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New year, new hobbies

Hello, Happy New Year and welcome to the January 2015 issue of *Woodworking Plans & Projects*!

Yes, a new year already! It's hard to accept but 2014 seemed to fly by and we now have another year to look forward to with all its hopes and possibilities to come. We should of course be making our resolutions; things we promise ourselves to do and carry forward into the year ahead, although that seems to have rather been overtaken by the idea of the 'bucket list', which can happen at any time we choose. I must confess, I do not subscribe to either notion but what I do know for sure is that I do NOT know what the year ahead will hold. Last year was a little difficult for me, for us as a family, moving grown-up children to places new. That seemed to occupy too much, but unregrettable time, so what would be good this year is to have more time out doing things I want to do rather than things that must be done. I'm sure plenty of our readers also have many constraints on their time and budget.

Special interests

One of the things that is apparent across a wide range of interests, not just woodworking, is a desire to find special time for special interests – diversions from everyday work activity. We are now a population who are 'time poor' – short of time because of the pace of life and necessity to get work and the other essentials of life done. And yet, we all, I think, yearn for a simpler and more meaningful existence. This starts to sound a bit 'deep' but it's true. That is where activities like crafts, photography, gardening, rock climbing, sailing, vintage cars and many, many other activities come into the picture.

I'm trying to do my bit with the magazine by diversifying the subject matter ever further but still keeping a 'woody' slant. We don't all want to be making often quite difficult woodworking projects and, more cogently, modern built properties seldom have the space for a workshop. So there



PHOTOGRAPH BY GMC/ANTHONY BAILEY



A pole-lathe turner at the Bentley Woodfair back in 2012

have to be better ways to access the pleasure of working with wood than in a traditional workshop. So, I hope that over the coming 12 months, I can introduce some different aspects of woodworking that you can enjoy.

Maybe that's my New Year's resolution? To diversify the content of the magazine for the benefit of all of us... Please do have a happy and fruitful 2015!

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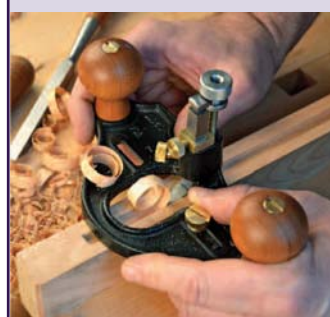
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Noticeboard

All the latest events and news from the world of woodworking...

Makita supports 'TEAM RUN 12'

Makita UK has donated pink cordless drill drivers to 'Team Run 12' as a contribution towards their challenging fundraising programme. Led by 23-year old Becky 'Bexx Star' Beard, the team's aim is to raise £25,000 for Cancer Research UK and Breast Cancer Care – BCC – in 2014. Becky has set herself a goal to run 12 marathons in 12 months, including in London, Wales and New York. Becky has every confidence that the £25,000 target will be met.

"In our own Charity of the Year event a few years ago, also in support of Breast Cancer Care, Makita launched a pink cordless drill driver of which £5 was donated for every drill sold, the proceeds of which helped us to raise £70,000 for the Charity, so we are delighted to donate some of these special edition drills to the team's online competitions and Quiz Night raffle later in November," says Kevin Brannigan, marketing manager, Makita UK.

Becky, who has a close family member with breast cancer, said: "Running nine marathons so far has been a huge challenge for me personally, but it has been mentally rewarding too and has helped me to start to come to terms with this illness."

The Makita drill is a pink version of the DF330D Lithium-ion, 10.8v drill driver,

The special Makita pink drill

DETAILS:

Contact: Makita

Web: www.makitauk.com



complete with one 1.3Ah battery, fast charger, drill bit set and carry case. Popular with professional construction workers it is small and compact and ideal for DIYers who want to get busy around the home.

"Everyone at Makita UK wishes Team Run 12 continued success and as almost all of us knows someone affected by this illness, men and women alike, we hope Becky and the team have the capacity and motivation to keep on running beyond 2014," says Kevin Brannigan.

Visit www.teamrun12.co.uk for more information about Becky's excellent work.

Reader letter

I'm a retired GP and have loved woodworking since schooldays. My job has prevented me – time mainly, but also cost and frequent house moves – from doing anything other than easy essential home DIY. I am now in the enviable position of having the time and money to re-awaken my passion and am gradually building up a home workshop. I suspect most woodworkers drool over a lot of the machines available

and given the space, I'd have one of everything.

I have just treated myself to a Makita 2012 thicknesser which, in time, I intend trying to convert to a planer with jigs, etc. but my first job was to address the problem of shavings extraction. It has approximately a 70mm extraction port and I have an Axi dust extraction system, which has 100mm and 30mm hoses, so I needed a method to connect the two. I know step up/down converters are available – Axminster do a good selection, and no I don't work for them! – but it would mean waiting a few days before I could use it – not an option! So, I thought of various home methods from rolled-up cardboard to duct tape and eventually came up with the perfect solution. I used a plastic plant pot – not the sort you buy to use, but the flimsy disposable

type you get when you buy young plants. The one I used has a 100mm top and a 70mm bottom. The bottom fits perfectly over the machine port as is, and the top fits perfectly in the hose when stiffened with a disc of 12mm ply – like a big washer – made with a holesaw, but easy enough with a jigsaw. A couple of hose clips – from Halfords – and I have a very cheap, very effective and very solid way to get rid of most of the waste.

Phil Turner

Hi Phil,

One of the things woodworkers are particularly good at is coming up with ingenious solutions, just as you have, especially if they are quick and cheap to do! Thanks for letting the readers know your own method for dealing with this knotty extraction problem.

The Editor



PHOTOGRAPH COURTESY OF PHIL TURNER

TTJ Award Trophies – Former winner designs this year's award trophies

The former winner of a Timber Trade Journal Award, entrepreneur Kenny McFarlane has produced and constructed this year's technically innovative TTJ award trophies, as his career comes full circle. Having attended the prestigious event in 2010 where he was the recipient of the TTJ Career Development Award in the under-25 category, Kenny received a plethora of further prizes before launching his highly successful business, bespoke hardwood stair rail producer Handrail Creations.

Kenny founded Handrail Creations where he now designs and produces bespoke timber handrails for residential and commercial projects.

Vicki Greenwood, Head of Events for the awards said: "Working with Kenny Macfarlane, Handrail Creations produced some great concept work in terms of designs, which was then followed through successfully all the way to production of the finished article. The awards were very well received onsite and I look forward to working on this project with Kenny and Handrail Creations again next year – a triumph!"

Constructed from sapele (*Entandrophragma cylindricum*), the trophies were ebonised in four coats of finish, right down to the grain and wire woolled to provide a high gloss finish which has proved popular with clients. The shape of the trophy is a complex forging, which is designed to look like a geometrically perfect double helix to 'wow' winners. The ceremony, which has been running for 18 years, showcases advancements and pioneering figures within the timber industry and helped catapult Kenny to cataclysmic heights with his design, manufacturing and installation service.

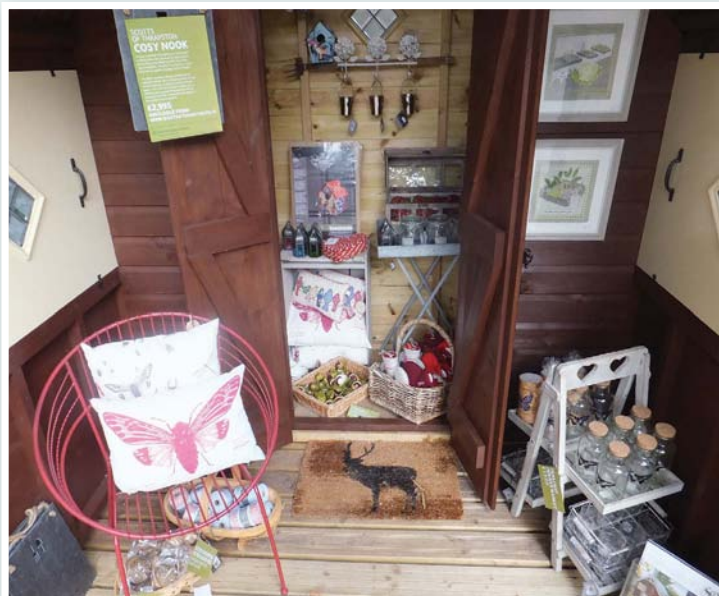
DETAILS:

Contact: Handrail Creations

Web: www.handrailcreations.co.uk



Kenny McFarlane working on the trophies for the Timber Trade Journal Award



PHOTOGRAPH COURTESY OF RHS GARDEN WISLEY

RHS Garden Wisley – Cosy Nook

Immediately receiving rave reviews, the RHS Cosy Nook was recently installed at RHS Garden Wisley and was adorned with autumnal offerings as part of Wisley's Taste of Autumn Festival. It will be treated to a range of different themed decorations throughout the coming months, including Christmas and St. Valentine's Day with custom displays created by visual merchandising manager, Gillian Rhodes.

Designed by Scotts of Thrapston in close partnership with the RHS, the Cosy Nook is a useful structure that provides both storage and display areas, staging suitable for potting out or planting seeds and a sheltered area for relaxing after the work is done. Taking its inspiration from the archives in the RHS Lindley Library, the RHS Cosy Nook pays homage to the follies common in the 19th and 20th centuries, which were decorative but had a secondary practical function such as housing or sheltering.

The Scotts of Thrapston RHS Cosy Nook measures 1.8m from front to back and is 2m wide. The tool store measures 800mm deep and the seating area includes a 1m overhang for protection from the elements and can comfortably house a freestanding table and chairs underneath. A 500mm deep shelving unit can be situated to the left or the right of the building and a central door provides easy access to the store area.

Constructed from pressure impregnated European redwood (*Pinus sylvestris*), a range of seven heritage colour finishes are available. The green stains of the willow or silver birch options are joined by the brown shades of chestnut and copper. Paint options include buttermilk – a neutral cream tone, clotted cream – a subtle shade with a hint of grey or duck egg – a bold but traditional green hue.

The RHS Cosy Nook starts from £2,995, supplied with lead look glass fibre roof, in a pressure impregnated finish, delivered for self-assembly within 150 miles of Thrapston, Northamptonshire. Optional extras include a decorative stain from the RHS range – £350, paint finish from the RHS range – £675 – and on-site assembly – £800.

DETAILS:

Contact: Scotts of Thrapston

Web: www.scottsofthrapston.co.uk

WOOD NEWS



PHOTOGRAPH COURTESY OF THE FORESTRY COMMISSION

New apprenticeships under the Government's Trailblazer programme

There are 38 land-based employers joining others from across 37 sectors, in designing new apprenticeships to meet the skills needs of their industries, thanks to the Forestry Commission. Forestry Commission England is joining forces with businesses across forestry, arboriculture, horticulture and landscaping, to create top quality apprenticeships under the Government's Trailblazer programme, which promise to be educational and teach the much-required skills in the industries.

The programme, run by BIS – the Department of Business, Innovation and Skills – will see organisations and businesses working together, to ensure they set the correct standard for their future workers. Businesses of all sizes will take part in the Forestry Apprenticeship.

Nick Boles MP, Minister of State jointly for the Department for Business, Innovation and Skills, said: "I congratulate the forestry industry for the key role it is playing in developing new top-quality apprenticeships. Through the Trailblazers initiative, companies in collaboration with their industry partners will give people the skills

they need to thrive and our businesses the resources they need to compete."

Ian Gambles, Director of Forestry Commission England, commented: "The Forestry Commission is dedicated to supporting the growth of forestry education and skills for the future. Everyone involved in forests and woodlands today has a duty to play their part. The collaboration generated through the new Trailblazer scheme will help to give our next generation of forestry employees – from those working in practical forestry, through to mapping and business management – the scientific and practical skills needed to manage our woodlands."

The Principal Employer Group for the Forestry Apprenticeship is chaired by Ian Barrow of Bartlett Tree Experts. Other organisations involved in the Forestry Group are Duchy of Cornwall, Fountains Forestry & Utilities, UPM Tilhill, Say it with Wood, Euroforest, Acorn Environmental Management Group, Abberton Rural Training and Lockhart Garratt.

DETAILS:

Web: www.gov.uk/government/organisations/departments-for-business-innovation-skills

NEWS FROM HSE

Revised Woodworking Information Sheet – WIS14

An advice sheet, called Wood dust – selecting suitable respiratory protective equipment WIS 14 (Revision2) – on selecting suitable respiratory protective equipment is now available on the HSE website. This information sheet provides advice to employers and operatives on the selection of respiratory protective equipment – RPE – for use with both hardwood and softwood dust. It is a revision of a previous edition, which now includes simplifications to Table 1 and clearer illustrations.

Control of wood dust on circular saws

A new video 'control of wood dust at circular saws' has been added to the HSE YouTube channel. The video provides information on how to control wood dust when using circular saw benches. It explains the problem, how to set up the wood dust extraction – local exhaust ventilation – correctly to control the wood dust and how to check that wood dust is being controlled by using a dust lamp. These techniques can be applied to other woodworking machines. See the website below for further information.

DETAILS:

Web: www.hse.gov.uk

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Cross-stitch stand

Chris Grace builds an improved version of an earlier cross-stitch stand as a birthday present for his mother

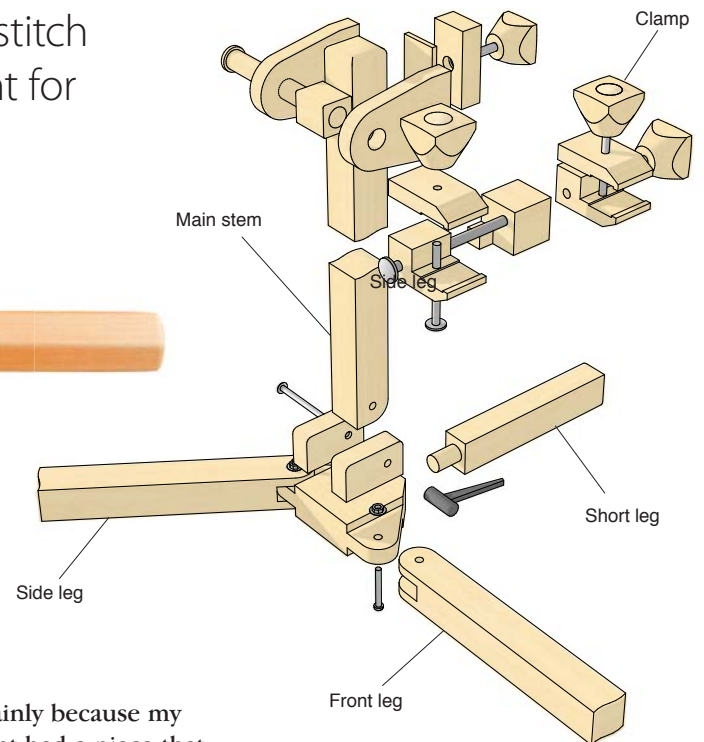
It's difficult to find birthday and Christmas presents to buy my mother, especially as she is now 80 years old. So, when an idea presented itself a few years ago I grabbed it with both hands, as she expressed an interest in a cross-stitch stand so that she could more easily undertake larger projects and have them positioned for her to reach comfortably while working. As my mother is particularly enthusiastic about small and compact, I needed to design something that was functional, but could be collapsed easily and stowed in a small space. I gave my original design to her for Christmas four years ago and it has worked well. I just thought I would make a couple of small tweaks for this version, such as making it taller so it could be used from different chairs. This time the material would be oak

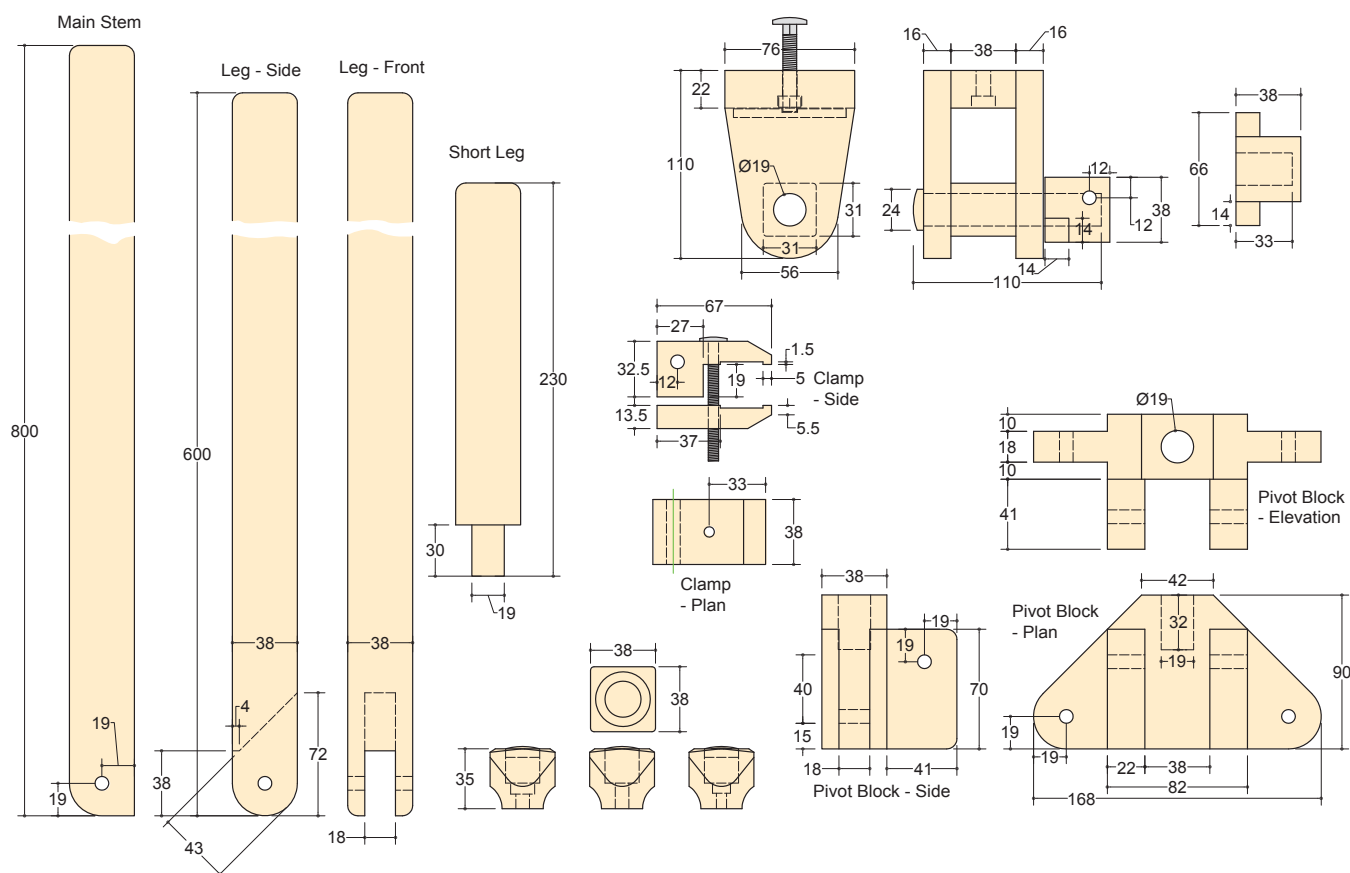
(*Quercus robur*), mainly because my local timber merchant had a piece that was almost the ideal size to complete the entire project if I cut it carefully. I re-did the CAD drawing, making the tweaks I intended, mainly to make it look a little more refined, to improve the design of the knobs and to increase the clamping force on the key joint for the main upright.

1 The first step is to trim both edges of the board to make them square and parallel. With the board now trued up, you can begin to cut the longest stick for the central post 38mm wide.



PHOTOGRAPHS BY JEAN GRACE





2 Next, cut the end off the board, leaving 620mm for the remaining sticks and allowing for a final trim. Cut the two legs and a stick for the other bits from the 620mm section. To make it easier to round over the ends of the legs, make small 45° cuts to remove most of the waste.

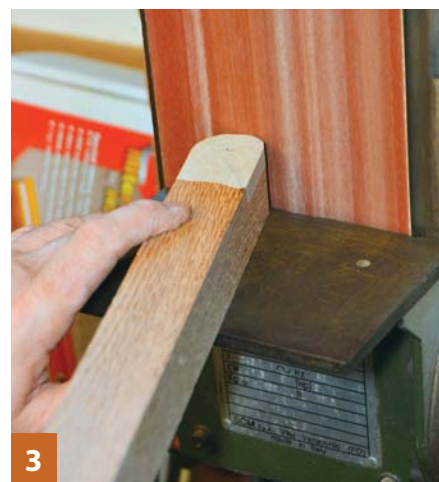
3 It is easy to burn oak on the belt sander, so keep the wood moving all the time to ensure the wood doesn't scorch. It is good practice to keep the abrasive belt clean and change it when it is worn out.

4 With the sticks cut to size and length put a radius on each edge with a bearing-guided roundover bit in the router. Use dust extraction wherever you can; it allows you to breathe easily in the workshop and makes clearing up much quicker too!

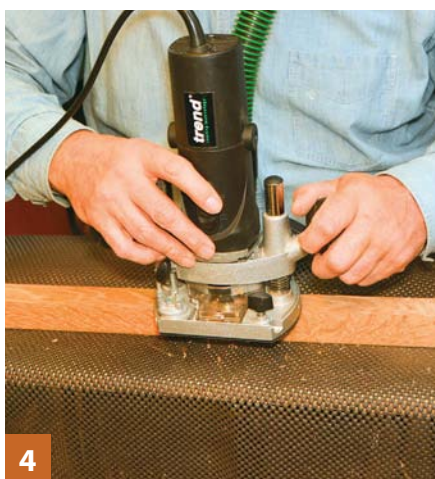
5 Sand to quickly smooth the remaining saw marks and slight scorch marks from where you may not have kept the wood moving through the saw quickly enough. Where possible, sand several pieces at once; this gives a more stable platform to sand and helps prevent rounding over the square sticks more than you intend.



