

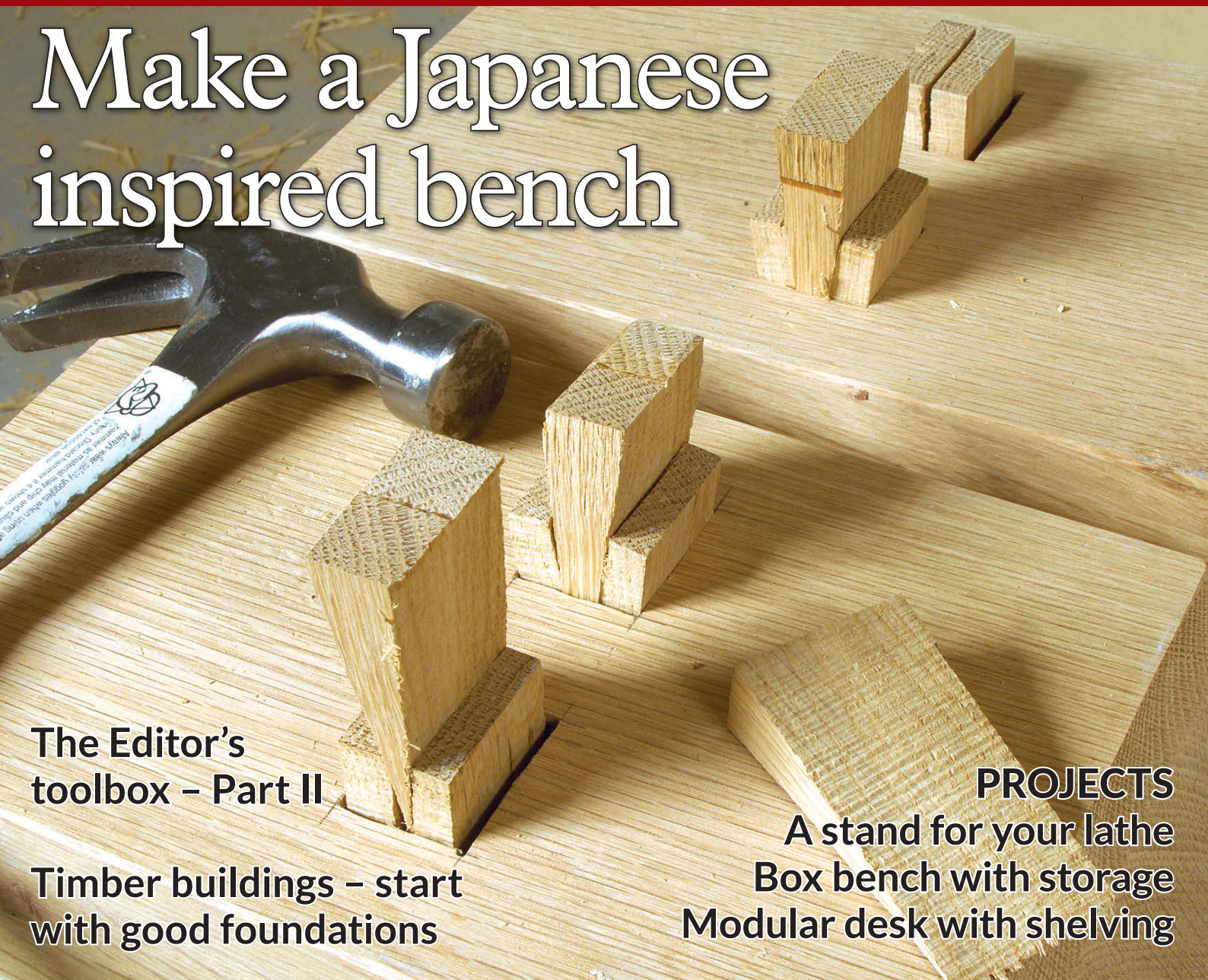


# Woodworking

## CRAFTS

HAND, POWER & GREEN WOODWORKING • TURNING • RESTORATION • DIY

## Make a Japanese inspired bench



**The Editor's  
toolbox – Part II**

**Timber buildings – start  
with good foundations**

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# In the autumn issue...



*Hello everyone and welcome to the autumn issue of Woodworking Crafts*

**T**he very word 'autumn' evokes images of a year that has seen its best go by, the days getting ever-shorter, trees losing their leaves as they turn brown, chilly, foggy mornings and who knows what weather to expect?

## It's history

Well, whatever the weather and however dull or dark the days we have plenty in this issue to keep your interest and to maybe have a go at. By chance we have two articles on a naval theme – one is a marquetry project for a board game called Uckers, played by naval personnel, and the other is a feature about the restoration of HMS *Victory*, which is showing its age, having sat in dry dock for too long without serious attention. Both are a reminder that we are still a maritime island nation with tradition and history to do with the sea.

When I was at secondary school I hated history lessons and think many schoolchildren did, possibly still do, it really depends how it is taught. For me it was the series of important historical dates I couldn't remember and figures from the past who didn't seem relevant to me. Now, it couldn't be more different. I am fascinated by the past, an information sponge soaking up facts. I read books, watch documentaries and visit ancient sites. I suppose now I can do it by choice, but I think having grown up and grown older I am aware that everything we do now, in our everyday lives, is built upon the past. What is even more impressive is discovering that civilisations aeons ago were doing things familiar to us and that, of course, includes working with wood and passing on the knowledge, teaching new generations already learned skills. We take a lot on ourselves if we think we have invented or learned anything for the first time, when in many case discoveries were made a thousand years ago, such as the properties of wood and metal.

What we have done is to use science to understand and refine that knowledge. What we need to do now is use that knowledge wisely and care for our natural resources for the generations to come after us.

Anthony Bailey, Editor  
Email: [anthonyb@thegmcgroup.com](mailto:anthonyb@thegmcgroup.com)



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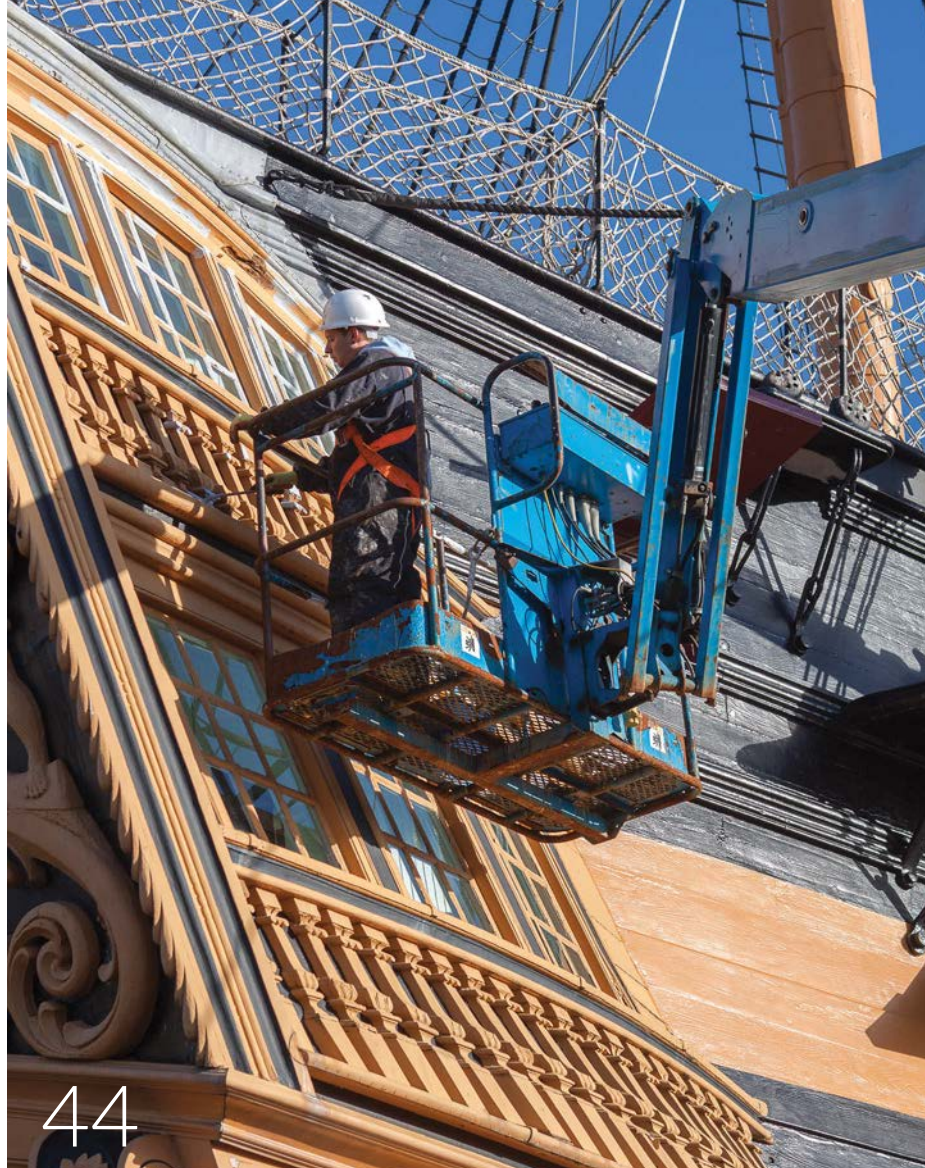
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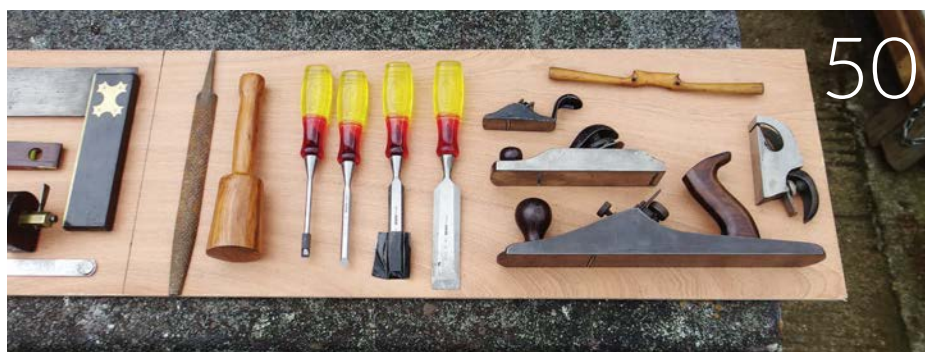
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### Woodwork on the web

To find more great projects, tests and techniques like these, visit our fantastic website at: [www.woodworkersinstitute.com](http://www.woodworkersinstitute.com)



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# Make the right sharpening choice

Selecting the correct sharpening standard is key to getting the best out of your tools.

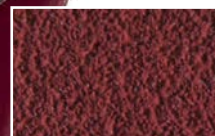
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PHOTOGRAPH BY GMC/ANTHONY BAILEY



Razorfish bench by Alun Heslop

A woven seat in a frame gives a more natural look



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# Design INSPIRATION

A bench can be plain, it can be simple, but it doesn't have to be dull – it can even be stylish

Simple plain shape with magazine storage underneath



PHOTOGRAPH BY GMC/ANTHONY BAILEY



Left: Rib shapes are more comfortable than you might imagine

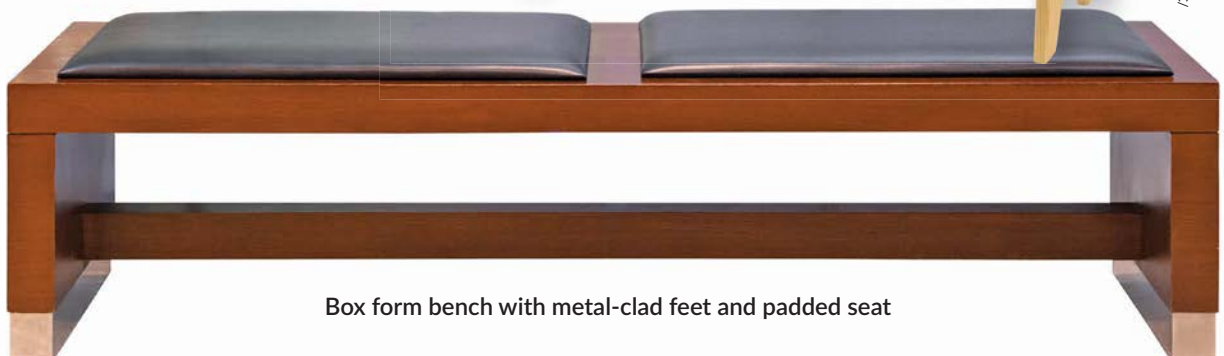
Right: A padded bench form to match an upholstered settee



A rustic five-board bench suitable for the kitchen



PHOTOGRAPH BY GMC/ANTHONY BAILEY



Box form bench with metal-clad feet and padded seat



# Japanese-style bench



**Anthony Bailey's** Japanese-inspired white oak bench features typical shaping and prominent tenons

**T**he term 'Japanese' is a bit catch-all, but in this instance it is evident in the scoop shape of the seat itself and the generally very simple, unadorned style with the plain leg boards.

This is a bench built up from a number of boards, so the seat and each leg board – for want of a better word – are biscuitied together with Titebond III waterproof glue.

## Board preparation

Cut the American white oak planks overlength, then plane and thickness them all. In the case of the legs this means to final thickness.

Calculate the thickness of the boards for the seat so they build up to finished thickness. The edges are planed accurately so the finished seat sections can be run through the thicknesser on edge after glue-up.

## Leg boards

Biscuit the leg boards together, taking care not to allow the beech biscuits to be exposed. This is because beech is more vulnerable to weathering and rot than oak.

Now saw the boards fractionally over final width and do one or two passes over the planer table to clean up the sawn edges. Use a tablesaw or a compound mitre saw to cut the board



## You will need

- Planer thicknesser
- Biscuit joiner
- Tablesaw/compound mitre saw
- Belt sander
- Random-orbit sander
- Small & large routers
- Cramps
- Bandsaw & narrow blade
- Block plane
- Chisel
- Chisel mortiser
- T-square
- Handsaw
- Fine-tooth saw
- Beech biscuits
- Waterproof glue
- Bearing-guided bevel cutter
- Auger bit
- MDF offcuts
- Finish of your choice

## Making the seat

The seat, comprising two sections side by side with a gap between, is built up to thickness from four boards.

The top pieces are short so they can be cut economically from one board length for each seat section if the saw is canted at 45° for the cut at the inner end of each piece.

**1** Biscuit and glue the two full-length boards together, clamp up and leave to set. Take the short upper sections and glue them together. Once dry, use a suitable object to mark the curve or scoop shape. Do this on the four pieces and cut the curves on a bandsaw using a narrow blade in order to follow the rather tight radius. If you don't have a suitably narrow blade then a series of relieving cuts, followed by short straight cuts, finishing off with in-out nibbling cuts will be necessary.

**2** Two things are critical: one is the need to keep hands back from the cut, to save your fingers; the other is the necessity of keeping the board vertical so the cut is the same top and bottom.

**3** Clamp the workpiece on a sacrificial board before belt-sanding the curve. A belt sander is necessary to achieve a truly smooth and even curve. ➤



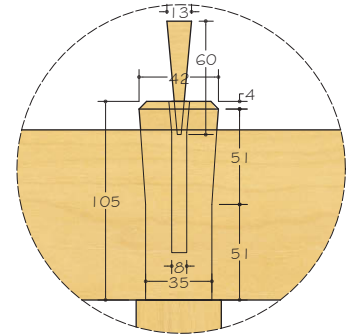
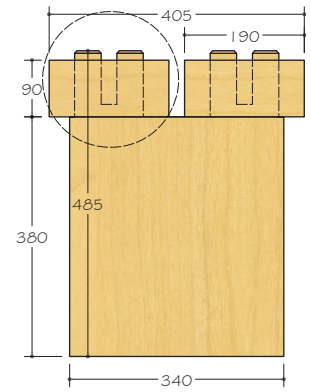
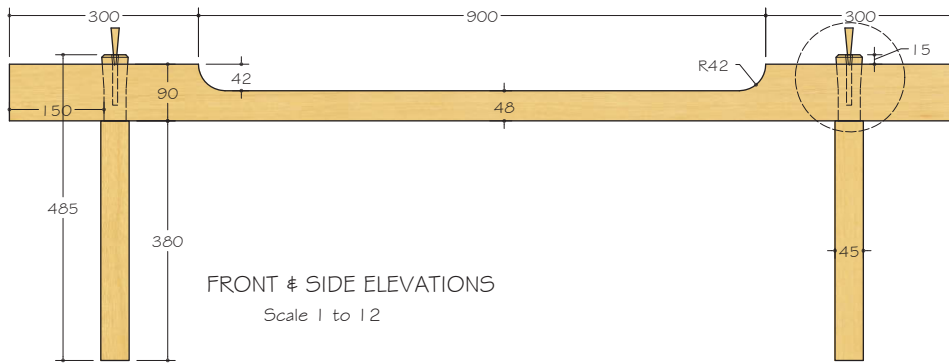
ends square to length so the tenons protrude through the seat top by 20mm, to be trimmed to 15mm after assembly.

