A Built-in Hardwood Hutch

When working with solid wood, joinery techniques must accommodate seasonal movement

by Stephen Winchester

The opening. **New studs frame the sides, but the back wall of this former closet was straightened with 1x3s and shims.**

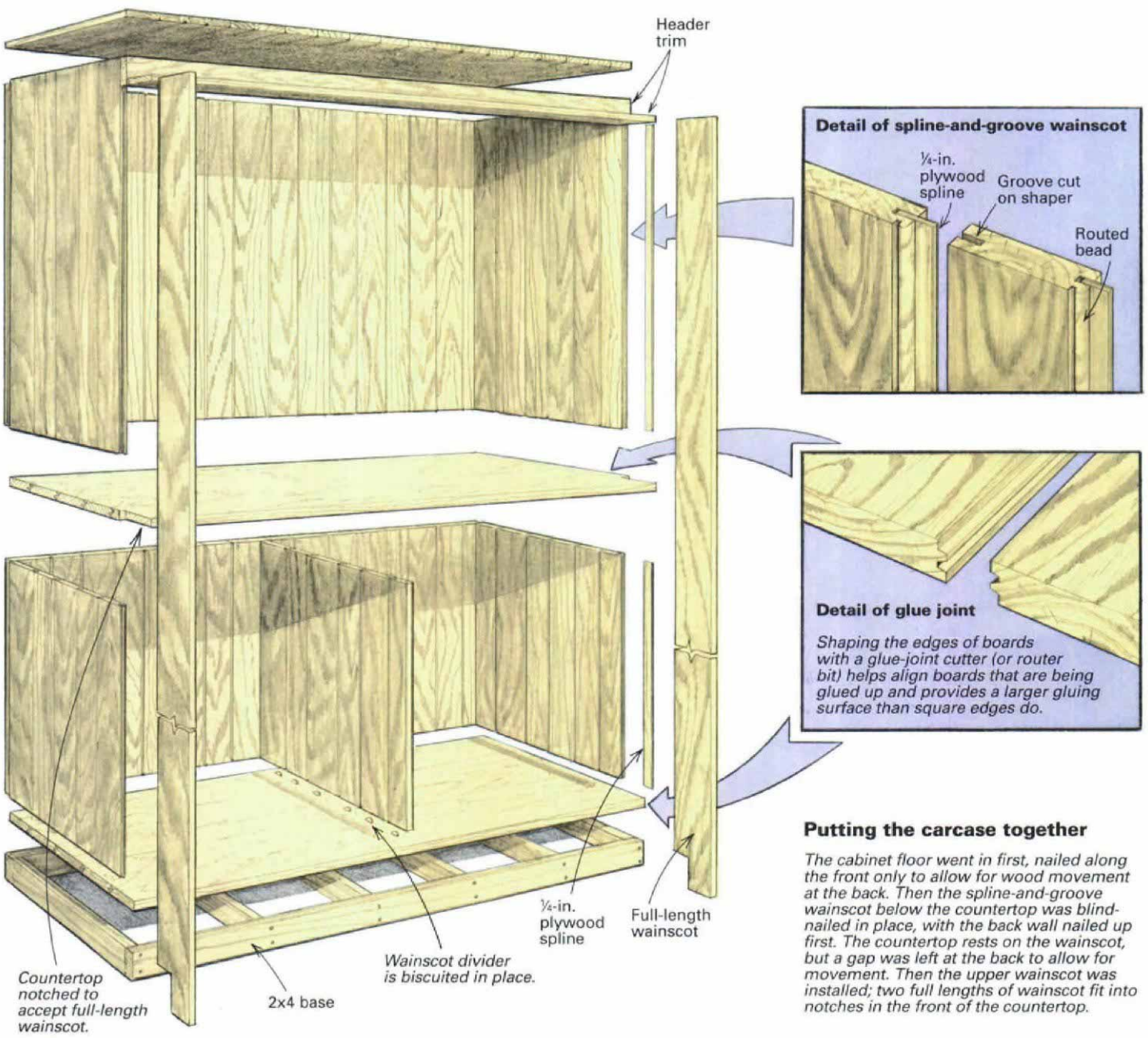
Ash matches. **A new ash hutch built into an old closet looks like the chestnut woodwork of the original room. The hutch was finished with two coats of Minwax Polyshades—half maple and half walnut—followed by a slightly thinned top coat.**

