and let it remain there for another 20 minutes. By this time, the epoxy will harden. Scrape off the surface and proceed with final polish. If you do this right, the fractures will be very difficult to detect.

Feb78 News Nuggets  
By Ruth Bronson

If you ever have to replace a cracked (but not broken) quartz gemstone such as a smoky quartz or amethyst, before going all out and cutting or buying a new one, try fixing it with Opticon resin number 224.

Opticon is a clear liquid plastic with the same refractive index as quartz. If you drop a colorless quartz stone into the thick liquid it will disappear, and if you can get the plastic into the crack, the reflections from the crack will disappear, and it will no longer be visible to the naked eye. Of course the crack must be connected to the surface of the stone, as a completely internal crack cannot be reached by the plastic; most cracks that occur after the stone has been cut will be connected to the surface.

Getting the crack filled with plastic is another matter. I drop the stone into a small jar of the liquid plastic so that it is completely covered, then place the jar under a lamp (such as a small gooseneck desk lamp), so that the gentle heat of the light bulb will warm the liquid. When warmed, the plastic becomes more fluid and penetrates the crack more easily. By alternately heating and then allowing the jar to cool, the liquid plastic will gradually fill the crack. One large stone was repaired by heating it each day and cooling each night for two weeks. The crack became smaller and smaller until it "disappeared" entirely. After the crack has been filled, the plastic is cured by adding hardener to the surface, so that the plastic won't be able to seep out if the stone is heated. How durable such a repair job is I don't know yet, but the large stone mentioned earlier is still satisfactory after six months. However, I would be very careful heating a stone which has been repaired in this manner.

Opticon is available from Griegers' in California and probably other lapidary supply houses as well. A can of it will keep for a long time and repair a lot of stones.

## **HOW TO PUT A FINAL POLISH ON AMBER**

Sep00 News Nuggets  
From Ruth Forest via The Polished Slab via Golden Spike and Pickhammer News 5/00.

Put a final polish on amber with Brasso (a brass polish) or Zam on a soft buff such as unstitched muslin. A hard buff will produce heat and can melt the amber.

## **HOW TO SHARPEN YOUR SAW**

by Ruth Bronson  
Apr78 News Nuggets

If your saw needs sharpening in the middle of a slice (indicated by stalling of the motor) on old grinding wheel rubbed against the diamond bearing edge several times all the way around will uncover the diamonds enough so that you can finish the cut.

Sawing through a firebrick at intervals will keep your saw well sharpened.

## **HEALTH TIPS ON SAW LUBRICANT**

Apr00 News Nuggets By OG

I recently read an article in one of the other club newsletters which is important to anyone using a lapidary saw. I can't find the article at this time and really never thought this advise would be necessary.

In short, NEVER, EVER USE AUTOMOBILE ANTIFREEZE AS LUBRICANT FOR YOUR SAW!!!!

The stuff is not good for your respiratory system or your nervous system. Always use a mask when you cut or trim slabs so you don't inhale the mist from your lubricant. Nothing you use, except water, is good for your lungs. (I know water isn't suitable as lubricant for hard rock cutting.)

## **STABILIZING POROUS STONES**

From ROCKHOUND NEWSLETTER  
Via DIGGIN'S FROM DAKOTA 1/82  
Gen Buresh, Editor  
July 1982 News Nuggets

If you would like to try your luck at stabilizing a porous stone such as turquoise so it can be cut and polished, the Silvery Colorado River Rock Club offers these instructions:

Take a jar with a lid; add one pint of acetone. To this, add the complete contents of both the resin and the hardener tubes of epoxy glue, mixing well. Add well-dried stones, cover the jar, and let remain for at least four days.

Remove stones and allow a week for them to dry. They should now be stabilized and ready for working.