

from the book *Buckskin: The Ancient Art of Braintanning*
by Steven Edholm and Tamara Wilder
courtesy paleotechnics

SHARPENING AND MAINTENANCE

OF

KNIFE EDGES

The sharpening of knives and other tools can be a useful skill for almost everyone. A sharp tool will pay you back abundantly with reduced task times and a job better done. A sharp tool is more pleasant to use and arguably safer, since excessive force must be applied to a dull tool to make it function; using excessive force sacrifices your control of the tool, increasing the likelihood of dangerous slip-ups. The time required to sharpen a tool, or even to learn to sharpen tools, is quickly made up for by more efficient, safe, and enjoyable use.

Some knives are made of worthless and/or poorly tempered steel that either cannot be sharpened well or will not hold an edge. Hope that you do not have one of these.

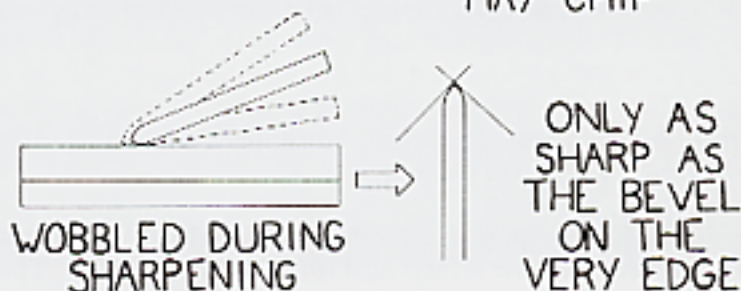
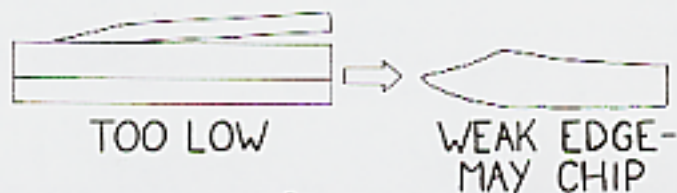
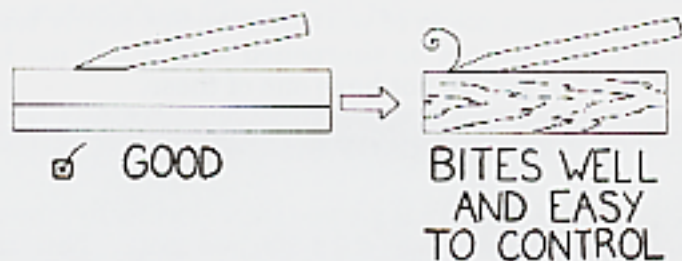
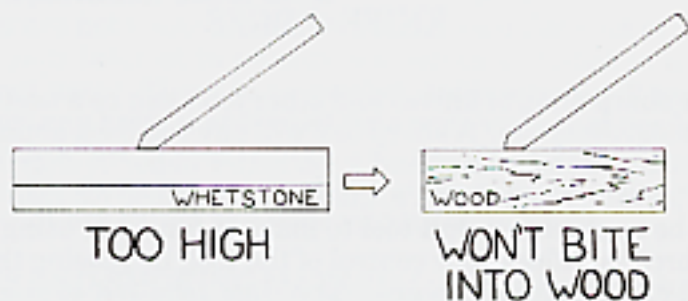
FACTORS OF SHARPNESS

FINENESS OF GRIND: If viewed microscopically, the edge of a knife would be seen to consist of jagged teeth. The teeth are always there because steel is sharpened by the process of abrasion: that is to say, that small particles of grit, harder than steel, grind the metal off of the blade, leaving fine scratches. No matter how much the knife is sharpened, it will still have these jagged teeth. The fineness of the teeth (i.e., how large or small they are) is a major factor affecting how sharp the knife is.

Whetstones come in various grit sizes, from very coarse to very fine. The coarsest stones are used to begin the resharpening of very dull knives and to do major reshaping or rebeveling of the blade. The progressively finer gritted stones are used in series, from coarsest to finest, to reduce the teeth on the edge to as fine a grind as possible.

