

Ahead of the curve

In the second part of this series, Chris Tribe constructs the table for his stylised cabinet – which we looked at last month in F&C

Part **2**

Accuracy in turning the legs for this table is important, particularly in the length, as there is no option to trim the legs to length if the table rocks after construction. The dimension from top to bead is also important as the bead below the apron must line up precisely with the leg bead.

Turn the first leg to establish a pleasing shape, ensuring that the bead is a perfect semi-circle. Ensure that the diameter of the leg matches the diameter of a Forstner bit to enable later jig making. The leg is parted just above the section where the bottom of the leg starts to splay. From this first leg, mark out a turning rod and turn the remaining three. Before parting, mark legs and bottom sections so they can be reunited in the same orientation on assembly.

The splayed section of leg is dowelled to the main section using a 12mm (1/2in) dowel. To facilitate accurate drilling for this dowel, make up a drilling jig. Drill a 10mm (3/8in) deep hole the same diameter as the leg in a piece of 25mm (1in) birch ply, or similar. Using the dimple from the first drill, use a Forstner to drill a 12mm hole through the centre. Use a digital Vernier to check the holes are concentric. The jig, which should be a tight fit, is tapped onto the end to be drilled and then mounted on a pillar drill with the table tilted to vertical for drilling to a depth of about 60mm (2 3/8in). A simple jig is required to assist clamping the leg to the table.

