

Harvesting Green Wood

Patience and perseverance pay off

by Dale Nish

I have been working with green wood for several years. I have found the satisfaction of finding the wood almost as fulfilling as actually working it. In some cases, as with life, the expectations and anticipation are the most rewarding part. Once while deer hunting, I found a large, soft maple burl growing at the base of a small tree. The burl encircled the tree, rising to a height of perhaps 30 in. with a diameter of over 48 in. Over several years I envisioned the turnings which could be obtained from a burl of such beauty and size. At last I received permission to cut it off, and gathered together the necessary tools and equipment, a major undertaking, as the burl was far off the main road. After arriving at the



These bowls were turned from green boxelder burls found in Nish's neighbor's firewoodpile. They measure 7 in. to 15 in. in diameter.



Seasoned and finished bowls turned from green silver maple, apricot, ash, black walnut, lignum vitae, macassar ebony, honeylocust and spalted maple.

tree and inspecting it carefully, an enthusiastic friend and I began to saw—the chain was sharp and the chips flew. Suddenly the bar fell into the burl. It was completely hollow. The only sound wood was a 2-in. to 3-in. shell. The burl was of no value at all for turning. Maybe next time.

The sources of wood for turning or carving are limited only by your patience and perseverance. The best wood cannot be purchased from a lumberyard or hardwood dealer, and even if the desired species is available, you will still be limited by the sizes offered. Most of us live where species growing locally far exceed species available commercially, but if you want to work local wood, you must cut your own.

Wood is everywhere. Robert L. Butler, in his book *Wood for Wood Carvers and Craftsmen* (A.S. Barnes Co., Inc., Cranbury, N.J. 08512), has a chapter aptly titled "Wood Is Where You Find It." In Utah, which is not noted for its forests, I have harvested locally grown oak, ash, maple, black locust, honeylocust, mulberry, English walnut and black walnut, American and Siberian elm, ailanthus, catalpa, cottonwood, poplar, boxelder, aspen, chestnut, sycamore, apple, pear, cherry, plum, peach, apricot and more. Wood is everywhere. I have found it in firewood stacks, trees bulldozed to clear building sites, limbs left from logging operations, wind-falls after a storm and orchards being uprooted. Other good sources of turning and carving wood are tree-removal companies, city shade-tree departments, local sawmills, landfill or dump areas and friends and neighbors who know you are a wood nut and inform you when they see trees being cleared. Local sawmills frequently have short or crooked logs which have been discarded as uneconomical for processing into lumber. These logs are either inexpensive or free. Show appreciation with a gift of a turning or two and see how your supply increases.

A minimum of equipment is required for cutting your own wood. A chain saw is a necessity, and you will also need a maul, splitting wedges and a peavey (if the trees are large). A pickup or trailer is handy, but you will be surprised how much wood you can haul in the trunk of your car.

The chain saw must be sharp and in good condition. Cutting parallel to the trunk of the tree is different from cutting cross grain, as the chain cannot cut efficiently across the end surface of the log. I use a chain saw with a 16-in. bar for most of my cutting, but I have a saw with a 30-in. bar for larger pieces. Here in Utah it is uncommon for a tree to be more than 30 in. in diameter.

The chain must be sharpened according to manufacturer's specifications—teeth even in length and equally sharp, or the saw will lead toward the sharp side of the bar. If the saw has an automatic oiler, check to be sure it works. The oil reservoir must usually be filled each time you fill the saw with gas. Manual oilers must be used frequently, as improper oiling or insufficient oil will raise havoc with the bar and chain. Always

use ear protection, since many saws can cause permanent ear damage after a short time of continuous use.

Cutting the wood — The first step in working a bolt (log section) is cutting off its ends to remove end checks. If you are concerned about nails or dirt in the bark or wood, remove the bark with an ax. This isn't always necessary, and I usually leave the bark on the log until I am ready to work it. The bark helps keep the log from drying out and checking, but it also encourages grubs and beetles, which may ruin the log or at least destroy the sapwood. If you remove the bark, cover the log with plastic to prevent drying and checking.