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6 Now move on to drilling the holes on the drill press. To ensure accuracy and to keep them square, use a brad point bit. You will find that this helps prevent wander in coarse-grained woods. Use masking tape on timbers like oak; this will make it easier to mark exactly where you want and will also allow you to more easily see the marks later.

7 You can then hand sand the big bits to finish them off. For this step, use a hand sanding block with vacuum extraction, which will allow for dust-free sanding.

8 It's now back to the chopsaw to cut the smaller bits, using a stop stick to make identical parts where necessary. Chamfer the stop stick to prevent sawdust building up in a corner and altering the length of the workpiece when cut. It is important to wear eye protection here, just in case any pieces get ejected.

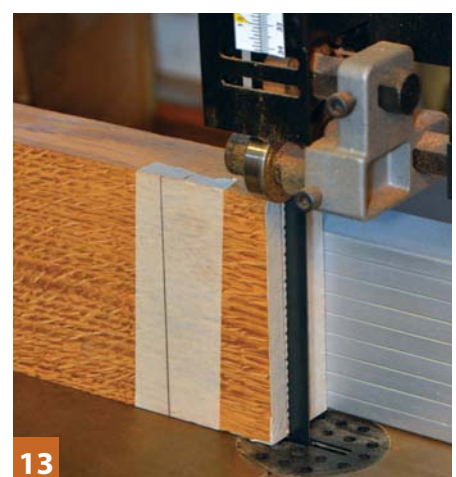
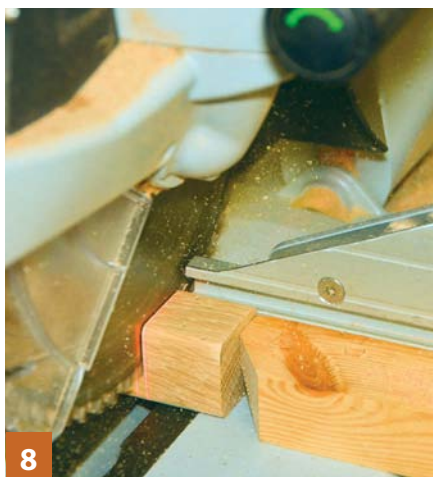
9 The clamp pivot requires a small stop on each side to position the clamps; the easiest way to make this accurately is to nibble away the waste on the chopsaw using the trenching function, with it still attached to the larger piece of wood. Then, cut it off and file it smooth.

10 Shape the top half of the clamps by trenching on the chopsaw, on the ends of a longer block before cutting it off once all the detail cuts have been made. At this stage, you can also cut the clamps square from their stick.

11 Shape the bottom half of the clamps using a jig to hold them securely. Remove the slight ridges left by the saw blade with the aid of a No.2 cut flat file.

12 The legs of the base require a slot at 45° to fit on the tongues of the central block. Nibble away the wood to form an angled slot; this can be achieved on a tablesaw, bandsaw or router with an appropriate 45° jig attached.

13 You can also do the cheek cuts on the central block on a bandsaw, or if you prefer, with a router and a long straight cutter on the router table.



14 Drilling against a sacrificial block reduces tearout on easy-to-splinter timber like oak. It is just too dangerous to drill such a small block without a vice, due to the size of the Forstner bit. When doing this, ensure to rest the handle against the column of the drill; this will give you added security.

15 Having now completed all other operations, cut the wings on the main pivot block at 45°. The stop block ensures both sides are identical. Make sure your fingers are away from the blade and the heel of your hand is pushing against the front of the machine for additional security. While at the chopsaw, the cheeks of the clamp should also be angled and then cut in half.

16 Here you can see the detail of the completed pivot block assembly, once it is finished and ready to fit.

17 Now, on to the lathe where the short third leg will receive its spigot, which needs to be a tight fit in the 20mm holes bored with the Forstner bit.

18 You can now test for fit. You should see a burnished ring on the spigot indicating how much – or little – more needs to be removed for the perfect fit.

19 Hold the handles in the chuck jaws, protected by tape, which will help to eliminate marking the wood. Drill them in stages with the smallest drill first to suit the nut or bolt they will receive.

20 Pull the nut into the handle recess with a bolt, with CA adhesive for security and to harden the wood.

21 Press the handles against a cork faceplate with a revolving centre and turn one end.



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1. When making pairs of items it is sometimes easier to make them on each end of a larger piece of wood so that you can use the same saw setup for each cut.

22 Then, with the end plugged using a contrasting timber, turn by screwing them onto a small chuck-mounted faceplate.

23 Turn the pivot pin with a button on the end so it won't slide out – another minor, but worthwhile enhancement.

24 All the carefully prepared pieces for the stand are now ready for assembly.

25 To ensure the pivot pin moves freely in use, careful alignment is required. Use a clamp while drilling the pilot holes.

26 Assemble and cross drill the pin. The bolt holds the pin in with the notch drilled in the side of the pin.

27 Again, use clamps to align the parts while drilling holes to screw the main stem pivot blocks on.

28 Here you can see the detail of the assembled components – in this case the leg base and the pivoting frame clamp.

29 This is how your final cross-stitch stand should look. ■



2. Use the most appropriate tool you have for the job. I could have done all the cutting

on the tablesaw, but as I am lucky enough to have a chapsaw also, I used that where it was more convenient or quicker.

3. Keep the wood moving all the time when using a belt sander to ensure the wood doesn't scorch, keep the abrasive belt clean and change it when it is worn out.

4. Use dust extraction wherever you can, now I can breathe in my workshop, and clearing up is much quicker too.

5. Where possible sand several pieces at once. This gives a more stable platform to sand and helps prevent rounding over the square sticks more than intended.

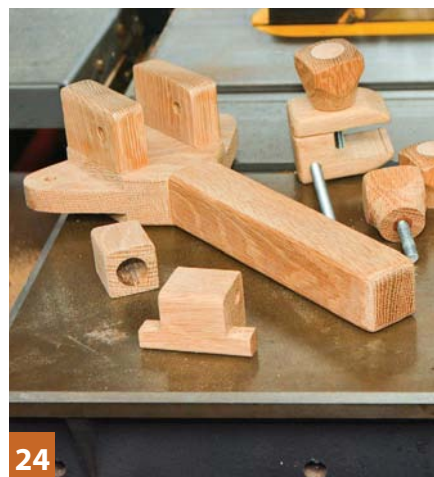
6. When marking out on timbers like oak with a distinct grain, I use masking tape. It makes it easier to mark exactly where you want, and to see the marks later.



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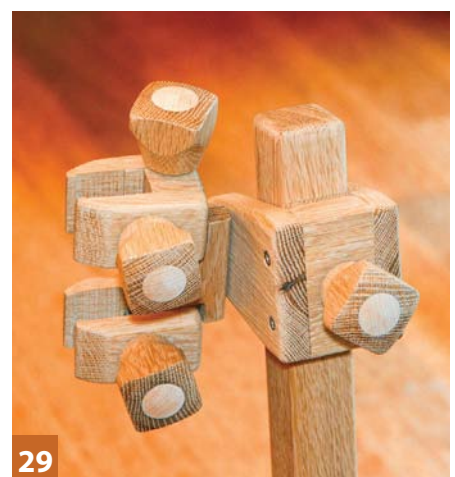
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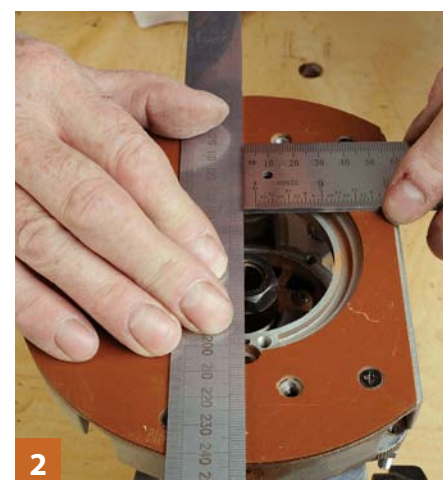
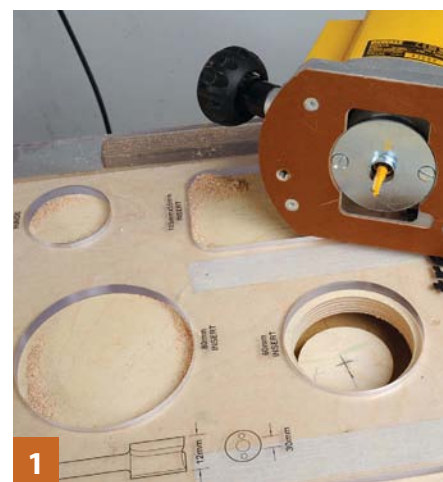
Horizontal router table

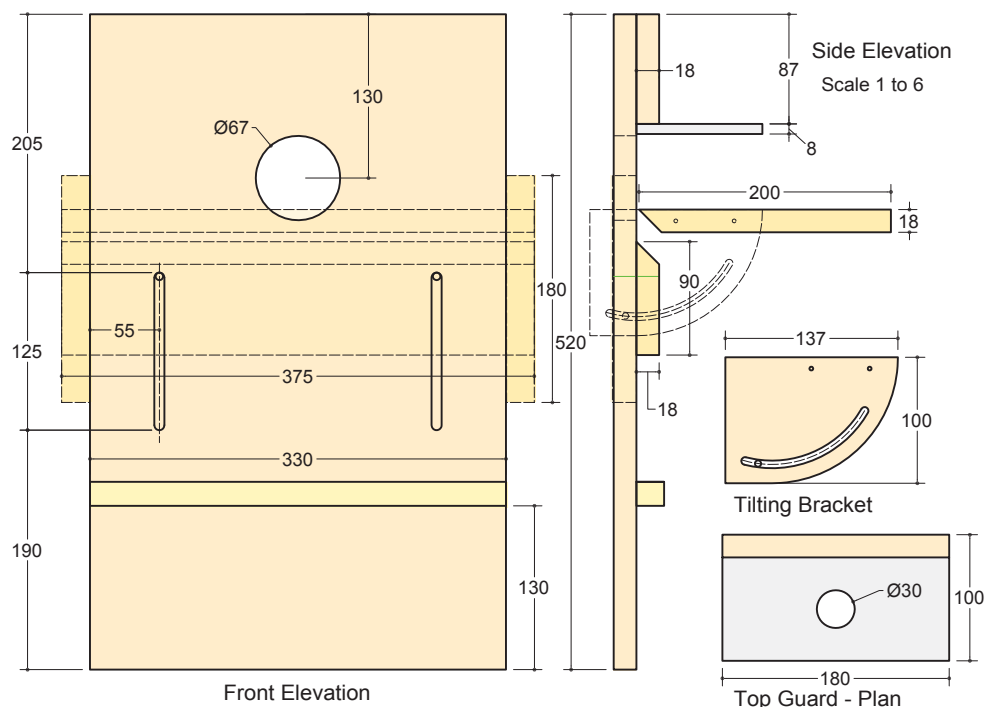
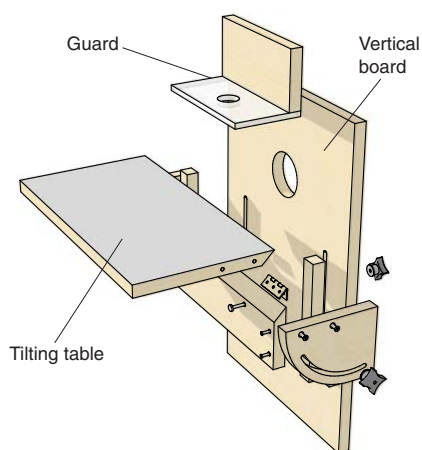
The Editor has decided to turn the tables and work flat out on his latest project with a sideways slant at a familiar piece of routing equipment...

Recently, one of our readers asked if we were going to make a horizontal router table. I remember years ago the late, great Ron Fox made such a thing, but it seemed like an idea worth revisiting. It might seem a bit unnecessary to turn the process of table routing on its side but it does give some advantages, including using gravity to keep the workpiece on the cutter and having a different viewpoint when feeding material through. There are different variants on the basic idea and this is just one that I have decided to try. You can always experiment and come up with alternatives or improvements to the basic design. The thing that interested me was the idea of being able to panel raise with a straight cutter instead of buying big hefty and expensive panel raisers, so that was my initial aim of this project, but I will try some other processes as time goes on...

1 My initial decisions were based on several things. I wanted to panel raise so I would need to mount a large router. It made sense to fit it to a vertical board that would clamp in my big vice. Being in the vertical axis I couldn't have an insert plate, it needed mounting straight into the board with a possible loss of depth of cut as a result. The cutter opening didn't need to be too large as I wasn't intending using big diameter cutters, mainly straight ones. I used a Trend template and their splendid double-sided jig tape, as well as a guide bush and small straight cutter to make the cutter opening.

2 Perhaps it wasn't sensible, but I made the opening before setting out where the large DeWalt router's mounting holes were. By sighting a ruler halfway through the guidebush holes as the datum line I could bring another ruler up to it to determine the hole locations.





3 Some careful setting out was needed, as I know from past experience that it is easy to get a hole slightly misaligned, which spoils the job if you end up elongating a hole to allow the machine screw to fit properly.

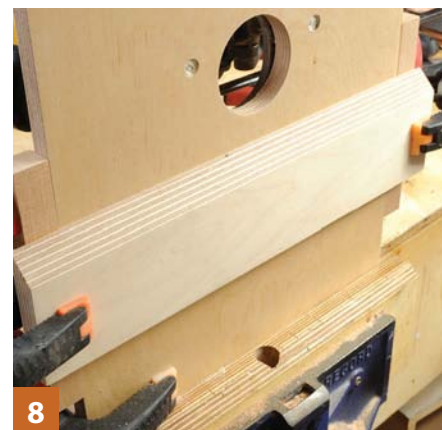
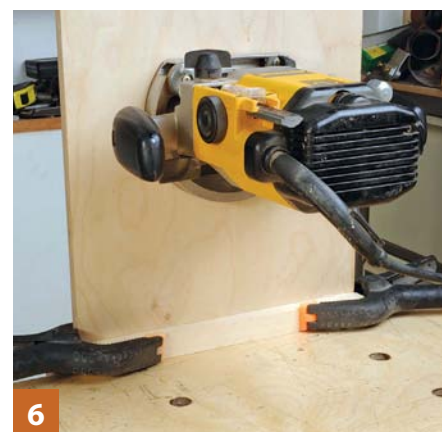
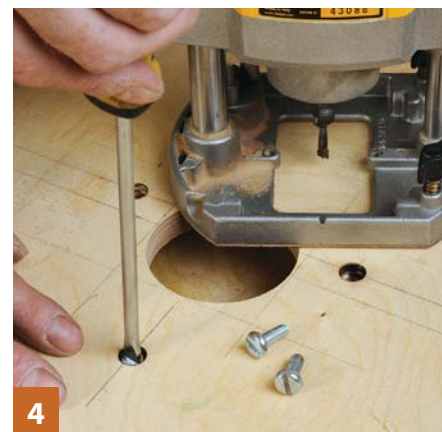
4 I used a Trend screwsink bit to router drill each hole. It creates a countersinking when, in fact, I was going to use pan head screws, but it didn't matter in the event. The main thing was to drill just far enough to bury the pan heads and still keep enough strength to hold the router securely under load.

5 After a test fit screwing the router to the board, it needed sanding and two coats of matte acrylic varnish to keep the board looking clean and make table adjustments smooth.

6 The router was fitted to the board and then mounted in the vice. A batten glued across the lower part of the board gives a positive stop when remounting in the vice each time.

7 I decided that as the table needed to be able to tilt and move up and down, it would therefore need a board with a 45° edge to facilitate the tilting. This cut was done on the tablesaw with the blade canted and the edge saw marks then cleaned up with my Record No.5 StaySet Jack plane, taking off just enough to get a smooth surface.

8 The board was then clamped dead square on the face of the vertical board and two fillets of wood glued tightly in place either side. It was critical that the whole thing didn't get stuck tight as it was meant to be a movable item! Once the glue dried it was reinforced by adding a couple of screws at each side.



9 The tilting table was made from an offcut of very highly finished, smooth white-faced MDF, on one face only. I fitted some brass hinges into the 45° bevel on the underside of this piece of MDF, again cut at the correct angle on the tablesaw.

10 Here you see the whole tilt table assembly. Where it screws to the fillets, only one screw per hinge can be used, but I felt that should be strong enough. This project was about empirical design and working out problems as I went along.

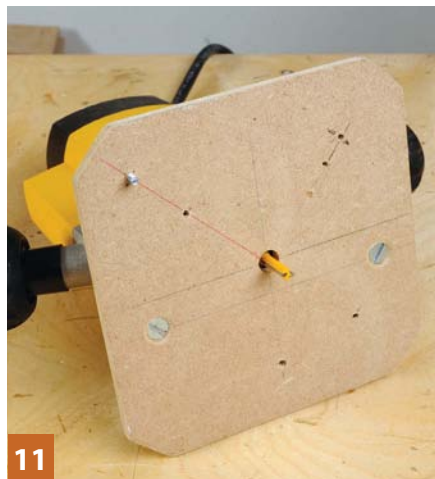
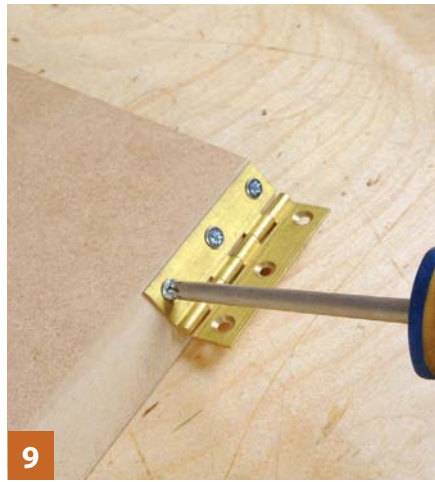
11 One such problem was how to tilt and lock the table at any desired angle. It needed a bracket at each end with a radius slot so a lock knob and bolt would hold the bracket at the chosen angle. I used my trusty router sub base as the diameter was too small for a trammel. I decided on the slot radius and moved the pivot screw to a newly drilled hole at that radius point.

12 The design of bracket I came up with looks like this. The pivot hole for the sub base screw to sit in is visible and the slot arc only needs to be the length shown here. It allows a position in theory just past 45° but also extends backwards slightly as my experiments showed.

13 Both brackets are held together with double-sided tape and shaped on the bandsaw and then sanded smooth on a static disc sander. The back end was trimmed shorter and square once I had done trial assembly on the tilting table.

14 Here the brackets have been screwed to the table ends after careful predrilling to prevent the MDF from 'puffing'. The lock knobs, repair washers and coach bolts hold the brackets firmly in whatever position is needed. The coach bolts are set into the fillets so they don't project and prevent the table from fitting onto the vertical board.

15 This view shows the assembly more clearly. The coach bolts are tapped into place with a hammer so the square necks bite into the wood, but a spot of CA glue will help prevent the bolts from loosening, which you do not want.



16 The tilting and sliding table needed some easy means of firmly fixing at any height, so I made some slots for more coach bolts and lock knobs.

17 With the big DeWalt clamped gently in the vice I was able to mark out and machine the new slots without removing the board from the router. The slot lengths were determined by two things: the tilting table would never be higher than the installed cutter and although a thick component could be accommodated below the cutter, it would never be too substantial so the slots didn't need to go too far down the board.

18 The tilting table could now be accurately and tightly clamped to the vertical board. This was the basic setup.

19 A thick offcut of polycarbonate sheet made an ideal top guard and allowed me to see the work area very well. The holes needed countersinking so the screws would sit in neatly.

20 For extraction, I used a TCT hinge sinker bit to make a hole for a vacuum hose. This can be set quite close to the cutter for maximum effect. Efficient extraction is still a work in progress, so the combined extraction and guard are simply clamped in place.

21 Here you can see the tilting table set at a suitable angle for panel raising and a long straight cutter fitted in the router.

22 Test cutting revealed some important details. Boards need to be truly flat and 'uncupped' so they don't rock as they are pushed under the cutter. A 1mm height adjustment is quite enough for each pass, particularly when the cutter is machining the full width of the panel raise. To help assess this I drew a scale on the side for adjustment purposes.

23 The finished, raised panel. Good downward pressure when feeding the blank into the direction of cut underneath the cutter is essential to prevent it catching and damaging the panel, but I'm pleased with the outcome so far. ■





Workshop notes:

Aubin's patent jointing saw

Colin Sullivan explains how he restored this Aubin's Patent jointing saw



PHOTOGRAPHS BY COLIN SULLIVAN

The patent for this novel saw was registered by Percy Adrian Aubin in 1927 and 'completely accepted' the following year. The patent is headed 'Improvements to or relating to Tenon Saws'.

I first discovered this strange looking saw with the blade missing at my local Sunday boot sale and knowing how difficult it would be to find the correct blade, put it to one side, keeping it just as a curio to show people. Later by chance, I saw a complete saw exactly like mine at the Tool Bank Museum in Dartford. The blade was just like a hacksaw but much thicker with quite fine teeth, surely I could find something similar to get mine working.

If you have ever tried to cut combing joints by hand you will soon realise this joint is more suited to a machine, unlike the dovetail

joint, which seems to lend itself to hand work. Maybe this is because the grain of wood is in-line whereas with a dovetail it is slightly across the grain. Years ago, I was offered a set of combing cutters to fit my spindle moulder; they are suitable for a joint 125mm long. I seldom use them, however, because they take so long to set up, but I have to say that they do make an excellent joint.

