

# PLANT SHELVES

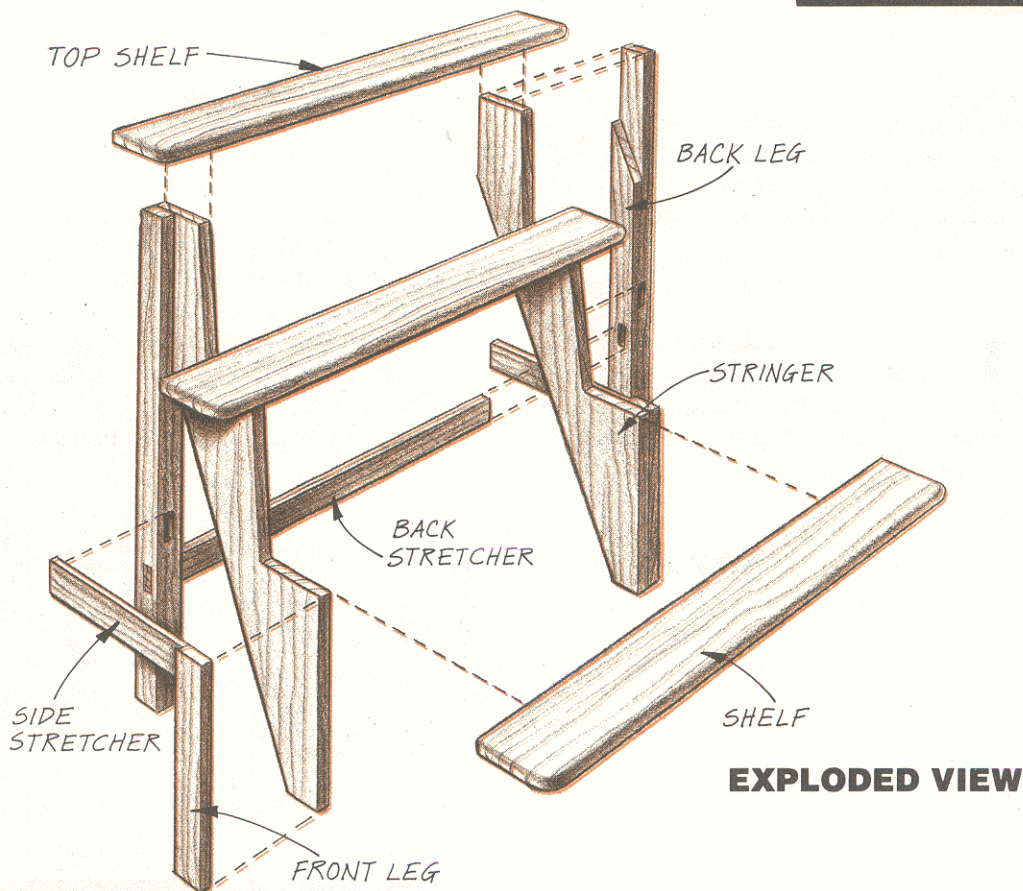
Designs for shelving for plants are not easy to find. If you want the shelving to be suitable for outdoors, they are even more difficult to find. This one fills the bill. It's rugged, it will hold quite a few potted plants, and it will hold them so they don't shade each other from the

sun. The stepped shelves also make the plants accessible for watering, put them on display, and take up so little room the unit can easily fit on a porch or patio.

You can build the project out of pine or poplar and paint it to provide protection from the elements and from water-







## CUTTING LIST

Part	Dimensions
Back legs (2)	$2\frac{1}{8}" \times 2\frac{1}{8}" \times 34\frac{5}{8}"$
Side stretchers (2)	$\frac{1}{2}" \times 2\frac{3}{8}" \times 13\frac{1}{4}"$
Front legs (2)	$1\frac{1}{4}" \times 2\frac{1}{8}" \times 14"$
Stringers (2)	$\frac{7}{8}" \times 9" \times 38\frac{3}{4}"$
Shelves (2)	$\frac{7}{8}" \times 6" \times 40\frac{3}{4}"$
Top shelf	$\frac{7}{8}" \times 6\frac{1}{2}" \times 40\frac{3}{4}"$
Dowels*	$\frac{7}{16}" \text{ dia.} \times 24"$
Back stretcher	$\frac{1}{2}" \times 2\frac{3}{8}" \times 34\frac{3}{4}"$