Belt sand the leg boards, then random-orbit sand to a smooth finish. The final abrasive grade is not critical as this furniture is subject to weathering.

Use a small router and bearing-guided bevel cutter to lightly bevel the edges. Make a larger bevel cut on the bottom of the leg boards.

*'The seat top pieces are short so they can be cut economically from one board length'*

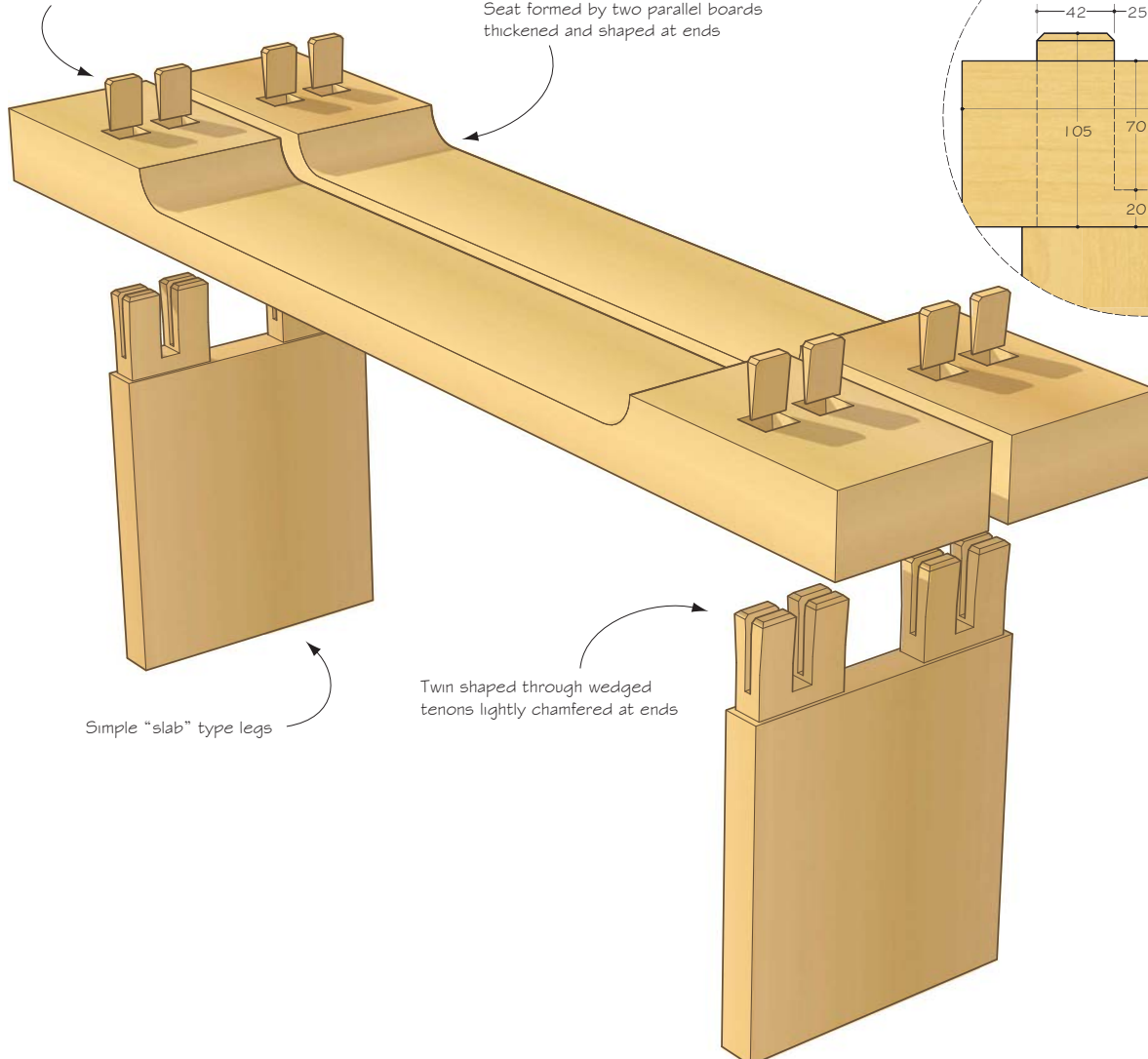




WEDGED TENON DETAILS

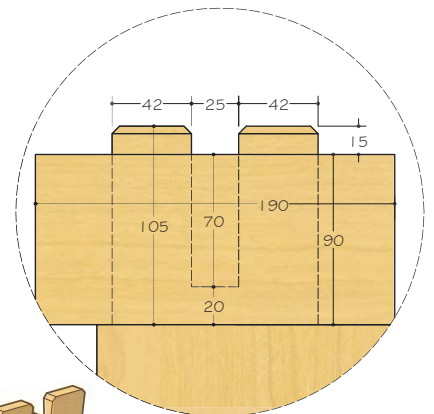
Wedges driven into slots in through tenons to fix seat to legs

Seat formed by two parallel boards thickened and shaped at ends



Simple "slab" type legs

Twin shaped through wedged tenons lightly chamfered at ends







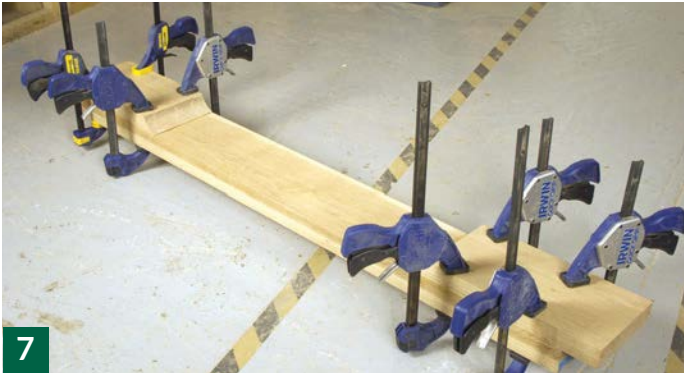
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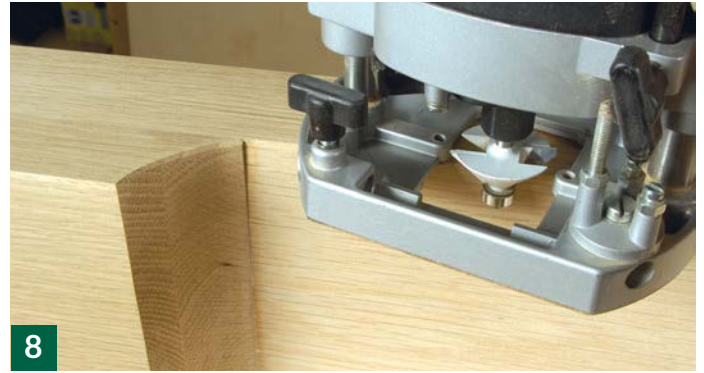
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8

**4-5** Place each short seat section in turn on the saw and trim the feathered end of the curve very slightly so it is neat, giving a slight step when glued in place. Draw alignment marks for accurate positioning

Clean any protruding lumps of glue off the seat sides and carefully run through the thicknesser, just skimming off a millimetre or so to leave the sides smooth and square. The whole of each seat section can be belt sanded.

**6-7** Glue these pieces on to the seat sections, cramp carefully so the sides align neatly, and leave to set. A couple of biscuits ensure the components line up flush for assembly.

**8** Use a small router and a bearing-guided bevel cutter to lightly bevel all edges for comfort and appearance. Take off sharp corners with a block plane.

## Mortises & chamfers

The mortise holes are the next challenge. Mark out the mortise positions, bearing in mind that the tenons are joined by a haunch in between them. You need a 25mm-wide x 20mm-deep slot running across the underside of each seat section but stopping where each outer mortise is. The mortises are straight sided, not splayed, but wedges fitted in the through tenons will lock the joint together. ➤

## CUTTING MORTISES

There are several options for cutting the mortises.

Method 1: use a large auger-type bit and a powerful drill to remove the bulk of the waste. Hold the drill exactly perpendicular to the workpiece to avoid going off line. A very sharp chisel and mallet are then required to square out the holes.

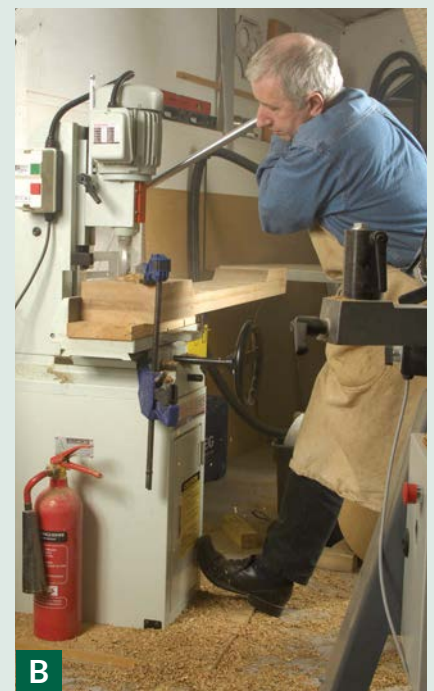
Method 2: Use a router and an extra-long 12.7mm or larger-diameter straight cutter. You will need two fences and long, adjustable fence rods or a homemade jig that allows the use of a guidebush. By turning the jig around it is possible to do both sets of mortises. Since router cutters are limited in length, you will have to accurately transfer the markings so you can machine from both faces. Finally you will need to square the holes with a chisel, although there will be less



A

to do than with the auger method as the jig allows the cutter close to the corners of each mortise.

**A-B** The third method, adopted here is to use a chisel mortiser if you are lucky enough to have access to one. Surprisingly, this is quite hard work as the chisel bit has to cut deep into hard oak and burns easily. This isn't quite the easy option it might appear, however it does result in square-cut holes. Allow most of a day for this exercise as there is a lot to do.

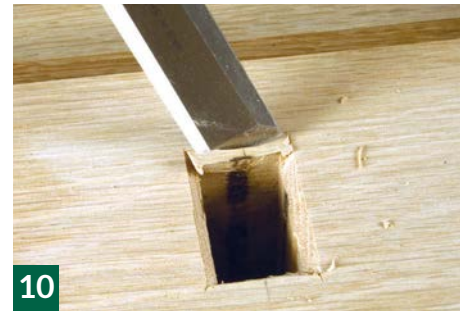
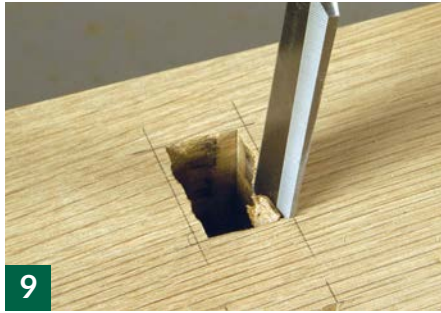


B

The fire extinguisher isn't a joke – that chisel gets very hot in thick oak



**9-12** Having made all the mortises, the openings on their undersides will benefit from slight chamfering to ease the tenons in. On the top side it is now necessary to mark outer crosswise lines because the sockets need to be opened out with a wide chisel to create 'dovetail' openings. A router and housing jig are needed to make the slots for the tenon haunches to sit in.



## Tenons

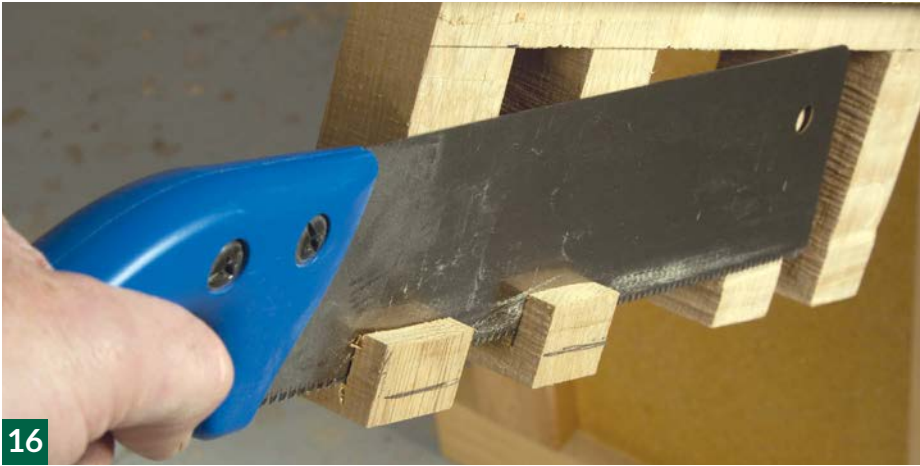
**13** Returning to the leg boards, use a large router and a T-square to establish the tenon shoulder line and depth, then move the router as far away from the shoulder cut without it slipping off into the cut area, so the base remains supported. Machine away unwanted wood freehand, but leave the waste at the end of the tenon so it is machined to thickness from both faces with only the end-face waste remaining.



**14-15** Mark the tenons and haunch positions from one face and saw out on the bandsaw.







16



17



18



19

**16** Remove the face waste at the end of each tenon using a handsaw. A pull saw without a solid back allows flush cutting

**17-18** Kerf the tenons across-wise and downwards for most of the tenon length ready for wedging, then invert the seat sections and try a joint fit, making the necessary adjustments with a fine-tooth saw and sharp chisel. If necessary, use a planer on a fine setting to slim the tenons. Once the tenons can be persuaded at least a third of the way in without much force, they should be about right.

### Assembly

It is probably best to adopt my assembly method as some force is required.

**19** Turn the bench the right way up then lift one end and drop it so the tenons are forced in. Do the same thing at the other end and repeat until the heavy seat sections have bedded down on to the tenon

shoulders, allowing gravity to force the assembly together.

**20** Cut large, wide wedges and hammer them into the tenon kerfs until they won't move down any more. Once all are in place and the mortise openings are tightly packed by the wedged tenons, trim off the exposed tenons using a fine-tooth saw resting on two 15mm MDF offcuts. Chisel a bevel on all four tenon edges to give a finished appearance.

The choice of finish is up to you, but the oak will turn a warmer colour with age. ■



20





# A woodworking glossary

## *The letters U, V & W*

**UNDERCUTTING** Cutting material away from an edge to create relief or thinness.

**UREA FORMALDEHYDE** The chemical formulation for a specialised type of glue such as Cascamite and Extramite. Supplied in powder form, when mixed with water it forms a creamy compound that sets very hard.



PHOTOGRAPH BY MARCFISH

Urea formaldehyde adhesive being mixed

**VARNISH** A brush or spray-applied coating that provides a hard, usually clear, oil-based finish.

**VEINER** A small, deep gouge.



PHOTOGRAPH BY FREDERICK WILBUR

Small veiners being used for arabesque carving



PHOTOGRAPHS BY GMC/ANTHONY BAILEY UNLESS OTHERWISE STATED

Veneers come in a vast array of types

**VENEER** Thin slices of wood used for inlay or to cover surfaces. Antique furniture has thicker, sawn veneers while more modern furniture uses thinner, knife-cut veneers.

**VENEER HAMMER** A wooden tool for rubbing glued veneer into place and excluding air bubbles and surplus glue.

**VENEER PINS** Very small-diameter pins intended for holding veneers and thin components in place when gluing. They come in several lengths and have other uses.

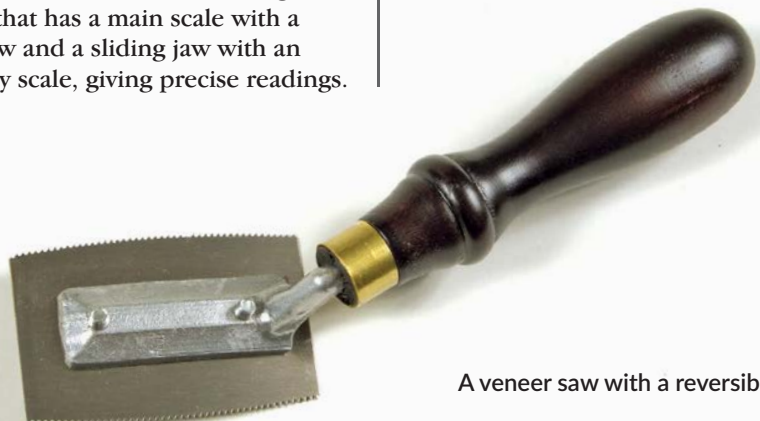
**VENEER SAW** A special saw for trimming veneer.

**VERNIER CALLIPER** A measuring device that has a main scale with a fixed jaw and a sliding jaw with an auxiliary scale, giving precise readings.



PHOTOGRAPH BY JOHN BULLAR

A veneer hammer rubbing down landings



A veneer saw with a reversible blade



**VIBRATION** Power tools create vibrations which can potentially affect the user's health through hand-arm vibration. Modern power tools create reduced levels of vibration for better long-term exposure.

**V-JOINTED** Usually tongued and grooved wood with a V-shaped channel in the centre of the board.

**VOLTAGE** Standard UK voltage is 240v. Since European harmonisation, it is often expressed as 220-240v, although the actual voltage has never changed. More powerful industrial machines use 415v, also known as three-phase.

**WAINSCOT** A traditional wall lining of vertical tongue and groove interlocking boards with V-groove detail between boards.