The blade for this saw is only 200mm long, which meant cutting shorter a 305mm hacksaw blade and drilling a new hole for the fixing screw. I found by putting two of the older style black blades together the thickness was just right for the saw. That type of blade also happens to be just soft enough for drilling without the bother of de-tempering them. The small bulldog clips are there to stop dust getting between the blades and the depth stop, a similar clip is shown on the patent.

The saw looks like a cross between a tenon saw and a hacksaw with a nice open wooden handle and a bent steel frame; a guide fence is fixed alongside the cutting blade and registers into the previous cut. The adjustable stop controls the depth of cut, which needs to be a little more than the thickness of the wood in use. The guide fence has a toe piece at the front, making it possible to start each cut easily.

The clips prevent dust from getting between the blades and the depth stop



The saw is perfect for cutting joints for small boxes

It is the perfect tool for cutting joints for small boxes or trays from wood about 7mm thick or less. This very simple and easy to use saw would be so easy to make today, so why has no one thought of resurrecting Aubin's clever idea?

Do any of our readers fancy trying to convert a hacksaw to do the same thing? If so, then let me know! Ed. ■

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The Tate & Lyle refinery was closed in 1981



Malcolm made the fluted clock as a wedding gift for his daughter

Malcolm's clock

March 2014

Dear Anthony,

I can work out the width and length from the drawing but not the thickness and, since I've only got a fairly low-powered router and am almost brand-new to this woodworking lark, I don't want to overreach myself! An idea of the degree of taper on the batten of the jig would be a big help, too.

My youngest daughter is getting married at the end of August and I was hoping to give the newlyweds this beautiful clock as their gift. So, Anthony, if you could help me, I'd be extremely grateful. And, assuming I can come close to your version, I'm sure my daughter and her new husband will be, too.

Thanks,
Malcolm Hughes

August 2014

Hello again, Anthony,

I know you won't recall the email I sent regarding the fluted clock you built way back in January 2013 but you were good enough to reply to my questions and told me to let you know how I got on. Well, I built a version of my own and it was scary, but finally so fulfilling. I know you're a busy man but I thought I'd give you a mini blow-by-blow account of my first real attempt at building something decent rather than 'just good enough'. As I said, I'm new to this stuff and don't even have anything that resembles a workshop. To be honest, I haven't even got a shed.

Anyway, if you find yourself with a couple of minutes to take a breather, maybe you'll read the rest of this email...



Malcolm's story – a wedding clock

A simple email exchange between **the Editor** and **Malcolm Hughes** led to the telling of a fascinating family history, which we share here

At the beginning of March 2014, I got a common enough email request for extra information, in this case it was about my RouterCentric fluted clock project in issue 76, from a guy called Malcolm. Time went by and Malcolm emailed me again to say he had finished making his version of the fluted clock – and then went on to tell a whole lot more...



This carving was the last piece that Gerry finished

GERALD JOHN HUGHES – TATE & LYLE

Back in the early 1870s, a man called Henry Tate began construction on a sugar refinery in Love Lane, Liverpool. It became the original refinery of what turned into a huge global conglomeration and the rest, as they say is history. Around the same time, somewhere in West Africa, a tree that was probably already a few centuries old was happily growing with its mates. These were mostly a species of African mahogany, the correct names of which I have no idea except for the sapele (*Etandrophragma cylindricum*). Then some b***er came along and cut a load of the trees into baulks of timber to be shipped back to the United Kingdom to be made into living room or library furniture and more besides!

The wood I've been using for the clock is the last of some of this decent hardwood, which my dad happened to have in his shed, in the yard of the house where I lived with my parents and two sisters and where one of my sisters still lives, but alas not my mum and dad anymore.

My dad, Gerry Hughes, worked at Tate & Lyle from the time he left the Navy in 1951 and, at the beginning of the 1980s, he saved the wood from the demolition fires when Tate & Lyle in their wisdom decided to raze that original Liverpool refinery and put close to 2,000 people out of work. In fact in a curious twist of fate, after all the trouble he and his union colleagues had trying to prevent the sugar refinery closure, it was he who was in charge of the demolition of the refinery chimneys known as 'The Three Sisters'! My dad contracted asbestosis, still a killer today with far more people killed by this deadly material than on the roads, although it was lung cancer that got him first.

Following several phone calls from my dad and using a minibus borrowed from a mate, we brought the wood back beneath the river Mersey through the Wallasey Tunnel, along with a good deal of teak (*Tectona grandis*), beech (*Fagus sylvatica*), oak (*Quercus robur*) and some Paraná pine (*Araucaria angustifolia*), bags of tools, anglepoise desk lamps, desks and typists' chairs and lots of other stuff – which I'm hoping nobody is still looking for...

There's very little of the wood left now, my dad made a couple of fire-surrounds and some mantelpieces and used the tongue and grooved beech in his kitchen. Towards the end of his life, the asbestosis he'd developed forced him



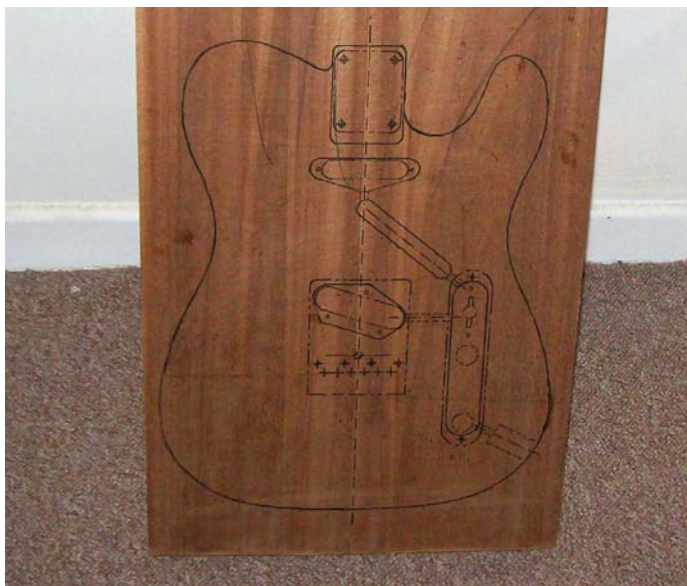
Bryon, Malcolm and Gerry Hughes

to take a slower pace with his leisure time and he took up woodcarving, while continuing his work as treasurer for the local Royal Naval Association Club where, on the wall as you enter the club, is a large piece of teak that my dad cleaned up and made a frame for, on which the names of members who died were carved and gilded. A lot of the oak became love spoons for my wife and me and my sisters. And the last thing he carved and finished just before lung cancer finally took him in 2001 was a framed carved mice and cat, based I believe on a poem entitled 'Six little mice sat down to spin'.

A lot of the mahogany and sapele was actually used by Tate's as door framing – the old-fashioned sort that was built in one piece with bevelled sides and tenoned joints rather than in nine or 10 pieces as today. In a completely mad moment, I decided I might get enough to make my



Most of the mahogany had been used for door frames



Malcolm used the mahogany and sapele to make a guitar for his son

son Bryon the body of an electric guitar. Considering my previous woodworking experience was at school a long, long time ago, and amounted to a plywood box held together with panel pins and a lapped dovetailed T-square that was, more or less, true, I still have no idea what possessed me. Maybe it was my dad making me use what he couldn't and using some of the few woodworking tools he'd acquired. He was a fitter and most of the tools were for his trade and a lot of them were made by him because the wait for them to be ordered and delivered was too long – that was my Dad! Anyway, I managed it and it seemed apt that I used the African mahogany and sapele since it came from a place where my ancestors lived and were then captured to be enslaved in a place where the crop they grew and harvested was sent to the refinery where my dad worked. He saved a lot of that wood and stored it in his shed for me to then make a guitar body for his grandson, who plays in a band called Sugarshed – and no, that wasn't a name chosen deliberately by the way. You can just make out the logo I created to stick on the headstock. It says 'Tate & Lylecaster' in the same font that Fender use for their Stratocaster logo!

My wife and I and one of my sisters went to Barbados

a few years back and it is a big regret that I wasn't able to bring back a piece of 'real' mahogany from the island. It is now illegal to cut any living tree for timber and it's severely punished if it's actually done. There are of course wood yards that deal in recycled timber but not in small enough pieces for me to bring home in a suitcase! Ah well...

Anthony, as I told you in my earlier emails, I don't have a workshop, not even a shed. I've got a couple of Stanley folding trestles, a couple of Black & Decker workmates, a few lengths of plywood of varying widths. I've got a router, my dad's old circular saw and a few power drills. I'm hoping to get a shed and a few more tools and then we'll see. I'm still harbouring the ambitious dream of building an acoustic guitar. Again, we'll see.

Cheers, Malcolm

Thanks to Malcolm for taking the trouble to tell us this fascinating, but admittedly incomplete family history. No doubt other readers also have a tale to tell, if you do, please do get in touch. **The Editor**

If this subject interests you then visit: International Slavery Museum, Liverpool: www.liverpoolmuseums.org.uk/ism/

The Atwells

Gerry Hughes had more in common with Tate & Lyle and its sugar and its wood than just working in the factory. His mother's family, the Atwells, were directly descended from West African slaves who worked the sugar cane fields in Barbados. They were not just descended from the African slaves – who probably lived in and among those hardwood trees – but also from the white 'indentured' servants – a polite term for slaves in those days, in that area of the world.

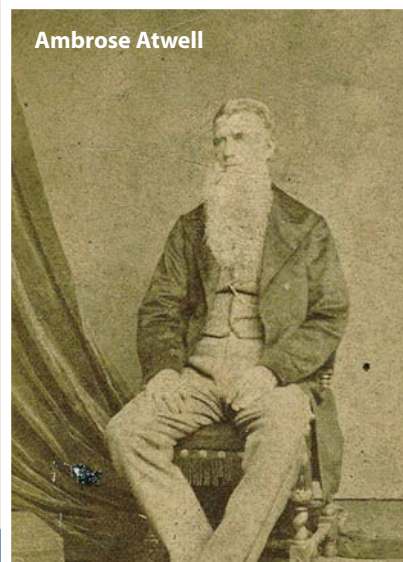
Depending on which version of the story you may care to believe, as we don't have accurate details to go on, the Atwells were followers of the Duke of Monmouth and joined in his rebellion against King James II. They were luckier than most of that defeated army in that infamous Judge Jeffries, 'The Hanging Judge', didn't sentence them to death but to indentured servitude in the Indies. Or, alternatively, they were victims of Oliver Cromwell's hideous ethnic cleansing of Ireland in 1649 – the so called 'Clearances' in which perhaps up to 500,000 Irish were either killed or transported to the colonies, which included America and the West Indies, Barbados being just one destination.

The Irish were often treated worse than black slaves working on the sugar plantations. A modern day check on typical Barbadian surnames

reveals a lot of Atwells in the current population!

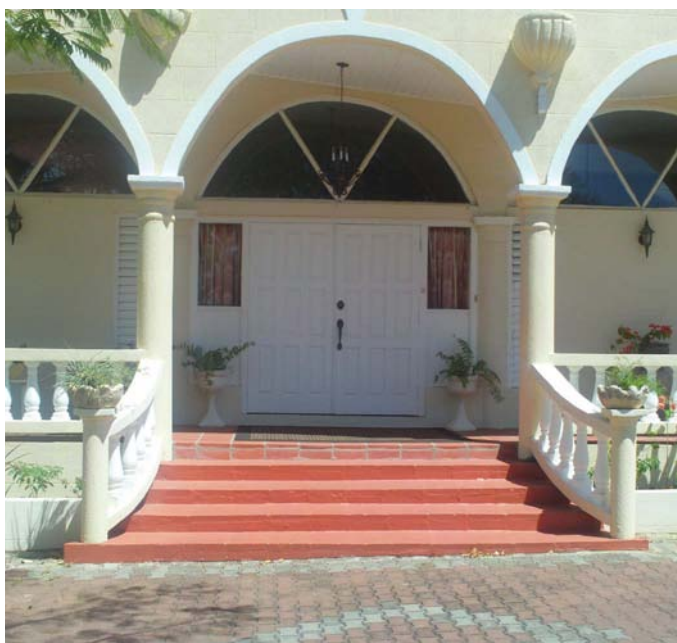
Great-great-great grandfather Ambrose Atwell had a son called Samuel who took a black mistress called Catherine Jessamy who bore him five children. One of his sons, Harold, found himself hitching a ride on a Norwegian frigate and jumped ship in Liverpool when it docked, hence his descendants, the Hughes family finding themselves very much part of a city once heavily associated with the slave trade. ■

Ambrose Atwell



PHOTOGRAPH COURTESY OF FLIP FUXASHUTTERSTOCK

This tropical island paradise was once home to Gerry's enslaved ancestors



The entrance to the original plantation



PHOTOGRAPH BY GMC/ANTHONY BAILEY

The International Slavery Museum in Liverpool

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Irreplaceable Woodlands

by Charles Flower

What first strikes you about this book from Charles Flower is just how visually impressive it is. The beautiful imagery on the cover makes you want to open it and delve inside, and what you will find are a whole host of beautiful photographs of woodlands, wildlife and flowers. But this book is far from being just about pretty pictures – the wealth of information you will find inside is staggering and provides you with a great deal of practical advice and information for those wishing to preserve our woodlands for the future.

The book is broken down into a variety of sections, including a fascinating history of Mapleshaw copse,

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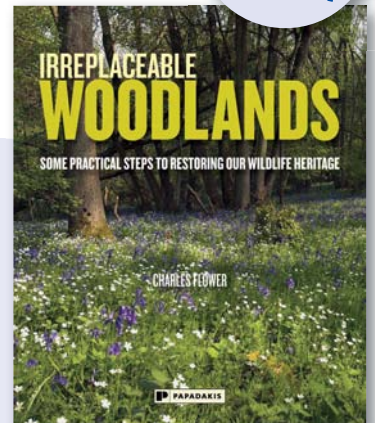
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which Charles has managed, as well as an overview of the woodland clearance since man's earliest farming. The book is also full of wonderful illustrations showing woodland sites as well as a selection of historical black-and-white photos.

It is clear that the author has a great deal of knowledge concerning woodland conservation and restoration, not to mention the

flora and fauna which make up the woodland.

If you are interested in managing woodlands for diversity, or would like to find out more about the rich diversity of animal life that makes up a typical woodland, then you will love this book. As the author rightly points out: restoring our wildlife heritage is of paramount importance for the future.



Oak-Framed Buildings

by Rupert Newman

Rupert Newman's latest book, *Oak-Framed Buildings*, isn't just an instructional guide on building oak frames, but Rupert also looks into the history and techniques of using oak framing. Split into chapters, they include: a brief history of timber framing, starting off, structural qualities of oak, designing frames, making frames, raising frames, the building envelope and finishing details. Each chapter goes into detail on its subjects with Rupert ensuring he includes as much information as possible. Starting right from the beginning of the building process, the book tells you about the possible problems one may face when even finding the land to build on. Rupert takes you through the complete process. As the founder of Westwind Oak, an oak-frame construction company, Rupert certainly knows what he is talking about, offering advice through his practical book to carpenters, builders and self-builders.

A number of the chapters offer 'case-studies', demonstrating the chapter's text and showing various projects at particular stages of construction. The images are quality colour photographs and Rupert includes 3D drawings and illustrations to help better demonstrate his meaning. As mentioned on the back cover of the book, *Oak-Framed Buildings* is 'a source of inspiration for anyone who appreciates beautiful buildings'.



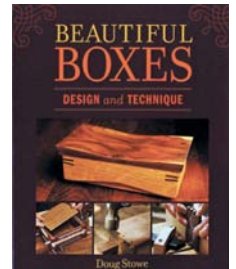
Beautiful Boxes: Design and Technique

by Doug Stowe

'Functional, beautiful and durable' is how Doug Stowe describes the box designs within this book. The boxes are a combination of skill and inspiration, demonstrating a design principle. The guide features a swivel-lid box, lift-lid rectangular box, veneered box, jewellery presentation box, bracelet box, finger-jointed chest, a jewellery box and a magnetic tower of boxes.

The guide has only a short introduction and each project is split up into small sections, making them easier to work through. After the project chapters, Doug includes a design gallery, which shows you the different types of feet, handles, hinges, curves and lids you could adapt, giving options for your designs, as well as offering a couple of pages of specific design options after each project.

Throughout the text, certain images are referred to and the book makes them easy to spot. The book also includes 'resources' and a metric equivalents table. A great book if you're into making boxes.



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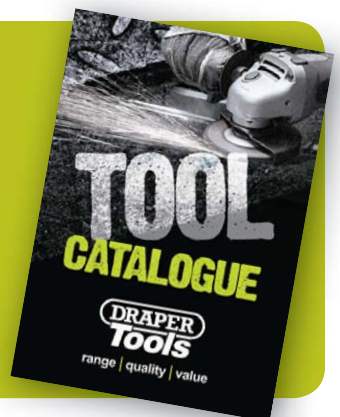
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Turn a dinner plate



Mike Mahoney shows you how to turn your own wooden dinner plate from a piece of quartersawn timber

I have been eating off wooden plates for more than a decade. No other material is more durable and beautiful for the purpose of serving our meals than wood. You can serve any matter of food on them. You can carve a juicy steak, and serve foods that stain wood without any ill effects. Now if you can't see your work with knife marks and stains on it, then wood is not for you. When I see this patina I see history and love, because if you are like me, most of the business of the house is done over the daily meal. The wear and tear are the details of our lives.

Making your own dinner plates is a relatively easy task for most woodturners. The key is to start with a quartersawn piece of wood. Since plates get thoroughly washed daily they will absorb water then shrink when they dry. Being quartersawn will keep them flat. This makes them



PHOTOGRAPHS BY MIKE MAHONEY

YOU WILL NEED...

- 16mm bowl gouge
- 10mm bowl gouge
- 12mm shear scraping bowl gouge
- 10mm spindle gouge
- Screw centre
- Range of abrasives
- Heat-treated walnut oil or similar penetrating oil finish



easier to use. You will also want to use a wood that is durable for such use. Any soft hardwood will work – maple (*Acer campestre*), sycamore (*Acer pseudoplatanus*), walnut (*Juglans regia*), fruit wood, beech (*Fagus sylvatica*), birch (*Betula pendula*), etc.

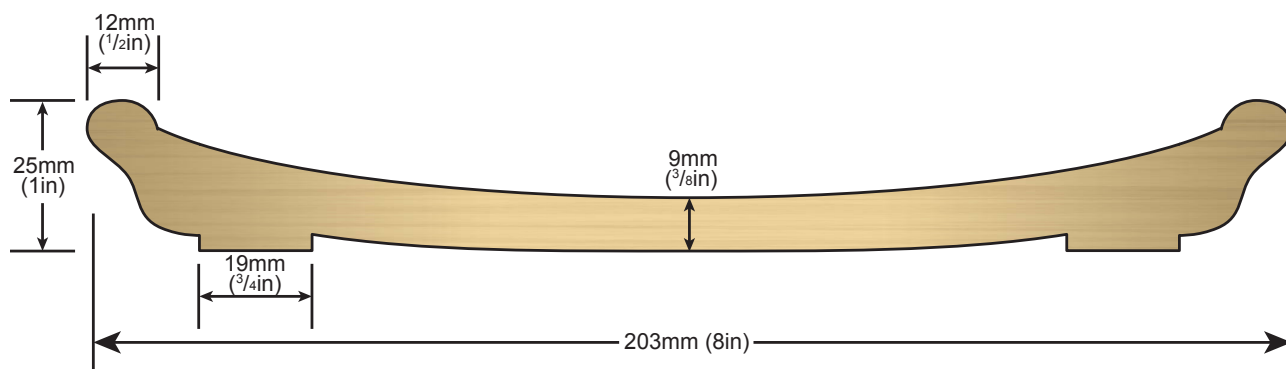
I see a lot of sycamore in my town. I only use it for its quartersawn beauty, which makes it perfect for plates. Typically plates average 280 × 25mm in size.

For this particular project I previously cut out of the log 305 × 32mm slabs and sticker them to dry. After approximately 120 days of drying time, I cut the slabs circular and let them dry for another 120 days. They are then ready for you to turn.

1 The first step for this project is to mount the plate stock on a screw centre that has a spacer in front of it; this should only let the screw protrude 12mm.

2 Next, you need to secure the stock with the tailstock of the lathe.





3 Now you can true up the diameter, top and bottom of the blank with a 16mm bowl gouge.

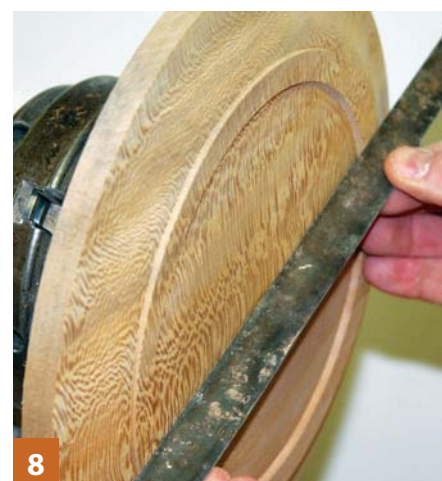
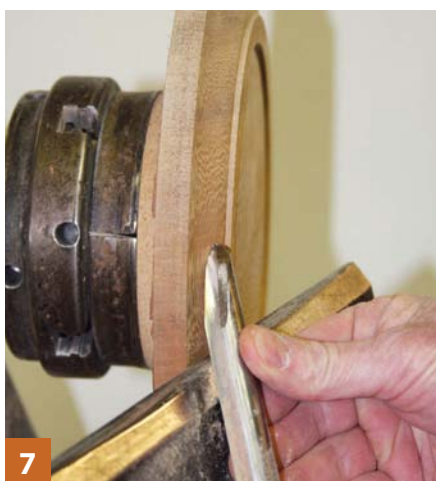
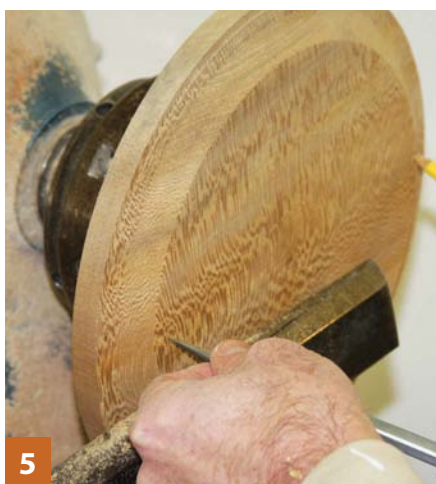
4 The next step is to remove the tailstock then remove wood to form the profile and base.