## Hardware

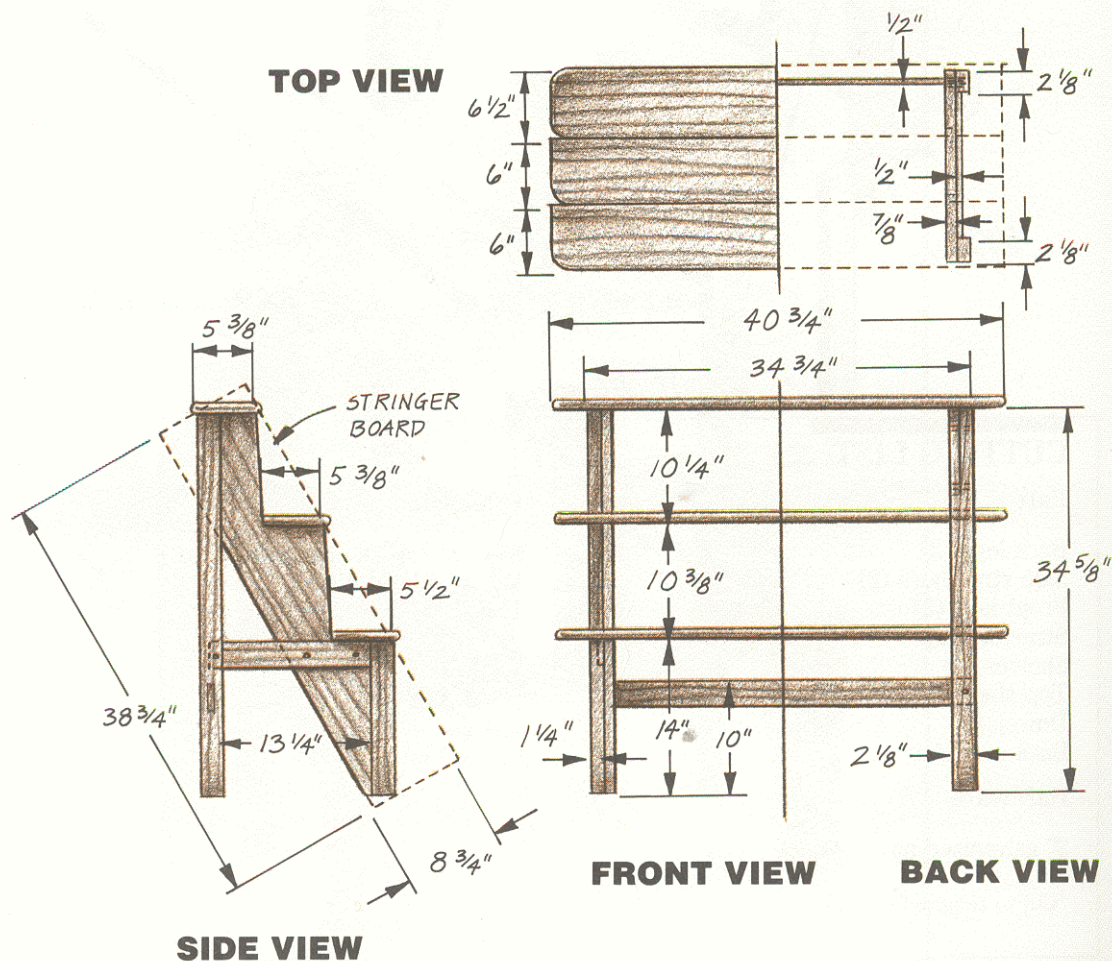
2" galvanized nails *or* deck screws

\*Cut to required lengths.

ing the plants. A better solution to the problem of preservation, however, is to use a naturally rot-resistant wood like redwood or cedar. Then you can paint it, apply a natural finish, or leave it to weather.

**1 Select the stock and cut the parts.** The original that we measured for these plans uses stock thicknesses that are not commonly available

today. See what your dealer does have, then adjust the joinery to suit. If you substitute a different thickness for the shelves, choose a thicker rather than a thinner board in order to preserve the weight-carrying capacity of the project; potted plants are not light. You could use  $\frac{3}{4}$ -inch-thick stock for the stretchers without weakening the rear legs too much, provided you don't at the same time make the legs any smaller. Having made any necessary adjustments, cut all





the pieces to the dimensions given in the Cutting List. It may be necessary to edge-glue boards to get sufficient width for the stringers. If so, see "Edge-Gluing" on page 6 for step-by-step instructions.

**2 Mortise the back legs for the stretchers.** The back legs are mortised to receive the full thickness and width of the stretchers. On the original, the side-stretcher mortises are blind while the back-stretcher mortises are through. You could just as well make them both blind or both through and adjust the stretcher lengths accordingly. Lay out these mortises as shown in the *Leg Mortise Detail*, or as you have decided to alter them.

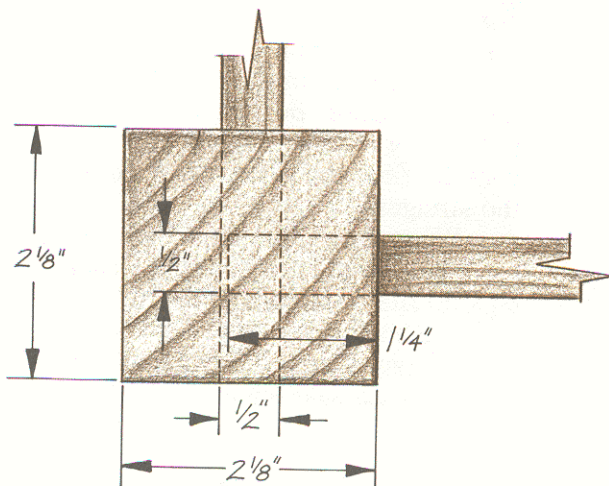
Drill out the mortises with a brad point bit in your drill press. Clamp a fence to the drill-press table to keep the holes properly aligned. If you're cutting through mortises, be sure to put a piece of scrap under the legs to protect the bit and table and to prevent tear-out. Clean up the sides of the mortises and square the ends with a sharp chisel.