After the end checks are removed, measure the useful diameter of the log and cut the bolts in lengths equal to the useful diameter or in multiples of it. Don't cut short lengths unless you're ready to work them. Short lengths quickly check and the bolt may be ruined.

After a bolt is cut, I stand it on end on wood blocks or slabs. Be sure the bolt is in a stable position for sawing. The bolt may be laid out different ways, depending on defects, pith (small growth center of the tree) position and end use. Large checks may sometimes be the places to make the cuts. One thing is constant—the pith must be removed from the flitches (blocks of wood cut from the bolt). Several options for layout and cutting are shown in the diagram at right.

Once the cuts have been outlined on the end of the bolt, make cuts parallel to the sides of the flitches. These cuts should remove most of the bark, but don't cut too deeply into the sapwood. The exception here is fruitwoods. Their sapwood is almost impossible to season without checking and should be removed.

The next step is the primary cut, which will usually halve the bolt. For the remaining cuts remove the pith. Any remaining bark should be removed with the ax.

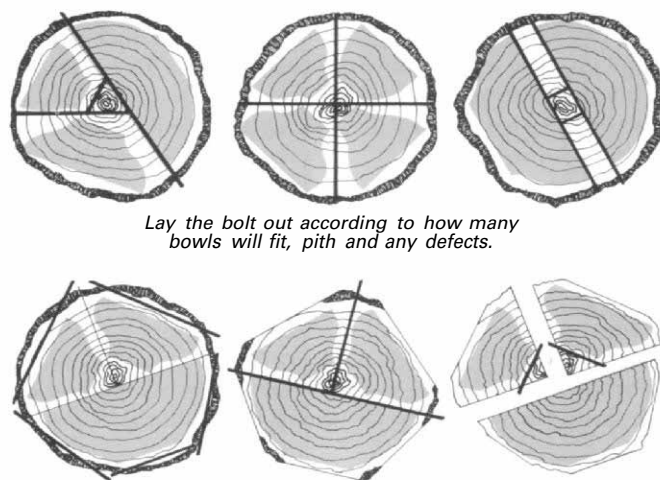
Try to cut with the sawbar making an angle of about 30° to 45° to the end of the bolt. Cutting parallel to the end of the log is inefficient because you are cutting end grain, and cutting parallel to the length of the bolt produces long shavings that can not clear the chain, causing it to bind and overheat. Short bolts can be cut standing on end. Long bolts must be laid down for sawing. In either case, the bolt must be in a secure position and raised sufficiently to allow the chain cutting room without contacting dirt or rocks.

Cutting for figure — Most of the pretty figured wood in a tree will occur in the area below the major fork (crotch figure), in the stump area (stump figure) or in the occasional burl on the trunk or around the base of the tree. Crotch figure, the most beautiful, is seldom found commercially because it is usually trimmed off at the mill, or is so thin or short as to be of little value. Some of the finest crotch figures I have found came from local cottonwood trees on their way to the dump. Cottonwood trees, at least in Utah, have little commercial value and are seldom used even for firewood. Other species with beautiful crotch wood are honeylocust, black walnut, elm, ash, catalpa, aspen, cherry and apricot.

If I have a complete tree, I try to work the major fork first. The first two cuts, after the small limbs and branches have been removed, are about 24 in. above the fork of the tree, severing the two primary limbs from the main trunk of the tree. If weight is on the limbs, it's good practice to cut up from the bottom side to a point about halfway through, then



Both the bowl and the block contain the line resulting from grafting English walnut to Claro walnut root stock. The block was obtained from a tree grown in northern California.