5 The base diameter for plates should be no smaller than 75% of the total diameter. As the plate is now 267mm in diameter, you should mark a base diameter of 200mm.

6 Cut a 5mm tenon with a 90° surface to use as a chucking device. You can also recess the base a few millimetres to add detail; this will also help stabilise the piece over time.

7 Shear scrape the profile with a 12mm shear scraping bowl gouge.

8 Test with a straightedge to make sure the base will sit flat.



1. It is better to leave the plate thicker than thin for this particular project.

2. If you are using kiln-dried stock, then you need to rough the piece out by relieving a bit of the interior and exterior and let the piece sit for a few days. You will find that kiln-dried stock does have a tendency to move more than air-dried stock.

3. Quartersawn stock is almost a must for this project.

4. It is best to put a relief in the base of the plate. This will help it to stay flat

5. I like to sand in forward and reverse between grits. This will give you a better finished surface to the project.

9 Sand to 400 grit then lightly mist the surface with water to raise the grain and let dry. Use a worn piece of 400 grit to cut any raised grain, pressing hard at the end to slightly burnish the wood.

10 Remove the plate from the screw. Make a jam chuck from a 255 × 50mm piece of green wood and support with the screw chuck or any secure means. True it up and mark the base's diameter.

11 Use a spindle gouge to recess the jam chuck to fit the plate base.

12 Cut the recess snugly enough to securely hold the plate, while you take cuts from the interior. Do not rely on an insecure fit.

13 Secure the plate in the newly made chuck and support with the tailstock. Keep the thickness of the entire plate around 12mm. Address the rim with a 10mm bowl gouge to get the thickness and design a bead at the rim with a 10mm spindle gouge to add detail.

14 Remove more material in the centre with the 16mm bowl gouge. Remove the tailstock to get full access to the interior surface of the plate.

15 Make a smooth surface keeping a 12mm thickness throughout. Sand using the same process as before. Remove the plate by tapping the back of the jam chuck, then sign the piece, add the species of wood and date it. Hopefully your descendants will have a story to tell in the future.

16 Since the plate will be getting plenty of use you should apply a penetrating oil finish. You wouldn't want to use a film finish. Film finishes will show wear and will have to be repaired. For this plate I will use a heat-treated walnut oil. Now make a plate for everyone in the house. Better yet, make some for your friends as well. ■



6. Never put a rim detail on the plate; food will get stuck and it will be difficult to remove.



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End table

In this excerpt from *Pocket-hole Joinery*, **Mark Edmundson** shows you how to make an end table using pocket-hole techniques

Small projects like this end table can be very rewarding and pocket screws can greatly simplify the building process. The challenges come in hiding the pocket screw holes and locating the parts during assembly. Using shims, clamps and careful screw layout guarantees that the project will go together smoothly.

An end table is a perfect candidate for a simple design. A top, four legs and a bottom shelf held together at the corners with a skirt – what could be easier? I usually start a project like this with a rough sketch. The size parameters and wood choice come next. For this end table, I try to keep it basic by making it square, but this also makes it plain, which detracts a bit from its overall appeal. A design that's sturdy rather than delicate seems appropriate for something this small, so I keep the leg dimensions as big as my 2" solid cherry (*Prunus serotina*) stock will allow at 1 $\frac{3}{4}$ in square. With a general idea of size – 24in tall $\times$ 18in wide – I mill up the stock, leaving the skirt and stretchers long so that I can tweak the dimensions if need be. I stand up the legs in a square and place a scrap piece of plywood on top: ho-hum – it looks like a little box tower, not like the sketch I drew. I add another scrap of wood propped up on blocks as the bottom shelf, which helps to ground it some.

I decide on an 18in square top with a $\frac{7}{8}$ in overhang, which then gives me a skirt length of 12 $\frac{3}{4}$ in $\times$ 2 $\frac{1}{2}$ in. I cut the skirts to length and hold them in place with blue tape so that I can get an idea of what the finished table will

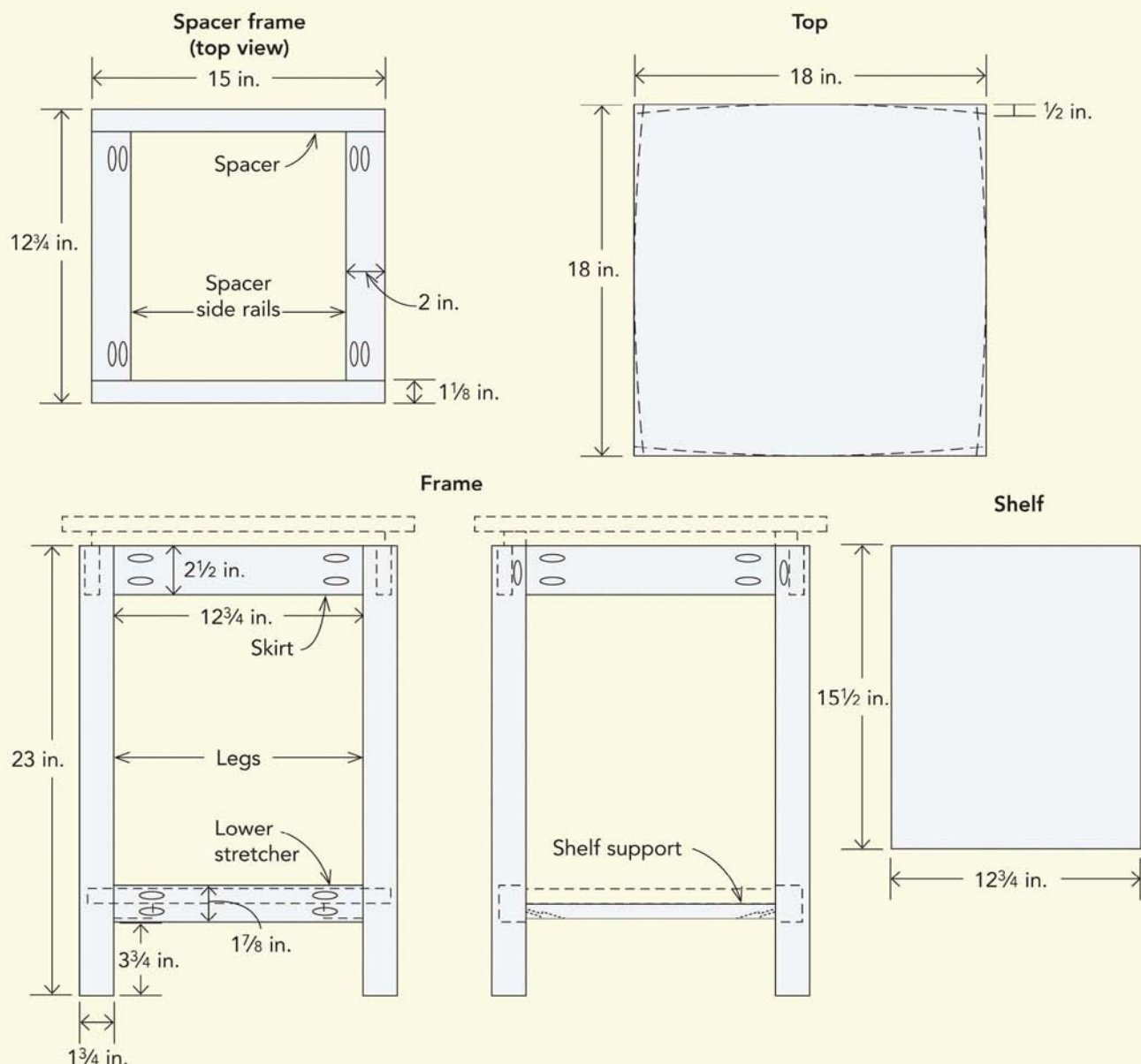
PHOTOGRAPHS COURTESY OF THE TAUNTON PRESS



Cutting list

Quantity	Part	Actual size	Construction notes
4	Legs	1 $\frac{3}{4}$ $\times$ 1 $\frac{3}{4}$ $\times$ 23in	Cherry
4	Skirts	$\frac{3}{4}$ $\times$ 2 $\frac{1}{2}$ $\times$ 12 $\frac{3}{4}$ in	Cherry
2	Spacer side rails	$\frac{3}{4}$ $\times$ 2 $\times$ 12 $\frac{3}{4}$ in	Cherry
2	Spacer front & back	$\frac{3}{4}$ $\times$ 1 $\frac{1}{8}$ $\times$ 15in	Cherry
2	Lower stretchers	1 $\frac{3}{8}$ $\times$ 1 $\frac{1}{8}$ $\times$ 12 $\frac{3}{4}$ in	Cherry
2	Shelf supports	$\frac{3}{4}$ $\times$ 2 $\times$ 12 $\frac{3}{4}$ in	Any wood – as these are hidden from view
1	Top	$\frac{3}{4}$ $\times$ 18 $\times$ 18in	Cherry
1	Shelf	$\frac{3}{4}$ $\times$ 12 $\frac{3}{4}$ $\times$ 15 $\frac{1}{2}$ in	Cherry

END TABLE



look like. It still looks boxy. Straight lines on all four sides don't exactly make the table dance. I can either taper the legs at the bottom, which seems an unnecessary distraction, or maybe add a curve to the top on all four sides to add interest and soften its appearance. With more blue tape, I mock up a curve and stand back to fuss some more. While thinking about how I will attach the top to the skirt using pocket screws and dealing with wood movement, I come upon the idea of using a spacer between the table and top. Building a square frame, $\frac{5}{8}$ in. smaller on all four sides, would lift the top and give it an interesting shadow line below. A couple of scraps placed on top of the legs give me just enough

of an idea to visualise the effect. It's pleasing and I'm given the confidence to start laying out the pocket joinery.

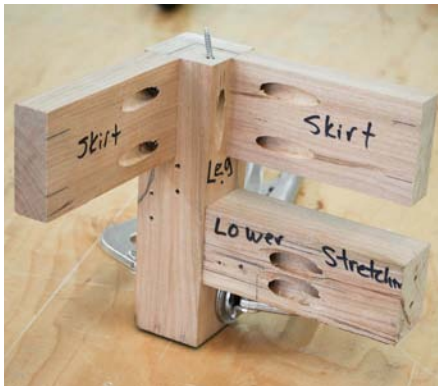
Laying out the joinery

Whether using traditional joinery, dowels, or pocket screws, layout is always a critical first step. With pocket screws, you don't want a screw collision at the corners to weaken the joint or cause the leg or stretchers to split. On a large cabinet this isn't as much of a concern since there is usually room to shift a screw up or down, but on a small end table with the skirt coming in from either side, space is limited.

Using cutoffs from the stock, I start by laying out all the screw locations at the corners and where



Using tape to mock up a design can help you flesh out ideas. Here, whether to cut a curve in the tabletop or leave it straight is decided using tape to represent the proposed shape



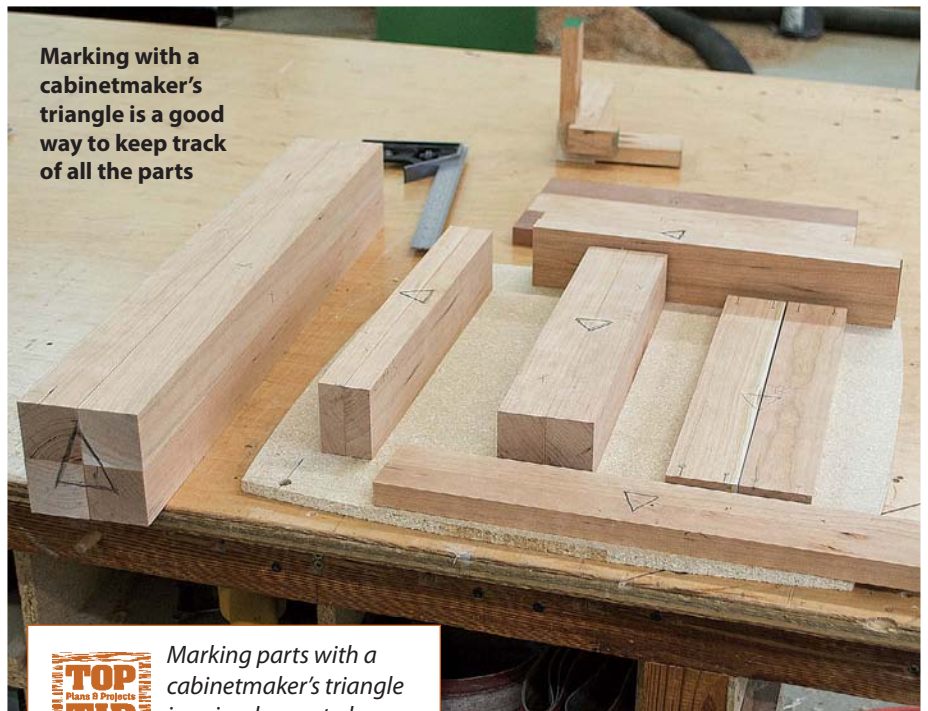
The author uses offcuts to mock up the pocket screw locations at the corners as well as where the lower stretcher meets the legs

the lower stretcher meets the legs. At the corners, all I need is to avoid having the screws collide and keep them away from the ends so as not to promote splitting. On the lower stretcher, however, I have to make sure the pocket screw holes are hidden by the lower shelf but don't interfere with the shelf supports. Laying out the screw holes on paper and on a small mock-up will help keep the joinery from colliding. Mark the pocket screw hole locations at least $4\frac{1}{2}$ in from the end of the piece so that they can be seen over the top of the pocket screw jig when the stock is being clamped to drill.

Label the parts with cabinetmaker's triangles. The skirts have two pocket screw holes on either end drilled $\frac{1}{2}$ in on-centre – o.c. – from the top and bottom edge – see drawing. Each leg has one pocket screw hole on the inside surface facing front or back; these holes are for the screws that will be used to hold the spacer frame in place. The spacer will be screwed to the tabletop with oversize holes and washers to allow for wood movement and will be attached to the four legs at the corners. Drill this pocket screw hole $\frac{1}{2}$ in o.c. from the inside edge of the leg. The spacer has side rails $2 \times 12\frac{3}{4} \times \frac{3}{4}$ in. The pocket screw holes are close together toward the inside edge to avoid the screw from the leg that secures the spacer to the table – see drawing. From the inside edge, drill the first hole $\frac{3}{8}$ in o.c. and the second hole $\frac{15}{16}$ in o.c. The lower table support stretchers each get two pocket screw holes $\frac{5}{8}$ in o.c. from both edges on both ends.

The lower stretcher is $1\frac{3}{8}$ in thick going into a $1\frac{3}{8}$ in square leg. With dimensions this thick, it is possible

Marking with a cabinetmaker's triangle is a good way to keep track of all the parts



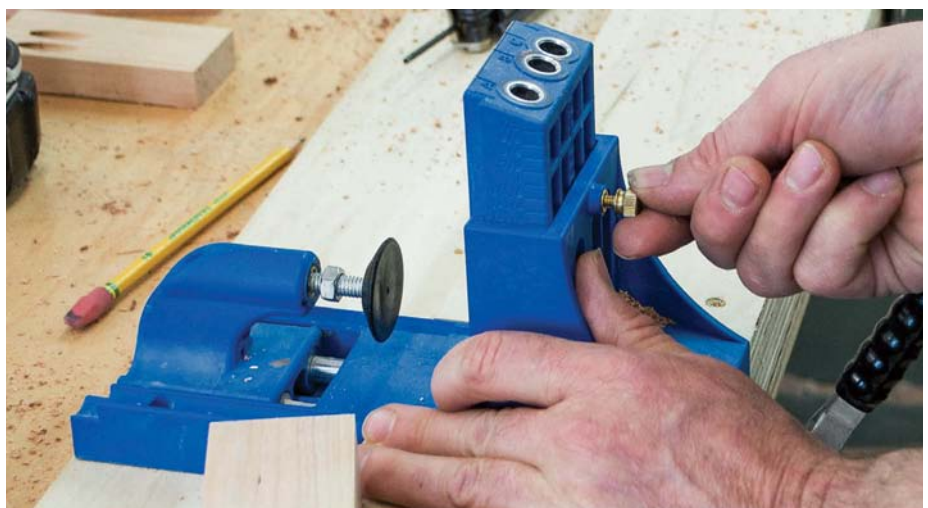
Marking parts with a cabinetmaker's triangle is a simple way to keep track of part location.

The tip of the triangle typically points up or toward the front of the project. The base of the triangle represents the bottom or back.

– but not necessary – to use a longer screw. By raising the adjustable pocket screw jig to the $1\frac{3}{8}$ in setting and using a 2in screw, you can centre the joint in the leg. Using two $1\frac{1}{4}$ in screws won't provide as much strength as the 2in screw, but in this situation it's plenty adequate. If you already have an adjustable jig and some 2in screws, I suggest using them, but if you have a non-adjustable pocket screw jig and only the $1\frac{1}{4}$ in screws, you'll be fine sticking with that. The pocket screw drill only countersinks for the head and about $\frac{1}{2}$ in of the shank, so



Drill two pocket screw holes on either end of the skirts, spaced $\frac{1}{2}$ in o.c. from the top and bottom edge



If you're using an adjustable pocket screw jig, you can raise the jig to the $1\frac{3}{8}$ in thickness setting so you can use a longer – 2in – screw to attach the lower stretcher

using longer screws means there will be more wood for the screw to drive through. Just to play it safe, I drive a 2in screw through the stretcher until the tip of the screw shows at the end, then back out the screw and ream out the hole with a drill bit. When driving the screws, I predrill $\frac{1}{8}$ in deep with an extra-long drill bit. This may be overkill, but it provides a buffer of security from the piece splitting or shifting during assembly. Locate the drill holes on the inside face of the stretcher $\frac{3}{8}$ in from the bottom edge and $\frac{5}{8}$ in from the top edge o.c.

Stock cleanup

Just because you're building with pocket screws doesn't mean you can't use traditional techniques when appropriate. Hand plane and scraper skills are invaluable. As you work through the stock cleanup, you will find it necessary to move the label marks as you sand. The top of the legs will be visible on the outside edge, so move the leg labels to the inside front side and include an arrow pointing up. Sand the surfaces and round over all the edges except the inside edge of the legs. The inside face of the lower stretchers and the inside face of the legs are flush at the joint. With the leg face down on the bench, butt the lower stretcher against it $3\frac{3}{4}$ in up from the bottom of the leg and make a mark on top and bottom of where the stretcher hits the leg. This will let you know when to stop and start the roundover of the inside edge. Place a small scrap of tape to remind you to stop. No roundover is required on the spacer between the legs and top. After the sides have been assembled, you can round over the edge exactly above and below the lower stretcher and flush-sand the butt joint.

Assembling the legs

To begin the assembly, start with a front leg and either the left or right $2\frac{1}{2}$ in skirt. There is a $\frac{3}{16}$ in step between the face of the leg and the face of the skirt. This is both a design detail and a pocket screw time-saver: by not having the surface of the skirt flush with the surface of the leg, there's no need for glue or flush-sanding. Cut two small scraps of wood $2\frac{1}{2}$ in long and $\frac{3}{16}$ in thick at least $1\frac{1}{2}$ in wide. You'll also need another shim for the back of the skirt so that the combined width of the $\frac{3}{16}$ in shim,



Drive the 2in screw through the hole in the stretcher to mark it for reaming with the extra-long $\frac{1}{8}$ in bit



You can then ream the hole



Nothing gets rid of machine marks faster than a sharp hand plane

skirt and top shim equals the width of the leg. The thickness of this shim should be around $\frac{3}{16}$ in.

With the $\frac{3}{16}$ in shim under the skirt and the leg butted up against them, measure the exact difference. The back shim cannot be wider than $\frac{5}{16}$ in though; otherwise, it would block the pocket screw holes – see the photo, right. To attach the skirt to the leg, lay both $\frac{3}{16}$ in shims under the skirt and butt the leg up against it. Make sure the tops are flush and secure the assembly to the bench with the face clamp. With multiple shims and parts, this process can be a bit awkward. When the face clamp is secured, check that the ends are still flush with a straightedge and that the joint is tight. A bar clamp across the skirt and over the leg will help keep things stable while you drive the pocket screws. Repeat with the matching back leg to this side.



Mark the stretcher location on the legs to help you know where to stop and start the roundover edge on the leg



In general, I prefer to prefinish the parts. On this project, however, the legs will need a flush sanding where the lower rail meets the leg. Also, there will be lots of clamping with spacers and bar clamps, which could mar the finish. So here the finish is best applied after the legs and skirts are assembled but before the top and shelf are installed.