**WALL PLATE** A horizontal timber member placed along the top of a wall to support joists and to spread their load.

**WANE** An edge of a sawn board where the bark or surface (live edge) of the trunk remains.

**WARP** Distorted timber, twist, cupping or a bow as a result of damp or heat. Such timbers are difficult to make use of, especially twisted boards.

**WASTE** In woodworking waste comes in several forms, such as rags from finishing, spent abrasive paper, chemical containers etc which require safe disposal. Wood waste is typically



A wedged mortise and tenon. The wedges will spread the tenon



Woodturning generates large amounts of waste wood

chippings and fine dust. These can be treated as general waste, although some woodburners are designed for them.

**WEDGE** A tapered slice of wood used for various purposes, including holding joints together or keeping a kerf or cut open in wood as it passes through a tablesaw.

#### **WEDGED MORTISE AND TENON**

A stronger version of the through mortise and tenon joint, the wedges spread the tenon in the mortise, locking the joint tightly in place. As a secondary advantage, the wedged tenon is a nice decorative element.

**WENGE** An African hardwood, dark brown in colour, often used for turnery or detailing on fine cabinet furniture.

**WHITTILING** Using one or more knives for carving simple wooden objects and figures. It does not require a lot of training or facilities.

**WINDING STICKS** Two straight, matching sticks that are placed at the opposite ends of a board and sighted across to check the flatness.

**WOOD** An organic material, a natural composite of cellulose fibres which are strong in tension, embedded in a matrix of lignin which resists compression.

#### **WOOD-BASED BOARD MATERIALS**

Manufactured from layers, particles or fibres of wood that are glued or compressed together to produce a flat



Reclaimed woodblock flooring being laid, which will be sanded once complete

board. The most common examples include plywood, chipboard and various types of fibre building board, including hardboard and MDF.

**WOOD BLOCK** Flooring made from small strips or blocks of wood, around 3in wide and 9in long, arranged in herringbone, basket-weave and other geometric patterns.

**WOOD MOVEMENT** The natural tendency of wood to expand and contract across the grain as its moisture content fluctuates in response to changes in relative humidity.

**WOODWORKER** A generic term for someone who works with wood, it covers a variety of wood-based trades, such as carpenter, cabinetmaker, furniture maker and joiner.

**WOODWORKING** Any activity that involves working with wood – particularly constructing items with wood, but not building construction. ■



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# Making an Uckers board

It's definitely game on for Ludo players of a military disposition. By **Quentin Smith**

## Tools & materials

- 12mm MDF (400 x 400mm)
- Various veneers
- Scalpel or craft knife
- Masking tape
- Straightedge
- Hand clamp
- Vacuum press or strong boards and clamps
- PVA or other adhesive
- Abrasive paper or mesh

**M**arqueterian Quentin Smith describes the process of making a board for the game of Uckers – a form of Ludo popular in the armed forces, particularly the Royal Navy.

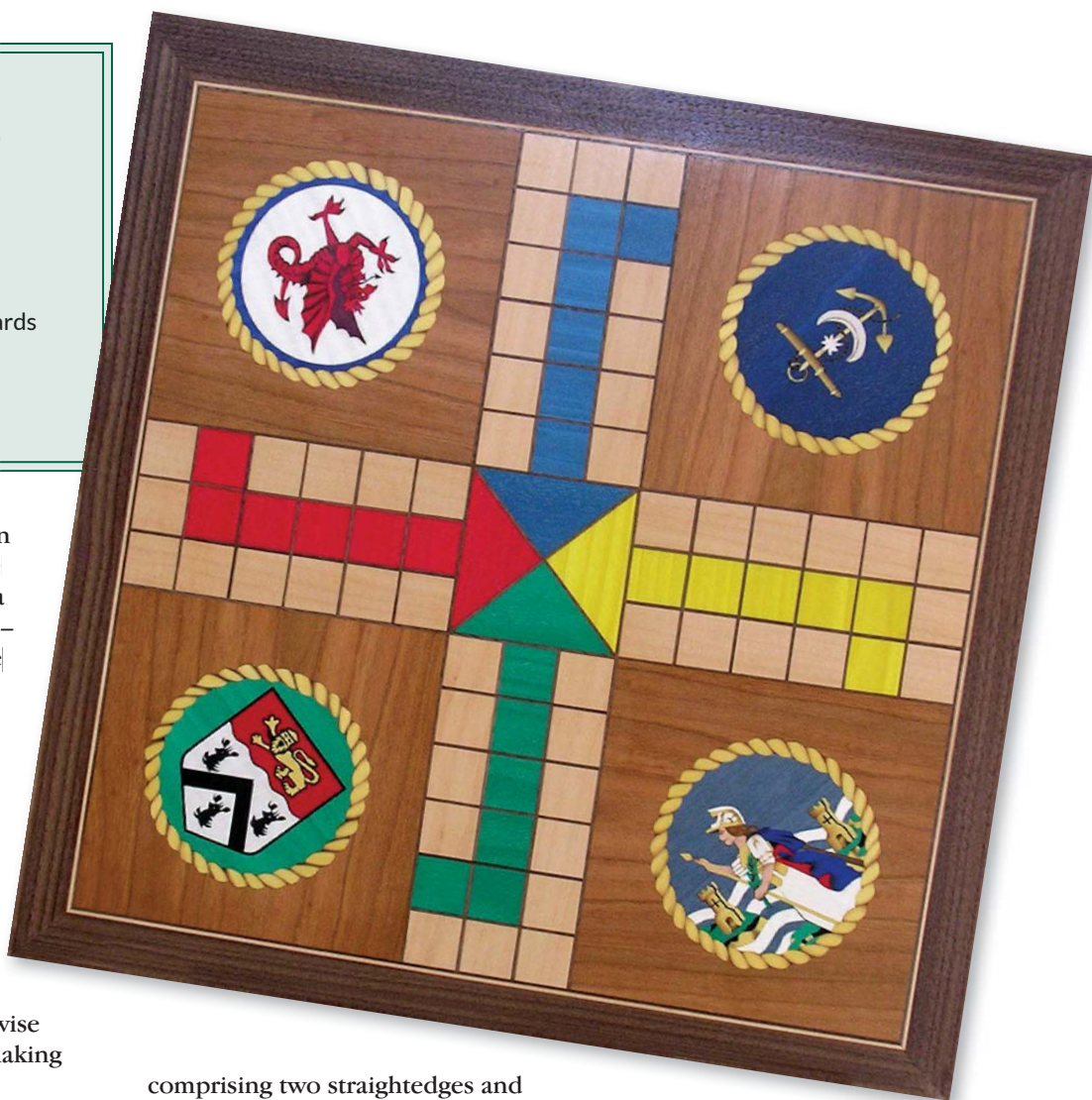
The key part of any game board is the playing area, around or across which the players move their counters. On a Ludo/Uckers board this consists of four arms radiating from the central finishing area. The four large corners of the board serve as the starting points, but otherwise do not feature in the game, making them ripe for the addition of personalising detail.

Each arm of the playing track consists of 18 squares in three columns of six, five of the central squares are coloured, together with one starting square in the outer track. The board made here is 400mm square. Playing squares of 22mm give a good proportion, leaving an attractive border area around the edge of the board.

**1** Strips of four coloured veneers (dyed tulipwood – *Liriodendron tulipifera*) are cut using a simple jig

comprising two straightedges and two 22mm spacers. The latter are prepared by cutting and sanding a small block to exactly 22mm, then cutting it in half. One straightedge is taped to the cutting board. A thin sliver is cut from the edge of the veneer to ensure a clean, straight edge. The veneer is then pushed against the fixed rule, the spacers placed against the rule and the second straightedge pushed up to the spacers. In all marquetry, ensure the knife is held perpendicular to the surface to give clean, right-angled edges. We don't want 'plugs and plugholes'.

**2** Strips of lighter veneer (sycamore – *Acer pseudoplatanus*) are cut slightly wider than 22mm, again ensuring perpendicular edges. Thin 'stringers' of dark veneer (American black walnut – *Juglans nigra*) are cut using a straightedge. These stringers are too narrow to cut using spacers, so I have found the simplest method is to cut a few stringers by eye, then cut further stringers judging against one chosen





master stringer. A firm clamp helps to hold the veneer and straightedge on the board during this operation. An occasional stringer will end up too thin or too wide, but these are simply discarded.

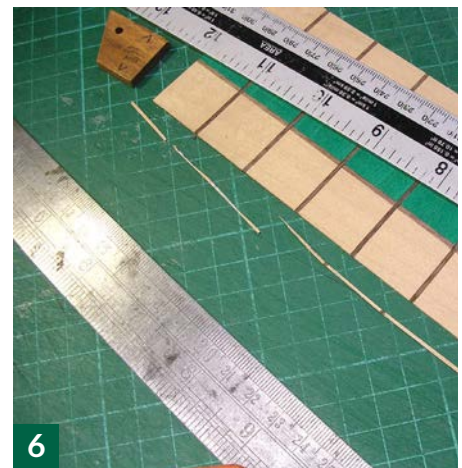
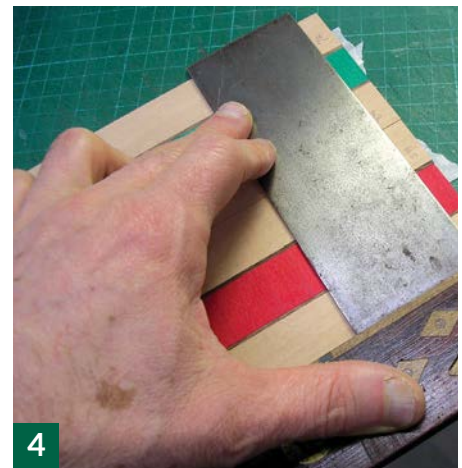
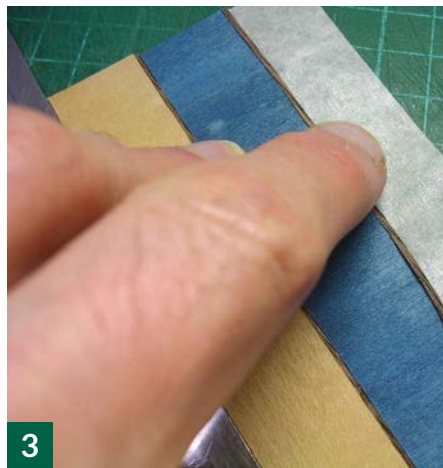
**3** Each playing arm is assembled by applying masking tape to one of the light veneer strips, then feeding in a dark stringer, ensuring it is pushed tightly against the light strip. Use a good quality masking tape as it will remain in place during pressing and low-quality tapes may lift fibres from the veneers, particularly the dyed tulipwood. The coloured strip is added in the same way, followed by a second dark stringer and the second light strip. Note that the grain direction of the coloured strip is at right-angles to the light strips. This is not critical, but all four arms should be made the same way.

**4** One end of the assembly is trimmed to 90° using a set-square, then five strips are cut using the same 22mm spacers. Each strip removed is kept in order to maintain the grain pattern between the squares. The strips are assembled on tape with thin stringers between, taking care to ensure that the squares line up. The last coloured 'square' is carefully removed and a piece of the light playing track veneer cut to fit.

**5** Ideally this would be such that the grain is continuous across the three columns, but in practice that is wasteful. However, do ensure that the piece is cut in the same orientation as the side strips, otherwise the square may appear not to match. The single side square is removed and replaced with a coloured veneer – again ensuring correct orientation.

**6** Finally the outer light squares are trimmed to 22mm width. Note that the last square in each arm is not cut to size – these will be trimmed once the board is laid.

**7** The board corners are cut from a decorative veneer (here four matched leaves of cherry – *Prunus serotina*). These were cut to around 150mm square, with one corner carefully trimmed to exactly 90° (double check this – the whole layout of the board is governed by these angles). ➤





**8** This board was a rather special commission, so each of the corners then had the logo of a Royal Navy base added in marquetry, cut by the 'window method'. For a simple board these corner areas could be just a square of appropriately coloured veneer.

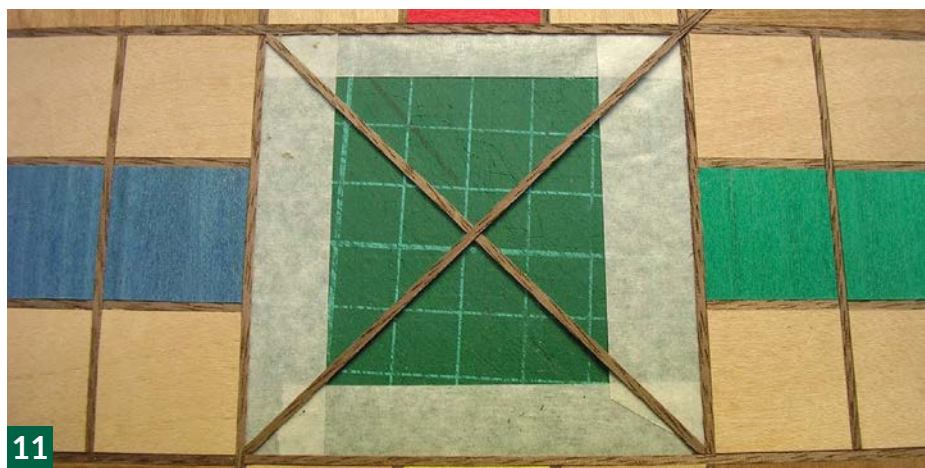
**9** Each corner veneer has a dark stringer attached to its right-hand side and then the correct colour playing arm fitted, ensuring the left side of the corner and the top edge of the playing arm are aligned (NB: picture shows the back of the work, which is taped on the front).

**10** The four assemblies are then brought together in their correct locations (conventionally opposite corners are red/yellow and blue/green). The assemblies are taped together with intervening stringers. Note that the stringers are extended across the tops of the playing arms. The assembled board still has an empty area in the centre, but this is the time to check everything is lined up and square.

**11** The board centre usually has four coloured triangles, but it would not affect the playability to have, say, a single piece of decorative burr. For the triangles, tape the underside of the recess leaving an area of the tape exposed. Position two stringers across from corner to corner and cut where they cross. Place a piece of the correct colour underneath (align the grain the same way as the playing squares) and trim using a straightedge. (Taping the back of the veneer will help avoid the delicate cross-grain corners breaking away.) Insert the piece and tape up, then repeat for the other colours.

**12** At this stage the board is complete, but probably has multiple layers of tape, possibly on both sides. Tape the front as necessary to maintain its integrity and remove all tape from the back. This is now ready to glue down, but we need to prepare the board.

**13** Cut the MDF square – if you don't have suitable workshop equipment it's easier and more accurate to pay to have this done. First, veneer the back – a simple plain veneer will suffice to balance the board against warping, but I often add a panel of light veneer as serious players like to record the victims of the worst





'eight-point' victories on the back of their board. Here I glued on a panel of maple. I am fortunate to have access to the Staffordshire Marquetry Group's vacuum press, but it is possible to press using solid boards, interleaving packing material such as newspaper, and a good collection of strong clamps.

**14** Once glued, but before the glue was fully hardened, I used a marking gauge to mark out a uniform border. I cut this through using a scalpel and straightedge and carefully removed the excess veneer.



**15** Strips of contrasting veneer (American black walnut again) were cut (slightly wider and longer than needed) and positioned against the newly cut edges of the maple and taped in place, overlapping at the corners.



**16** By turning the board over it is easy to see the corner and to cut a nick through the overlapping border veneers.



**17** On turning the board back over a straightedge can be positioned from the corner of the maple panel to the board corner and the two veneers cut through to make a clean mitre. Cut outwards so there is no chance of accidentally marking the maple panel.



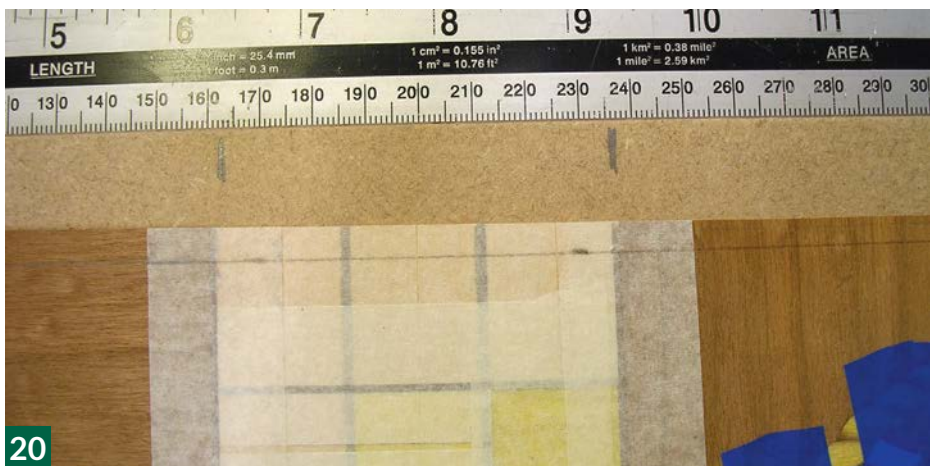
**18** Once all four corners are cut, each border piece is folded back (don't remove it), glue is applied to the board and the border folded back. Tape the mitre joints before returning to the press.