BEVEL: The bevel that is put on the knife will, to a large extent, determine how sharp and durable the edge is. The bevel must be consistently flat to be at its best, which means that

KNIFE BEVELS



the hand which guides the blade across the whetstone should not deviate from the chosen angle. It takes a lot of practice to gain the coordination requisite to maintaining a good consistently flat bevel.

If the bevel on your knife is too blunt (factory edges are often too blunt for our tastes), it can be changed on a coarse stone or with a file.

TOOLS FOR SHARPENING

WHETSTONES: We like to have a human made “stone” of carborundum with two sides, one very coarse and one medium-coarse. The coarse side is used as the first grit when resharpening a very dull tool, removing chips in a blade, or changing the bevel. The medium-coarse side is used as the first grit in sharpening tools that are not in such bad condition.

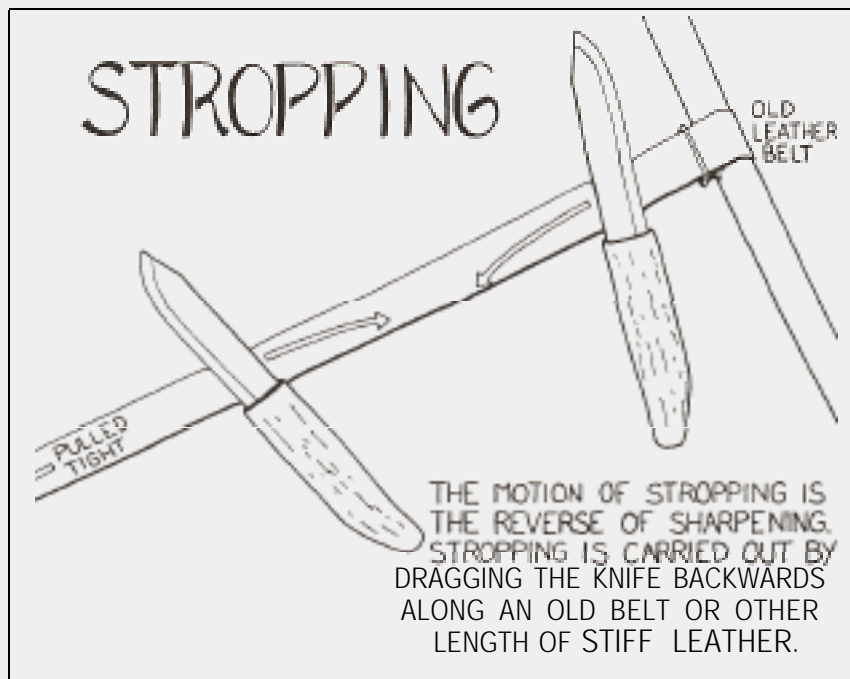
For the finer grades of stones, we prefer to go natural. Natural stones from Arkansas are the most common. They are classified as soft, medium, or hard, the softer ones being more coarse. With a soft and a medium Arkansas stone and one of the manufactured two-sided stones mentioned above, a very nice edge can be put on a knife. Very hard stones are used to achieve extremely fine edges, but the average person can get by without them.

Some other natural stones which can simply be picked up will work very well. Slate is of notable mention, occurs in nice flat sheets, and was commonly used in times past for whetstones.

A lubricant should be used on whetstones. Our preference is water. Apparently there are both oil and water stones, but we haven't run into the stone yet that will not work with just plain water (excepting those which are already saturated with oil). Oil is messy and smelly, and if you run out, the oil soaked stone will not work with water. There's probably a good reason for using oil, but we don't want to know it. We're happy with our water. Keep a layer of lubricant on the stone as you are working.

With much use, whetstones tend to become dished in the center. To make the surface of the stone flat again, grind the face on flat cement with water; using sand and water on cement will make the grinding go that much faster.