Use a bar clamp and a face clamp to hold the leg/skirt assembly in place while driving the pocket screws



Use a square to locate the lower stretcher on the legs

The lower side stretchers are $1\frac{3}{4}$ in thick and butt up against the $1\frac{3}{4}$ in legs. Cut two $\frac{3}{8}$ in shims to elevate the side stretcher when using the face clamp. Place the leg assembly face down on the bench. With the skirt already installed, it will be a snug fit to slide the side stretcher into place; be careful not to force the legs too far apart when positioning. Align the stretcher so that the bottom is $3\frac{3}{4}$ in up from the bottom of the leg. Position shims under the stretcher; use card stock if necessary so that the joint is perfectly flush. Double-check that the stretcher hasn't shifted from the $3\frac{3}{4}$ in measurement and clamp with the face clamp. Clamp across the legs with a bar clamp. Predrill $\frac{1}{8}$ in deep with a long drill bit and then slowly drive a 2in pocket screw. Repeat for the remaining screw. Continue this process with the shims and face clamp on the opposite side. After one side of the table has been assembled, start from the beginning and assemble the opposite side.

Installing the front & back skirts

With both sides assembled, flush-sand the joint between the stretcher and leg. Check the results with a straightedge. The lower shelf will butt against the stretcher and legs, so if it's not flush, the reveal between the shelf and stretcher will not be even. Round over the corner of the leg above and below the stretcher on the inside edge with a file. Now, using the right-angle jig to hold one of the sides upright, position the front or back skirt, $\frac{3}{16}$ in shim and $\frac{3}{4}$ in shim against



With bar and face clamps holding the assembly, slowly drive the long screw through the lower stretcher and into the leg



TOP TIP It's important that the inside of the joint between the leg and lower stretcher is flush. It can be tricky to cut a shim that is the perfect thickness, so I add a piece of card stock to increase the thickness if the shim alone is not doing the job.



Flush-sand the butt joint between the leg and the stretcher after assembly



With the lower stretcher installed, finish the roundover on the leg above and below the stretcher

the leg. Secure with the face clamp and bar clamp. Use a straightedge to check that the top of the leg and skirt are flush, then drive two pocket screws through the skirt. Remove the right-angle jig and transfer the shims and remaining skirt to the other side. Clamp the skirt with the face clamp and bar clamp, and slowly drive two pocket screws. Clamp the right-angle jig to the remaining side assembly, and slide it against the skirt ends. With the shims secured with the face clamp, clamp across with a bar clamp. Check that the ends are flush, then drive two pocket screws. Move the clamps and shims to the other side and repeat.

Assembling the shelf supports

To complete the table base, install the lower shelf supports onto the side stretchers. These supports will be completely hidden from view. They sit $\frac{15}{16}$ in below the top edge of the stretcher. Cut a shim to that width and another shim measuring $\frac{3}{16}$ in $\times$ $\frac{5}{8}$ in, which will be needed underneath. The shelf support meets the side stretcher at the leg junction. Clamp it into position using the shims and face clamp. Drive two pocket screws through the shelf support and repeat on the opposite end. Follow these steps to install the remaining shelf support to the lower stretcher. Now you can assemble the $\frac{3}{4}$ in spacer using the face clamp. Check that the ends are flush and use a slow drill speed when driving the screws.

Cutting the tabletop

The top has a slight curve on all four sides, which comes in $\frac{1}{2}$ in at the corners. To build a template that is symmetrical, I cut and shape a half curve on a scrap of $\frac{1}{4}$ in MDF and then use the half curve to make a symmetrical full-curve template.

Start with two strips of MDF measuring 6in wide and 24in long. For the half template, measure over 7in and 16in along the long edge and make a mark. At the 7in mark, measure down $\frac{1}{2}$ in and draw a line. Next, cut a $\frac{1}{8} \times \frac{3}{4} \times 24$ in long batten of knot-free wood. Clamp the batten to two heavy workshop items, such as a hand plane or a small vice, spacing them about 10in apart. Align the batten at the 16in mark so that it is flush with the top of the template.



You'll need the right-angle jig to hold the sides upright during assembly



With the face clamp holding the shims in place, drive pocket screws through the shelf support into the lower stretcher. A bar clamp across the support provides added security against slippage



Hold the spacer frame joint with the face clamp while driving the pocket screws



Clamp the batten to some heavy shop objects to help create a curve and to hold it in place while tracing the template



Clean up the cut marks on the half template using a strip of wood wrapped with 80 grit sandpaper

At the 7in mark, position the batten so that the face passes through the $\frac{1}{2}$ in line. Adjust the curve in or out by flexing the tail end. You want the curve to be flat in the middle but to increase its curve at the end. Trace the entire length of the batten.

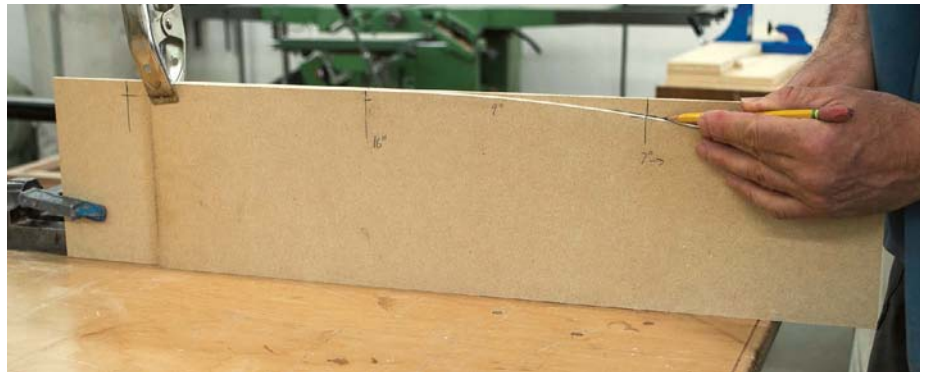
Cut the curve on a bandsaw. Next, clamp the template upright on the bench. Take a thin scrap of wood at least 16in long, and wrap the strip in 80 grit sandpaper. Fair the curve by sanding along the length of the curve. To check if the curve is fair, roll it on the benchtop to feel for bumps. Once the half template of the curve is done, you can make the full template. Take the other piece of 6 × 24in template stock and make marks at 3, 12 and 21in. With a square, make a $\frac{1}{2}$ in hash line at the 3in and 21in marks. Clamp the two templates together so that the 7in mark from the half template lines up with the 3in mark on the full curve template.

Trace the half curve onto the full template. Flip the half template and line up the 7in mark with the 21in mark on the full template. Trace the curve, then cut out the full template. As before, use the 1in batten and 80 grit sandpaper to clean up the curve and check for flat spots by rolling the curve on the benchtop. Cut the top material at 18in square. Mark the centre at 9in on each side and at each corner make two $\frac{1}{2}$ in marks in both directions. Set the full template on top of the 18in square, aligning the $\frac{1}{2}$ in marks with the marks at 3in and 21in on the template. Check that the 12in template mark matches the 9in halfway mark on the tabletop. Clamp at both ends and trace the template. Repeat on the three remaining sides.

After the curves have been cut, reposition the template and clamp at both ends. Make sure the 12in and 9in marks are lined up. Use a $\frac{1}{2}$ in router bit with a bearing in the middle to follow the template and clean up the cut. Repeat on the three remaining sides.

Fitting the shelf

The lower shelf slides in between the legs and lower stretchers. Since the shelf supports are supposed to be $12\frac{3}{4}$ in wide, the shelf must be cut just slightly under this dimension so that it will slide into place without scratching the legs. I set the saw fence at $12\frac{3}{4}$ in first and tested the cut on a scrap of



Align the half template onto the full template and trace half of the curve



The finished curve is ready to cut



Measure in $\frac{1}{2}$ in on both sides of the corner to mark the point that the curve will pass through



Align the template on the tabletop so that the centre and end marks match. Trace the outline onto the top



Use a router with a bearing in the middle; this will allow you to follow the template and clean up any saw marks

plywood. It slid in without much fuss and had an even shadow line against the side stretchers. Confident that this fence setting was right, I cut the real shelf and slid it from the back into place to check the reveal. It's OK if the fit is not perfectly tight because the shelf sits below the top edge of the stretcher and a small gap isn't distracting. If the finished gap were not consistent, I would probably cut it so that an even $\frac{1}{16}$ in gap on either side of the shelf would hide the discrepancy. Rounding over the top edge lightly will help lessen any gaps. Finish-sand the tabletop and shelf, then oil all the parts.

Attaching the top and shelf

The top and lower shelf are attached to the table using pocket screws and No.10 flat washers via a $\frac{1}{4}$ in hole to allow for wood movement across the grain. Set the spacer frame with the pocket screw holes facing down on the bench. The 2in-wide frame pieces go along the sides. Starting from the front, measure down the side, making marks at $2\frac{1}{4}$ in, $7\frac{1}{2}$ in and $12\frac{3}{4}$ in. At each mark, measure in 1in to centre the hole on the rail. Repeat on the opposite side.

Drill the hole at the $7\frac{1}{2}$ in mark with a $\frac{1}{8}$ -in drill bit; this allows the table to expand and contract from the centre attachment. The $2\frac{1}{4}$ in and $12\frac{3}{4}$ in marks are drilled with a $\frac{1}{4}$ in bit, giving the pocket screw room to slide forward and back to allow for seasonal changes in the solid-wood top.

Next, drill out the lower shelf supports on the table. Drill a $\frac{1}{4}$ in hole $1\frac{1}{4}$ in from each end centred on the support. One of my $\frac{1}{4}$ in holes lined up directly above a pocket screw hole, so I was forced to use a bigger washer to span the pocket screw hole. Install the lower shelf, sliding it in from the back. Centre the shelf on the table, and clamp it to the support rail at the front and back, using protective cauls against the finished surface of the shelf. Now tip the table on its side with a protective blanket underneath. Using the $\frac{1}{4}$ in bit, barely touch the drill to the support rail to establish the centre, then predrill the hole using a $\frac{1}{16}$ in bit, being careful not to drill too deep. Take a pocket screw and No.10 washer and drive the screw by hand. Repeat on the



Slide the test shelf into place, making sure that the fit is not too tight and the shadow line between the shelf and the stretchers is consistent



Drill oversize holes in the spacer frame to allow for wood movement of the top at the edges



Clamp the shelf in place using protective cauls against the finished surface



Attach the lower shelf with pocket screws and No.10 washers. Drive the screws by hand to ensure the holes don't get stripped out



Mark the diagonals on the underside of the top to help locate the spacer frame, then use the diagonal marks and a square to centre the frame on the top



Attach the spacer frame to the tabletop with pocket screws and No.10 washers, driving the screws by hand



Predrill $\frac{1}{8}$ in deep first and then drive the pocket screws through the top of the legs into the spacer frame to install the top

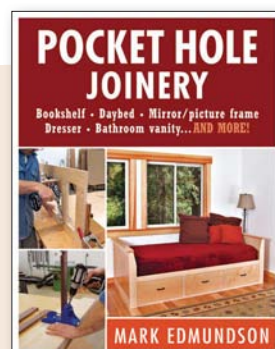


Use a square to centre the base on the top before attaching it

remaining holes. Next, mount the frame to the top. Because the top is curved on all four sides, it's a bit awkward to locate the frame. I used a straightedge to make marks along the diagonal at the corners to help centre it. It's still necessary to measure the middle distance from the edge of the top to the frame to get it exact. When the frame is centred, make a few pencil lines on the inside to mark its location. Clamp the frame/top assembly to the bench, checking to make sure it didn't move. Predrill and screw the two centre holes. On the outside holes, use a $\frac{1}{4}$ in bit to locate the centre of the hole, then predrill with a $\frac{1}{8}$ in bit. Drive the pocket screws with a No.10 washer by

hand – to make sure they don't get stripped out or overtightened.

Now you can set the table on the top assembly. Measure over from the edge of the legs to the frame to centre the top. Clamp the table to the bench to secure it while drilling and screwing the corner holes. It's nice to have a long predrill for situations like this when you don't want the assembly to slip and it's hard to really get a good clamp on it to hold it steady. The long predrill doesn't go very deep; it just gives the screw a nice positive start. The final step is to slowly drive the pocket screws in all four corners, making sure that none go through the top! ■



Pocket Hole Joinery

This excerpt was taken from *Pocket Hole Joinery* by Mark Edmundson. To order your copy, see details below.

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Without sounding like a kid on Christmas morning, the Dowelmax is perhaps one of the best jigs I have ever used, for any task. ...

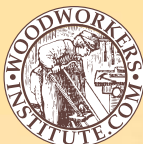
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Dean Bielanowski, OnlineToolReviews.

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Folding sawhorse

If space is an issue in your workshop, then this folding sawhorse from **Simon Rodway** will be right up your street

Unless you are one of those lucky people with a really large workshop, space is usually at a premium when it comes to storing all the things we need for woodworking. The sawhorse, which by its very nature needs a large footprint on the ground for stability, will be one of the worst culprits when it comes to taking up lots of room. One established solution to this is to make the legs hinged so that the whole thing folds flat. The design has got the additional advantage of a folding bottom shelf for tools and bits and pieces, which acts as a brace when opened.

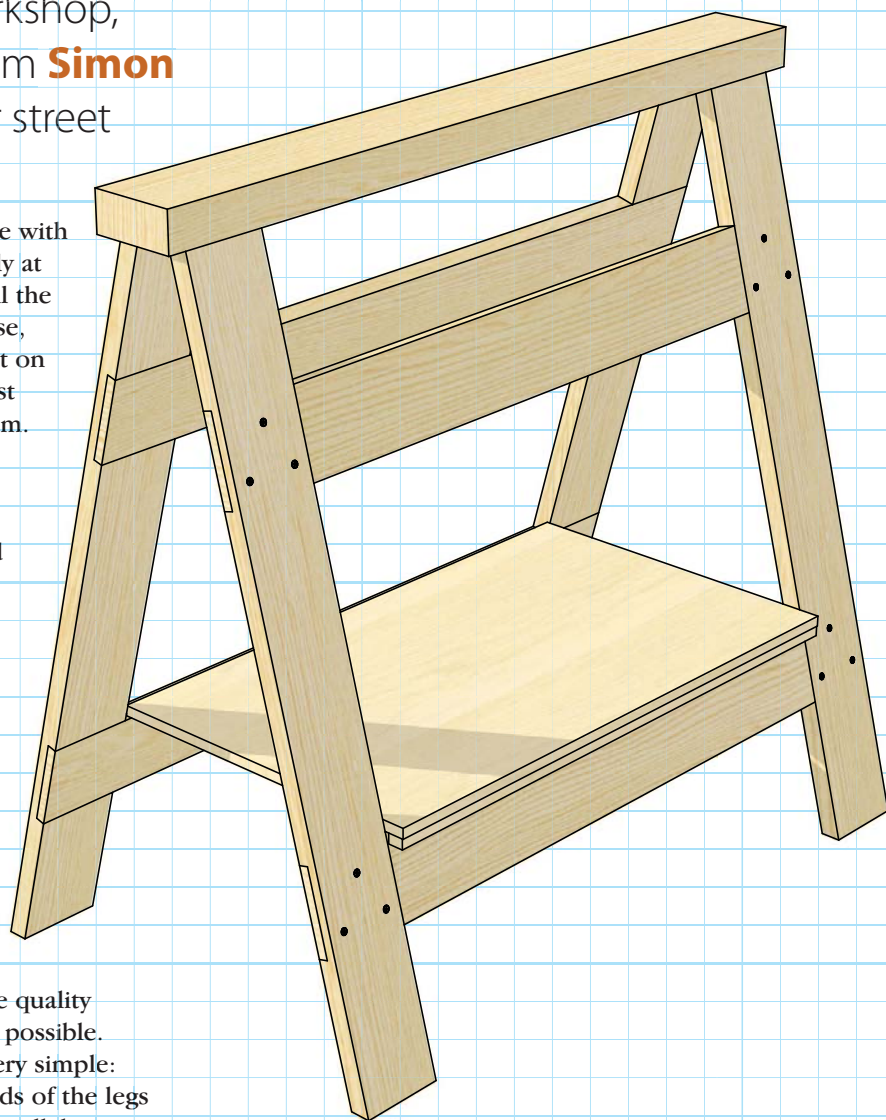
Construction

Since there is no such thing as a free lunch, I will say at the outset that there is a price to be paid in terms of rigidity. If you just use your sawhorse occasionally to support long lengths of timber or sheet material for cutting, this may never be an issue. If you are likely to subject it to a bit more punishment, then I would suggest you make one side – the side with the hinges for the shelf – fixed into the top and the other side hinged. In any case, you need some reasonable quality hinges throughout, with as little lateral play as possible.

The construction of this sawhorse is really very simple: no compound angles for the legs here. The ends of the legs need a 15° bevel, making sure the bevels are parallel on each leg – a mistake I have made in the past. Mark off the positions of the cross-pieces on the inner faces of each pair of legs and cut housings to half the depth. Cut the cross-pieces to length and form tenons on each end for the halving joints. Check for square, screw and glue to form a pair of frames.

Fixing the legs

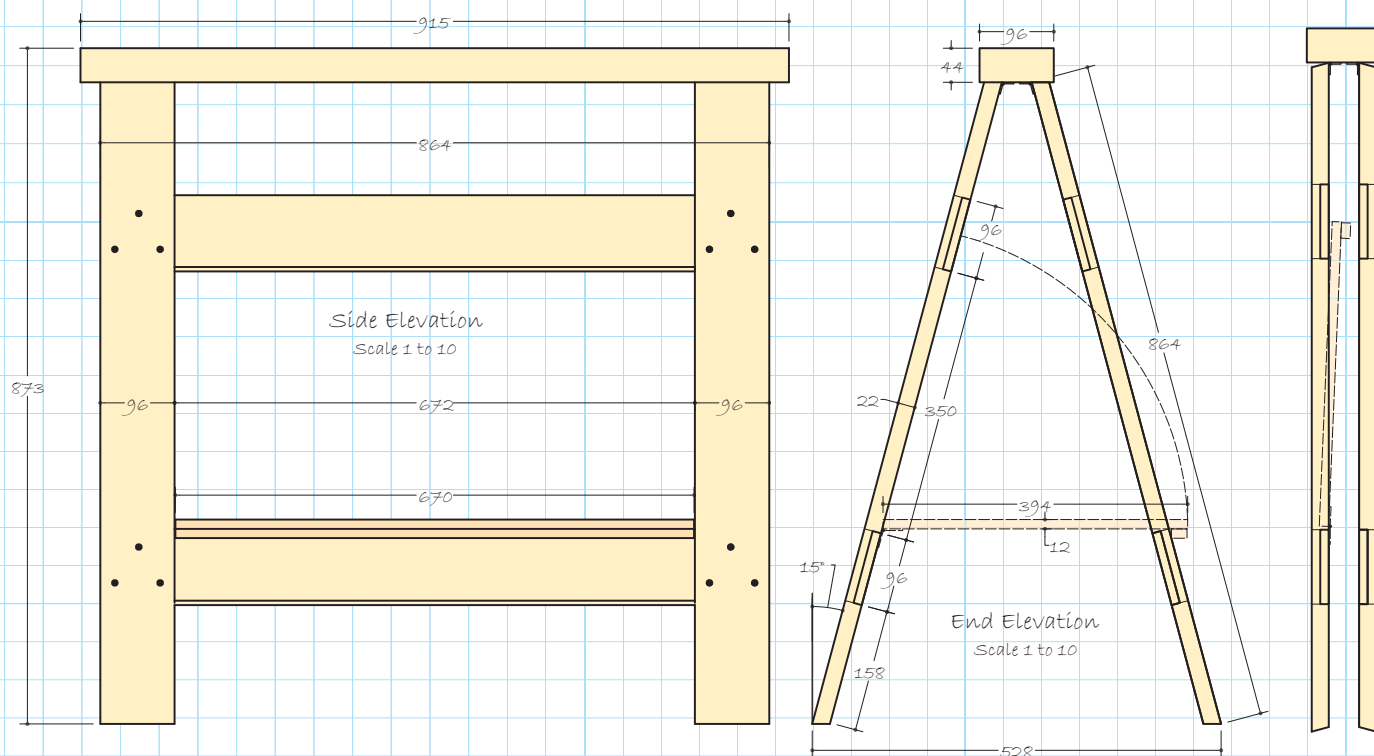
The next stage is to fix the legs to the underside of the top – centred looking at the sawhorse side on – and inset about 6mm front and back. Screw your hinges to the tops of the legs and then fix to the underside of the top, making sure that when the legs are opened, the bevel on the top of the leg sits true and flat to the underside. If you are fixing one



Cutting list

Top	1	@	915 x 96 x 44mm
Legs	4	@	864 x 96 x 22mm
Braces	4	@	864 x 96 x 22mm
Shelf	1	@	670 x 394 x 12mm
Shelf batten	1	@	670 x 20 x 12mm

Leg lengths are approximate due to being bevelled both ends. Ensure to cut the shelf oversize for fitting

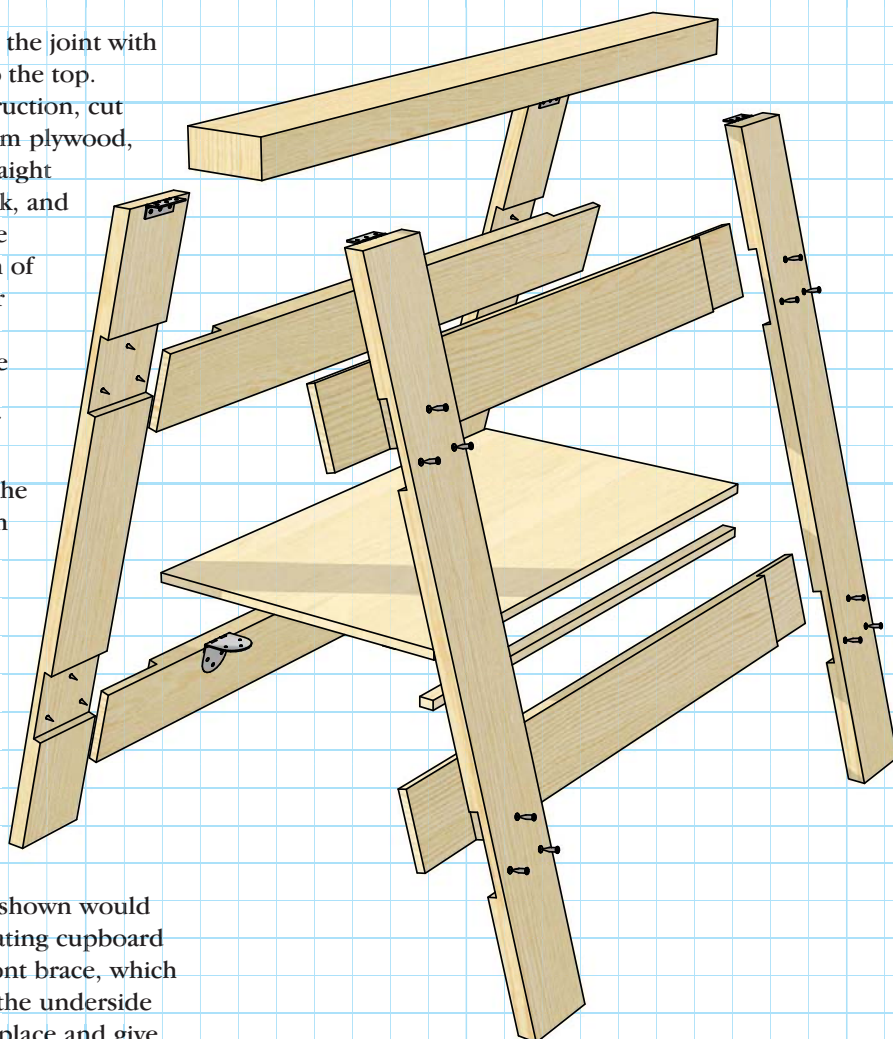


pair of legs, then you may want to reinforce the joint with angled glue blocks as well as screws up into the top.