I love an old house. Working on one makes me appreciate the skill of the carpenters who came before me. It's amazing to see the level of craftsmanship the old-timers attained using only hand tools—especially in their trimwork. I recently renovated an early 1800s farmhouse in New Hampshire that had some beautiful chestnut trim. I got the chance to match this woodwork when I added a family room with a built-in hutch (right photo, above).

I made the new family room by removing a wall between two small rooms. There was a closet in each room, one on both sides of the wall, and when the wall came down, the closet area was a natural location for the built-in hutch. Built-ins ought to look good and last a long time, so this hutch was built of solid hardwood and designed to accommodate wood movement (drawings facing page). But before I started building, I straightened and leveled the closet area.

Roughing in the hutch—New studs on the left and right made the sidewalls plumb and straight, but there wasn't room on the back wall for new studs. So I straightened the back wall with shims and 1x3 strapping (left photo, above). At the bottom I tacked a 1x3 across the old wall and into the old studs. Placing a straightedge on the 1x3, I tucked some shims behind the low spots to bring them out to the straightedge. Next I tacked a 1x3 to the top, again shimming it straight. Then I tacked on more horizontal 1x3s 16 in. o. c. Moving from left to right, I held the straightedge vertically, against the top and bottom strapping, and shimmed the intermediate strapping out to the straightedge. The wall was

Left photo, this page: Stephen Winchester



straight when all the pieces of strapping were even with each other.

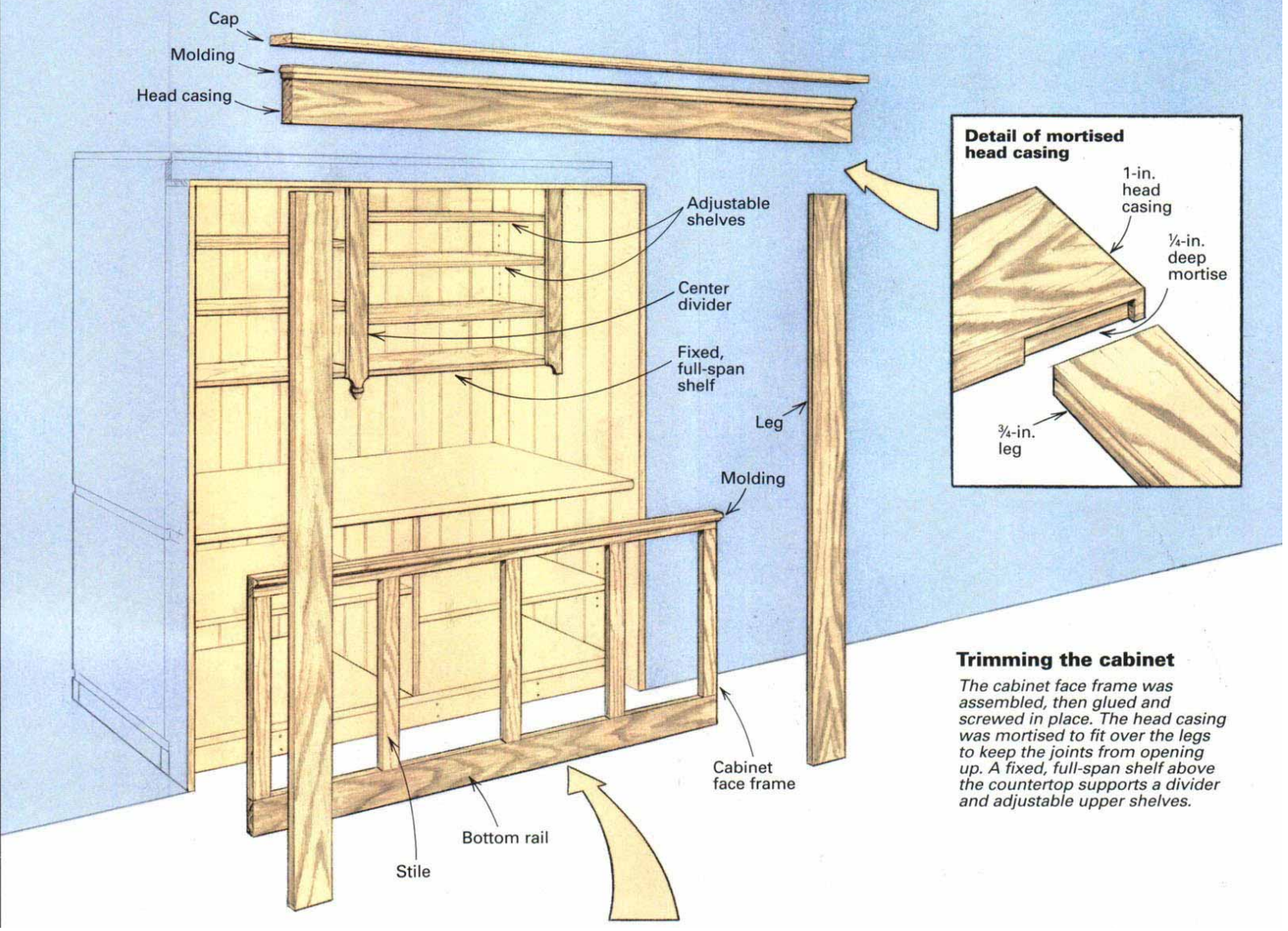
The hutch rests on a 2x4 base; I installed it level by shimming the low end and nailing it to the new 2x4 walls on each side. With the new level base, I didn't have to scribe the cabinet sides and back to the floor, which had a big hump in it.