**3 Lay out and cut the ends of the stringers.** The stringer ends are best laid out directly from the assembled legs. Begin by clamping together a rear leg, side stretcher, and front leg as shown in the *Side View*. The front leg just butts against the front end of the side stretcher; hold it with a bar clamp. Make certain the pieces are 90 degrees to each other. Measure  $26\frac{3}{4}$  inches up from the bottom of the back leg and mark where the stringer will come.

Lay the clamped leg assembly in position on a stringer board as shown in the *Side View*. Clamp the stringer to the legs and trace the legs and stretcher onto the stringer. Also trace the bottom edge of the stringer onto the back leg. Repeat the process for the other two legs and the other stringer.

Saw along the lines representing the back edge of the back leg and the front edge of the front leg. A hand- or portable saw will be most convenient for these cuts. Plane off the saw marks.

**4 Cut the steps in the stringer boards.** Lay out the steps for the top and bottom shelves perpendicular to the angled cuts that you just made. A carpenter's framing square is handy for this. Since the bottom shelf coincides with the top of the stretcher, you have already laid out most of the bottom-shelf step. Lay out the middle-shelf step by



**LEG MORTISE DETAIL**

setting an adjustable bevel to the angle of the bottom step and drawing the middle step  $10\frac{3}{8}$  inches away. Lay out the vertical lines by connecting the back of one step with the front of the step above. These are not truly vertical lines as you may notice by looking closely at the *Side View*.

Saw out the steps with a handsaw and smooth the cuts with a fine rasp. Only the vertical cuts will show.

**5 Notch the back legs for the stringers.** The stringers rest in notches in the back legs as shown in the *Back View*. With the material thicknesses used in the original, these notches are  $\frac{7}{8}$  inch deep. Lay out the depth of the notches. (You have already laid out the ends of the notches.) Clamp each leg in turn in your vise and saw out its notch with a handsaw.

**6 Assemble the side units.** Sand the legs, side stretchers, and stringers. Glue and clamp the side stretchers into the back leg mortises, making sure they are square. Be sure to use a glue suitable for outdoor exposure, like Titebond II. Glue and clamp the front legs to the stringers.

When the glue in these joints is dry, apply glue to the notches in the back legs, to the front ends of the stretchers, and to the stringers where the stretchers will join. Clamp the two subassemblies for each side together.

**7 Reinforce the side assemblies with dowels.** Pin the tenons in the

mortises, and the side stretchers to the stringers, with dowels. The original uses  $\frac{7}{16}$ -inch-diameter dowels but  $\frac{3}{8}$ -inch or  $\frac{1}{2}$ -inch dowels will do nicely and may be easier to find. The dowel holes in the back legs should go through the tenons and into the far surface of the mortises but to preserve strength they should not pass all the way through the legs. The dowels pinning the stretchers to the stringers can go all the way through. Glue the dowels with weather-resistant glue and saw them off flush when it is dry.

**8 Round the corners and edges of the shelves.** All four corners of the top shelf and the two front corners of the lower two shelves are rounded to a 2-inch radius. Lay out these corners and cut them with a coping saw. Smooth the corners with a fine rasp and sandpaper. Round-over all of the shelf edges except the back edges of the bottom two shelves with a  $\frac{3}{8}$ -inch-radius piloted roundover bit in your router. Sand the shelves.

**9 Glue the back stretcher to the back leg units.** If you're building the shelves just like the original, with no shoulders where the back stretcher joins the back legs and with through mortises, you now face a joint that is not common in woodworking today. The assembly cannot be clamped from side to side because the clamp would simply push the legs further onto the stretcher. To assemble the joints, begin by balancing a side assembly on the back surface of the rear leg. Apply glue to the end of the



back stretcher and insert it into the mortise in the leg until the end is flush with the outer surface of the leg. Check that the stretcher is square to the leg, then dowel it the same way you doweled the side stretchers. Now put the second side assembly on its back edge, apply glue to the remaining end of the stretcher, and slide the side assembly on. Pin it in place with a dowel as you did the other. Measure to make sure the two sides are parallel, then let the glue dry.

## **10** Attach the steps to the plant stand. Stand the assembled

framework up on its feet on a flat surface and put the shelves in place. Check that all the shelves overhang the same amount on both ends.

Fasten them in place with galvanized nails or deck screws twice as long as the thickness of the shelves. Use two nails or screws at each end of each shelf.

## **11** Apply a finish.

Actually, a finish is optional if you used wood that is rot-resistant for the shelf unit. If you want or need a finish, use materials recommended for the exterior of a house.