**19** Once pressed, the excess veneer can be carefully trimmed from the edge. Strips of veneer are cut and glue to the board sides. This is most easily accomplished by taping in place while the glue dries. Stretching the tape during application ensures good contact.



**20** Once back and sides are veneered it's time to glue down the board. There's no second chance at this, so we need to ensure the board goes in the right place and stays there. Position the veneer assembly and check that it is central and square. Remember that both the corner veneers and playing tracks are oversize and may not be even, so measure to fixed parts of the playing area, not the edges of the veneer assembly. ➤







21



22

Once correctly positioned, tape small pieces of veneer to the board so that they rest against the assembly edges. Remove the veneer assembly, apply the adhesive and replace the assembly. The veneer pieces should ensure correct positioning. Clamp up and leave to dry.

**21** Once glued, remove the tape and the small positioning pieces. Carefully measure the last squares of the playing arms to 22mm, set a marking gauge and mark up the board. Trim using scalpel and straightedge. Borders are applied as described above for the back, but for best effect two thin stringers are required for each edge, one light, one dark. These are best assembled along with the border veneer by sticking a piece of tape to a straightedge and turning it over so the sticky side is upwards. Place on the innermost stringer, pressing it firmly against the straightedge. Repeat with the second stringer and finally add the border veneer.

**22** The four stringer/border assemblies are taped in place, overlapped, mitred and glued in place as above. All that remains is to finish the board. I sand using a

moderate grade of abrasive mesh with a vacuum attachment. If sanding with abrasive paper, regularly remove dust with a vacuum cleaner or brush to avoid darker dust being ground into the lighter colours. Finish with oil, lacquer or varnish as you prefer. I use several coats of Morrell's pre-catalysed basecoat (a form of cellulose sanding sealer) and rub back to a satin finish using a well-worn, sponge-backed abrasive pad.

**23** All your game needs now is playing counters. I purchase 19mm-diameter wooden tiles and veneer one side using the same veneers used for the playing colours (a set in natural veneers is pictured). It's worth making a few spares in case a piece gets lost. They are fiddly to sand and polish, but worth the effort. Applying sticky-back velour to the undersides adds a touch of luxury. Dice are readily available on the internet. Happy gaming. ■

## Suppliers

Veneers: The Veneer Hub,  
01525 851166  
[www.thewoodveneerhub.co.uk](http://www.thewoodveneerhub.co.uk)

Counters: 19mm wooden tiles from  
Jasmine Studio Crafts,  
0208 090 8443  
[www.jasminstudiocrafts.com](http://www.jasminstudiocrafts.com)

Baize: [www.turners-retreat.co.uk/baize](http://www.turners-retreat.co.uk/baize)

Ernie Ives Craft Knife:  
QJS Marquetry  
01785 850614  
[qjsmarquetry.co.uk/craft-tools.php](http://qjsmarquetry.co.uk/craft-tools.php)

Instructions for the Window Method:  
[qjsmarquetry.co.uk/downloads/instructions-window-method.pdf](http://qjsmarquetry.co.uk/downloads/instructions-window-method.pdf)

Rules for Uckers: [www.royal-naval-association.co.uk/uploads/uckers.pdf](http://www.royal-naval-association.co.uk/uploads/uckers.pdf)



23





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# Meet the contributors...

We put all of this month's professional and reader contributors here, so you know exactly who they are and what they do

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## Quentin Smith

Quentin is a freelance marquetarian and marquetry tutor with more than 30 years' experience. He is the founder of the Staffordshire Marquetry Group and in 2017 completed six years as President of the Marquetry Society.

Web: [www.qjsmarquetry.co.uk](http://www.qjsmarquetry.co.uk)



## Jamie Lake

Jamie is an MOD apprentice-trained aircraft technician with 17 years in that field. Now he is a craftperson/engineer. His real passion in life is woodworking, which he has been doing in his spare time for more than 10 years. He has

made many items of furniture, from jewellery boxes and key cupboards to display cabinets and outdoor furniture.



## Simon Rodway

Simon has been an illustrator for our magazine since 'the dawn of time' itself, drawing on his experience in the field of architecture. He also runs LineMine, a website with articles and online courses on drawing software. A new course, SketchUp

for Woodworkers, is proving really popular.

Web: [www.linemine.com/courses](http://www.linemine.com/courses)



## Geoffrey Laycock

Geoffrey is a Chartered Safety Practitioner, Chartered Ergonomics Practitioner and Fellow of the Royal Society for the Protection of Health. He has written extensively for our sister magazine *Furniture & Cabinetmaking*.

Email: [geoffrey@otterconsultancy.co.uk](mailto:geoffrey@otterconsultancy.co.uk)



## Robert Wicks

Robert has been turning for the past three years and is based in Berkshire. In addition to holding a busy international sports marketing role, he is the author of five Haynes manuals on a wide range of subjects, including adventure motorcycling and aviation. He says

woodturning provides the ideal way to be creative. He has a keen interest in segmented work.

Email: [robert.wicks@gmail.com](mailto:robert.wicks@gmail.com)



## Gary Marshall

Gary has had a lifelong interest in woodlands and the countryside. He trained in countryside management and subsequently ran a company working with the local County Councils and Unitary Authority and their Countryside and Rights of Way

Teams, as well as a wide range of conservation organisations.

**Your face and details could appear here in our 'rogues' gallery' if you write an article for the magazine, and you could be rewarded for your efforts too.**

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# JOINTING MACHINES

If you want fast, reliable jointing then a jointing machine may be the answer

Ask any serious woodworker which static machine they really, really need in the workshop and invariably the answer will be – a bandsaw. True, it is very versatile, can cut well if properly set up and it can even cut tenons or dovetails with a bit of jig work. My answer is different – in my case it is a compound mitre saw, a good one that cuts truly perpendicular in both planes. Why? Because you can buy prepared timber and sheet material cut to size for you on a timberyard panel saw. That leads

on to the next question – how do you make joints? In my case I have choices, but if I had to choose one that was quick, easy and reliable I would choose some form of jointing machine. Between prepared timber, pre-cut board and a decent mitre saw, plus a jointer, that gives me the ability to not only do home projects but also can form the basis of a small business making custom carcass-fitted furniture that people can't buy off the shelf.

So what kind of a jointer could that be? Currently there are three

main types to choose from – the biscuit jointer, the duo doweller and the domino jointer. All three have advantages and disadvantages. Cost immediately comes into the equation but consider that if you buy one static machine, the compound mitre saw – plus a portable jointer and some work supports – you have a very workable system that doesn't take up loads of space. If you do quite a bit of woodworking then the cost starts to recede when you split it out across a number of projects or jobs. ➤



## JOINTING SYSTEMS



### Biscuit jointer

A Swiss invention from the 1950s, it is no longer the sole province of the originator, Lamello. There are biscuit jointers from different brands and at different prices. They all do roughly the same job. They cut 4mm-wide slots into which compressed beech biscuits fit, with glue, to form solid, accurate joints. They work best as carcass joints and as alignment between components. Things such as legs on chairs that come under stress are not suitable for this method, but it is incredibly versatile in other ways. They are capable of cutting grooves and even small rebates or surface detailing.

Lamello has kept ahead of the game by introducing variations on the basic concept that particularly suit knock-down assembly. Neither its machines nor consumables are cheap but they give guaranteed precision and numerous carcass-manufacturing options.

### Domino jointer

Not to be outdone, Festool created the Domino system and the machines and consumables needed to operate it. The wooden Domino components come in different sizes and timber types and are engineered to match the oscillating bit fitted in a Domino jointer. One version is better suited to cabinet work, while the larger machine is intended for joinery construction. There are various consumables and accessories to expand the system. The joints created are incredibly strong and can easily match the strength of a mortise and tenon.

Apart from the likes of router biscuit cutters or dowelling jigs, those are

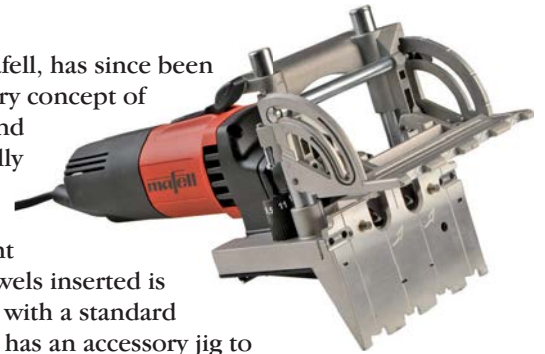


the three main options to consider. It is also possible to make your own simpler loose tenons by machining them on the router table.

However, if you adopt a very specific type of jointing machine, bear in mind that you may be tied to its consumable components and tooling and the cost and availability that implies.

### Duo doweller

This machine, originally created by Mafell, has since been copied. It takes the rather unsatisfactory concept of dowel jointing with its lack of speed and propensity for misalignment – especially on end-grain joints – and turns it into a fast, repeatable and precise method of butt jointing with dowels of different sizes. In fact, a joint with sufficient dowels inserted is incredibly strong and able to compete with a standard mortise and tenon. The Mafell version has an accessory jig to permit accurately spaced dowels on carcass panels, for example.



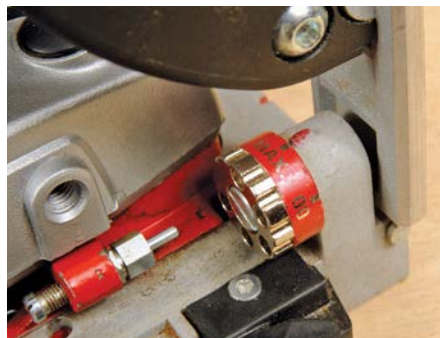
## USING MACHINE JOINTERS

### The biscuit jointer in action

First you need to understand how it operates. It is basically a motor, right-angle gearing and a small saw-type blade mounted in a sliding housing with an adjustable fence. The baseplate is machined to be the primary datum and the adjustable fence is the secondary datum when setting slot positions. The machine can be used freehand, resting on the workpiece or on a baseboard, and can even be fixed down or, in some cases, inverted clamped in a vice for static working. As with all jointing systems you do need some mental agility to make sure the joints are done correctly in the right place with the right orientation. Extraction is essential and clearing blockages in the chippings outlet tends to be a fact of life.



Creating a drawer-bottom panel groove with anti-slip devices retracted



The depth-setting turret has biscuit settings and min and max cut depth



Using a T-square for cross-panel slotting for holding bookcase shelves





A biscuit joiner can usually be inverted in a vice as a static machine



The range of typical biscuit jointed carcass and frame joints

## Domino joiner in action

Settings options are more comprehensive than a biscuit joiner. You need the correct bit installed and the correct positioning offsets. It has a sprung push action like the other joiner types. Once you get used to using the machine this becomes a lot quicker to do and, as with all machine jointing, making trial cuts helps to sort out any alignment issues. There are quite a variety of Domino component sizes and types, you will inevitably end up with a large Systainer case containing most of the range, but some will empty quicker than others and need stock refilling. This is the only system that can create joints at an angle using the correct accessory, which adds another complication in setting out, but it is extremely useful for chair joints and the like. Extraction is essential as the chippings can clog up and cause the machine to jump out of position slightly. ➤



The DF 500 machine, suitable for general jointing work



A screw-on accessory designed for holding narrow components



The oscillating and rotating bits are available in a number of sizes



The comprehensive depth and height-setting scales



The much larger XL 700 machine for serious joinery work



A size and shape comparison between biscuits and Dominos



## Duo doweller in action

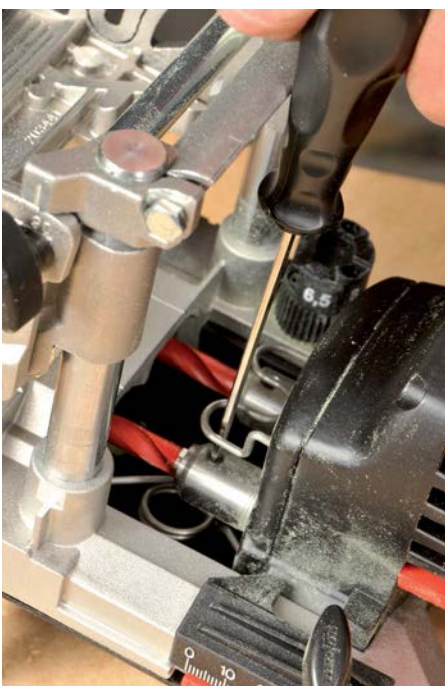
Dowelling that really is made easy – you choose the correct bits to match the dowel size. Setting the fence is simple and the sprung fence pins allow multiple offsets for the holes – or use the accessory jig for wider panels. It is a push-type machine with sprung retraction of the cutter bits and the fence has adjustment. Extraction isn't an issue as the chippings drop straight on to the floor with no risk of clogging up. You can use any suitable size dowels as well as the manufacturers' own consumables.



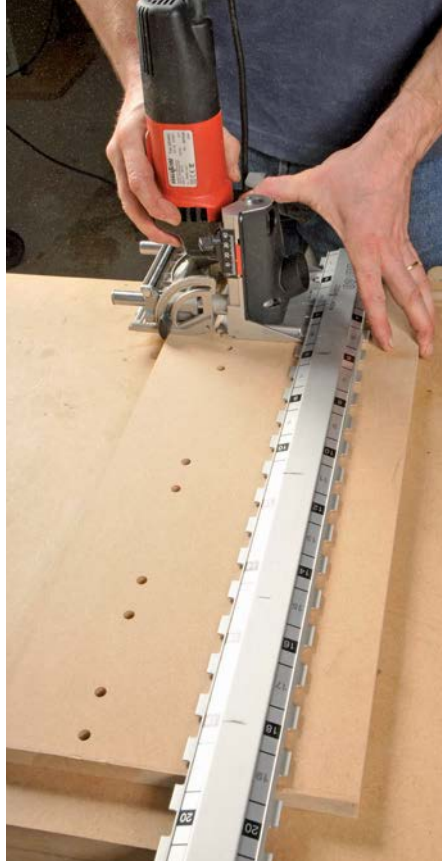
End-grain dowell machining is very accurate with the duo doweller



Matching up carcass corner components, note hole spacings



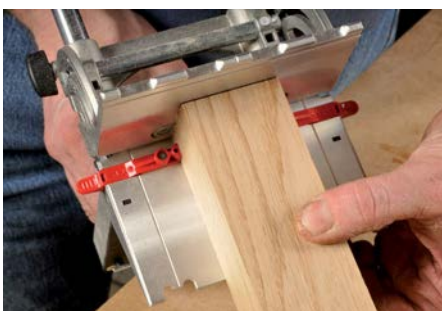
The sprung stop pin being used to set drilling positions



The panel dowelling jig makes carcass building quick and precise



Releasing a drilling bit to change for a different size bit



Special clip-on stops holding a narrow component for drilling

## COSTS

As I stated previously, it depends on what you intend doing and your level of usage, which will determine how the costs spread out. If you buy a cheap machine there are likely to be accuracy issues which may be curable or workarounds. A premium brand will be much more precise and last your lifetime and beyond. So it's something to weigh up before spending proper money.

## Biscuit jointer

At the low price end an Erbauer machine is currently £65 at Screwfix, a DeWalt jointer could set you back about £210 while a Lamello Classic X is £500 – its more specialised models for sophisticated jointing consumables cost even more. There are plenty of other biscuit jointers to choose from, so shop around.

Beech biscuits for large size '20' per thousand will cost around £26 but will last you a while.

## Domino jointer

The Festool Domino has no competition at present as it is under patent, although that may change in the years ahead. There are two models – the original cabinet and light joinery DF500 Q-Plus at around £700, and the large-scale joinery machine XL 700 EQ-Plus at £920. There are various accessories too.

Festool's consumables abound, but as a guide 8 x 40mm dominos in a pack of 130 is just under £14. As an indicator, in many instances one domino component can equal two dowels.

## Duo doweller

Currently there are two choices – the expensive but very accurate Mafell DD40 at around £720 (price dependent on the kit version) and the much cheaper, but not so precise, Triton model at around £130.

As an example, 10mm dia. dowels would cost around £8.50 per 100, making them rather more expensive per item than beech biscuits.

So there you have it, invest wisely and you can have a set-up to envy that doesn't have to take up loads of space and is truly portable as well. ■



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# Makita 10.8V power tools test



PHOTOGRAPHS BY GMC/ANTHONY BAILEY

The popular adage 'less is more' prompted the **Editor** to try out some compact Makita 10.8V tools to see if it was really true...

Over time the power tool market has evolved with new technologies and changing user habits. Li-ion batteries in ever-larger capacities, brushless motors and increasingly diverse tool applications are just some of the changes that have taken place. Makita decided some time ago to standardise on 18V, 14V and 10.8V tool categories and junk 12V tools altogether. I decided to try just three products from the range to see how they stand up to professional use,

because that is the market they are aimed at.

## HR166D rotary hammer drill

Makita supplied this tool in its kit form in a blow-mould case, complete with two 2Ah Li-ion batteries, charger, grease, cloth, expanding tape rule and a full set of drill and driver bits. In other words, a very comprehensive kit ready for work.