Chestnut substitute—Chestnut was once used for almost everything in a house, from sheathing to door and window frames to trim. But during the first part of this century, a blight wiped out almost every American chestnut tree. Today, you can get salvaged chestnut from old buildings or get it resawn from beams or sheathing, but it's expensive. I chose white ash instead, which has about the same grain pattern and texture as the chestnut woodwork on this job. But ash is hard, so it's more difficult to work than chestnut.

Gluing up wide boards—The cabinet floor and the counter were glued up out of several boards, as were the wide shelves for the bottom cabinet. To joint and join the boards in one step, I used a glue-joint cutter in the shaper. (Jointing is the process of straightening a board's edge or face and is typically done with a jointing plane or with an electronic jointer. Joining is the process of connecting two boards.) The glue-joint cutter makes edges that look something like shallow finger joints (detail drawing above). These edges align the boards and provide a larger gluing surface than simple square edges do. Glue-joint bits are also available for use in router tables.

First I lined up the boards so that their grain matched, and I marked them so that they

Drawings: Bob Goodfellow



Trimming the cabinet

The cabinet face frame was assembled, then glued and screwed in place. The head casing was mortised to fit over the legs to keep the joints from opening up. A fixed, full-span shelf above the countertop supports a divider and adjustable upper shelves.

Pocket-screw joinery. **To attach the bottom rail to the stiles, a spade bit makes a pocket hole that's 1½ in. short of the rail's edge (left). A pilot hole is then drilled up through the edge to connect with the pocket hole (middle), and the boards are glued and screwed together (right).**

wouldn't get mixed up during the glue-jointing operation. I used numbers—1s on the first two adjoining edges, 2s on the next two and so on.

I don't have a wide planer, so I had to flatten the glued-up boards with a belt sander. With a 60-grit belt, I sanded across the grain first, then with the grain. Then I used a 100-grit belt and finished with a 120-grit belt. The countertop, the most visible of these wide boards, was finished using 180-grit paper on a random-orbit sander.