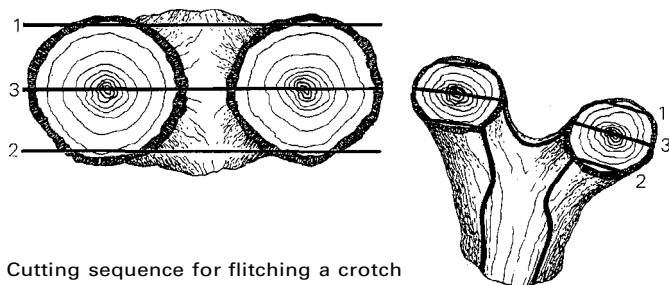


Lay the bolt out according to how many bowls will fit, pith and any defects.

To cut a bolt, trim the sides of the flitches (left), make the primary cuts (center), then slice off the pith (right).

cut down into the limb at a point 2 in. or 3 in. away from the first cut, toward the top side of the tree. As the downward cut progresses the cut should open up. Be careful, as the limb may break down to the first cut, and may roll or twist toward you. The next cut is made 24 in. to 36 in. below the fork of the tree. Before the cut is made, be sure to support the trunk with wooden wedges or blocks to prevent the trunk from settling and binding the saw blade.

After the fork has been cut from the tree, examine the ends for decay, splitting, insect activity or other deterioration. Use a lumber crayon, and mark the pith on the ends of the fork. If the fork is sound, transfer the crayon marks to the sides of the fork. Use a straightedge to connect the marks from top to bottom. These lines will be the cut lines when the fork is split.



Cutting sequence for flitching a crotch

Using the center line as a guide, saw a slab from both sides of the fork, trying to keep the cut parallel to the center line. The slab cuts should remove part of the sapwood and bark, but should not be so deep that they remove wood that could be used during turning. Watch for nails or other metal, and pull or chop it out of the wood. Expect to hit a few nails if the trees come from yards or fence lines. Sharpening a chain is a small price to pay for a quality piece of wood, and in my experience, a nail or piece of wire does much less damage to the chain than does a small rock or pocket of sandy dirt.

After the slab cuts are complete, saw down the center line. Do not try to saw straight across, parallel to the ends of the forks. Rather, angle the cut 30° to 45° to the end-grain surface. This allows the chain to cut more efficiently. Too little an angle and the wood cut out by the chain will resemble sawdust; too much of an angle will cause the chain to produce long slivers or shavings, which will clog the chain drive. Experience will show you the best cutting angle. If the fork is large you may have to cut from both sides, at least until you reach the main trunk below the fork. Start the cuts carefully and be sure they line up and will meet at the junction of the fork. A cut running off to one side will require extra work, and could ruin a piece of wood of exceptional beauty and value. A perfect cut would be right down the pith of the tree, leaving part of the pith in each piece, resulting in minimum waste and two true, flat slabs. It is always exciting to make this cut and watch the fork separate. A feeling of wonderment comes over me, and I can hardly wait to see what is revealed. It is better than Christmas, because it happens every time a piece of wood is worked. One cannot do this and not see the Master's hand in this beauty of nature.



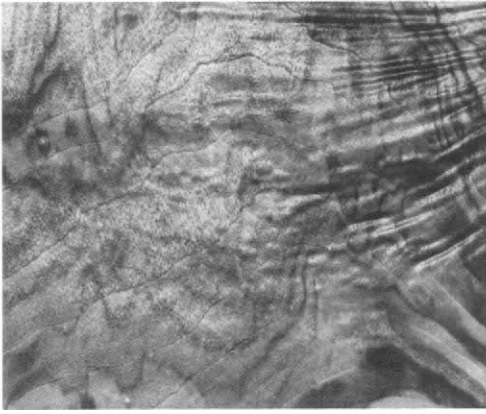
Wedges are used to split a cherry stump containing pockets of dirt and rocks. Be sure to split through the pith.