The drill is lightweight compared

to the usual rotary hammer unit and comfortable to hold with various grippy rubber overmould areas. Controls-wise there is a drill/hammer and drill selection lever, trigger switch and lock/rotation direction button. That is it – no gear change, no variable torque settings, only electronic speed changes made by altering pressure on the trigger. The motor is brushless, which is part of the reason this tool is possible, as there is less friction on the motor core as it rotates.

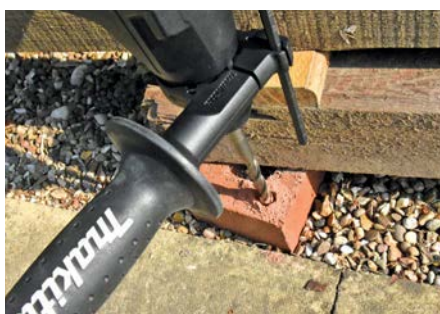
The kit is comprehensive – the tube of grease intended for keeping the hammer function working well, the range of driver bits, holder, metal drilling bits, brad points, masonry bits and sockets cover everything within this machine's capacity.

## On test

I had both 2.0Ah and 4.0Ah batteries on charge but, out of interest, I fitted the other small battery straight from the case without charging. I went for the biggest masonry bit – a 12mm – and tried it out on a standard modern, dense house brick in hammer mode. The drill kept cutting out. I swapped for charged battery and all was good. Obviously the other battery needed



The kit version is comprehensive and ready for anything



Drilling a housebrick on hammer action was surprisingly easy





Although lacking a lower gear, screwdriving was easy in hardwood

a good charge first, the battery lights showing the charge state. The 680rpm drill speed isn't exactly staggering but it seemed to drill through the house brick relatively quickly all the same. Next I tried drilling some ash hardwood with a brad point drill. I was concerned about the back and forth movement of the SDS chuck and bit but in practice the drill ran perfectly centred and to the approximate depth I was expecting. The last test was driving some largish screws in without pre-drilling, which it did perfectly well although, without a lower speed range, a light touch on the trigger was needed to avoid the risk of 'cam-out'.

## Verdict

Within its intended range it was an impressive piece of kit. The rather low-down LED work light isn't in the best position, but a design compromise. For a lot of screwdriving I would probably opt for one of the 10.8V drill drivers or combi-drills in the range.

## JV103D enclosed handle jigsaw

The jigsaw has pretty much what you would expect to see on a jigsaw – variable orbit, sprung-lock blade changing, on-lock trigger, variable speeds, variable soleplate positions and a non-scratch cover. To operate the jigsaw you have to press the lock/unlock button on the top first, which also activates the LED worklight. Any standard-fitting jigsaw blades can be used and there is even a clip-in extraction pipe.

## On test

I was pleasantly surprised, as this machine is apparently less powerful than many. It cut straight lines and curves where I expected it to go and, with maximum orbit enabled, it went through a 45mm-thick piece of hardwood without fuss. So, much better than I expected.

## Verdict

Useful for site work where power supply or trailing wires are an issue. Also available in a top-grip knob version.

## PT354 CXT pin nailer

A substantial piece of kit, this nailer comes with a safety lock button and pin depth adjustment. The pin compartment has an easy-to-grip squeeze tab to slide the cover open. Lie the strip of pins at the bottom of the track with printed arrows downwards and slide the cover closed. The safety lock is essential but, to be on the safe side when loading the nailer, the battery should be removed. A red indicator shows how many pins are remaining. Pressing the nose of the nailer on a surface activates the LED worklight – press the trigger and it fires. The nose has rubber sleeve to protect the surrounding surface with a spare sleeve mounted at the back end of the nailer.

## On test

The pins supplied were long and thin, more like needles. As it happened I had a 'real world' test, which was fitting some narrow shelves mounted on quadrant, which would have been difficult with screws or conventional nails. Pre-drilling would be essential and long, thin fixings.

## Verdict

Such fine pins don't seem strong enough to be useful, but once you start pinning things to other things you soon realise just how useful a lightweight pin nailer can be.

## Charger DC10SA

A fan-cooled intelligent charger for all 10.8V batteries. It is not a sealed unit but can be wall mounted. Charging time for a 2.0Ah battery is 30 minutes while it takes 60 minutes for a 4.0Ah battery.



Deep cutting with the jigsaw on orbit setting was quick



Fixing shelving quadrant supports with minimum effort

## Overall conclusion

I wish I had asked for a drill driver as well, because it would be more compact than the rotary hammer and have more adjustments – torque and gearing. However, on the basis of these three it's easy to see why this apparently compact 10.8V kit is here to stay. It would suit many second-fix and installation tasks where 18V tools are overkill if you don't need the extra performance. ■

## Tech Spec

**HR166D rotary hammer drill**

No-load speed: 0-680rpm

Impacts per minute: 0-4800ipm

Capacity in Concrete: 16mm dia.

Capacity in Steel: 10mm dia.

Capacity in Wood: 13mm dia.

Impact energy: 1.1Joules

Net weight: 1.8-2.4kg (dependant on battery size or bare)

Price: £170 (blowmould case kit with drill bits)

**JV103D jigsaw**

Capacity in aluminium: 20 mm

Capacity in mild steel: 10 mm

Capacity in wood: 90 mm

Settings: 3 orbital + straight cut

Stroke length: 23 mm

Net weight: 1.9-2.0kg (dependant on battery size or bare)

Price: £100 (bare unit)

**PT354 CXT pin nailer**

Nail gauge: 23 gauge

Nail length: 15, 18, 25, 30, 35mm

Magazine capacity: 100

Net weight: 1.8-2.0kg

Price: £250 (bare unit)

(Please note prices quoted are those typically found online)

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# NEWS & EVENTS

All the latest events and news from the world of woodworking

## Very, very old news

By Anthony Bailey



PHOTOGRAPH COURTESY OF SHUTTERSTOCK

Besides all the appalling tragedies we see and hear in the news, there are lesser but no less important stories, which have a deeper, longer-term impact on us and on our planet, the one we think we own, Earth. We don't own it and it will truthfully take back whatever we reject or mess up and allow the natural world to subsume what is left of our efforts. Sorry, that sounds ever so serious and it is, but my own personal skew on this subject is about – the trees. Although some areas of the world have few trees to their name, many others, including our country of course, are blessed with many noble and lesser specimens. Our relationship with trees is complicated. A tree, like a plant in the wrong place, is a weed – it blocks new development, gets in the way of a high-speed rail route or its wet leaves stop trains running. A tree can lift up the wall of a house or get in the way of relentless fibre optic cable laying. And so – that tree, those trees, have to come down. No half measures, no carefully planned surgery, only felling will do.

That's the bad stuff, but what of the deeper significance of trees? The positives, the things we would miss and have to do without? In some cultures it is quite usual before felling a tree to ask for forgiveness or to give thanks – after all, the tree has had a life, possibly a long one. It has given shelter, perhaps provided sustenance, been a home for wildlife, given limbs to make useful things and now finally its might is reduced to a trunk, hopefully to be turned into usable

timber and the waste used to make a fire and cook food.

Trees don't live a singular life. Whether one or a forest they coexist with us – or, rather, the other way about. We now know more about trees than ever we did. They contain a record of our climate in annual rings and of man's folly in the extraordinary amount of carbon deposits from atomic bomb tests.

Trees communicate with each other through the network of fungal mycelium – the Wood Wide Web. They can defend, they can protect and help and they can attack. Trees are living things in their own right and yet we are foolish enough to abuse them.

There are many good things we can do for them and for ourselves – forest walks, 'forest bathing', using wood wisely, planting trees, supporting planting a forest, joining a woodland volunteer group, studying the ecology, learning woodland crafts and skills, protesting when others would 'do trees down'.

All of this and much more is surely, very, very old news.

If you feel as deeply affected by this subject as I do, visit:

[www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk)

[www.treecouncil.org.uk](http://www.treecouncil.org.uk)

N.B. The UK government has appointed a 'tree champion' to co-ordinate a reversal of the decline in UK woodland. We can but hope...



## SHOWS

**Fangfest – Festival of Practical Arts**  
1-2 September 2018, Fangfoss, Nr York, YO41 5QZ

Facebook: Fangfest Festival of Practical Arts, Fangfoss, Near York

**Self Build and Design Show** 8-9 September 2018, Westpoint, Exeter, EX5 1DJ  
[www.selfbuildanddesignshow.com](http://www.selfbuildanddesignshow.com)

**Into The Trees** 14-16 September 2018, Pippingford Park, Nutley, East Sussex, TN22 3HW  
[www.into-the-trees.co.uk](http://www.into-the-trees.co.uk)

**Apple Day** 23 September 2018, Stanmer Park, Falmer, Nr Brighton, BN1 9QA  
[www.brightonpermaculture.org.uk](http://www.brightonpermaculture.org.uk)

**Bentley Wood Fair** 28-30 September 2018, Bentley, Halland, East Sussex, BN8 5AF  
[www.bentley.org.uk/woodfair](http://www.bentley.org.uk/woodfair)



PHOTOGRAPHS COURTESY OF FANGFEST/JANE COOK

Fangfest Festival of Practical Arts, Nr York



PHOTOGRAPH COURTESY OF SO SUSSEX/SARAH RYMAN

Into The Trees, Nutley, East Sussex

## Web links for you

### YouTube

**Art du tonneau, Frédéric Gillet**  
**Tonnellier** – if you ever wondered how coopered barrels are made, this clip shows a French tonnellier, or 'cooper', making them. It is a fascinating process worth watching, but take a tip – turn the sound down as it is rather bizarrely set to country & western music.



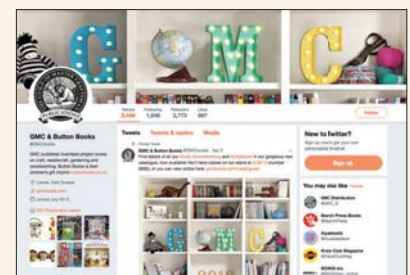
### Instagram

**#dubruitdanslejardin** – another French feed which translates oddly as 'noise in the garden'. It is actually various quite simple but fun wooden creations based around ocean and fish themes. Some useful ideas to be found here.



### Twitter

**@GMCbooks** – our very own Twitter feed with the latest news about crafts, woodworking and kids' books can be found here.



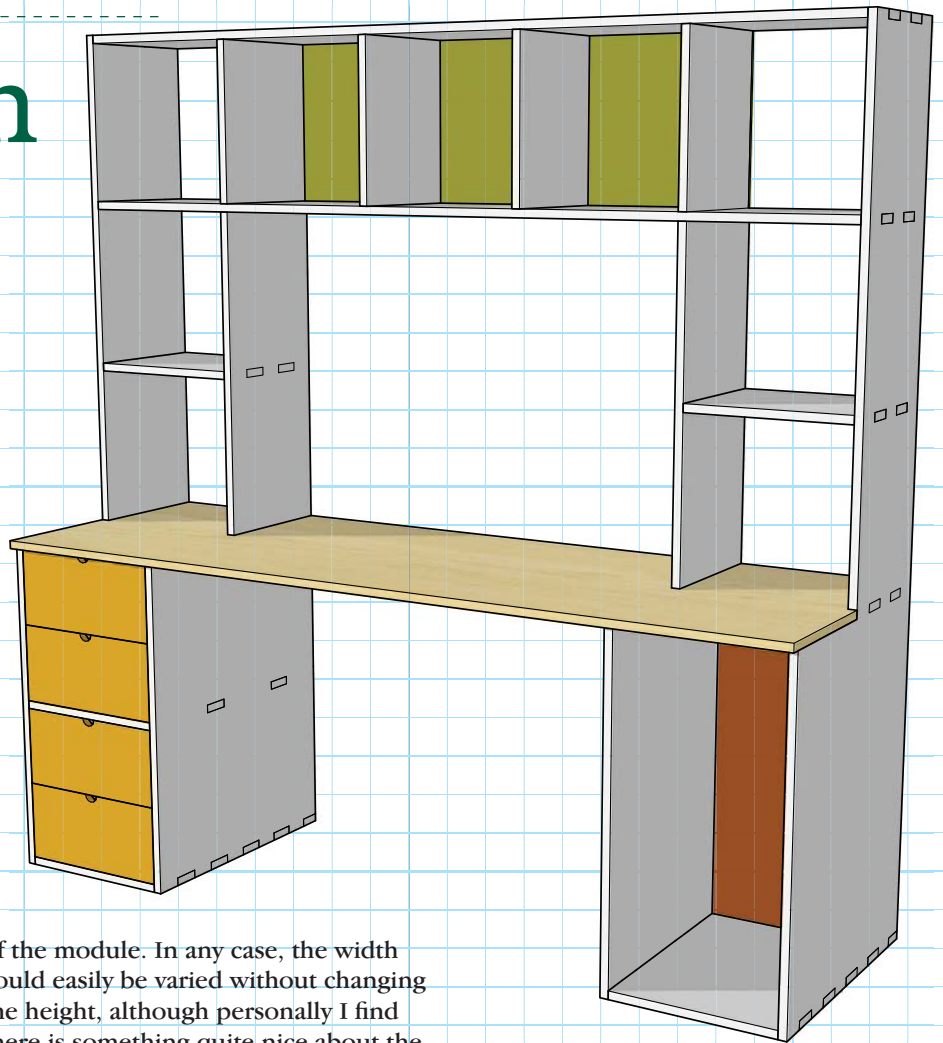


# PLANS 4 YOU

## Desk with modular storage

Simon Rodway hot desks with his latest project

It is obviously pretty important when building something such as a workbench or a desk that the height of the work surface is fit for purpose or, in other words, it won't give you back ache. Consequently, I have based this whole project on a very specific module of 354mm, and this was arrived at by taking a recognised standard finished desk height of 762mm, subtracting three thicknesses of 18mm and dividing by two. The great thing about building things for yourself, of course, is that you can customise, so you may want to alter this height and consequently the size



of the module. In any case, the width could easily be varied without changing the height, although personally I find there is something quite nice about the symmetry of the square module.

With the exception of a few back panels and the drawer boxes, the whole thing is made from 18mm plywood sheet. All the main carcass corners are simple interlocking finger joints, and using the same finger or tenon width of 60mm on the ends of the horizontal dividers and shelves, which are through jointed into the carcass sides, gives a consistent look throughout.

The top section, which spans across the whole desk width, can be built in one go, and the four internal vertical dividers are reduced by 6mm in depth front to back to allow a back panel to be pinned and glued across their back edges. Optionally, you can add rebates to the top and main shelf to let this panel into. I wanted to avoid the use of any rebates if possible, and keep the construction very simple, but this may be one place it is unavoidable since the joint could open up along the top edge over time.

The bottom section can be assembled by fixing the bottoms to the sides and the internal vertical dividers – the latter have finger joints along the bottom edges and are located at the top under the desk by small section battens screwed to the underside of the desk and the divider. The pedestals, if I can call them that, are different on each side. One side is left open to take a desktop computer and peripherals, the other has a single horizontal divider with shelves above and below. The desk top itself has the same size tenons as the top section cut on its back edges. Leave these tenons dry until the top section is in place, so that you can move the sides outwards to fit it. Then it is a fairly simple matter of adding the internal dividers above the desk top, with the verticals just butt jointed and glued top and bottom.

