

From Bough to Bow

Traditional Archery Let the Chips Fly!

The day has finally come, you have your seasoned wood and it's time to start making some chips! This part is great! It is like opening up a wrapped gift to see what you have. A workbench with a vice is a great help. I have a vice mounted on a pedestal so I can work from both sides without unclamping (*see photo opposite top*).

We will get to know the wood by dissecting it one layer at a time. In-between the bark (that you see) and the sapwood of the tree there is a thin layer of inner bark. So, gently peel away the bark with a drawknife. (If you hold the drawknife with the beveled edge down it will be easier to control.)

Peel away a small section of bark until you expose the inner bark. You will know that you have gone through the inner bark if you expose the white sapwood. At this step you are just trying to remove the bark, recognize the inner bark, and just barely expose the first layer of sapwood. The drawknife will not be able to get into all the nooks and crannies so you will have remnants of darker inner bark remaining on the first layer of white sapwood.

You may also notice some raised lumps or bumps on the exposed sapwood; these are usually knots, called by some

pin knots, that may be very small. Remember where these knots are and note how the wood is naturally raised around them.

Now that the first layer of sapwood is exposed we can view our stave or billet and decide where that future bow may be lying. I use a 1¼" wide template the length of my stave or billet and lay the template directly on the exposed sapwood. Position the template to best use the bow stave so you will have a 1¼" wide section of wood with little or no twist and few knots. If a knot can not be avoided it is better to position it in the center of the limb than to end up with a knot at the edge of a finished bow limb. With the template in its best possible position, draw a line on each side and remove the template (*see photos on page 42*).

The wood between the lines will eventually be the back of our bow. The back being the part of the bow limb opposite the archer while shooting. With a sharp small hand ax, start chopping away small slivers of wood keeping the blade of the ax perpendicular to the sap wood you have exposed; or at right angles to the back of the stave. Slowly chop away and approach as close as you feel comfortable to the layout lines you have just drawn.



Here are the tools I will be using in these projects. Perhaps the only ones unfamiliar to a "handy" man are the draw knives (center) and scrapers (just below the draw knives). The long strips in the back are my patterns.

You may be asking why don't you just cut it out on a band saw? The answer is, you may; but using hand tools is part of the experience for me. The idea here is to slow down and get to know the piece of wood you are working with. If a sliver of wood you are chopping away is splitting at an angle and approaching too close to the layout lines, turn your stave around and chop from the other direction blocking the split from going any further. In a short time you will surprise yourself at how close you can come to the line with nothing more than a hand ax.



Now that the bow stave is chopped out and is roughly 1 1/4" wide. It is time to find the actual back of our bow. Ultimately the back will be a single growth ring (also called an annual ring) of heartwood. The heartwood is the yellow wood under the white sapwood of our piece of Osage. The sapwood can be left for the back if it is in good condition, but I feel a better bow can be obtained by omitting the sapwood on Osage. Yew is the only wood I know of that requires the sapwood to be left on. The sapwood of Yew has excellent tension properties (good for a bow's back), while the heartwood of Yew excels in its compression qualities (good for a bow's belly). Combined with its light weight it is no wonder why it has been the bowyer's choice for bow wood for centuries.

Understanding what it was to stay in a single growth ring became clear to me one day while playing with a two by four stud made from Douglas fir. Looking at the end grain of that piece of Doug fir I could see the distinctly marked annual rings separated by a thin band of red running parallel to the two inch side of the board. With a horseshoe rasp I began to remove

wood from the two inch side of the board noticing the color change every time I crossed one of the red rings. I learned that once I broke into one of those red rings I could carefully file off the surrounding wood leaving only the red wood I exposed. Inch by inch I made that red patch grow until I had a section of unbroken red wood. It finally clicked that this is what "following the grain" in bow making means! I practiced on that board for a while using the horseshoe rasp to continue exposing the layer of red wood and then I tried using a drawknife. Once I got the feel of the drawknife I chased that red ring with less effort than with the rasp.