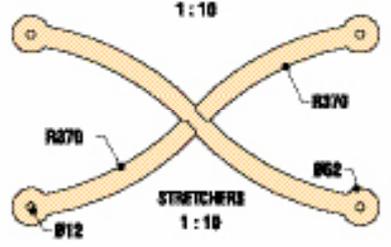
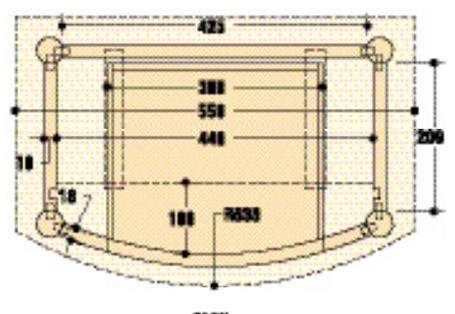
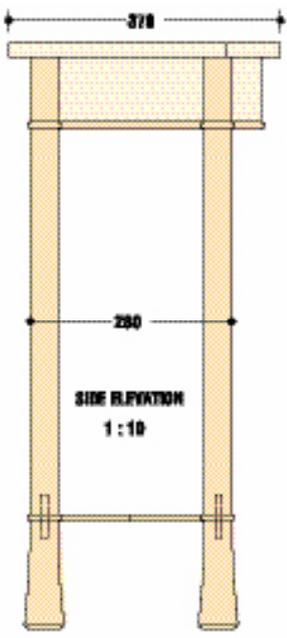
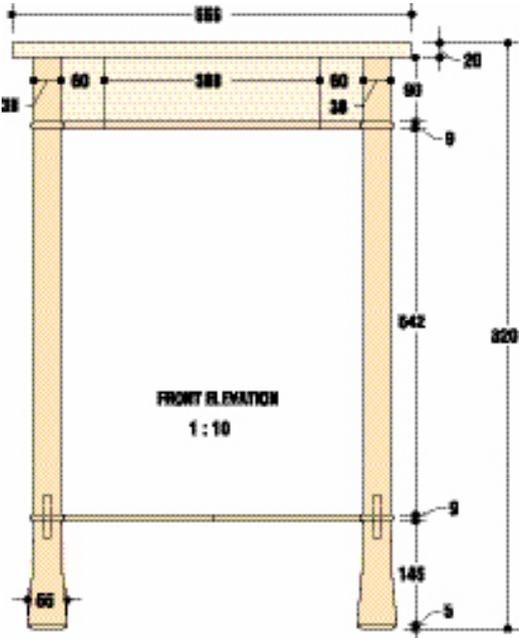
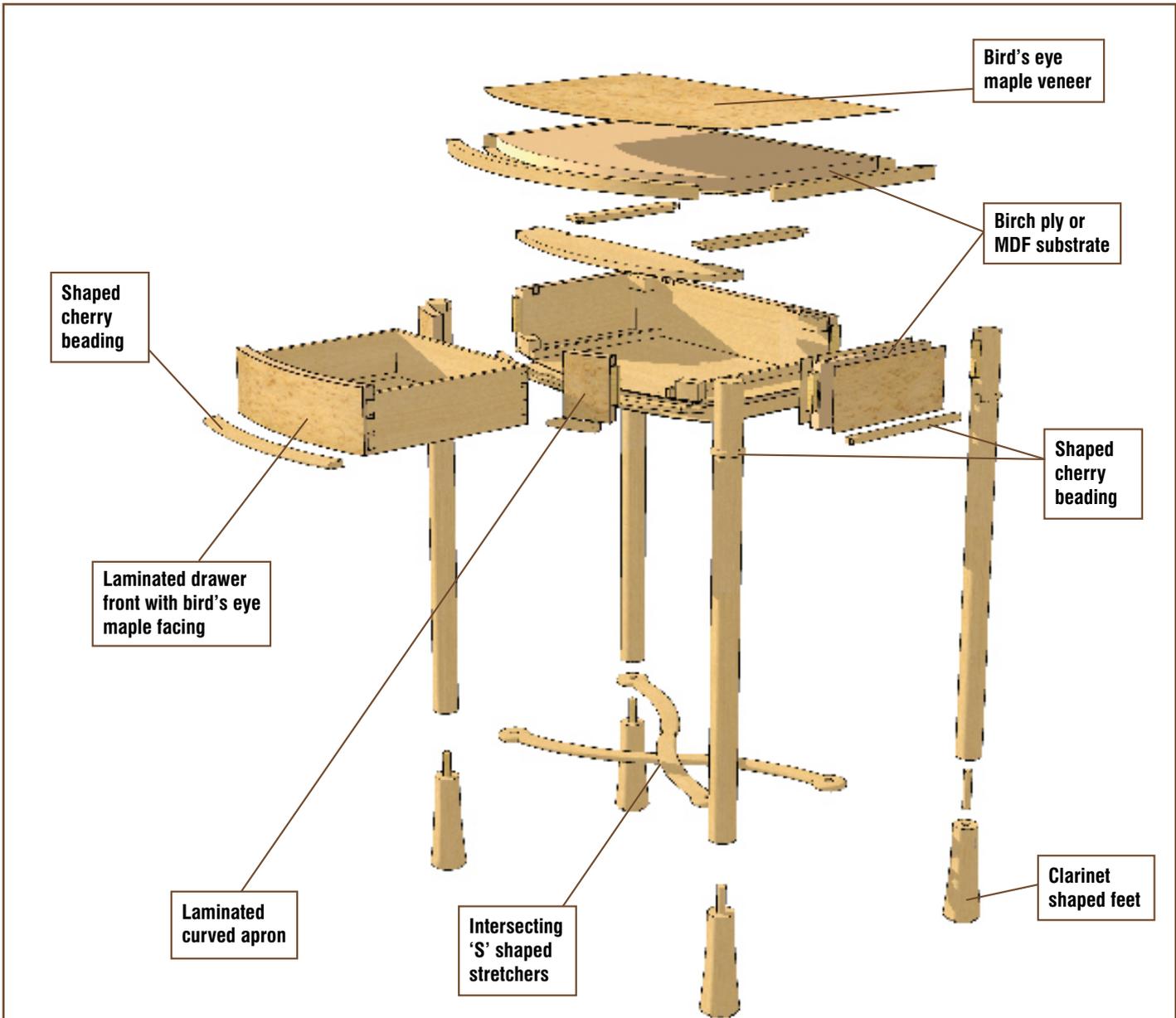
THE APRON

The apron and top are 18mm (23/32in) birch ply veneered in birds eye maple (*Acer saccharum*). I think for the small areas involved here, the possible problems about substrate moving with resultant veneer crazing are unlikely to be a problem, but I may consider swapping to MDF if I repeat this project.

Veneer both sides of the apron pieces, with the grain running vertically. Cut to >



PHOTOGRAPHS BY CHRIS TRIBE



DRAWINGS BY SIMON RODWAY



Set-up for drilling end of the leg on a pillar drill



Jig for drilling the leg



Set-up for routing the curved apron for loose tenons



The curved apron piece in the jig showing a routed mortise

< dimension and check the ends for square.

If you do not have a scribing blade on your saw, make a scalpel cut along the line of cut to prevent splching of the veneer when cutting.