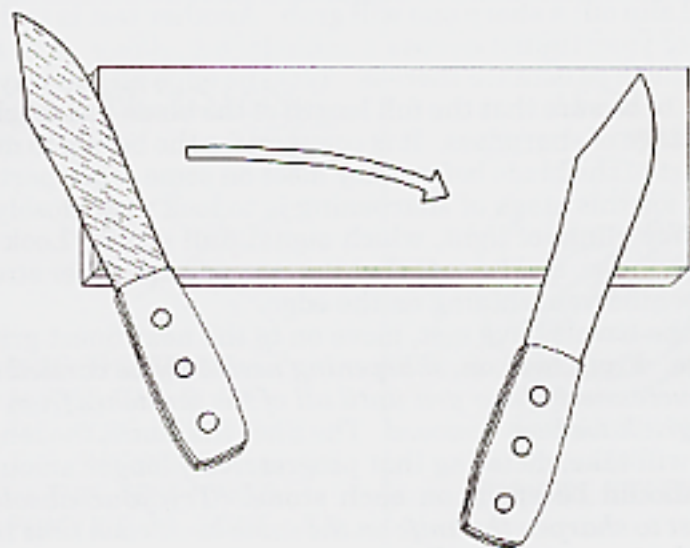
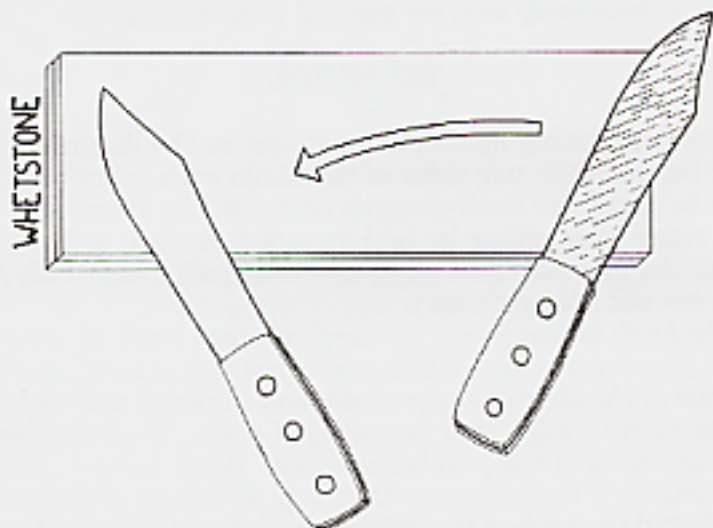
STROP AND STEEL: Two other tools that may find use are the sharpening steel and the strop. A *strop* is a piece of leather much like a section of belt, in fact an old belt will work fine. The knife is drug across the strop backwards, the opposite of using a stone. It is used as a maintenance tool to realign the teeth on the edge of the blade and also, as the final step in sharpening, to remove a bur that may form on the edge as a result of sharpening the knife. We sometimes strop our knives on some convenient piece of wood.



The *sharpening steel* is used periodically to maintain the edges of already sharpened knives. It is essentially a very fine file; so, it removes more metal from the knife than the strop. The knife can only be touched up on the steel so many times before it must again be resharpened on stones.

The knife is run down the steel towards the hand on the same bevel that it was sharpened on. This motion can be scary, and should be; so, proceed very slowly while learning it. The knife will sharpen up just as surely if you go slowly and carefully, just not as quickly. Remember that it is mostly the wrist, not

SHARPENING MOTION



the whole arm, which moves the knife on the sharpening steel. Alternate between the two sides of the blade with each pass. This tool is a great boon in the kitchen, since it is at its best on “kitchen knife-like” steel. We prefer this type of knife steel, which is relatively soft, for general purpose knives.