We will be using this same concept on our piece of Osage, the only difference being that we will not leave the thin layer of different colored wood in-between the annual rings; we will just barely scrape through it exposing the thicker layer of the annual growth ring. This step of our journey is very important and exciting. We will be uncovering the very back of our finished bow.



You must be in a patient mood to work with your wood at this point. The correct lighting and the angle at which you view your wood are crucial. You may be able to see two distinct layers of wood viewing your stave as you would be sighting down an arrow; but when you stand up and look directly at the stave the distinct rings then seem to disappear. This step will take time and patience, but it will become very clear to you.

The stave right now has the bark removed and the first layer of sapwood exposed with remnants of inner bark left in the hollows the drawknife could not reach. I explained earlier that we will ultimately be exposing one single layer of heartwood; but

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ble to stay in a single layer of sapwood while you are learning.

Soon you will notice a color change in the wood as you remove the sapwood. You are starting to break into the heartwood, but it does not happen all at once. When you find a distinct spot of color, slow down even more and try to make it grow by carefully removing the wood around it. Make that colored spot grow working your way down the stave. You will probably goof up and break through that ring from time to time. Mark those areas with a pencil and continue until you reach the other end of the stave. By now you will have noticed how the wood is naturally raised around any knots. Working around knots slows the process down quite a bit. It is easier to work around those areas with a scraper or pocketknife.

The ultimate goal here is to end up with only one annual ring exposed.

Now go back to where you started and break into another ring, or start where you have marked a spot where you have already broken through. You should be getting a feel for that punky layer of wood just before you break into another annual ring. When you know you are in the softer, hairy layer it is helpful to use a scraper to

remove that stuff and expose the harder shinier layer below. Just as the drawknife left remnants of the inner bark in the hollows of the sapwood, it will also leave remnants of the punky layer of wood in the hollows of the heartwood. That is where a curved scraper will be helpful. If you feel like you are getting lost, just walk away from it for a while and come back when your patience has returned. Before you know it a distinct layer of heartwood will be exposed and you will have it worked from one end of the stave to the other.

This is a time for celebration! Show it off to anyone who will even pretend to be interested. This is the very surface of the back of your bow that is emerging from that stave! It is like brushing the sand off the top of a hidden treasure chest!



do not get in a hurry and just start ripping away at the sapwood.

The sapwood is layered in annual rings just like the heartwood, it is just very hard to see. Keeping that in mind,

attempt to remove one layer of sapwood at a time. Get to know your stave and all its irregularities. Use whatever

tool you feel comfortable with. When using a rasp I like one with a coarse cutting side and a smoother cutting side when you flip it over. You may notice that when you start breaking through into another annual ring the wood comes off rather "hairy." If you cannot see this using the file try breaking through an annual ring with a steel scraper. When using a drawknife you will feel and hear the difference when you break into another layer of wood. As mentioned earlier I use the drawknife with the beveled edge down for more control. Do not get frustrated, it is near impossi-





Position the template to best use the bow stave so you will have a 1/4" wide section of wood with little or no twist and few knots. If a knot can not be avoided it is better to position it in the center of the limb than to end up with a knot at the edge of a finished bow limb.

If you were working with a full-length stave that is great, you are now ready for the next step. However, if you have been working with a pair of billets I must now take the time to explain the splicing of your billets to create a full-length stave.

In the next issue—Marrying Two Billets



You could do this with a bandsaw, but why spoil the fun? This is all part of the process. I simply choose to employ only hand tools.

Brian Luke is a devoted husband and father of three teenagers. He has worked as a tool and die maker since 1979 and has been a lover of the bow since 1963, when at the age of four he received his first bow and arrow set (a fiberglass bow with the rubber tipped arrows). Brian started building longbows in 1992 and has since won six National Championships competing with in the NAA Traditional Longbow Division. He has won three Outdoor Nationals and three Indoor Nationals setting a record for the indoor FITA.



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