The apron is jointed to the legs using 9mm ($11/32$ in) beech loose tenons. A jig is required to hold the leg while routing the mortise. In F&C139, I described a jig for routing a groove in a turned piece. A larger version of this jig is required here. Drill a 3mm ($1/8$ in) hole centrally into the end of the jig – also drill holes 12mm ($1/2$ in) off centre at 9, 6 and 3 o'clock. Drill a 12mm hole centrally in the other end. Drill a 3mm ($1/8$ in) hole in the centre of the top of the leg. The leg is positioned into the jig using a 3mm steel rod through the centre holes in the top of the jig and the leg – the 12mm dowel in the bottom of the leg locates the other end. Check that the leg is central in the jig, side-to-side, and also parallel to the top surface. Drill through the 6 o'clock hole and retain by driving in a 3mm rod – a screw carefully driven in to nip the other end will also help retain the piece.

FLAT & GROOVE

A flat is created at the top of the leg and then a groove routed in the centre of the flat. If you have two routers it is useful to set one up for routing the flat and another for the groove. The 9mm groove should stop 12mm from the top of the leg and 20mm ($25/32$ in) from the bottom of the bead. Having made a cut at 6 o'clock for the back legs, rotate the leg until a rod through 3 or 9 o'clock engages with the hole. For the front legs an additional hole is required as the front rail is angled – read the angle for this hole from the master drawing, on mine it was 109°.

Now rout the ends of the rails to take the loose tenons. Another jig is required for this. This is a piece of MDF with a register piece fixed at 90° to its edge – additional MDF is fixed behind this edge to increase thickness so that a flat bearing edge is created. The rail is clamped to the jig against the register piece with the end aligned with the bearing edge.

Rigidity is maintained at the front of the apron assembly by a 10mm ($3/8$ in) thick rail that is dovetailed into the top of the side rails. After cutting the dovetails, the curvature of the front of the rail should be formed using a router and trammel. The tops of the front legs are notched out to receive the ends of the rail. Kicker rails are fitted from the front to back rails using lap joints.

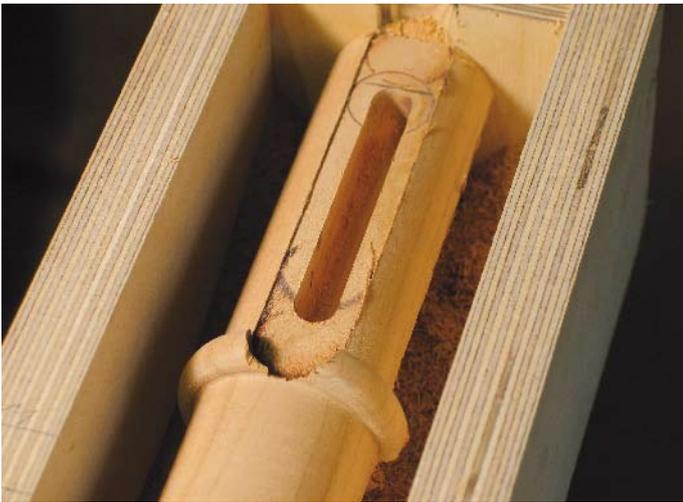
LAMINATING

Having completed the jointing of the back and side rails, the curved front should now be laminated using a former. The former consists of five 18mm ($23/32$ in) MDF layers which are held together by locating dowels and screws.

Create the first layer using a router and trammel, ensuring that the long straightedge is parallel to the axis of the curved edge because the former will be used later as a jig to cut the drawer front. Join the layers and mark the centreline for future reference.

The curved front is laminated as one piece, using twelve 1.5mm ($1/16$ in) maple veneers. It is then cut to create the drawer front and two apron pieces. The parts are then brought together on the former to veneer. This method ensures continuity of grain pattern between the drawer and apron veneers.

Cut the laminations to size, giving a good



A leg in the routing jig showing the flat and groove for loose tenons



Routing the leg in the jig

allowance for the pieces to shift when bending over the former. The lamination can be done in a vacuum press or using a piece of 4mm (5/32in) MDF on the top of the stack and lots of G-clamps. In this situation, I would recommend using a UF glue rather than PVA, as the latter does not set hard and can be prone to creep.