TECHNIQUE

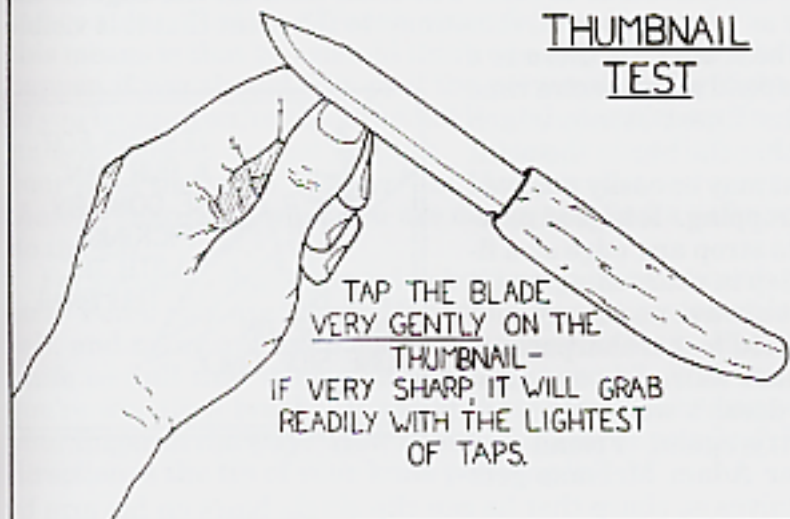
The sharpening motion is as shown in the diagram. Alternate between the two sides of the blade with every pass, being sure to cover the entire length of the blade, from base to tip. The stone may either be laid on a flat surface or held in the hand. Just be sure that all tender body parts, *especially fingertips*, are out of harm’s way.

*The knife is sharpened on the first stone until the two bevels meet, forming an edge. If this goal is not met, you will go through the rest of the sharpening process, and the knife will be left with the same dull edge that you started with. Test the edge frequently to see if the bevels have met. When they do, the knife will suddenly feel sharper. One way to test for sharpness is to gently tap the edge of the blade against your thumbnail. A dull knife will slip off, a sharp one will grab. Another test is to drag the skin of your thumb **across** the blade (*not along it !*), and feel how much resistance there is. Test the edge all the way up and down to be sure that the full length of the blade has reached the first stage of sharpness. It is common for the bevels to meet on one part of the blade before they meet on some other part. A final test for this stage of sharpening is to look very closely at the edge for glints of light, which signal dull spots. Look directly at the edge, and be sure that the sun, or some other strong light, is behind you, shining on the edge.*

When the bevels have met, move on to the next finest grit of whetstone. From here on, *sharpening need only be carried out on each successively finer grit until all of the scratches from the previous grit have been removed. The finer the stone, the longer grinding will take, dictating that progressively longer amounts of time should be spent on each stone. Try your absolute damndest to sharpen the knife on the same bevel each time that you switch stones and at all other times, for that matter.* The importance of maintaining a constant bevel cannot be over emphasized.



THUMBNAIL TEST



SHARPNESS TESTS

THUMBSKIN RESISTANCE TEST



DRAG THE THUMB
ACROSS THE BLADE-
 THE MORE RESISTANCE,
 THE SHARPER THE BLADE.
 THIS TEST TAKES
 PRACTICE TO JUDGE WELL.

THUMB CUTTING TEST

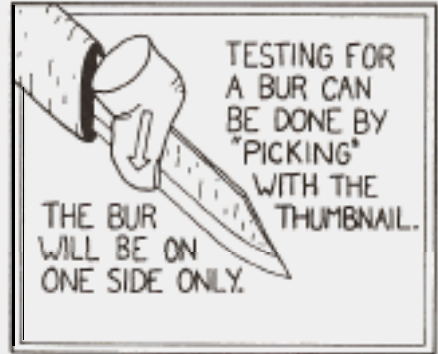


AN EFFECTIVE TEST
 WITH
 BAD SIDE EFFECTS.



An excessive bur of steel will often form on the edge of the knife as it is sharpened, sometimes to the point that it is visible as a bent curl. If there is a bur, spend a little extra time on the finest stone, which will thin the bur to the point that it may be easily removed by stropping. It is good practice to strop any edge as a final step in sharpening, but it is not always necessary.