Spline-and-groove wainscot—One of the original small rooms had beaded wainscot all the way around, so I decided to use beaded wainscot inside the hutch. To make the wainscot, I ripped ash boards on the table saw into random widths, from 5¼ in. to 3¼ in.

To join the pieces, I used a spline-and-groove joint rather than a tongue-and-groove joint (detail drawing p. 65). First I jointed the edges of each board. To make the groove, I used a ¼-in. straight cutter on the shaper, but a ¼-in. slotting cutter in a hand-held router or a dado-blade assembly in the table saw would work, too. I centered the ½-in. deep groove on the edge of the board. The $^{15}/_{16}$-in. splines were ripped from ¼-in. plywood. I didn't use biscuit joinery because, when wainscot shrinks, gaps appear between the biscuits. A full spline looks like a solid tongue.

Using a beading bit, I beaded one edge of each board to match the original chestnut wainscot.

Installing the wainscot—I installed the floor of the cabinet first, flush to the front of the 2x4 base. I nailed the floor at the front only and left a ⅜-in. space at the back to allow for wood expansion.

I put up the wainscot for the bottom half of the hutch by blind-nailing through the splines and into the walls as I would any T&G material. I didn't glue the splines because each piece of wainscot should expand and contract independently. This wainscot rests directly on the cabinet floor; if the floor butted into the wainscot, a seam would open. I avoided visible seams in the corners by putting up the back wall first and then butting the sidewalls into it. And I allowed for expansion by installing the first board on the back wall ⅜ in. from the corner.

I also made a wainscot divider for the bottom cabinet. It was biscuited to both the floor and the underside of the counter. I used just a dab of glue in each biscuit slot to prevent any unnecessary glue squeeze-out.

The counter sits on the wainscot. Before I installed the counter, I notched its two front edges, which would allow an entire length of wainscot at the front of each sidewall. Along the sides, the counter is nailed into the wainscot so that it stays put, but to allow for expansion and contraction, the back edge of the counter isn't nailed.

Now I was ready to put the wainscot in the top of the hutch. I set the wainscot on the counter and blind-nailed it through the splines into the walls. Putting the wainscot up in two sections, bottom and top, eliminated the wood-shrinkage gaps that would have resulted from running the wainscot from floor to ceiling and butting the counter into the wainscot. With the front edges of the counter notched, I installed the front pieces of wainscot on each sidewall. Because the unit is recessed into the opening, I wanted a full length of wainscot from floor to header with no seam.

Pocket-screw joinery—In my shop, stiles and rails for the face frame were cut to width but not to length. Stiles and rails are the vertical and horizontal frame pieces, respectively.

I assembled the face frames on site. I cut the stiles and the rails to length and clamped them to the cabinet to check the fit. After some slight trimming on a compound-miter saw perfected the face-frame joints, I laid the stiles and the rails on the bench and screwed them together.

The top rail was narrow enough to allow the stiles to be joined to it with screws driven straight through the edge. But the bottom rail of the cabinet was wide, and the intermediate stiles butted into it, so here I screwed the rail to the stiles through pocket holes. A pocket hole is a cut made on the face of a board that doesn't reach the board's edge.

There are several jigs on the market to make pocket holes—from simple guides for a hand-held drill to dedicated pocket-hole machines. I don't have any of them, so to make the pocket holes to assemble this face frame, I used a spade bit, starting the hole with the drill held vertically and tipping the drill back as I fed the drill bit in (left photo, facing page). The pocket hole ended at a mark 1½ in. from the edge of the rail. Then I drilled a pilot hole in the edge of the rail at an angle up through the pocket hole (middle photo, facing page). Finally, I squeezed a generous amount of glue between the stiles and the rails, clamped them together and ran the screws in (right photo, facing page).

After the glue was dry, I sanded the joints flush and installed the face frame. I glued the bottom rail to the front edge of the cabinet floor and screwed the top rail to the underside of the countertop (drawing facing page).