Some trees, such as black walnut, will have crotch figure anyplace a branch attaches to the trunk or larger branch. Other trees may not have true crotch figure, but you can always find beautiful figure in that area. Crotch figure of small trees is thin, often only an inch or two deep. To preserve it, shallow trays or plates must be turned, with the figure at the bottom so one can turn down to it and reveal it. Otherwise, the turner will go through the figured area into the plain wood, leaving the figure visible only at the edges.

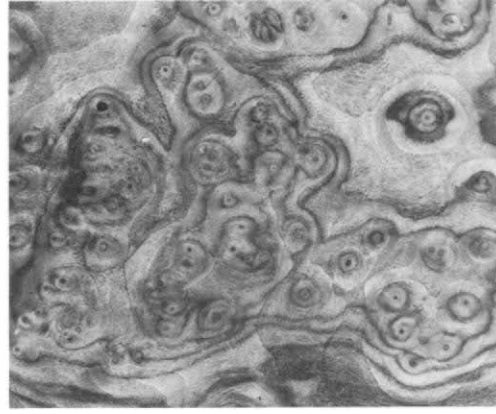
Stumpwood — Stumpwood is that portion of the tree which starts to flare at the base of the trunk and continues into the ground. A tree is usually cut off at a point 1 ft. to 2 ft. above the ground, leaving the stump intact. One can often saw the stump off close to the ground and collect a fine piece of wood. At other times the stump may be dug out completely. The roots are cut off and the remaining stumpwood cut up. For the woodturner the stump offers many opportunities, including a lot of hard work. Color and patterns are beautifully innumerable. Stumps contain both sapwood and heartwood, just as in the trunks of trees, but they will not be so evenly separated and will flow into each other. Colors are often more dramatic, with streaks of black and dark browns coming to life, producing marble-like patterns. Because the stump is in continuous contact with the moist ground, it is subjected to mineral stains, stains from decaying surface matter and other colorants. The irregular grain found in the stump may show as quilted figure, fiddleback, ribbon or swirl—the only thing certain about a stump is uncertainty. You can expect figure equal to or better than that found in other parts of the tree, with the possible exception of the crotch figure. Because stumpwood figure goes all the way through the blocks, stumpwood usually can be cut into various sizes and turned with little regard to grain direction. This wood is excellent for deep bowls of simple design.

Burls — Burls are rare, and usually available only as veneers, but if the woodturner is alert, burls can be found. Burl wood has most interesting designs, in many colors and textures. These wart-like growths are usually found around the base of the tree, but may appear anywhere on the main trunk. The burl consists of a mass of dormant buds, sometimes called eyes. Therefore, there is no alignment of wood fibers, and the burl is gnarled and misshapen. This in turn produces figure of unpredictable color and pattern. Because burls have no grain direction, they are quite stable when turned green, and in most cases are easier to work than wood from other parts of the tree. Make sure to use sound burls, without bark pockets or decay. Cut them into their most useful sizes, disregarding grain direction. Often only small pieces can be turned, because of defects, but if the defects are small, I often turn the piece and leave the defect in the surface of the turning.

Treating green flitches — Trees are designed to carry sap, and so long as a tree is alive, its cells are full of water. When a tree is cut down, it begins to lose moisture. This process is called seasoning or drying. As the wood loses water from the cells it becomes lighter, harder and stronger, and it also shrinks in size. Seasoning will continue until a balance is reached between the water in the wood and the moisture in the air around it. This balance is called equilibrium moisture content (EMC). Because the EMC will vary with the humidity



Marble-like figure of walnut stump can be turned with little regard to grain direction.



Walnut burl. The eyes are formed by the dormant buds that compose the burl.



Shallow trays were turned from ash with crotch figure.

in the surrounding air, final seasoning should be done in areas similar to where the wood will be used. In most cases, this will be in heated rooms.