To finish the desk, you will need to add the drawers and the back panel to the bottom section. Again, I have

### Cutting list

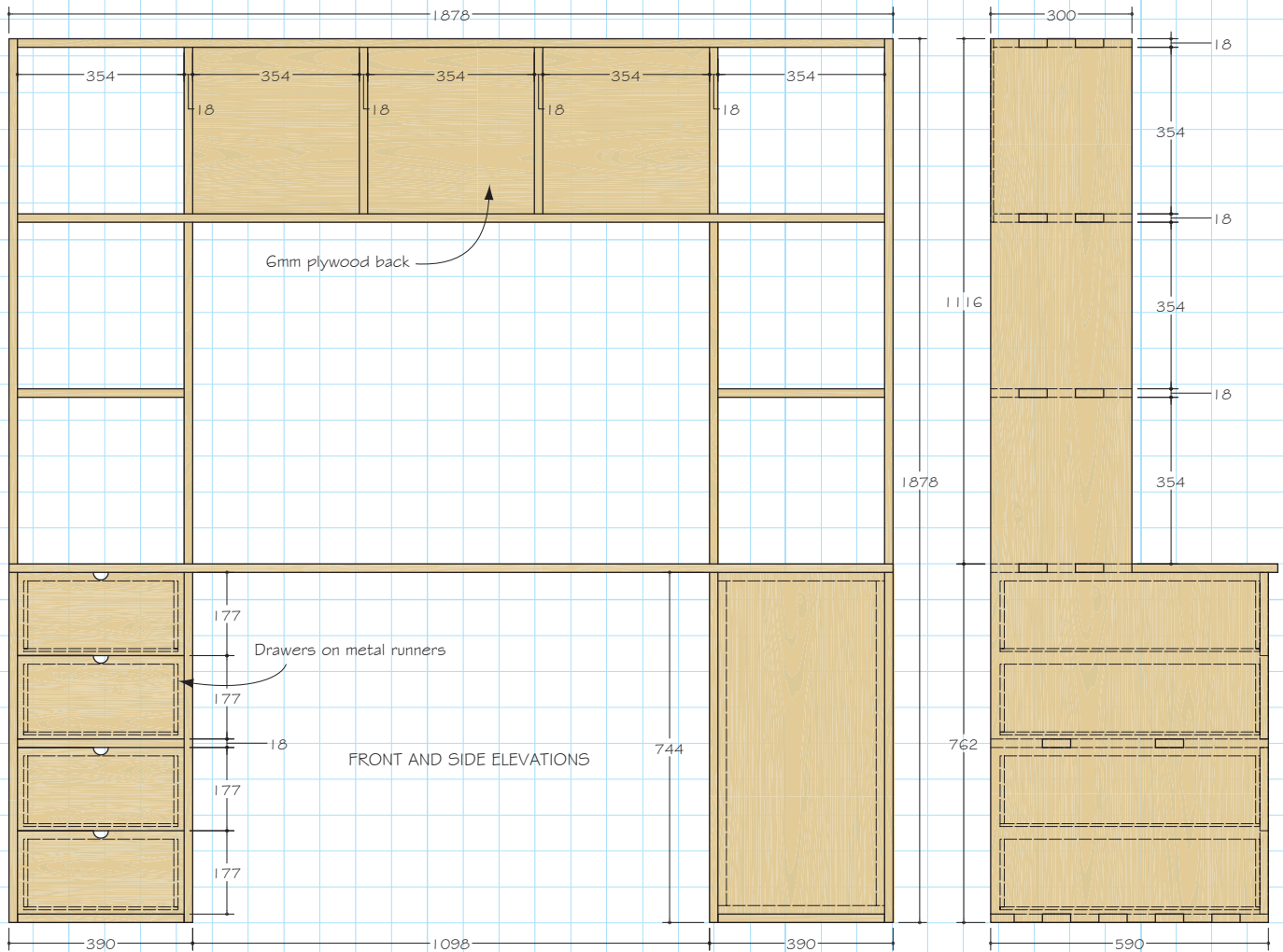
|                   |                     |
|-------------------|---------------------|
| Sides             | 2 @ 1878 x 590 x 18 |
| Top/main shelf    | 2 @ 1878 x 300 x 18 |
| Top dividers      | 4 @ 354 x 294 x 18  |
| Top panel         | 1 @ 1134 x 390 x 6  |
| Small shelves     | 2 @ 390 x 300 x 18  |
| Vertical dividers | 2 @ 726 x 300 x 18  |
| Desk top          | 1 @ 1878 x 610 x 18 |
| Bottoms           | 2 @ 590 x 390 x 18  |
| Bottom dividers   | 2 @ 744 x 590 x 18  |
| Bottom shelf      | 1 @ 590 x 390 x 18  |
| Bottom panel      | 1 @ 726 x 354 x 9   |

### DRAWERS

|              |                    |
|--------------|--------------------|
| Fronts       | 4 @ 354 x 177 x 18 |
| Sides        | 8 @ 552 x 144 x 9  |
| Fronts/backs | 8 @ 328 x 144 x 9  |
| Bottoms      | 4 @ 552 x 328 x 6  |

Note: Panel and desk battens not included, cut to fit. Top panel given as full height across back edges of top and main shelf.

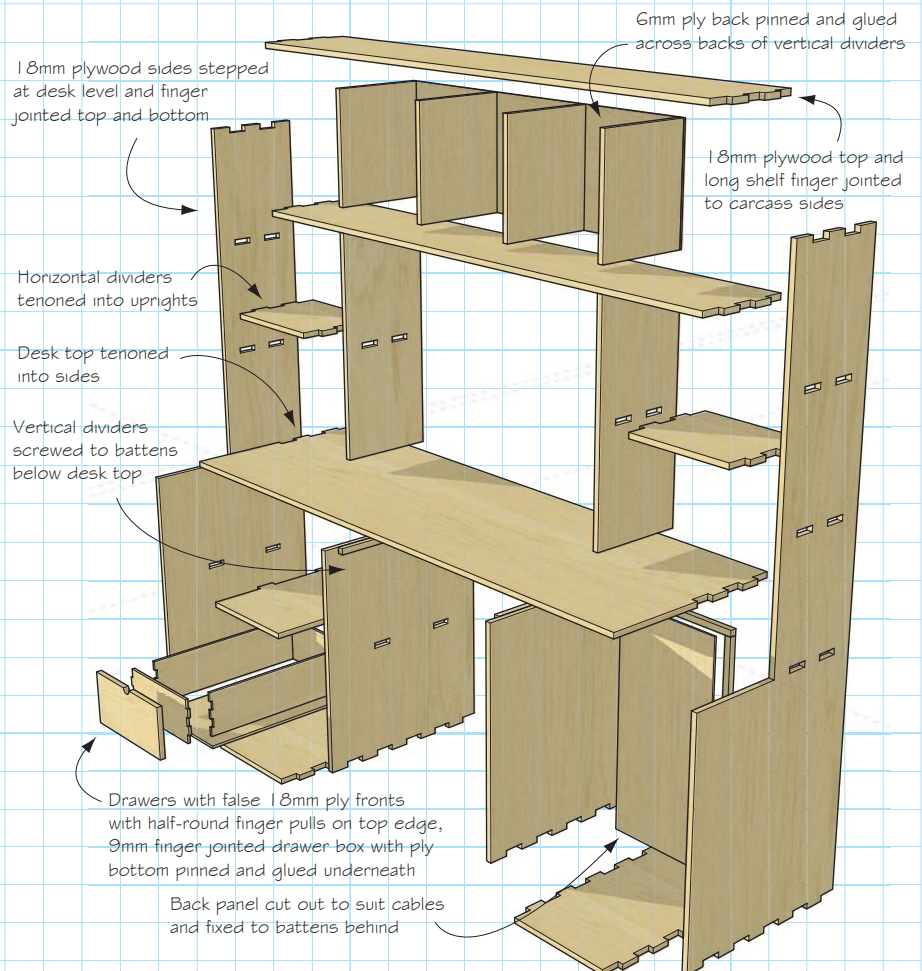




constructed the drawers as simply as possible, with false 18mm plywood fronts and half-round finger pulls, screwed from inside to drawer boxes. These are made from 9mm plywood, finger jointed on the corners, and with the bottom simply glued and pinned to the bottom of the box. Of course, if you want you can fit this into grooves in the box sides.

The drawers all run on metal drawer runners attached to the carcass sides, so the box widths will need to be reduced accordingly, usually by around 12mm-13mm on each side. The 9mm-thick back panel on the computer side is fixed to battens behind the panel. This allows the panel to be adjusted to suit individual depths of computer and associated cabling, and openings for the cables will also need to cut out.

I have shown the finished desk and modular shelving painted, with the exception of the desk top itself. I quite like the look of plywood edges, but this is a personal preference, and it would be a simple addition to add timber lippings to hide the edges where they are exposed. ■





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# Lathe stand

**Robert Wicks** shows you how to make a handy, bespoke wooden lathe stand

I started turning about three years ago and to get going I invested in a hobby lathe from Axminster Tools & Machinery. Over time, my skill level has improved and I am now starting to demand more of the lathe and the hobby as a whole. I have also developed, as is undoubtedly the case with most people who discover turning, an ever-growing collection of tools and turning accessories.

While I have been happy with the lathe itself, the original stand was causing me a number of issues. First, it is made of very lightweight material and hence not very rigid, contributing

to unwanted vibration – an absolute no-no when it comes to turning. The stand was also simplistic in its design and offered very little in the way of storage, aside from a single tray that seemed to be designed to ensure my stock and accessories were constantly getting covered in dust and shavings. Finally, as I am 6ft 5in tall, the lathe was a little on the low side for comfortable operation and this was further compounded by the fact that I stand on a 38mm rubber mat in my workshop. With all of these issues in mind I decided building a lathe stand was a great project for the winter.

Before embarking on this project, three key things need to be considered in the initial planning: the length and width of the lathe bed; the need for rigid uprights – sides – to overcome the vibration issue; and a suitable and cost-effective form of storage, preferably in keeping with the stand design.

Once you are certain of your measurements, I recommend mocking up a cardboard prototype of one of the uprights. This enables you to carefully check the final height of the lathe bed, as well as the height of the shelves. ➤



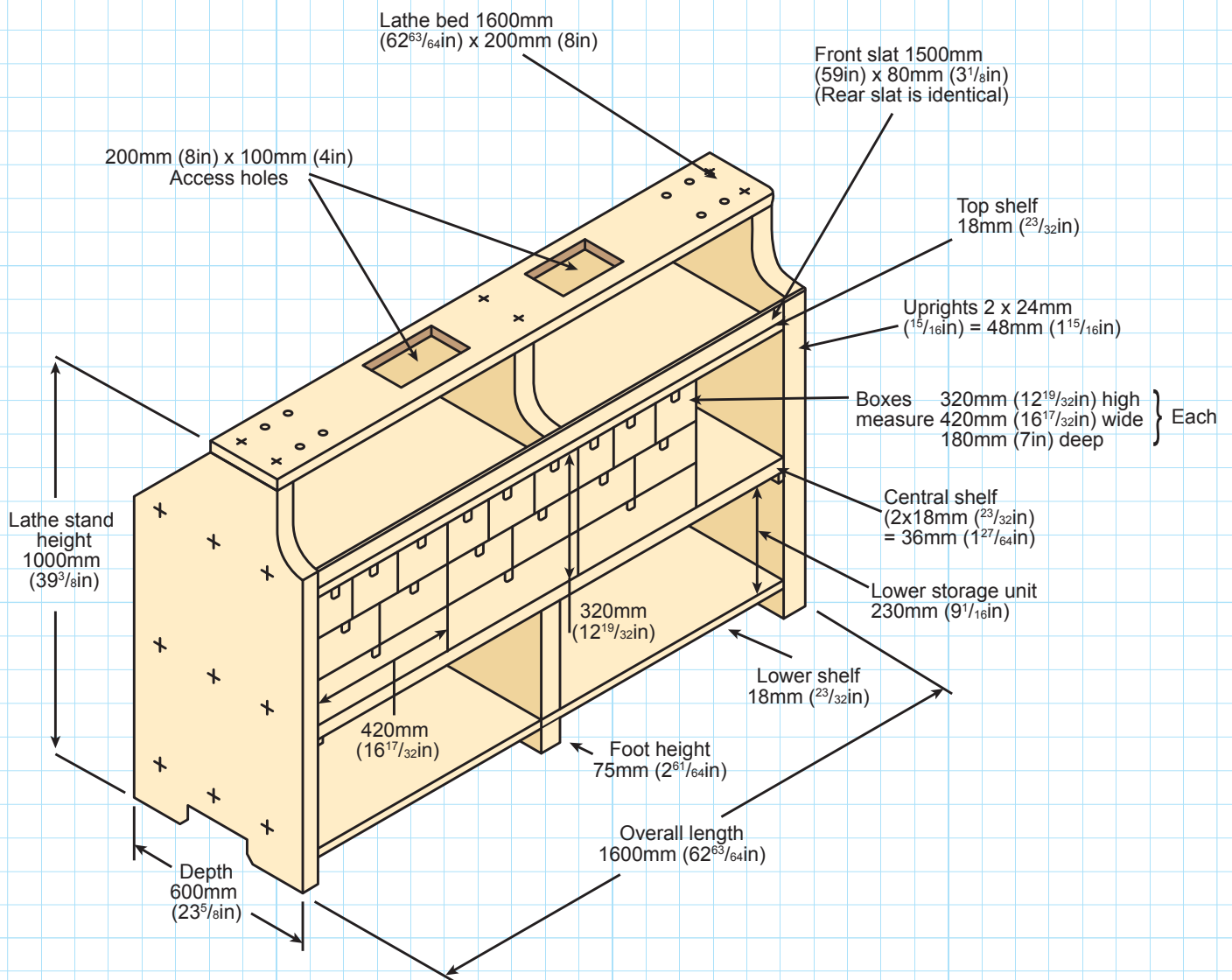
## Equipment used

- Vertical screws
- Japanese fine-cut saw
- Masking tape
- Titebond glue
- Wood screws
- Nails
- A selection of clamps

- Jigsaw and/or multi-tool with plunge cut blade
- Danish oil
- Bought storage boxes
- Bosch multi-tool
- PPE: facemask, respirator/dust mask and extraction

## Timber requirements

- Two sheets of 48mm marine plywood
- 10 × 10mm plywood strips
- 3 pieces of 18mm ply





**1** Start by cutting up your sheet to size and laminating together two pieces of 48mm marine plywood to create the thickness of the pieces required for the ends of the bench. You will find it to be more expensive than standard ply, but it tends to be more durable and with fewer defects. Make sure you have a good, even coverage of adhesive on one face, then lay the two pieces together.

**2** Getting a good bond to ensure good lamination between the two sheets is essential. If necessary, use every clamp you have available at the time.

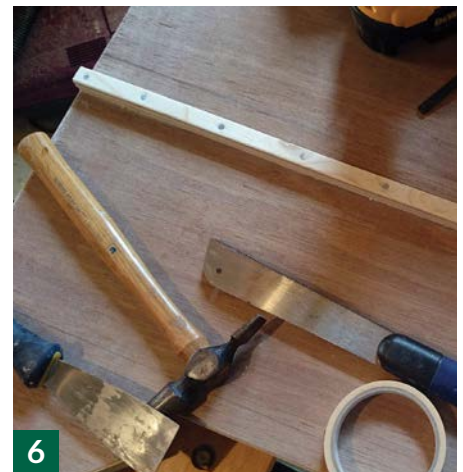
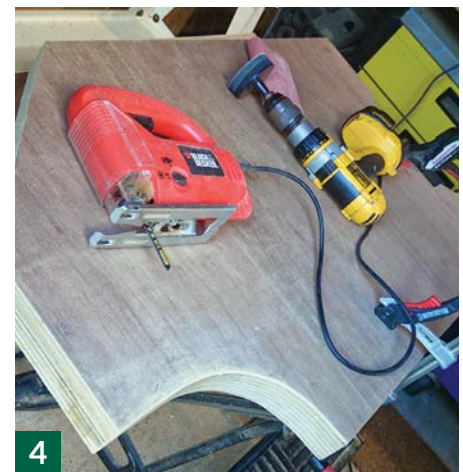
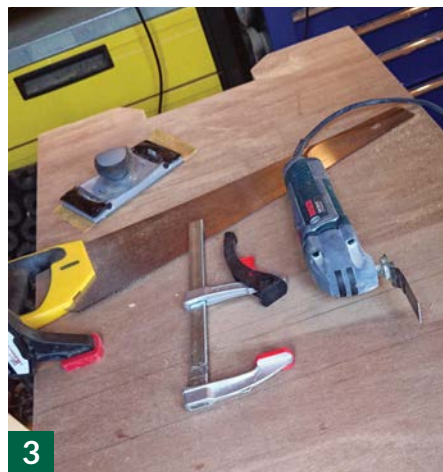
**3** Once you have your two uprights, use a jigsaw and/or multi-tool to cut the feet, tapered backs...

**4** ... and curved fronts. Exercise caution when working with the uprights as they are cumbersome and heavy.

**5** You can clamp the two ends together and clean up all the faces to make sure both match.

**6** Use 10 x 10mm plywood strips on the inside of each upright to support the shelves. Simply nail and glue them into position. They will come in very handy during final assembly, particularly if this is something that you are doing on your own. Remember to apply masking tape above and below the strips to make the glue clean-up easier.

**7** Create the lower storage shelf out of 18mm ply. Before putting this in place, glue and screw the lower central support leg that runs the full depth of the stand – without this the structure can bow under its own weight and that of the cast-iron lathe bed. ➤



## Handy hints

1. Make a prototype out of cardboard to ensure the proposed dimensions meet your requirements.
2. Cut the sheets for each end simultaneously – this will save time and ensure they match up.
3. Don't cut the curved fronts too deep as you might find yourself standing further back from the lathe than you would like.
4. Source decent quality timber from a reputable merchant.





**8** Make the central shelf a double layer of 18mm ply for added rigidity across the centre of the stand and also bear in mind that this shelf carries the full weight of the accessory boxes' content. Then, put a single 18mm sheet in place for the top shelf. In addition to the support strips, screw in each of the shelves using 75mm wood screws, preceded by a pilot hole. I have to admit that my storage boxes came from Ikea, but of course you can make these yourself if you don't want to buy them. The birch ply and general proportions suited the stand perfectly and saved me a great deal of time on the project. Be sure to get boxes that hold everything you need and take extra care in getting the shelf heights exactly right. If the storage boxes are not as deep as the stand, add a rear strip of ply directly behind the boxes, so they don't move backwards.

**9** You can now add the upper central support – this should have a matching curve to that of the two uprights, but not be quite as deep given the front and rear panels that run the full width of the stand. Secure this upright with wood screws from below and some Titebond. Depending on your own requirements, cut access holes in the base using the plunge-cut blade on the multi-tool. I did this should I need to tighten the fixings beneath the tailstock or the toolrest assembly – this has been a recurring issue for me, undoubtedly brought about by the vibrations mentioned earlier.