Once you are happy with the main construction, cut the bracing shelf to width out of some 12mm plywood, but leave a bit long front to back. Rest a straight edge across the bottom braces, front to back, and measure the distance along the leg from the inner top corner of the brace to the bottom of the straight edge: it's likely to be about 5 or 6mm. You need to raise the pivots on your shelf hinges by about this amount to get the shelf flat. Fix the shelf hinges to the inner face of the back leg brace and rest the shelf across from the hinges to the front brace. Adjust your hinges if necessary, then mark the front edge of the shelf, allowing for a 20mm overlap at least to fix a strip of plywood or small batten under the front edge to prevent the legs from splaying. Cut the shelf along the front edge and then fix to the sawhorse by screwing to the hinges along the back edge. Finally, mark the best position for your ply strip or batten to secure the legs and fix in place with pins or screws and glue.

Securing the shelf

One additional refinement which I haven't shown would be a small catch. For example, a simple rotating cupboard catch or similar, on the back edge of the front brace, which you could turn into a small shallow slot in the underside of the shelf. This would secure the shelf in place and give the sawhorse just a bit more rigidity for those awkward jobs when you need a little bit more force than normal. ■



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Crown Hand Tools

We look at this range of good quality traditional Sheffield tools from **Crown Hand Tools**

Crown Hand Tools is well known for carving and turning tools, but as shown here, they have plenty of other hand tools to offer woodworkers. Their range is extensive and it isn't possible to list or show all the good quality tools they produce, so we have chosen a selection, which cover the typical needs of a bench woodworker.

305mm tenon saw with stained beech handle

This tenon saw is their largest model suitable for a range of tasks with 13 teeth per inch. It has a heavy brass back to stiffen it and allow the saw to cut without undue pressure.

152mm rosewood try square

This is one of a range of beech (*Fagus sylvatica*), rosewood (*Dalbergia retusa*) and brass mitre and try squares. It comes with a nicely blued steel blade, brass facing and brass pins to lock the blade to the body, which has a smooth lacquer finish.

Mortise and marking gauge

This model has a marking pin on one face and screw adjustable mortise pins on the other. The head has inset brass strips for accuracy and a milled brass knob to lock it.

Set of three cabinet scrapers

This set covers all the standard requirements for scraping wood smooth and there is just enough flex in the steel to perform correctly.

HSS burnisher with rosewood handle

You can't use a scraper without a burnisher and this one comes with a 150mm long, thick high speed steel rod, which is perfectly smooth and is ideal for achieving a nice even burr on a scraper blade.

Flush cutting saw

This flexible blade saw cuts on the pull stroke. With 20tpi and no set to the teeth, it is intended for fine trimming work without damaging the surrounding surface.

190mm rosewood bevel with brass lever

This lever type is easy to use and the rosewood stock is nicely finished with brass plates inset at the bottom. The blued steel blade is long enough for most purposes but Crown also make longer 229mm and 267mm blade versions.

65mm round awl

A scratch awl is an excellent way to set out lines or mark dovetails because it can get into tight corners and leaves a clean line that is very visible. Crown also make a longer version with a 127mm blade.

Registered mortise chisels

These chisels are in metric equivalents running from 6mm to 51mm blade widths. They all come with a thick

square section blade, lacquered ash (*Fraxinus excelsior*) handle, which is leather washered to the blade, which helps to reduce shock. There is also a steel ferrule and striking hoop on the top end.

Verdict

These tools are perfect if you want to work with and appreciate good quality traditional Sheffield hand tools. The full range is vast and there is certainly something for everyone to choose from. You can see the full range by visiting their website.

THE NUMBERS

- 305mm tenon saw with stained beech handle – **£59**
- Rosewood try square – **£14.40**
- Mortise and marking gauge – **£43.20**
- Set of three cabinet scrapers – **£10.20**
- HSS burnisher with rosewood handle – **£11.40**
- Flush cutting saw – **£12.72**
- 190mm rosewood bevel with brass lever – **£17.28**
- 65mm round awl – **£12**
- Registered mortise chisels – from **£22.80-£45.60**, depending on the sizes chosen (all prices SSP inc VAT)

WHERE TO BUY

www.crownhandtools.ltd.uk



PHOTOGRAPH BY GMC/ANTHONY BAILEY

**Craftsman's
corner**

Niwaki Japanese pull saws

Want to try something different? Well, at a push you could get to grips with these Japanese pull saws, which are a cut above the rest!

Until a while ago, I wasn't aware of a British company called Niwaki who import and sell high-quality Japanese goods. These include a range of woodworking tools of which these two pull saws caught my eye. Many woodworkers have still to try these unusual tools, preferring the typical Western-style push saw, such as those made by Crown – see previous page – which have thicker blades and a rigid back.

The range

The big Bakuma 250 saws are long, particularly the bamboo wrapped handle. The experience of holding and using is quite different to a standard handsaw. The grip is quite positive and pleasant and the seemingly flexible and flexing blades cut with control because they are not under compression but are 'stretched' if you like, and therefore cut a neat

straight line when you get used to them. The Bakuma Kataba is for crosscut carpentry work while the double-sided Bakuma Ryoba offers both crosscutting and rip ability. The blades, which can be replaced if they get damaged, have teeth sharpened and hardened to a high degree and consequently can sometimes break, hence the blades being replaceable. Removing the blade is a matter of tapping the back of the Kataba blade to loosen it, whereas the Ryoba has a latch instead, which helps to avoid tooth damage. Fitting a new blade is easy enough to do.

Verdict

There are times when a pull saw is more appropriate than a Western-style saw and my own tool cabinet at home holds both types. I wouldn't set up a test between both sorts of saw because it really is a matter of

personal preference, not just between push or pull, but choosing from job to job. Having said that, I am definitely a fan of pull saws; they are a pleasure to use and the fine kerf and straight line they will cut is very impressive. For such high quality, the prices are reasonable and a good investment.



The two Japanese pull saws from Niwaki

THE NUMBERS

Bakuma Kataba – £32
replacement blade – £18
Bakuma Ryoba – £32
replacement blade – £24

WHERE TO BUY

For more information and to view the full Niwaki range visit, www.niwaki.com



Niwaki
Great Stuff from Japan

Triton T12 Twin Pack 12V



Those masters of orange innovation, Triton Tools, have a couple of handy 'shooters' up their sleeve – the T12 Twin Pack 12V – so we let **the Editor** take them for a spin



The range includes a 12V drill driver and a 12V impact driver

Triton do things differently, from their Workcentres to ingeniously designed routers to a massive beam planer, they take a different approach to other manufacturers when designing their tools, powered or otherwise.

In fact, this dynamic duo makes a lot of sense: you get two heavy, well-built drills, each about the size of 10.8V machines, but with more battery courtesy of Samsung, a one-hour charge time, which is acceptable as two batteries are available to use, and the soft case is compact and makes the whole thing very easy to carry around, with hook-and-loop strapping inside.

The range

As a fitter's or service engineer's kit it would be ideal and even if you need

bigger power drills for major work, often fitting out and fixing only needs smaller power tools. The drill is drill or screwdriving only – there is no hammer action – but you do get 17 torque settings plus drill, forward and reverse, variable speed trigger and, best of all, a bright LED worklight just above the trigger. The chuck is keyless and a thick collar behind can lock or remove the chuck, revealing a simple hex bit socket. This latter feature is really useful for accessing tight working spaces and using all hex-shanked accessories.

The impact drill is very similar in appearance and both tools have rubber overmould detail. The trigger also gives variable speeds but over a more condensed range. In this case, the hex socket has a sprung collar, which allows you to lock the bits

in place. A little lighter and more compact than its drill partner.

Verdict

While I would not suggest that Triton have oversold the capability of these two tools, they have capacities more or less identical to 10.8V cordless tools, even though the batteries themselves have greater capacity. I found that working within the designed limits, these tools performed well. The solidity of the build and the handy worklights make them good to use.

THE NUMBERS

12V DRILL DRIVER

Voltage: 12V DC
No load speed: 0-400, 0-1300rpm
Max. torque: 22Nm
Chuck capacity: 10mm
Torque settings: 17+ drill
Drilling capacity: 20mm wood; 6mm metal
Weight: 1.18kg

12V IMPACT DRIVER

Voltage: 12V DC
No load speed: 0-2000rpm
Chuck: 6mm hex drive
Max. torque: 90Nm
Impact frequency: 0-300a0ipm
Weight: 1.14kg

RRP: £145.55 (inc VAT)

WHERE TO BUY

www.tritontools.com



The 12V impact driver in use



PHOTOGRAPHS BY GMC/ANTHONY BAILEY

Hot Stuff

Take a look at the tools, gadgets and gizmos that we think you will enjoy using in your workshop

Prices correct at time of printing and inclusive of 20% VAT. Photographs and information courtesy of the manufacturers

DEWALT's 'Guaranteed Tough' Help for Heroes kit

Following the announcement of a new partnership with Help for Heroes, DEWALT is releasing a Help for Heroes XR Li-Ion promotional kit. The brand will donate £10 from the sale of each kit to supporting wounded, injured or sick Services personnel from the British Armed Forces.

The kit includes a DCD795 compact brushless hammer drill-driver, DCF886 impact driver and two 4.0Ah batteries sold in a Help for Heroes branded TSTAK kit box with an exclusive DEWALT camouflage inlay. Both tools use brushless motor technology reducing friction, thus eliminating energy wastage and maximising the runtime and life of the tool. The 4.0Ah batteries offer users 33% longer runtime compared with a standard 3.0Ah battery and all for the same size and weight. The batteries have a charging time of 70 minutes and feature a built-in LED state of charge indicator, letting the user know when it is time to charge the battery or swap over to a fully charged one.



£407

CONTACT: DEWALT
WEB: www.dewalt.co.uk

Jet DC-2300 extractor

The Jet DC-2300 is a twin-bag chip and coarse dust extractor, suitable for many machines in the workshop. It can be connected to up to three smaller machines via its three 100mm connectors. The manufacturer recommends connecting it to a simple 125mm metal duct system.

An alloy bodied motor drives a high efficiency impellor fan; the air flowing into the bags is via metal tubes, again creating efficient airflow. Plastic waste sacks are used which are easy to replace and held in place with quick release metal straps. Large polyester air filters are fitted; these can be replaced with two cartridge filters which upgrade the filtration capability of the machine to be able to handle sanding machines.

The base has castors for easy mobility around the workshop. It is fitted with a 13A plug, but in some cases it may need a 16A supply. Plastic 785 x 1,200mm waste sacks are available in packs of 10. Please note that the hose is not supplied. This machine has a Performance Rating 1. Price is valid until 31 December, 2014.

£419.95

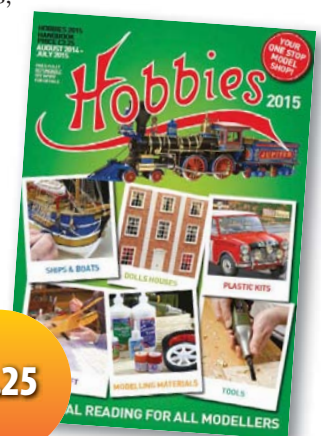


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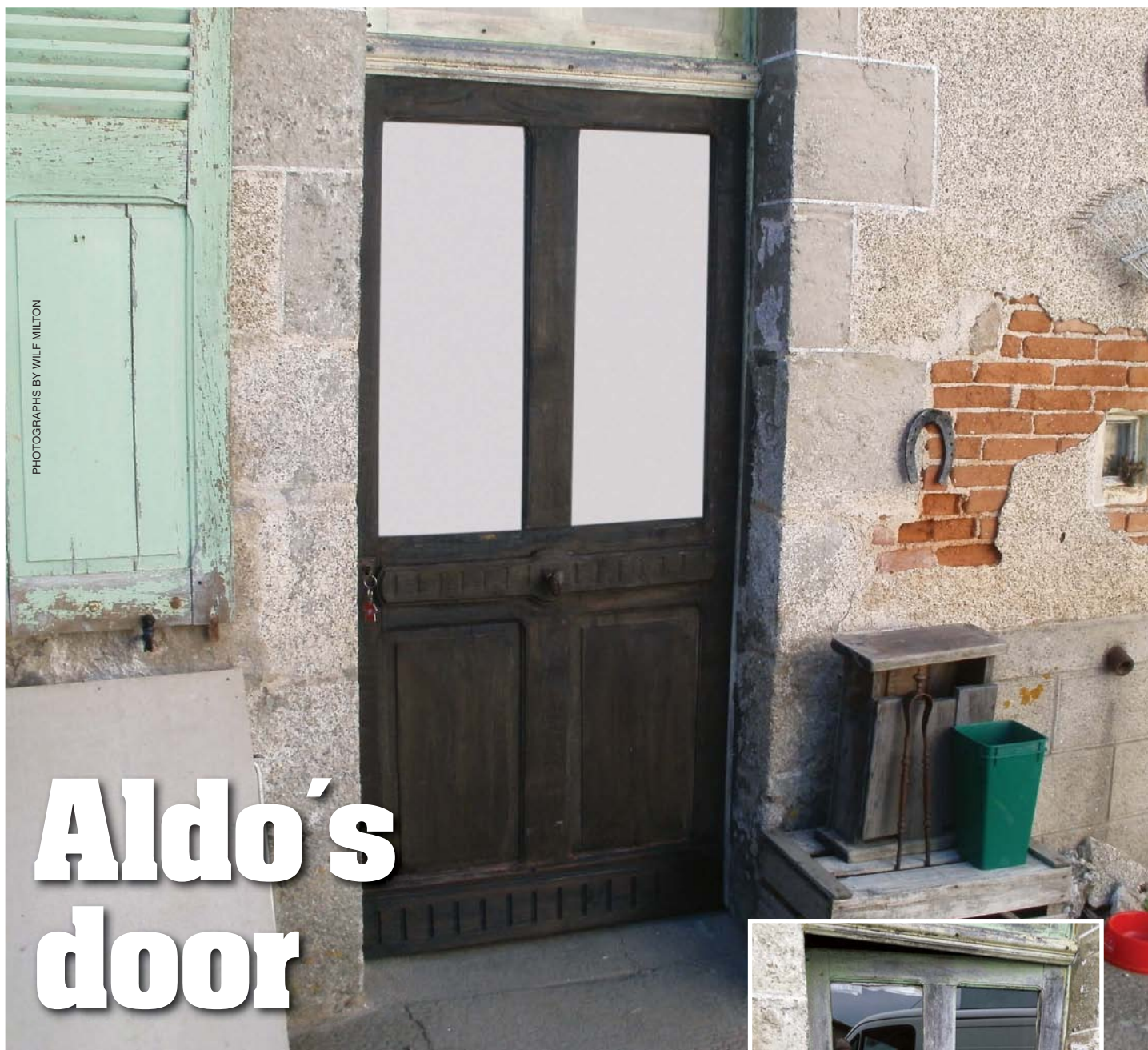


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Aldo's door

Woodworking Plans & Projects reader **Wilf Milton** from the depths of France, tells us how he brought a door with character back to life...

This was a project suggested by my wife, 'Wilf could do that'. My slogan on my TV service van was 'Wilful repair!'. I started the restoration in September 2013, first of all taking off the kickboard/weather board to see what was beneath. It was not a pretty sight. I machined a new copy slightly larger, to cover more area, out of Douglas pine (*Pinus douglasiana*). At that point my back gave up and the project was shelved for a year. Although only a few yards to carry the door to my workshop, it was a two-man job. A very heavy piece of oak was this!



1 The door had not been touched for about 30 years.



2 Bear in mind this is in rural France, where older properties are often let go and tend to be bought up and revamped by us Brits!



3 I started by cutting off 15mm from the bottom and routed out a lot of the rot from where the kickboard had been. A lot of filler was used here too.



4 I replaced the 15mm from the bottom with a piece of chestnut (*Castanea sativa*), which was screwed on with a good amount of Extramite...



5 ... I then went on to replace the screws with beech (*Fagus sylvatica*) dowels, once set.

6 I took a bit of care to let in a piece of chestnut, which had been cut almost to size and glued it in with more Extramite, after a generous amount of hardener had been applied.





7 After much planing and sanding to a flat surface, I then fitted the new Douglas fir kickboard with more Extramite and screwed it on from the back.



9 I cut them out and fitted chestnut fillets. I didn't profile them as the rest of the frame – it seemed unnecessary.



8 As you can see from the photo here, both window panels needed attention as the frames were rotten at the bottom.



10 I had to remove the lock, which was a replacement after the original key had been lost and underneath was a huge area of rot. I cut this out, used lots of hardener and filler and let in yet another bit of chestnut.



Glass panels

11 As the rebate for the glass was too shallow, the original glass had been 3mm and I wanted 4mm, with more scope for a decent depth of putty with a base layer under the glass, which doesn't seem to be used in France all the time.



12 To achieve this, I glued 6mm quadrant around the apertures...



13 ... which helped to give a really deep rebate.



14 Before fitting the glass, I did as much sanding as necessary for a reasonable finish...



15 ... and used a dark oak stain.



16 The glass was finally fitted and the door rehung for about the 25th time, after which my wife applied two coats of acrylic varnish. I am still applying the odd touch as I see things to improve. Altogether, a mammoth job for a retired TV engineer! ■

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Joint solutions



PHOTOGRAPHS BY GMC/ANTHONY BAILEY

The bridle joint

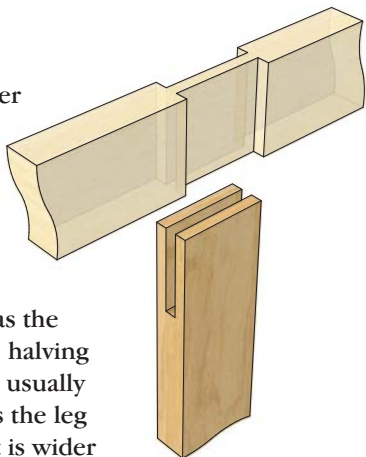
We have already looked at a range of different joints but they just keep on coming! This month, **the Editor** shows us the rather overlooked bridle joint

At first glance, the bridle joint looks like a 'one trick pony' but in fact it is capable of more variants based on very specific uses than might otherwise be obvious. The bridle gives a very positive connection between components, subject to a means of locking the parts together, and it also maintains good joint strength. Unlike say, the lap joint, it resists twisting; it will also lock by compression, normally only needing a means of fixing to prevent it pulling apart. It can be cut by hand or by certain machine methods. Here are the potential variants

but as usual with jointing, there will always be an unusual version that most of us have never been aware of. In common with the mortise and tenon joint, the bridle is capable of a lot of variations. In theory, a bridle joint can, for instance, meet at any angle so whether you have a square, oblique, curved or round frame shape and this is a frame joint – you can make it fit together with a bridle. Although glue may often be enough, it is advisable to fit a dowel or screw through a predrilled hole, which will allow the joint to lock tightly.

Simple or 'T' bridle

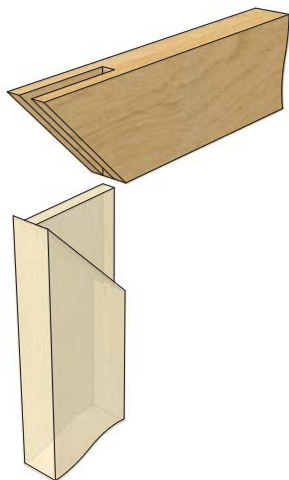
This common joint locks components tightly together and perpendicular so it resists 'flat-packing' for want of a better term. It looks aesthetically pleasing and strong. It can be used as an effective substitute for joints, such as the mortise and tenon and the halving joint. The components are usually flush on the faces, whereas the leg in the table leg bridle joint is wider than the rail.