Mortised head casing—The trim, or casing, around the hutch was installed next. The ¾-in. thick side pieces, or legs, went on first; I ran them ¼ in. long at the top. The 1-in. thick top piece, or head, was mortised to fit over the legs (detail drawing facing page). You could think of this as being a mortise-and-tenon joint, with the legs being the tenons. I set the head on top of the legs and with a sharp pencil traced the outline of each leg onto the bottom edge of the head. Then I scored the marks with a sharp knife. Scoring makes for a cleaner mortise. I mortised these sections of the head a good ¼ in. deep with a hinge-mortising bit in my small router. Finally, I used a chisel to square the corners of the mortise. This joint practically guarantees lasting beauty: If the header shrinks, the joint still looks tight.

I wanted the molding under the front of the counter and at the top of the head casing to match the original molding at the top of the doors and the windows (photo above). This molding wasn't something I could have picked up at the lumberyard, and I couldn't find any cutters the right shape, so I combined two different shaper cutters to make the molding (drawing left). The result was a perfect match.

Making doors—I made frame-and-panel doors for the cabinet at the bottom of the hutch.

The door stiles are 2 in., the top rail is 2½ in., and the bottom rail is 3½ in. After cutting the pieces to size, I used my shaper to mold the inside edges of the frame, cut the panel groove and make the cope and stick joint between the stiles and the rails.

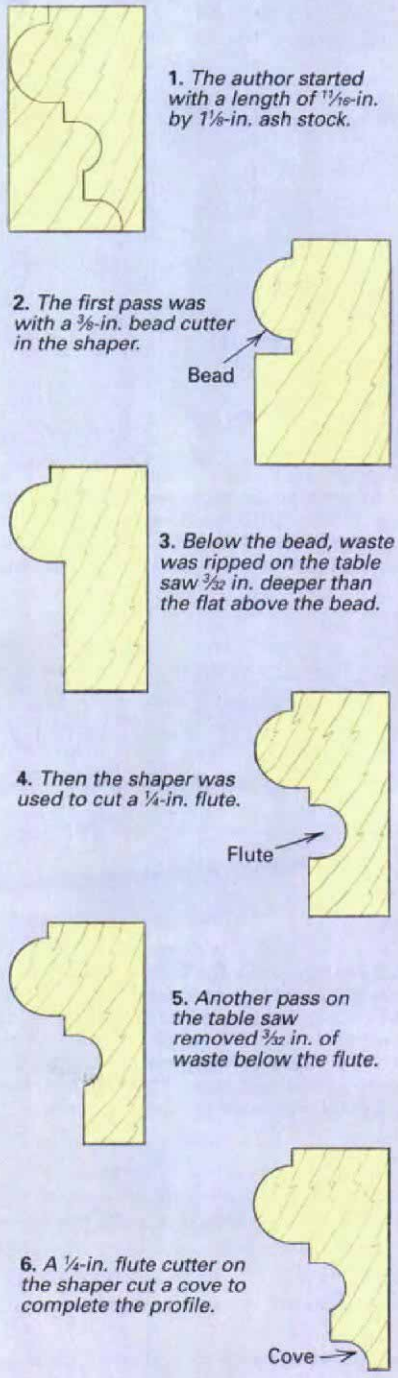
I assembled the frames dry to check the door size and to get the panel size. I allowed ⅛ in. on each side of the panel for expansion. The ash panels on these doors were raised (beveled around the edges) on the shaper, so I glued up the boards with square joints to make the wide panels. If I had used the glue-joint cutter, the glue-joint profile would have been visible when I shaped the raised edges.

To be sure everything fit, I dry fit the panel within the frame before gluing up. Then I glued the doors and clamped them. I used a small amount of glue on the joints because the squeeze-out could glue the panel in place, and the panel should be free to expand and contract. □

Stephen Winchester is a carpenter and woodworker in Gilmanton, N. H. Photos by Rich Ziegner except where noted.

Matching molding

A table saw and a shaper were used to make ash molding (right) that matches the original chestnut trim (left).



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