A good test of sharpness is to shave hairs on your arm. If it doesn't work, then try and try again. Friend and carver Adam McIsaac gets his knives so sharp that he can clip single hairs on his arm by tapping them lightly.



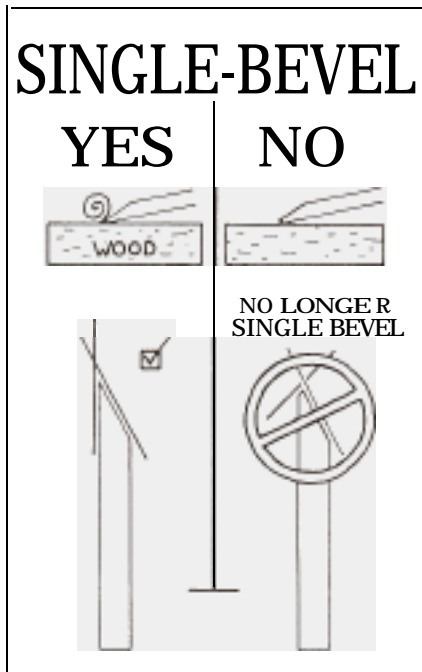
OTHER GRINDING TECHNIQUES: There are grinding techniques other than the one pictured, like grinding in a circular motion or running the stone up and down the blade. These are often better for sharpening large blades (like hide-scraping tools), tools with only one bevel, and some other things. Otherwise, the basic concepts of sharpening remain the same.

SINGLE-BEVEL TOOLS: Some tools have only one bevel, the other side being flat. Single-bevel tools are designed that way for a reason; so, the flat side should *always* be maintained flat. Don't add a bevel to the flat side of a single-bevel tool, or you will find that your now double-beveled tool no longer functions the way it was designed to. Some tools which should have a single bevel are hide-scraping tools, scissors, pruning shears, plane and spokeshave blades, drawknives, broad axes, and broad hatchets. It is often necessary to "dress" the flat side of single-bevel tools towards the end of sharpening to remove burs of metal. Sharpening the flat side is no problem if not done excessively, but it should always be done with a flat stone, held perfectly flat on the flat side of the tool!

SAFETY: When using potentially dangerous tools, there is one concept that will go further to insure your safety than any static safety rule. That is, **‘Watch your follow-through!’**. What this means is that you should think one step ahead to what will happen if you should slip, or if the person standing right next to you bumps you, or the hand holding what you’re cutting loses its grip, and so on and so forth. Listen to that little voice in your head that says *“Danger!”* or *“Are you sure you want to do that?”*. Then, stop what you are doing, and find a safer way to do the job.

For instance, forget the rule about not cutting towards yourself. Some jobs are more safely done by cutting towards oneself, and many are more efficiently done this way. But, is the knife so dull that it may slip off of the work? Will the stick you’re whittling break? If one of these things does happen, is your finger in the way? How about your arm or your leg? What direction is the tip of your knife pointing in?

The information that you need to watch your follow-through



is already in your mind and body. You’ve cataloged most of the spatial-movement-force relationships just by functioning in daily life. The trick is to learn to listen to that little voice, to train yourself to assign special significance to dangerous objects, and to maintain that consciousness.

A friend of ours once cut the tendon in his finger clean through while scraping paint from a window pane. Just a second before it happened, he heard that little voice and ignored it. Now his finger is contracted and worthless. He’s probably really pissed off.

TROUBLE SHOOTING SHARPENING

Went through the sharpening process, but knife is still dull.

>>Didn't carry out sharpening long enough on the first grit. A rough edge must be put on the knife with the first, coarsest, grit of stone. Start over.

You got the knife sharp, but it dulled up as soon as you used it.

>>An excessive bur was left on the edge of the blade. Use your finest stone a little more, and then strop to remove the bur. Could also be attributed to an extremely poor quality of steel, but this is unlikely, since it's difficult to put a good edge on really soft steel in the first place.

Fingers cut off

>>Didn't watch follow-through. Be more careful next time.