**10** Drop in the front and rear panels on the top shelf – cut these to size once the stand is nearing completion. I used my Japanese fine-cut saw to make minute, but very accurate, adjustments here. Once in place, you have a tray that can be used for your



tools during turning and for other items you need to regularly access. This can be further subdivided to create separate areas, depending on your requirements. For a clean front on the stand, use vertical screws every 100mm starting beneath the top shelf and into the underside of the panels. If you've already fitted the accessory boxes, remove these and countersink the screws, otherwise the boxes will foul on the screw heads when you put them back. Use the lathe bed as a template to mark the holes accurately. Drill and secure the lathe bed with good quality bolts.

**11** Now for the base on which the lathe bed will rest. Place this on top of the three vertical supports and secure with screws only – don't use glue in case you ever want to replace this element.

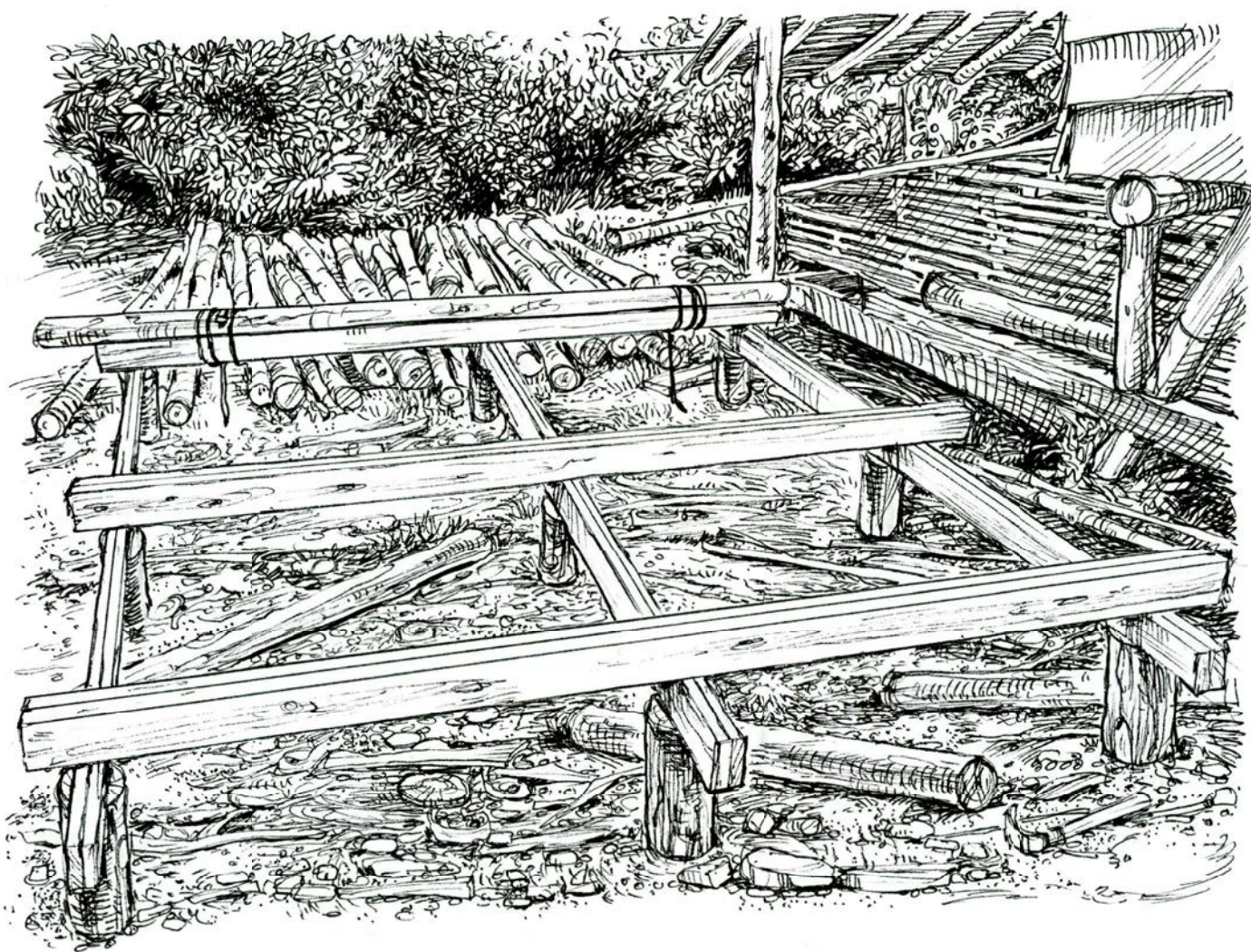
**12** At this point you haven't added a backing board as, if you drop something down the back, it is easily accessible via the lower shelf. To finish, simply apply a couple of coats of Danish oil. To make life easier, it helps to label the storage boxes. You are then ready to put your lathe stand through its paces. ■





# Framing bed

Your new roundwood house or outbuilding has to be built on a framing bed, as woodland expert **Ben Law** explains in an extract from his latest book, *Woodland Workshop*



If there is one woodland device that has helped form my direction in life, it would have to be the framing bed. The framing bed has helped create my house, workshop and many other buildings and has been at the heart of the roundwood timber-frame building movement. It is a simple device to construct, provided you have the space to build it. ►

## Materials you will need

For a permanent bed:

- 6 lengths of sawn timber: 197in (5000mm) long x 6in (150mm) wide x 4in (100mm) deep
- 9 round poles (chestnut recommended): 54in (1371mm) long x 7in (175mm) diameter

For a temporary bed:

- 12 lengths of sawn timber: 197in (5000mm) long x 6in (150mm) wide x 2in (50mm) deep

- 9 round poles (any timber): 54in (1371mm) long x 7in (175mm) diameter
- Timber locks and screws

## Recommended tools

Tamper, spade, 3/4/5 triangle, drill, impact driver, screws, timber locks, saw, chisel, maul, spirit level, laser, tripod. A post-hold auger is also useful.



## Benefits of the framing bed

The framing bed has been the catalyst for overcoming so many of the natural intricacies and characteristics that a natural roundwood pole contains. It has enabled me to not only work with those shapes but translate them into an order that creates buildings and forms that have a logic and allow mathematical calculation.

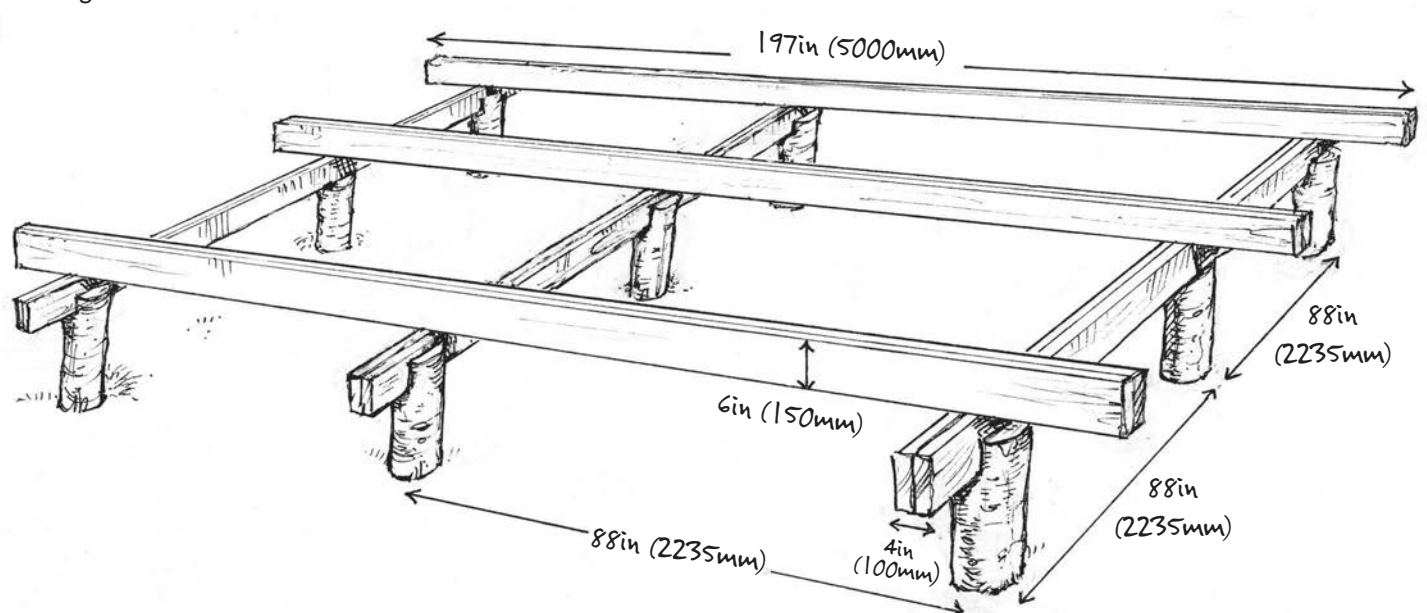


### SIZING

If you are building a permanent framing bed, which will be used for the construction of many different frames, then I recommend 6 x 4in (150 x 100mm) timbers. If, however, you are making a temporary bed for the construction of one building, I recommend making the bed from pairs of 6 x 2in (150 x 50mm) timbers joined together, which, once the frames have been built on the bed, can be taken apart and reused as the floor joists in the building.

*The lengths of timber for this project are for a generic framing bed, but always make the bed wide enough to carry frames the width of your proposed building*

Framing bed dimensions





## Positioning the posts

Using the 3/4/5 triangle, mark out the positions of the posts in a grid pattern. I have made each post 88in (2235mm) from the next one. Dig the holes by spade or auger to a depth of 24in (60mm). Do not point the posts and use a post rammer – they need to sit flat in the base of the holes. If they were pointed, the weight of timbers on top of the bed could push a post slightly further into the ground and, in doing so, throw the whole framing bed out of level.

Back fill the holes and use the tamper to firm the posts up. Set up the laser level on a tripod to your chosen height. I set the tripod so the laser marked the first post at 18in (450mm) above the ground and then marked where the laser line crossed each of the posts.

Remember, your finished working height will be 12in (300mm) above the laser mark, so I will end up with a working height of 30in (762mm) above the ground. If your ground is sloping, you will end up with a varied working height across the bed. It is tempting to build the bed higher but remember, the higher the bed, the higher it will be to lift the poles on to the bed.

Saw the top off each post about 4in (100mm) above the level mark, then saw at the level mark a cut of about 4-5in (100-125mm) in depth. Chisel down from the top of the post to leave a ledge for the timbers to sit on. ➤

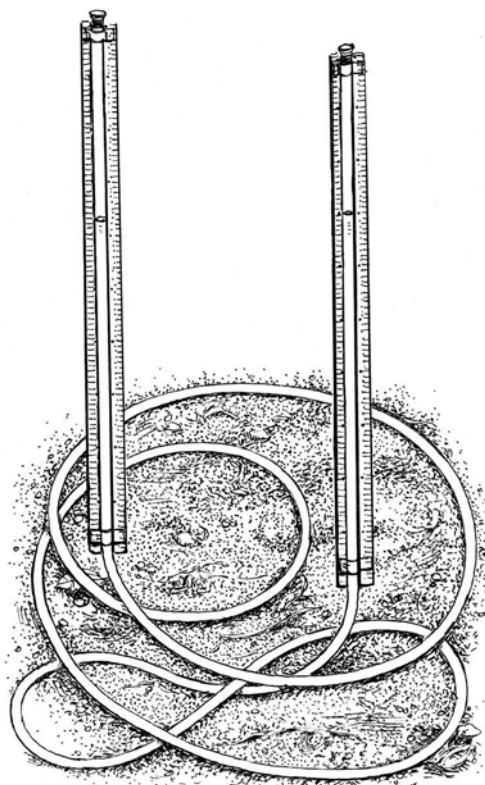


A laser and tripod for marking the levels on the posts

## Alternative to a laser

If you don't have access to a laser, you could always make a 'bunyip' water level and use that instead. You will need two 48in (1219mm) lengths of wood 3in (75mm) x 1in (25mm) and 192in (4877mm) of 1/2in (12mm) clear plastic water pipe and four large jubilee clips or strong clear tape. Mark a matching scale (imperial, metric or both) on to each piece of wood and tape each end of the plastic pipe to the wood. Holding both pieces of wood upright, fill with water until the water is halfway up each scale.

Working with a second person, get them to hold one piece of wood upright by your first post while you walk with the second upright piece of wood with your thumb over the top of the plastic pipe and not lifting it too high to the second post, remove your thumb and the water will find its natural level. Continue this process using the scales on the wood to mark each post. Water is a very accurate levelling medium.



Bunyip water level



### Positioning the timbers

If you are making a temporary framing bed, screw the 6 x 2in (150 x 50mm) timbers together, making sure they will be easy to undo again. Next, position the timbers on the ledge you have created on the posts, line them up and check they are level before pre-drilling and fixing them with timber locks.

Place the next layer of timbers on top, making sure they are lined up over the top of the posts – use the 3/4/5 triangle to make sure they are at 90° to the lower layer of timbers. This is very important as it will affect the layout of your frames. Check the top layer is level and pre-drill and fix with timber locks. Your framing bed is now ready for use.



Using the 3/4/5 triangle to get the layers of the framing bed at 90°



The completed framing bed





Students working on a frame during one of my roundwood timber-framing courses

### Using the framing bed

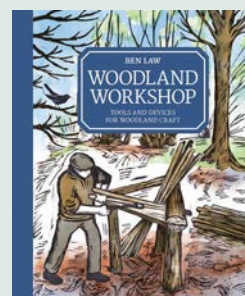
The framing bed is a level map upon which you lay out your roundwood frames. By marking positions of components of a frame on the bed, you can remove them, replace them with other timbers and get a mirror-image frame. Because the framing bed is horizontally level, making the frames on it will ensure they stand up vertical. The bed can be used as a reference – it is possible to measure up at any point from the bed to your roundwood frame and calculate the difference in height. The right-angled nature of the framing

bed allows you to lay out round poles parallel to the timbers of the framing bed and use the timbers that run at 90° to help mark out floor beams and tie beams with confidence.

If you are using a framing bed for making multiple frames of different sizes, think carefully about how you mark the bed. Pencil lines are fine for your first project but multiple pencil lines can lead to error, so consider using different colours for each project. If it is wet, use indelible pencils as they will write better when the wood is wet. ■



My roundwood timber-frame house, constructed on a framing bed and raised by hand in the woods



### Woodland Workshop

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# The Battle *to save* Nelson's flagship

By Richard Johnstone-Bryden

**T**he Royal Navy's sixth warship to bear the name *Victory* has symbolised the fighting ethos and values of the Royal Navy for more than two centuries. Today, she is at the centre of a new battle which has been billed as the last opportunity to save significant elements of her original structure.

The current restoration project has been triggered by the consequences of sitting in a dry dock for 90 years and commenced following her transfer to the HMS *Victory* Preservation Trust on 29 March 2012. The new organisation was established under the auspices of the National Museum of the Royal Navy (NMRN) to resolve the dilemma of how *Victory's* long-term preservation should be managed and funded. The transfer agreement enabled the Ministry of Defence to relinquish its ongoing financial responsibility, while enabling *Victory* to remain in commission in an enhanced ceremonial role as the First Sea Lord's flagship and a popular tourist attraction that has welcomed more than 30 million visitors since opening to the public in 1928.

On assuming responsibility for *Victory's* maintenance, the trust's new conservation team was given a simple brief – fix *Victory*. Although

*Victory's* history has been extensively documented in terms of where she went, the battles she participated in and those who served in her, there was a surprising lack of information about specific elements of the ship itself. In some quarters she was unfairly referred to as HMS MDF on the basis that she had undergone so many refits that virtually none of the original timber survived. Such assessments were incredibly harsh, yet in the spring of 2012 no one could provide an accurate answer about the age of the ship's individual components.

The conservation team decided to start with a blank sheet and follow the sequential process developed by National Historic Ships UK (NHS UK) for the conservation of historic ships. NHS UK is a government-funded, independent organisation which gives objective advice to the UK's governments, local authorities, funding bodies and the historic ships sector on all matters relating to historic vessels within the UK. Its approach consists of a series of 'conservation gateways', starting with the stabilisation of the ship in question. Thus, *Victory's* conservation team spent the first two years tackling the countless leaks to keep the rain out by caulking the deck and repainting the hull. These may sound like minor tasks, but when you are dealing with a 3500 ton wooden ship they represent a considerable undertaking. The completion of these jobs in 2014 enabled the trust to alter its description of the ship's condition from '*Victory* leaks' to 'a specific part of *Victory* leaks'. In parallel with this work, the museum commissioned a number of surveys to improve its understanding of the ship as a historical object and the causes of her distortion.