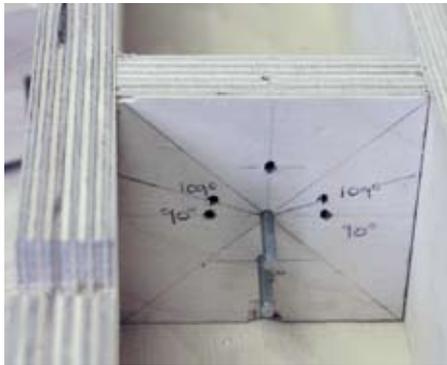
DRAWER FRONTS

Following lamination, mark the centreline from the former onto the curved piece and use the top edge of the former to mark a line for the top of the front. Cut to the line using a fine bladed bandsaw (about 15tpi) then plane the edge with the front/former assembly in the vice. This creates a datum edge to cut the front to width using the fence on the bandsaw.

Now, with the piece clamped to the former with the centrelines aligned, cut the length of the drawer front, using the mitre fence on the bandsaw set at 90°. Cut gingerly to avoid cutting into the former. You should now have a drawer front and two apron pieces ready to be veneered.

VENEERING

Put masking tape on the ends of the drawer front to prevent them sticking to the apron ends, and dry assemble them on the former. Attach stops to hold the assembly in place while pressing. Veneer the front and back of the assembly using the same system as for lamination. After veneering, use the former and mitre fence on the bandsaw to cut the apron ends to length and at the correct angle – read off the full-size layout, allowing a little extra for fitting. Carefully cut through the veneer at the joints to part the drawer front from the apron pieces.

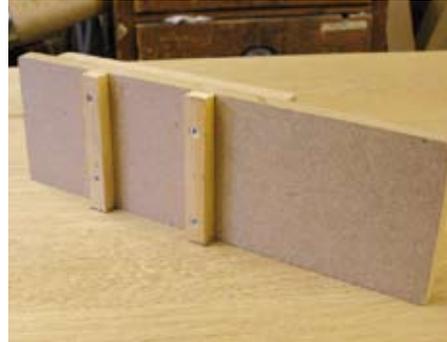


Division plate for leg routing

BEADS

Make some 10mm (3/8in) cherry (*Prunus avium*) bead 15mm (9/16in) wide to fit to the bottom of the apron rails. At 15mm they do not fit the whole width of the rail but create a rebate on the inside for a bottom board to fit into. The bead should match up with the turned beads on the legs, as they will be mitred to each other.

Take the angle for the mitre from the >



Jig for routing ends of straight apron rails



MicroFence circle cutting attachment used for shaping the template for the rails



Stretcher template (main pic) and (inset) at top – rail as shaped; middle – rail with waste cut away; bottom – waste piece



Clamping rails using the jig for positioning



Drilling the foot to receive a dowel

“I think for the small areas involved here, the possible problems about substrate moving with resultant veneer crazing are unlikely to be a problem, but I may consider swapping to MDF if I repeat this project.”

< drawing. Bisect the angle created by the edge of the rail and a tangent to the circumference of the leg. Transferring this angle to the rail bead is fairly straightforward – use a mitre guillotine or chisel, and appropriate mitre block. Cutting the mitre onto the leg bead is quite tricky – I made up a template using acrylic sheet, marked the line of cut and then made the cut freehand. Final fitting and gluing of the bead is done with the apron frame dry assembled and clamped.

The curved piece for the front bead is shaped using the router and trammel. It is wider than the other bead as it fits the full width of the apron/drawer front, about 24mm ($\frac{5}{16}$ in). Cut the piece at about 15mm ($\frac{9}{16}$ in) thick, rout the bead shape using a bearing guided cutter on the router table, and then cut away the waste to leave the curved bead. This should be cut into three to fit the drawer and two apron pieces. The apron pieces are mitred to the front leg beads in a similar manner to the other pieces.

A cherry veneered board is fitted to the underneath of the apron, into the rebate created by the beads, to provide a running surface for the drawer. It is neater if the board can be the same thickness as the apron bead – I used 6mm ($\frac{1}{4}$ in) MDF veneered both sides with 1.5mm ($\frac{1}{16}$ in) cherry. Apply a wide lipping to the front of the board so that when the front curve is cut, no MDF is shown in

the drawer opening. Shape the corners of the board to fit round the legs. Drill and counter sink for screws to later glue and screw the bottom to the back and side rails. Shaped glue blocks will be needed to fix the bottom to the front apron pieces.

DRAWER ASSEMBLY

For assembly, make up a board with four 12mm ($\frac{1}{2}$ in) holes positioned to locate the dowels in the bottoms of the legs. After a final clean up and sanding to 320grit, start assembly by gluing-up the side rails and legs, then later glue up the back, top rail, bottom and sides. Be quite rigorous in checking dimensions at the front and back of the drawer opening to facilitate later drawer fitting. Also ensure that the legs sit firmly on the assembly board with no rocking.