The simple or 'T' bridle

Mitre bridle

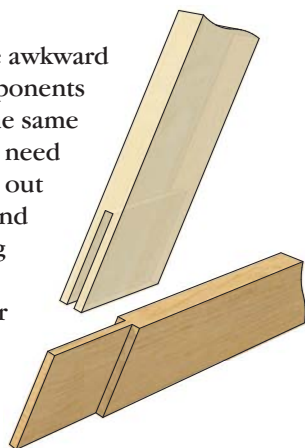
This works especially well for small corner joints where a mortise and tenon aren't practical to execute. It can work as a 90° or curved joint, or even as an angled frame joint. Mitre joints always look 'finished' and neat too.



The mitre bridle

Oblique bridle

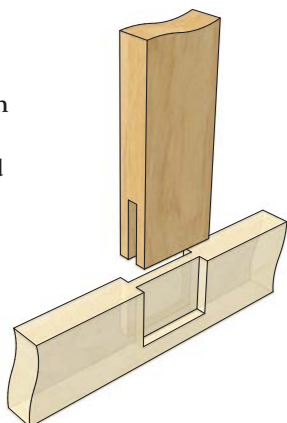
The oblique bridle tackles those awkward situations where you need components meeting at an angle. Basically the same as a standard corner bridle, you need to use a sliding bevel for setting out the angles correctly. In compound angle form, it is used for making traditional sawhorses, but set in from each end like the simple or table bridle to resist collapsing.



The oblique bridle

Stopped bridle

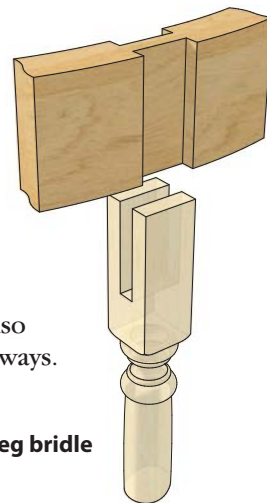
This variant isn't needed that often and requires a bit more work as it is more awkward to make stopped recesses instead of sawing and chiselling right through.



The stopped bridle

Table leg bridle

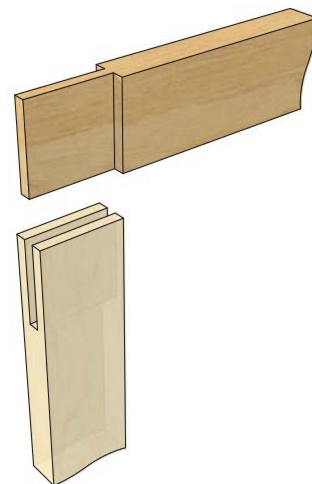
Often found on round or 'demi-lune' antique tables, this is the same as a simple bridle but on a curve. It is incredibly useful because jointing into a curved leg is otherwise a challenge and may pull apart with use, whereas this joint maintains the continuity of the material right through the joint. It also resists any tendency to collapse sideways.



The table leg bridle

Corner bridle

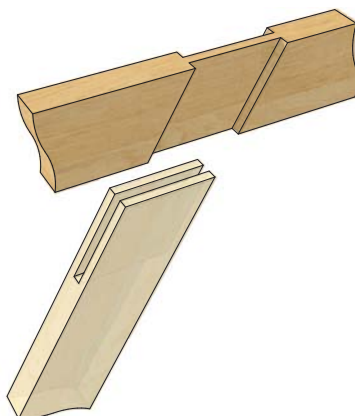
Stronger than a simple lap joint, it holds together better and has more gluing surfaces. For a bit more effort it makes for a stronger frame connection. You can add a screw or dowel if you want to make it tougher still.



The corner bridle

Oblique T-bridle

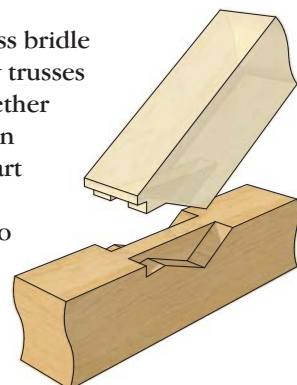
Similar to both the previous oblique version and the standard T-bridle, useful for unusual jointing situations where angled meetings are required.



The oblique T-bridle

Roof truss bridle

In the modern world the roof truss bridle doesn't have a place because new trusses are mass-produced and fixed together with metal nail plates. However, in restoration work, it still plays a part when rebuilding a truss correctly. The small notch-out is designed to help prevent the rafter sliding along the purlin, and thus prevent roof collapse.



The roof truss bridle

MAKING A SIMPLE BRIDLE JOINT BY HAND



1 Mark the position of the component on the rail ready for marking the joint positions.



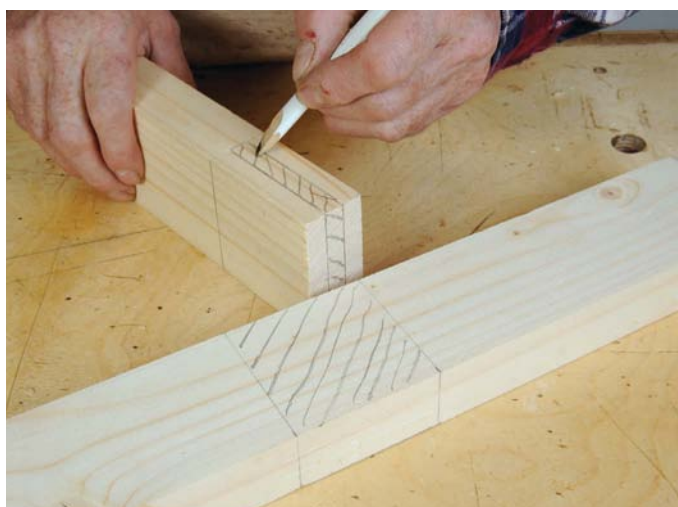
2 Now sit it behind the rail and mark across where the top of the rail is.



3 Use a square to accurately mark the joint positions on each component, marking all the way around.



4 Use a mortise gauge set to give 'third-third-third' spacing on each half of the components. Only mark from one side so the joint will definitely go together flush.



5 Hatching lines are important so you know exactly which parts are waste. The topmost component will sit over the front one when its cheeks are cut away.



6 The component with the centre to be removed is done by first sawing down inside each marked line with a tenon saw. Do this angled in the vice from both sides; this will ensure you get an even cut.



7 The waste is removed using a coping saw. If necessary, the blade can be turned to make cutting easier.



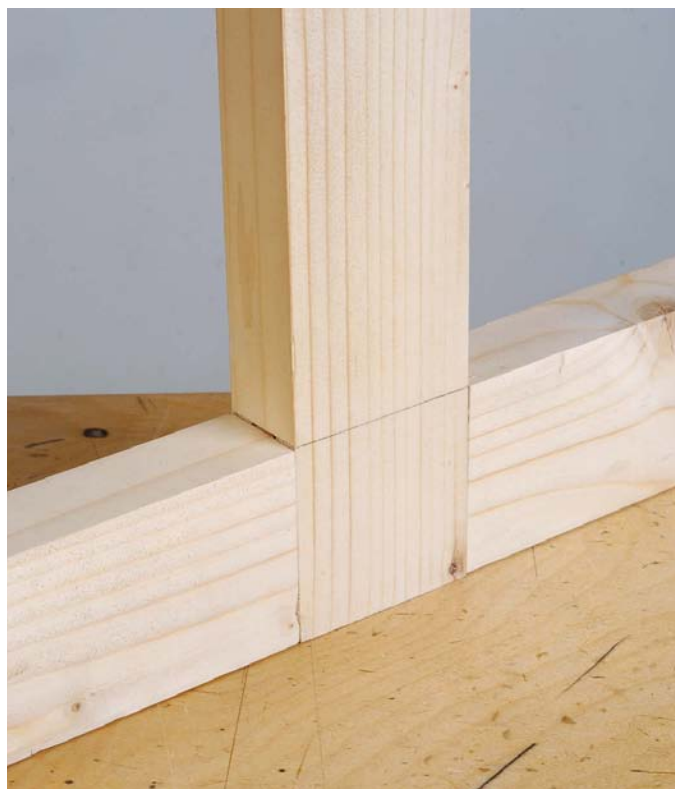
8 The end of the cut is squared neatly using a narrow chisel dead upright. Check it meets the marked line on both edges.



9 The other component has its saw cuts done first again on the waste side of each line – this needs to be done from both faces.

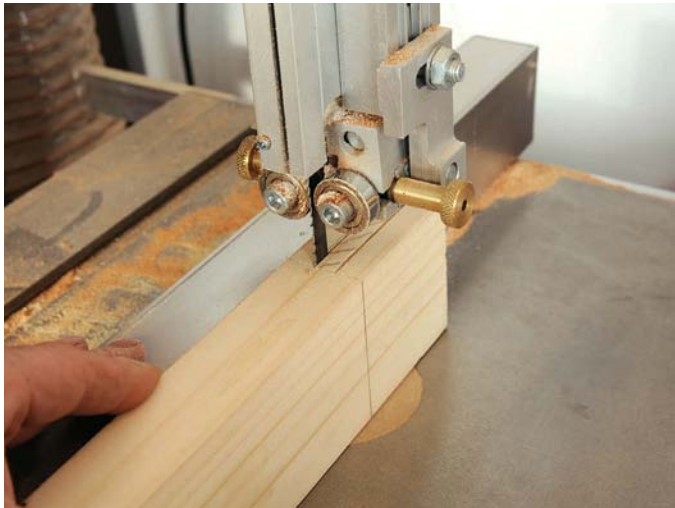


10 A nicely sharp, wide chisel is used to pare down work from both sides to avoid any breakout. Always check you are working to the gauged lines.



11 The joint should be a good fit with only limited pressure needed to close it together. If necessary, pare the meeting faces lightly to help it fit nicely.

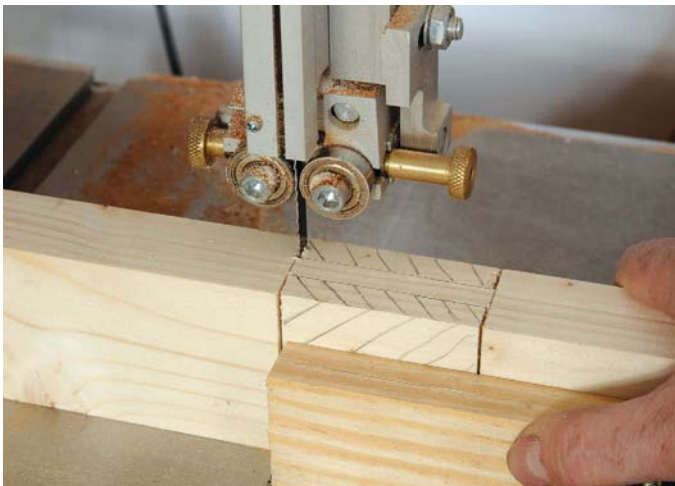
MACHINE METHODS



1 You can use a bandsaw to cut the end joints with the straight fence in position.



2 Next, move the blade back and make an angled cut to remove most of the waste. The rest can be nibbled out and finally straightened across the bottom of the cut by moving the component sideways carefully.



3 Now cut the shoulders in the other joint half using the bandsaw's mitre protractor. Take care to stop the cut before it goes too far and weakens the wood.



4 The other half of the joint can be cut in a similar fashion removing most of the waste, then reversing it so you can take out the remaining waste.



5 The best method, however, is to use a router with a large diameter straight cutter and a T-square for guidance. Do both router cuts first, machining in the direction of cutter 'contact-rotation' so the centre waste supports the router base. Remove that piece last without bothering with the fence; just make sure the router base straddles both sides of the joint. ■

Next time, we put the Housing joint to good use.

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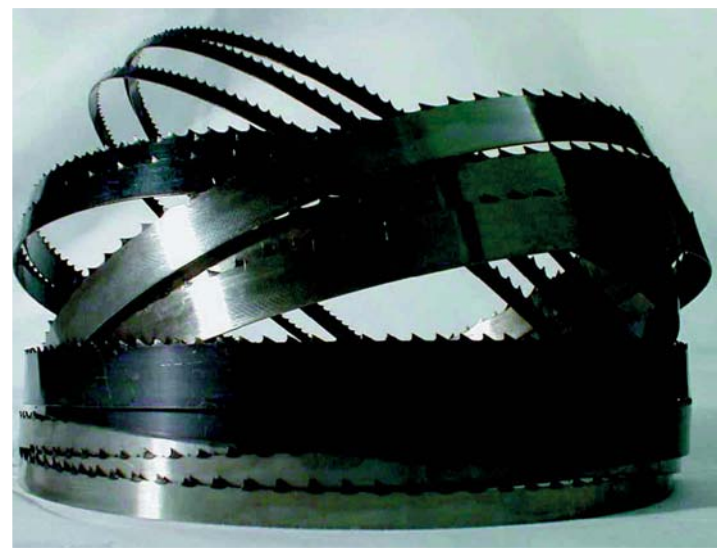
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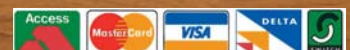
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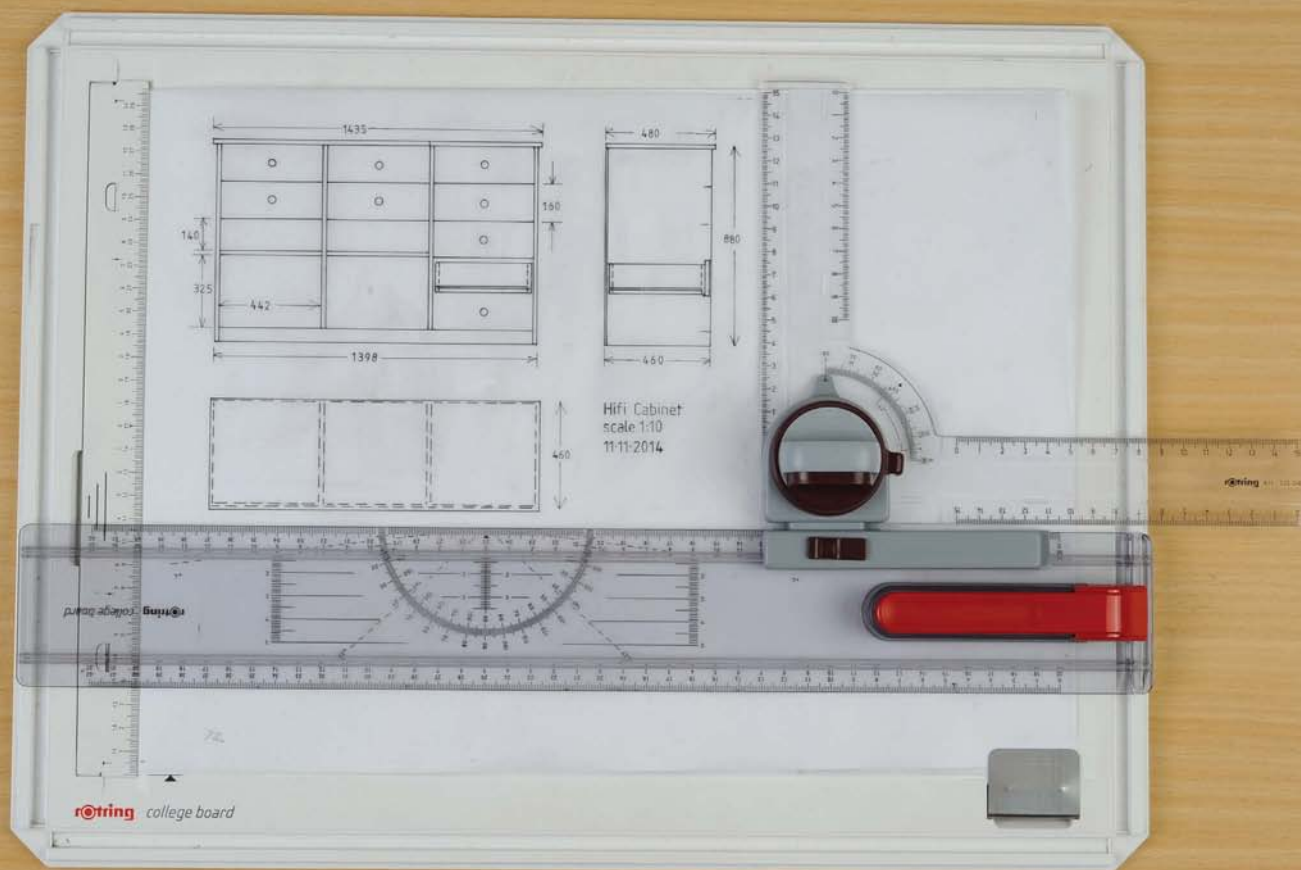
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PHOTOGRAPHS BY GMC/ANTHONY BAILEY

Basic 2D technical drawing

In *WPP* 96 **The Editor** showed us the setup you need to do pencil and ink technical drawing. In this article he uses those skills to draw up the latest project he needs for the Bailey family home – a hi-fi unit

A few months ago my youngest daughter Amber started listening to old vinyl LP records on a 'retro' record player, which she borrowed from her Grandpa. It wasn't the real thing, but it did fire up her interest in 'proper' vinyl recordings and incidentally, mine as well!

I still had all my old hi-fi kit tucked away in the loft, the speakers were too big although the sound is brilliant, so I bought some secondhand 'shelf speakers' made by the same highly regarded company, Mordaunt Short – for any hi-fi buffs out there. It became apparent that if we were going to step back in time and play vinyl with its richer, superior sound, and the odd few scratches of course, then we were going to need a new piece of furniture that would accommodate the equipment, lots of records and since we have lots of CDs, those too along with a CD player.

If I made this unit I could make some matching furniture for the rest of the lounge, so the first one would set the tone so to speak, for the rest of the suite.

We were going for a light colour and as the big computer desk in the same room is maple (*Acer campestre*), it seemed logical to use maple veneered board and maple lippings for the hi-fi unit. It would replace an older storage unit, but the need to hold so many discs and CDs meant it would have to be higher overall. There were a series of dimensional constraints, the overall width, the rough depth, the sizes of each piece of hi-fi equipment and any special requirements, e.g. cable access and ventilation and the sizes of LPs and CDs in standard cases and DVDs in larger cases, too. All these factors needed to be fed into the calculations.

Many a slip!

One thing I have learnt over the years about furniture that has to hold specific items or objects is that you don't just dimension from the outside inwards, but do the reverse and work out the inner dimensions and equate them with the external limits too.

Years ago, I designed and built a TV cabinet in the days when TVs had cathode ray tubes. The cabinet would completely enclose it, with foldaway doors that could slide back into the cabinet on either side of the TV set. It took me several months to get this project done, but once finished, I proudly delivered it to the client, who was waiting in great anticipation for it. So, imagine my alarm when I tried to put the TV in the cabinet and the foldaway doors gently scraped the sides. Had I got my dimensions wrong? Were the hinges thicker than I had expected? It was a bad moment until the client explained the TV set had been changed for a NEW ONE...Whoops!

Fortunately, a quick bit of on-site engineering dealt with the clash of metal on plastic casing, but there was obviously a lesson to be learnt about the dangers of making something to fit well, especially if it turned out not to be the same thing at all!

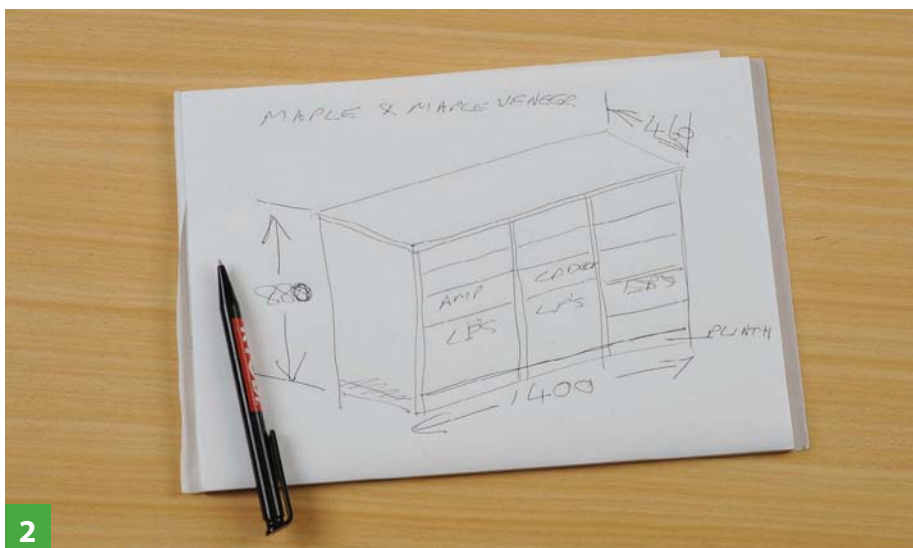
The drawers in particular are a size constraint. OK, the carcass is made with dividers that will determine the drawer box widths and so long as the CDs or DVDs can be stowed easily and economically in the resultant drawer sizes, there shouldn't be a problem. We can take the combined thickness of the carcass sides and the intermediate dividers off the overall width. Now, we decide on the drawer box side thickness and subtract that. The drawer runners are standard two-part easy runners available in various lengths, each set adds 12.5mm per drawer side $\times 2 = 25\text{mm}$ overall. We should now know the overall width of each drawer box. However, even with the greatest care in setting out and assembly it is possible for the dividers to be slightly in the wrong position or the drawer box the wrong size. In other words, we have to allow for tolerances. In this case, each drawer box needs to be one millimetre less in width. Each drawer runner can cope with being half a millimetre out and in any case, it is possible to put a slip of veneer behind each runner if packing is needed to adjust the fit. It is a lot harder to reduce the drawer width or set the runners into the drawer box, so, as I know from experience, it is better to get things right at the very beginning.