Green flitches should be end-coated immediately after cutting, as checks will quickly appear unless the ends are sealed against moisture loss. If the flitches are to be seasoned before turning or held for a month or two before turning, I prefer a commercial end-coating made by Mobil Oil Co., called Mobilcer-M. Coat the ends and about 2 in. in from each end, and also areas of high figure, knots and (with some species) sapwood. Other end-coatings such as hot paraffin wax, asphalt, thick oil-based paints, vaseline or white glue may also be used. If a flitch has been cut and left for a few days without treatment and the ends are checked, make a fresh cut to remove the checks before end-coating. For temporary storage of flitches or green turning blocks, I often use plastic bags.

Flitches that are to be seasoned for later use should be treated much differently. I cut them as long as possible, because there will be less trimming waste when they are finally used. I then weigh each piece and write its weight and the date on the flat side of the flitch. The weight will be recorded periodically, and when it stabilizes, the moisture content of the wood will be in equilibrium with that of the atmosphere.

After weighing and end-coating the flitches, I stack them in an unheated shed. Sticker the flitches if flat and of uniform thickness, or stack them if they're of random size and thickness, to allow for good air circulation. Then cover them tightly with a plastic sheet. In humid areas, you could probably leave them uncovered.

If you weigh a block of green wood on a daily basis, you will note that most of the weight loss occurs in the first few weeks. This is also the time when checking is most liable to occur. Covering the green wood with plastic gives it a chance to season slowly, without checking. If the wood has a lot of figure, or is very valuable, I sometimes leave the plastic on for several months and then open the bottom of the cover to allow the direct outside air in contact with the wood. Over a period of a month or two the cover is opened more and more until it is completely removed.

When the weight has been stable for several weeks, the EMC has been reached. In most areas, this will be between 12% and 15% moisture content. At this point, the wood should be brought into a heated storage area and allowed to season to between 6% and 8% moisture content. The time necessary for this depends on species, temperature and thickness. Periodic weighing will indicate when the moisture in

the wood has reached the EMC of the heated room, or a good moisture meter can be used to check the wood.

Wood seasons at various rates, but you can expect at least a year per inch up to 8/4 stock, and three to four years for 12/4 or 16/4. Often, thick stock takes five years or more to season, and even then is not suitable for finished turnings. Green turning is the best solution for working thick wood.

If it is necessary to use wood that has been seasoned in an unheated area, rough-turn the bowl to shape, leaving a wall thickness of 1/2 in. to 3/4 in. Remove the bowl from the lathe and allow it to sit on the bench for a week or two. It will probably warp a little, but it should not check. If you see checks appearing, put the bowl in a plastic bag for a few days to allow the moisture content to stabilize. Then, remove the bowl from the plastic bag and allow it to continue seasoning. Unless the wood has a high moisture content, one treatment in a bag is usually enough.

If during the turning process the bowl seems really damp, and you can feel the moisture in the wood, complete the rough turning and treat the bowl as green wood.

After you green-turn — Green wood should be cut to rough shape, mounted and turned in a manner similar to turning seasoned wood—except it is much more fun. After the bowl is green-turned to a uniform wall thickness of 3/4 in. to 1 in. for bowls less than 8 in. in diameter, and 1 in. to 1 1/4 in. for larger bowls, I coat the surfaces, inside and out, to control checking during seasoning. Before coating the bowl I often weigh it and write the date on the bowl.

For bowls with no problem areas, a heavy coating of paste wax is usually sufficient. Coat the end grain carefully, forcing the wax well down into the fibers. If a bowl has high figure, knots or sapwood, coat these areas with Mobilcer-M, let the coating dry until it has a clear appearance, then coat the remainder of the bowl with paste wax. Place the coated bowls on the floor or on low shelves in an unheated area with little air movement. After about a month, move them to a moderately heated room. Bowls coated with paste wax will season and reach equilibrium moisture content in about three months. If I am in no hurry, I often dip bowls in Mobilcer-M and let them drain dry. These bowls will take six to twelve months to be ready for finish-turning. □

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