THE BOTTOM RAILS

Curved intersecting rails are fitted to the legs using the 12mm dowels for the feet.

Make a template in 9mm ($\frac{11}{32}$ in) MDF thick enough to resist flexing in use. The laying out of the curves requires careful thought! Use a router and trammel to cut the larger curves. I used a MicroFence to cut the small radii that fit round the legs, however, this could be done by hand.

Cut out two cherry blanks approximately 15mm ($\frac{9}{16}$ in) thick. Position the template on the piece using 12mm dowels in the leg positions – a panel pin in the centre will help to prevent flexing. Create the shape on the router table. Assemble the two pieces on the assembly board and mark the position



Leg bottoms with dowels fitted



Leg bottoms and rails assembled



Leg bottoms and rails fitted to mid-sections



Former for drawer fronts – see F&C139



Make-shift ring fence on router table for cutting grooves in the drawer front (guard removed for photo only)

of the intersection. Mark up and cut lap joints on the intersection. As the rails have rounded edges, the joints will be mitred to 6mm ($1/4$ in) from the edge. After cutting the joints, shape the bead using a bearing guided cutter then cut away the waste. The rails are glued-up using the assembly board to ensure accuracy.

The feet and rails can now be glued-up. Check the positioning of the feet – is grain orientation correct and are they aligned with the legs?

THE DRAWER

Check the fit of the three previously veneered front and apron pieces, and make any adjustments necessary. Rout for loose tenons in the ends of the curved apron pieces. A jig is required, similar to that for the other rails but with a curved bearer. Glue and clamp the apron pieces in place. The curved apron beads should be mitred and fitted now.

The drawer linings are in 8mm ($5/16$ in) quarter-sawn maple, the bottom cedar of Lebanon (*Cedrus libani*). Plane up the sides and back to a snug fit in the drawer opening. Form a flat 8mm wide on the inside ends of the drawer front to receive the sides – note that the flat does not continue to the top of the front and should be square with the ends. The dovetails can now be cut in the usual way. Very sharp chisels are required when cutting the pins on the front as you will be cutting against the grain of the laminations.

The drawer bottom is fitted to the sides using drawer slips and is rebated and grooved into the drawer front. I used a slitting cutter and a workshop made ring fence on the router table to groove the front. The radius of the fence needs to be the same as the cutter, less the depth of the groove. Take care that the fence is mounted centrally to the cutter. The rebate on the curved front of the drawer bottom was formed using a curved fence on the



Rebate cutter and curved fence used to rebate the front of the drawer bottom (guard removed for photo only)

router table. When you are happy with the fit of the drawer, fit kicker strips on either side, fixing them with screws up through the bottom.

A strip of birds eye maple veneer is used to hide the laminations on the top of the drawer front. Plane about 1mm ($3/64$ in) off the top to allow clearance, then fix the veneer – this can be ironed on with PVA. The bead can now be fitted to the bottom of the drawer front but before fitting, rout a finger groove in the bottom of the bead.

THE TOP

The top consists of a birds eye maple veneered 18mm ($23/32$ in) thick panel with 28mm ($11/8$ in) wide cherry lipping.

Veneer the panel slightly over-size then cut accurately. The curved front is formed using a router and trammel. Fit the panel securely to a board. The centre point of the trammel should be fitted in a block, the same thickness as the panel, located appropriately on the board. Having cut the curve on the panel, the negative shape should be cut in the front lipping.



Cut packing pieces to the exact profile of the drawer and moulding in order to prevent bruising when clamping

By reducing the length of the trammel by the width of the cutter, the correct curve should be formed. I have a MicroFence on my router and it was invaluable for this project with its various curved pieces. Mitre the lipping round the panel – the mitre angle for the front will be a bisection of the angle between the line of the side and a tangent to the front curve.

Biscuit the lipping to the panel and glue-up. I left the waste on the front lipping piece to aid clamping, then cut it away using the trammel. Form a gentle curve on the edge with a guided cutter on the router table. The top is fixed using screws through the front rail and blocks fitted to the top of the back rail.

FINISHING

After a final clean up with 320grit, I finished with five coats of Finney's Microporous Hardwax Oil, finally rubbed down with 0000 grade steel wool and wax.

Next month: In the final part of my series, I will look at the curved wall cabinet which accompanies the curved box and table. **F&C**

