Were there an all-star team of North American hardwoods, white oak (*Quercus alba*) might play quarterback. Strong, durable, attractive, abundant, easy-to-work, and moderately-priced; what more could you ask? Perhaps its only drawback is its tendency to warp, particularly when flatsawn. Of the two dozen or so oak species cut for lumber, white oak is second only to red oak in availability and use, and is one of the most sought after North American hardwoods.

**Where the wood comes from**

White oaks grow throughout the eastern US as far west as Texas. The trees are some of the continent’s longest lived, with many individual specimens documented as 300-400 years old. At maturity they can be 4 feet or more in diameter. In the open, these stately trees spread their branches widely, while in forests, their crowns can reach to 100 feet or more. As of this writing, white oak is not cited on either the CITES list or the IUCN Red List as being endangered, and is considered in abundant supply.

**History in woodworking**

Where to start? Perhaps with Connecticut’s “Charter Oak.” Featured on the state quarter, this massive white oak dated from the 12th or 13th century, and was believed to have concealed the Connecticut State Charter of 1662 from the invading British. The venerable tree finally succumbed to a storm in 1856.

And let’s remember the USS Constitution, the oldest commissioned warship still afloat. “Old Ironsides” earned her nickname in an 1812 battle with the HMS Guerriere when the British cannonballs simply bounced off her white oak-planked hull. Today, the US Navy maintains The Constitution Grove, a woodlot in Indiana where white oak trees are reserved for the ship’s upkeep. Or turn to Gustav Stickley or Charles Limbert, whose white oak furniture has become synonymous with the Arts and Crafts style that’s still popular today. (See page 32.) Or consider the millions of barrels used to ship goods worldwide for centuries. Nearly all of those that carried wet cargo were made from white oak because it is naturally water-tight and resistant to decay. Today, white oak barrels are still a mainstay at distilleries and wineries here and abroad.

**Selecting the best stock**

White oak is available in thicknesses from 4/4 to 16/4, widths from 4” to 20” or more, and lengths to 16’. You’ll pay more for wider, thicker, and longer pieces, with prices starting at $5-6 per board foot. While most stock is plainsawn, it is also commonly available quartersawn, which is much more stable. Quartersawn white oak (front) contains a high percentage of tyloses—microscopic structures that fill the wood’s pores, making it more water-proof and a good choice for outdoor projects. Red oak (rear) has so few tyloses that you can blow in one end of a board and make soap bubble at the other—an impossibility with white oak.
White oak is no stranger to my shop, and it’s always a pleasure when a project demands it. As long as my tools are sharp, I don’t have to undergo any special preparations other than careful stock selection. I usually opt for using rift or quartersawn stock, as I don’t particularly like plainsawn oak. I find the stark difference between its spring and summer wood makes the cathedral pattern a little too bold. I’ll make the majority of a larger piece from riftsawn stock, saving the quartersawn pieces for prominent surfaces. The trick is finding riftsawn stock. Most dealers cull out quartersawn pieces as premium product, but few differentiate between riftsawn and plainsawn. I take the time to search out boards that display primarily rift grain or I’ll look for wider boards that display rift grain along their edges.

When building, I’ll cut out the center section, using the plainsawn center offcuts in less prominent places.

Many Patterns. Depending on the cut, white oak offers three distinct looks. Plainsawn (left) displays strong cathedral patterning. Riftsawn (center) has very linear grain, while quartersawn (right) is straight with a distinctive fleck.

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Working and finishing
White oak is a well-behaved species when worked with both machine and hand tools. It glues easily, holds nails and screws tenaciously, and finishes nicely. But be aware that white oak can develop a black stain if exposed to a combination of iron and water. This happens frequently during glue ups where squeeze out creates a liquid bridge between wood and clamp. To protect against this, cover your clamps with packing tape where such contact might occur. On a personal note, working oak tends to turn my hands purple, although it eventually wears off. However, I once worked with a fellow whose skin chemistry was such that he actually left purple finger prints on oak. Eventually he was no longer assigned to build any projects with the wood.

Straight and tawny. This wall shelf is based on a candle holder my father-in-law made years ago. The straight-grain and tan coloring of the quartersawn oak play well with the alumilite resin I used for the dragonfly inlay. The vase was colored using the fire-sanding technique shown on page 41.

White Oak Uses
- Furniture
- Cabinetry
- Flooring
- Barrels
- Ship building

Photos: Ken Burton

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