DRAWING SEQUENCE



1

1 Make sure you have the necessary drawing kit ready to use before you make a start – see issue 96 for more on the equipment and maintaining it. A drawing board, scale ruler, pencils, pens and other bits-and-bobs are required.



2

2 Work out the critical furniture dimensions and note them down. In this case, overall width and probable but not definite height and depth. However, you need an idea of what the overall scale and appearance should be.

3 Check the sizes of all the intended contents such as LPs, CDs, hi-fi equipment and crucially the amount of wiring and connectors and what space they need to take up. In addition, allow for ventilation for the amplifier as it will otherwise overheat with possible disastrous consequences.



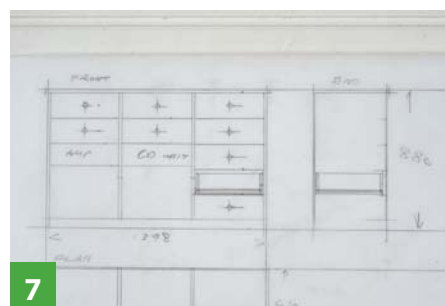
3



4 Choose a suitable working scale for drawing; this will be metric and readable in millimetres rather than centimetres, as that would not give fine enough measurements. The scale should be chosen so it will be possible to fit the 'front elevation', 'end elevation' and 'plan' views on the drawing paper or drafting film.

5 The correct procedure is to have the front elevation at the top and the end elevation to one side and in line, so drawing lines are transferred across from one view to the other. The plan view should be directly underneath the front elevation for the same reason.

6 Use a fine 0.35mm mechanical pencil on a small size drawing to set out the lines. Don't choose too hard a lead or it may be difficult



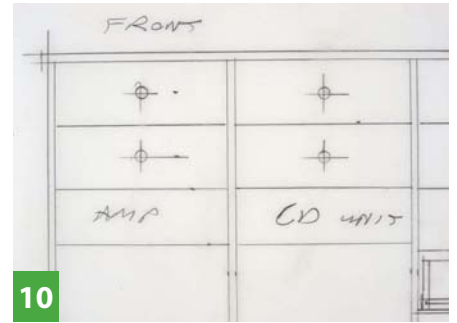
to completely erase the pencil lines. I normally use an HB lead – these are bought as a slim protective box of leads to keep them safe from breaking.

7 Using the scale rule, lay out the position of the main dimension lines so you can see all the views will fit on the drawing. I get the horizontal lines down first. Once that is done, you can start aligning all the main vertical lines measuring across the drawing. Leave room all round for

dimension lines later. Then, infill the other details, bearing in mind the following three steps...

8 The critical external dimension in this case is the width, because of the width of the wall behind with a stairway to its left. To avoid this new piece of furniture being something people walk into as they pass up and downstairs, it needs to be slightly narrower in width. The walls are also uneven in finish and project in slightly towards the bottom.





9 A calculator is essential for accurate spacing of divisions. An early decision is the choice of material thickness before drawing everything out. Going back to the discussion earlier about allowing for the carcass and drawer box thickness and drawer runner width, you can draw these in having subtracted them on the calculator and then divided the remaining width to give the compartment sizes.

10 The compartment widths are defined by the sizes of the objects they hold – in this case the biggest objects are the amplifier and the CD player. Fortunately, their widths are similar and therefore all three divisions can be evenly spaced

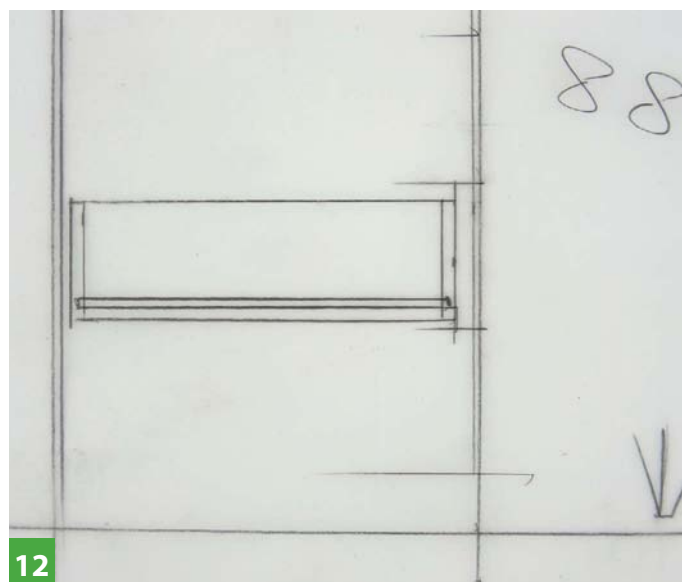
with a bit of space each side of these hi-fi component units.

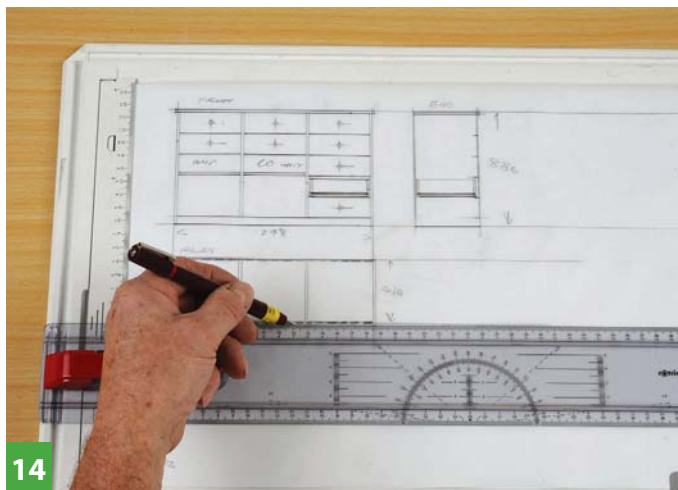
11 The LPs need to be stacked vertically to avoid distorting them and make selection easy. All the drawers are the same height to accept 'cased' CDs and boxed CDs, but the two hi-fi spaces are less so, as those units are so high. This unit has now grown to an overall height of 880mm with a narrow plinth at the bottom.

12 It was felt the depth of the unit should be similar to the one it is due to replace, so it didn't project too far. The drawer boxes have 'planted on' fronts, which need to be set in by about 5mm rather than trying to get everything on the

front flush. This helps to disguise any unevenness, because using metal easy runners doesn't always make the fronts sit neatly. A limited space is needed behind each drawer; this will allow it to run back to its full extent when closed.

13 By now everything should be drawn correctly with the aid of a mechanical pencil. These pencils give a very fine, even width that an ink will line cover. For a small drawing, a 0.35mm technical pen is best as it looks in scale with the drawing. Only T-squares, set squares and rulers with 'ink edges' may be used; these have a recess – or bumps – on the underside so the ink won't run underneath as you draw.





14



15

14 Start by drawing one set of lines either horizontal or vertical and leave a short while to dry, then do the other lines, taking care to start and stop in the right place each time. Any hidden lines must be drawn using a series of dashes or dots and dashes, so it is obvious they are behind the front lines.

"A stencil joint is essential as it allows the pen to run upright on the drawing surface"

15 Using a finer 0.25mm technical pen, the dimension lines can now be drawn and arrowheads added at each end. Ensure to leave a gap to enter the dimension figure. Make sure dimension lines do not clash or cross over the drawing.



16

16 Now use a letter and number stencil to mark on the dimensions. A stencil joint is essential as it fits to the pen and the pen casing is removed and screwed to it, thus allowing the pen to run upright on the drawing surface for a precise clean inking. The drawing should be labelled, scaled and dated.

17 The last job, as always with ink drawing, is to remove pencil lines with a non-abrasive plastic type eraser and to use a scalpel scraping sideways to remove and ink over runs. This relatively simple project is now drawn and ready for building. ■

Next time, we look at making 3D drawings using isometric projection.



17

Clock case

Louise Biggs deconstructs her clock case project



The project started with a request to make a new case for a clock movement. The existing case was a mantel clock; the new case was to follow loosely the lines of a balloon clock. The design was based around the size of the clock face and the interior space required for the movement and the chime rods and the request that the case stood about 600mm high.

The other restriction was the timber the clients wished to use; they had an amount of English walnut (*Juglans regia*), which they had been keeping for a special job. There was a fairly large amount of insect damage, as well as a request not to use any of the sapwood. Both of these factors seriously limited the amount of useable timber.

Design and template

A full-size template was drawn, starting with the measurements of the clock face and the measurements and positions of the movement and the chime rods. The rounded top and shoulders of the case followed a very similar line to the original case, as the longest chime rods went to the farthest corner of the case. The lower part of the case was drawn up so as to achieve the right proportions, while

still maintaining the height requested.

Once the shape was achieved the construction was then based around the amount of timber available.

The client then requested a wall bracket for the clock to stand on, which had to be taken into account for the available timber and designed to complement the clock.

Front and back panels

The panels were made from the most highly figured pieces of walnut, but needed to be joined for the width required. One board was cut to the length of two panels and on the client's band re-saw deep cut through the width to achieve four panels. These were joined with a loose tongue to line up the grain as much as possible.

Forming the sides

Having written a cutting list and rough cut the timber to eliminate



PHOTOGRAPHS BY LOUISE BIGGS



The original mantel clock



I chose to make the panels from the most highly figured pieces of walnut

sapwood and insect damage, the available timber was established for each part of the case. Due to the width and shape there was not enough to make the sides in one piece.

The lower waisted part of the side would be formed by laminating a thin layer of walnut onto a block of American tulipwood (*Liriodendron tulipifera*).

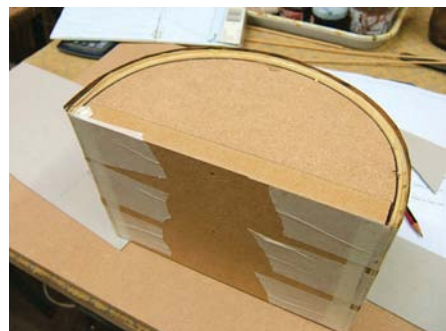
The tulipwood was planed to width, cut to length and the curve marked out and cut on the bandsaw. Accurate cutting and shaping using spokeshaves, rasps and abrasives was required to make sure the curves were square to the front and back faces and that the curves met, as both halves of the blocks were needed with a tight fit between them. The concave sides formed the sides of the case; the convex sides created the other half of the formers.

The walnut was deep cut through the width on a band re-saw and then planed to 3mm thick, but left longer than required. The walnut was tried dry in the former, to see whether it would flex enough to follow the curve without splitting or distorting – it needed a little help.

Using PVA with an extended 'open working time' – 30-40 minutes – the concave face of the tulipwood



The case side and former block with the walnut laminate between



The former was made from MDF and cut and shaped with a central support and then a piece of flexible ply was fitted over the shape

was coated with plenty of glue. Not having a steam chamber, the walnut was placed between wet towels and steamed using an iron. Once the walnut had become more flexible it was aligned on the concave tulipwood, the second half of the block was lined up and the whole clamped firmly together and left for several days to thoroughly dry. The process was repeated for the second side.

The shoulders had tight curves on the top edges, so these were made from solid walnut, cut on the bandsaw initially and finished with spokeshaves, rasps and abrasives.

Between the shoulders and waists of the case would be two 32mm-thick sections of tulipwood. These would not be seen as the applied moulding would cover the outside faces.

Both sides required cut-outs for the chime rods, one side with a hole cut right through for the two longest chime rods – this would be covered by the applied moulding – and the other side with a groove for fixing screws of the chime rods in their support block. Rebates were cut on the inside edges of the top curves of the shoulders to take the curved top of the case.

Once these areas were cut out, the three sections of the sides were joined with loose tongues formed on the router table, allowing for the step in the side, which will support the sounding board for the movement and chimes.

The sides were fitted together dry to gain the ideal clamping positions and then glued and clamped with sash clamps, making sure the curves on the top of the shoulders were protected.

Top arch

Having purchased some English walnut veneer with a similar grain pattern, a former was created to follow the same curve as the clock face, but 15mm larger. It was left longer and wider than required so that the arch, once formed, could be trimmed back to size.

The former was made from MDF and cut and shaped with a central support and then a piece of flexible ply was fitted over the shape. The first veneer running with the curve was taped into position and then, using a contact adhesive for ease of holding the veneers in place, successive layers of veneer were cross veneered –



Stringing detail and case profile showing the applied moulding



Between the shoulders and waists of the case would be two 32mm thick sections of tulipwood



The sides clamped with the top rebates protected and chime cutout shown

at 90° to one another – until a 6mm thickness had been built up.

Once the glue had set, the arch was cut to length and width. The arch sprung out of shape a little, but was then held into shape within the rebates on the carcass.

Carcass

The moulding just below the shoulders was routed to shape and applied to each side.

The timber was prepared for the sounding board and the bottom, and with the arch; the main sections of the carcass were joined together.

The clock face was cut into the front panel and the door was cut out of the back panel. Both panels were then rebated, so that they locked into the shape of the carcass and these were then glued and clamped to the carcass. Once dry and the edges cleaned up, a small 'V' groove was cut to disguise the joint.

The moulding for the bottom edge, which was designed to continue the flow of the curve on the sides, was formed and mitred around the bottom of the clock case. This moulding was then repeated on the wall bracket.

To lighten the look of the case – after discussions with the client – 3mm boxwood lines were inlaid into the front of the case following the lines of the outer curves and four bun feet were turned and fitted. Support blocks were added and rebated to allow for



Once the glue had set the arch was cut to length and width

the original board that the movement was attached to, to be slid into place.

The door was fitted and hinged and a length of dyed cord was fitted into a small rebate on the edge of the door to act as a dust barrier and close the gap created by the 1.5mm router cutter used to cut the door out of the back panel.

Wall bracket

The wall bracket followed the curves of the clock case and had a quadrant moulding formed on the front edge of the back panel and both sides of the central support. The ends of the panels going into the top were then shaped to form a mitred end to the moulding. The back panel was rebated into the top and the central support was housed into the back panel and the top. These were then glued and screwed together to achieve maximum support for the clock.



The main sections of the carcass joined together



The wall bracket

Conclusion

The case and bracket were cleaned up with cabinet scrapers and abrasives and then French polished before being wired and waxed. The clock face was fitted in position and the movement and chimes were installed. ■



The back of the clock



The moulding for the bottom edge



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A look at... Eltham Palace

Eltham Palace was decorated and furnished with the sort of luxury associated with Cunard ocean liners between the wars

Just off a south-east London street stands one of the most important examples of Art Deco style in the capital. Enter the circular entrance hall of Eltham Palace and you could imagine yourself on a huge ocean liner resplendent with glass, panelling, clean lines and expensive materials.

Originally a manor house, it was acquired by the future Edward II in 1305 as a gift to his queen, Isabella. Edward IV added the Great Hall with impressive hammerbeam roof in the 1470s but 150 years later the palace was eclipsed by the grandeur of Greenwich and became a farm.

It took people with vision to see its potential and in 1933 Stephen and Virginia Courtauld – his family owned the Courtauld rayon business – acquired Eltham Palace, engaged young architects John Seely and Paul Paget and built a private house next to the Great Hall, which they restored to use as a sitting and music room.

The rooms reflected the eclectic tastes of the Courtaulds and their artistic advisers, including the painter Winifred Knights and her husband Tom Monnington.

French collective

That the interior bears some resemblance to the passenger ship the *Normandie* is not surprising as Art Deco – not popularised as a name until 1968 when Bevis Hillier wrote *Art Deco of the '20s and '30s* – derives from an informal collective of French artists known as La Société des Artistes Décorateurs. They organised the 1925 Exposition Internationale des Arts Décoratifs et Industriels Moderne from which the terms Style Moderne and Art Deco derive.

Art Deco is based on geometrical shapes and the new age of travel, which led to historical styles such as Greco-Roman Classicism and



A view through the dining room doors



The high glamour of the entrance hall prepares you for the Art Deco splendours within

Egyptian being drawn upon, as well as technologies such as modern aviation and electric lighting.

Its opulence can be attributed to a reaction against the forced austerity imposed by World War I. Every town had – and has now mostly lost – its Art Deco cinema, New York has the Chrysler building with its sunburst-design spire and the ocean had its luxury liners like the *Queen Mary*. Materials included aluminium, stainless steel, lacquer and inlaid wood of which there are some marvellous examples at Eltham Palace.

The junction between the medieval Great Hall and the 1930s building is marked by a spiral staircase. The new house is entered via glazed double doors which lead into the vast entrance hall. This is triangular in plan with rounded corners and is lit by a 7m-diameter concrete and glass domed roof. The curved blackbean (*Castanospermum australe*) veneered walls are inlaid with classical marquetry scenes and figures.

London Zoo

Access to the dining room is through spectacular black and silver doors featuring animals and birds drawn from life at London Zoo, a fancy that led the Courtaulds to keep a pet ring-tailed lemur in its own centrally heated quarters.

Stephen Courtauld's new country residence was inspired by Wren's

work on Hampton Court Palace, and constructed to a 'butterfly' plan, linking the medieval palace with the typical 1930s building style.

Despite the Courtaulds' conversion of the Great Hall to a sitting room, with new stained glass for the windows and new wall hangings, the hammerbeam roof and Minstrels Gallery have survived to evoke a sense of the medieval setting.

The Courtaulds left the palace in 1944 to escape the bombs that were raining down in that part of London. The lease was taken over by The Royal Army Educational Corps until 1992. Although the building was well maintained, some damage was caused to the internal fixtures and fittings as furniture was removed and the veneered walls whitewashed over for the practical purposes of the Army. In 1995 the building passed into the guardianship of English Heritage, who spent the next five years restoring it to its former glory.

World War II

Most of the original collection of art and furniture is no longer in the house, but the '30s furniture has been carefully replicated in the main rooms. World War II had already brought an end to the expensive glamour of Art Deco but its influence is felt in the understated but crisply executed lines of some of today's exhibition-quality pieces by makers like Huw Edwards-



From top: The classical curved sweep of the pillared main entrance cleverly links the Art Deco and medieval parts of the palace; Eltham Palace's dining room; a classical shrine originally sat within the alcove above Victoria Courtauld's bed

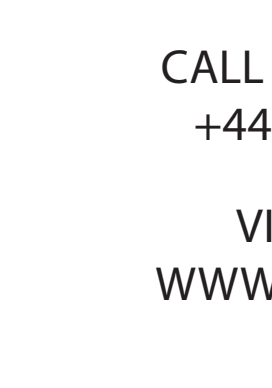
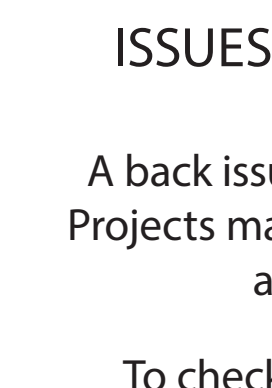
Jones, who is sometimes influenced by Deco and ancient Egypt, and in the work of designers like Tim Gosling, whose Deco-inspired furniture is based on Greco-Roman architectural and mathematical precision combined with a use of sumptuous materials. Then again, it could be said that something as modern as the use of carbon fibre as practised by Nicholas Spens, and aluminium honeycomb panels to allow heavy embellishments, as executed by Yannick Chastang, is very much in the spirit of Art Deco, embracing modernity with grace. ■

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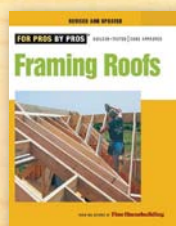
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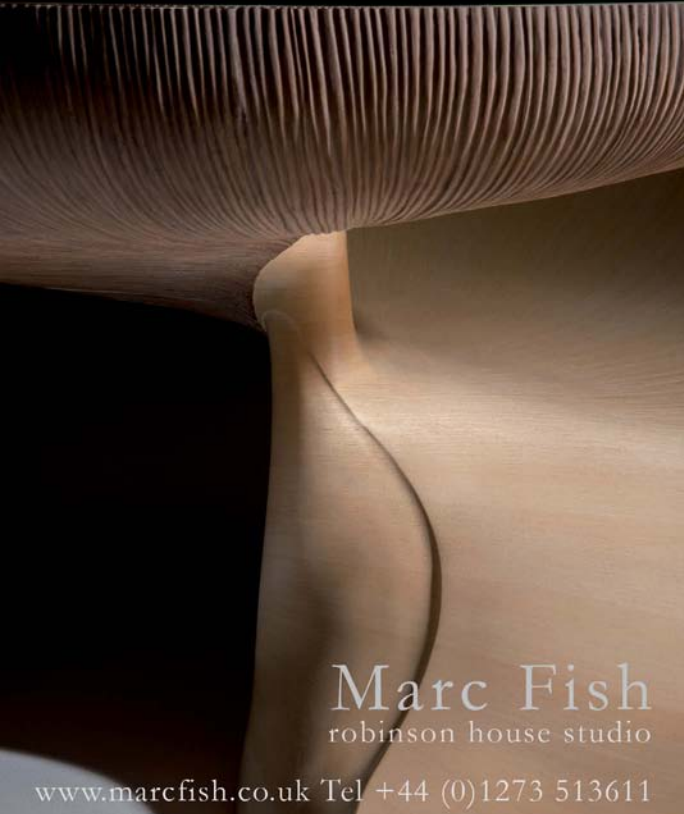
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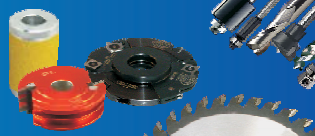
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