The race mark survey recorded the positions of all the race marks which had been cut into individual pieces ➤



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The old caulking is removed and replaced to stop the decks leaking when it rains

*Victory* in dry dock while still fully rigged before her current restoration commenced





The classic view of a fully rigged *Victory* on display in Portsmouth Historic Dockyard



Andrew Bains, leader of the conservation team



One of *Victory's* enormous anchors and some of the cannon that formed her main armament



Hull planking softened by wet rot

of wood within the ship. These marks were made by shipwrights to record the date on which a piece of timber arrived in a dockyard. When used in conjunction with the dates of the ship's major refits, the race marks enable the conservation team to make an informed decision about when each piece of wood was fitted. This in turn helps to generate a fairly accurate picture about the extent of the repairs carried out during each refit and how much original woodworking remains in *Victory*. Another survey involved an analysis of the ship's paint. This provided the team with an accurate indication of the various colours that were used at different points in the ship's life, which has led to some surprises. For example, the lower gun deck was painted duck-egg blue between 1803 and 1805, while the mustard yellow applied to the hull was actually the wrong shade. When used in conjunction with the results of the race mark survey, the paint analysis is helping to firm up the timings of when particular pieces of timber were fitted, on the basis that the bottom layer of paint is likely to be the original undercoat. This assumption provides

a rather effective benchmark by which to judge the age of the adjoining pieces of timber. If the neighbouring pieces of wood share the same bottom layer of paint, then it is reasonably safe to say that they were fitted at the same time. If not, the difference in the number of paint layers will confirm whether the adjoining pieces of wood were fitted earlier or later. A dendrochronologic (tree dating) survey was also conducted to identify where specific pieces of timber originated from, which provided further evidence of when specific repairs were carried out to enhance the team's understanding of *Victory* as an object.

The final element of the investigations focused on why the ship is moving and falling in on itself. To create an accurate record of the ship's current condition, the team enlisted the services of the Wiltshire-based Downland Partnership to use state-of-the-art laser mapping techniques to create a digital 3D model showing every last millimetre of the ship. To achieve this, its scientists used a Leica HDS6000 scanner, which records an incredible 50000 measurements per second. A total of 850 scans, lasting



Postage stamp depicting Admiral Lord Nelson & HMS Victory

PHOTOGRAPH COURTESY OF SHUTTERSTOCK



## HMS Victory Time Line

**1759 – 23 July**

Victory's keel is laid in Chatham Dockyard

**1765 – 7 May**

Victory is launched and placed in reserve.

**1778 – 13 April**

Commissioned for service in the American War of Independence under Admiral Augustus Keppel

**1778 – 27 July**

Fights in the inconclusive first Battle of Ushant

**1780** Fitted with

copper sheathing during a refit in Portsmouth Dockyard

**1781 – 12 December**

Captures a convoy of troopships during the second Battle of Ushant

**1793 – 1794**

Flagship of the Mediterranean Fleet under Admiral Lord Hood

**1797 – 14 February**

Flagship of Admiral Sir John Jervis at the Battle of Cape St Vincent

**1798 – 1799** Fitted as a hospital ship

**1800 – 1803** Great repair at Chatham

**1803 – 1805**

Flagship of Admiral Nelson in the Mediterranean

**1805 – 21 October**

Fights in the Battle of Trafalgar as Lord Nelson's flagship

**1806 – 1808**

Repaired at Chatham Dockyard

**1808 – 1812**

Flagship of Admiral Sir James Saumarez in the Baltic

**1812 – 7 November**

Enters Portsmouth Harbour to conclude her sea-going career

**1814 – 1816** Victory

undergoes an extensive refit

**1824 – 1830**

Flagship of the Port Admiral in Portsmouth

**1869 – 1891** Tender

to HMS Duke of Wellington

**1903** Rammed and severely damaged by HMS Neptune

**1922** Enters No2 Dry

Dock for restoration under the guidance of the Society for Nautical Research, which had raised the funding for the work that could not be justified under the auspices of her ongoing naval role.

**1928** Victory is opened to the public on completion of the restoration

**1941 – 10 March**

Damaged in bombing raid

**2012 – 29 March**

Custodianship transferred to the National Museum of the Royal Navy

**2012 – 10 October**

Becomes the flagship of the First Sea Lord



Victory moored in Portsmouth Harbour before she entered dry dock to be preserved in 1922

three-and-a-half minutes each, were carried out to record a staggering 89.25 billion measurements. Not surprisingly, it took three months to convert this information into a series of 3D models that could be used by structural engineers to gain an accurate understanding of the way in which the ship was moving and how it could be stopped. It is unrealistic to expect that all of the ship's individual pieces of timber can be simply moved back into their original position, so the conservation team has had to set itself the more realistic target of stabilising *Victory* and taking the necessary steps to prevent any further movement. It was assumed that the results would highlight the replacement of rotten wood and missing fixings as the highest priority, yet they indicated the hull is capable of coping with a certain amount of rotten wood and missing fixtures because it is heavily over-engineered. In contrast, the results revealed that the hull is unable to withstand the strains imposed by an insufficient level of support on a long-term basis, thereby identifying the primary cause of *Victory*'s distortion. To resolve this issue, a pioneering ➤





Repainting the balusters directly above Nelson's cabin. He appears to have the help of a more ancient artisan

### Victory's birthplace

Victory's keel was laid down on 23 July 1759 within the shallow timber-lined Old Single Dock in Chatham's Royal Dockyard. 6000 oak trees were used over the next six years to create a First Rate capable of carrying 104 guns to a design by Sir Thomas Slade. On 7 May 1765 she was floated out of the dock in which she had been built and laid up on the River Medway. She remained in Ordinary (reserve) for 13 years until she was commissioned for service in the American War of Independence. The Old Single Dock was subsequently rebuilt in stone and extended in the mid-19th century. Today, it is home to the last of the Royal Navy's wartime destroyers, HMS Cavalier, which is one of the principal attractions at The Historic Dockyard Chatham.



Victory was built in Chatham on the site of the dry dock in which HMS Cavalier is preserved



PHOTOGRAPH COURTESY OF THE NATIONAL MUSEUM OF THE ROYAL NAVY

system of 134 15ft adjustable props fitted at two levels was developed to replace the 22 steel cradles and concrete plinth on which the hull has rested since 1922. The new system is designed to mimic how the ship sat in the water. Every telescopic pole is fitted with a sensor that constantly monitors the load to enable adjustments to be made when required. BAE Systems began installing these props last summer and is expected to complete the work next year.

The museum's other major study assessed *Victory's* historical significance to influence the future presentation of the ship and the scope of the restoration itself. This review confirmed the widely-held view that *Victory's* role in the Battle of Trafalgar as Lord Nelson's flagship is the most significant aspect of her rich heritage. However, it also highlighted that she can rightly be described as a ship of significance due to her status as the sole surviving First Rate – a prime example of Georgian ship building techniques,

and in particular, the craftsmanship of Chatham's shipwrights; the First Sea Lord's flagship and the world's oldest warship in commission. The previous concentration on *Victory's* Trafalgar appearance led to the removal of several ungainly features that had been added since 1805. Although NMRN will not reverse this work, it will protect the remaining items that were fitted after the great repair of 1800 to 1803 to preserve the surviving evidence of her subsequent heritage.

Based on the results of all its investigations, the museum is currently evaluating what materials should be used for specific repairs, such as the replacement of the outer hull planking and how the saturated internal structural components can be dried out without triggering further distortion of the hull. Resolving these issues and implementing the solutions is expected to take another 20 years to complete. ■

### Further Information

Tel 02392 727582 [www.hms-victory.com](http://www.hms-victory.com)



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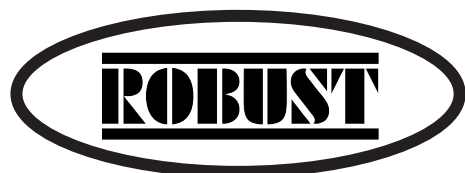
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# The Editor's toolbox

## Part II



The **Editor** set himself the challenge of making a custom toolbox – just how did he get on?

**L**ast time... It seemed like a great idea but trying to decide on a size and shape for a toolbox that would need to contain disparate items – from saws, to planes, to hammers, chisels, marking out tools, all carefully fitted, not just chucked in – presented a real challenge.

A base, a lid and a mid-section seemed generous until I started trying to get things to fit. I even sawed and planed up some softwood partitioning material using spare lengths of wainscot TG&V. After some rather tortured deliberations it became pretty clear that partitions would waste space and be difficult to fit. It was one of my 'walk away from it' moments when

clarity of vision struck me – each tool would need its own special way of being fixed safely in place and still be accessible. In other words there would be no one-size-fits-all means of fitting everything in. Read on...

**1** I had some old pine boards, not quite the right width, so after running them through the tablesaw and truing the edges with a No.5 jack plane, they were ready for glue-up and the 'Mark 1 forefinger' for checking flushness ensuring good working material to start with.

**2** Two long sides and two ends cut in pairs on the compound mitre

saw to match perfectly. I was making this whole thing up as I went along – I hope I get it right.

**3** Simple drilled and glued butt joints with properly recessed Pozidrive woodscrews were all I thought this case needed.

**4** Putting the basic shape together was quick and easy, but the lid section joint needed to avoid a screw line or I might need a hurried adjustment.

**5** Two pieces of 9mm ply cut to size and a continuous line of PVA was the basis for completing the box,





although I tried not to over-glue so cleaning up dried glue inside wouldn't be difficult.

**6** Now for a series of flat-headed nails to hold the ply firmly, checking the case was square. The ply is undersize because hard case edging would be added later.

**7** The completed box looks crude and yes it is, but fairly indestructible, especially once the case fittings are added.

**8** Now to cut the lid off. My choice was a biscuit jointer set for maximum depth of cut with the rubber anti-slip facing removed so it would saw. The measurement had to include the blade-to-machine base offset. ➤





**9** A batten acts as a fence and, pushing in the direction of cut, the two long faces were sawn through first, followed by the two ends.

**10** Inevitably there was a slight misstep – possibly the fence batten wasn't properly aligned from face-to-end. A bit of hand planing should sort that out.

**11** I used the large double-ended block plane from the intended kit to clean up all the lid and base faces so they met nicely.

**12** Inside the case there were traces of PVA glue that I wanted to remove, scraping with a chisel so there would be neat edges for the tools to press against.

**13** Is my case high enough? Just piling up three typical tools suggested it might not be. A bit of ingenuity would be required.

**14** The lid – not an issue. Saws are flatish things and they can be arranged to maximise space and look aesthetically pleasing.

**15** I had already intended to have a mid-section board with tools on, so I needed to cut corner and midway supports to hold it. I used a spare piece of wood to press each support against the saw fence to avoid them being 'thrown'.

**16** Partitioning was a non-starter, difficult to fit and very space wasting. Instead I gradually evolved a number of different solutions to suit various tools.

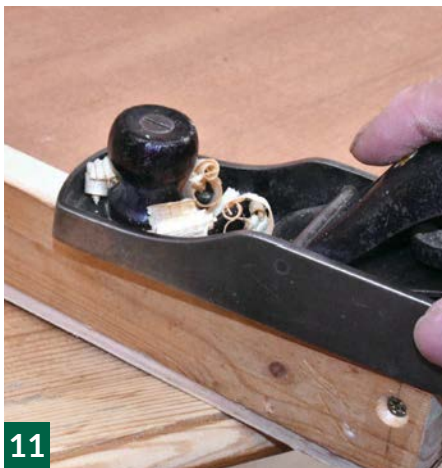
Sorry folks, that's all for now. See the next issue for the riveting conclusion of – The Editor's Toolbox! ■



9



10



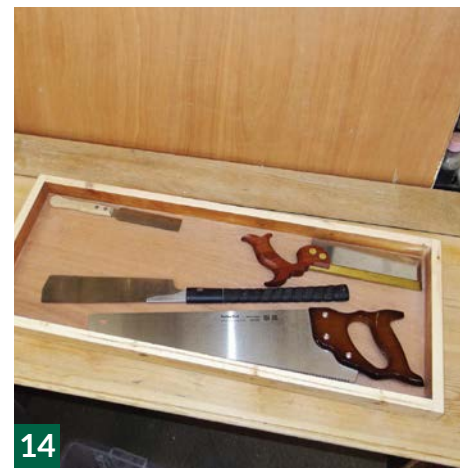
11



12



13



14



15



16



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# *Make a memory box*

- Traditional coffee table repair
- Michael T Collins makes a wooden wheel
- Green woodworking – Pig bench



PHOTOGRAPH BY LOUISE BIGGS



PHOTOGRAPH BY MICHAEL T COLLINS



PHOTOGRAPH BY PHIL GREENWOOD

**PLUS:** *Woodland ways; Trees for life; Plans 4 you and more...*



# Woodland ways

PHOTOGRAPHS BY GARY MARSHALL



## Large-scale wood recycling

**Gary Marshall** investigates a scheme for making our wood supply go further

**A**re you aware of the National Community Wood Recycling Project? I wasn't until a few months ago when I was looking for some sound but inexpensive wood for a garden project.

So I checked out the National Community Wood Recycling Project. This is the administrative body for Community Wood Recycling, a national network of social enterprises. These enterprises collect wood waste and reuse or recycle it in the most environmentally-friendly way possible, creating valuable work and

volunteering opportunities in the process. For your nearest enterprise go to [www.communitywoodrecycling.org.uk](http://www.communitywoodrecycling.org.uk) – this will save a lot of time searching overpriced timber merchants for non-existent cheap new timber when recycled will do equally as well.

I am now a firm fan of my local enterprise, Mid-Sussex Wood Recycling Project, and recommend it to anyone needing good quality timber at affordable prices. It has a large and varied stock, including profiles, lengths and curiosities you could find difficult to source elsewhere.

### What's not to like?

Mid-Sussex Wood Recycling Project is tucked away down a quiet lane leading to a local farm. It utilises otherwise redundant farm buildings and is supported by companies and organisations including local authorities, community groups and some large construction and development companies, from which it sources otherwise waste timber. It reuses and recycles pallets and provides a waste timber collection and certification service. I was really impressed with the overall ethos of the enterprise. Nothing gets wasted – any 'un-reuseable' timber gets chipped for biomass energy conversion.

### Background

Mid-Sussex Wood Recycling Project has been going for 11 years now and is run and has been enthusiastically built up by Dave Treadwell. According to Jamie, who was managing the site when I visited, it's going from strength





to strength. Jamie was happy for me to take a look around – hence all the photos. You can see the type of stock and storage for yourselves from the pictures.

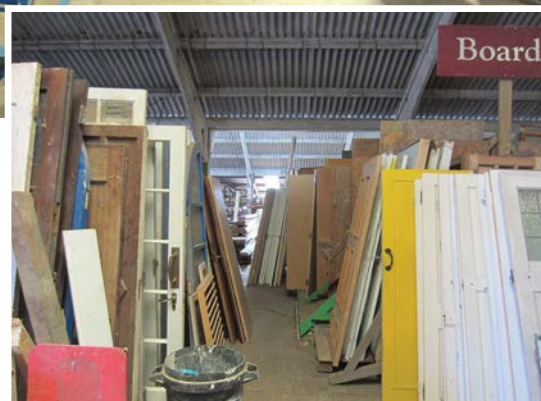
## Associated community group

Mid-Sussex Wood Recycling Project is also home to the Pericles Volunteering Group ([www.pericles.org.uk](http://www.pericles.org.uk)). This is a pioneering training and work project, working with adults and young people with special needs and/or mental health issues. It meets a couple of times week making, among other things, outside furniture and raised beds. It also grows herbs and produce in sustainable ways. There's even a sedum roof over the main covered area and a composting loo (very reminiscent of my article *Don't throw your old wood away* in January 2018's edition of *Woodworking Crafts*).



## A place to bump into like-minded people

On my second visit Jamie was talking to a woodland owner – so I couldn't help my ears flapping. It wasn't long before we were all in deep conversation about cutting, coppicing and managing overstood hornbeam woodland. We even touched on anomalies of the planning system regarding wood stores in ancient woodland and found we had contacts in common. Having just popped in for a few lengths of treated timber, I ended up spending the best part of a very enjoyable hour or so wandering round, chatting and wondering where I could store all the wood I fancy for future projects.



Raised beds and outdoor furniture made by the Pericles Volunteering Group



The sedum roof over the main covered area

(For a fuller picture of the whole enterprise visit: [www.midsussexwoodrecycling.com](http://www.midsussexwoodrecycling.com) The website is really interesting and well laid out – there are even a couple of videos to watch). ■



## *Learn a routing technique*

# Frame and panel cutters

There comes a time when you need to make your own doors for kitchen, lounge or bathroom. With careful parts preparation, the correct machining order and a router table and suitable cutters you can create your doors the way you want them and in the timber of your choice too





1

A typical frame and a matching panel for quick and easy construction



2

This cutter has to be reassembled when changing from profile to scribe



3

These cutters are moved up and down to change cuts

**1** I ran a cabinetmaking business for some years and a lot of the work was just that – cabinets in one form or another. Everything that needed to be framed and panelled, from carcass sides to doors, required suitable cutters to do the job and, not being in possession of a spindle moulder, the router table was the logical answer. By acquiring several different frame and panel cutters I could cater for most requirements and produce decent quality frames and panels quickly and easily.

### Profile and scribe cutters

**2** A panel isn't complete without a frame to it, so that is where we start. There are several different cutter types as well as styles. The one I used to favour many years ago was the reversible type where you machine the scribing cuts first, then swap cutter components and do the profile cuts second.

**3** Since then it has been possible to buy one-piece cutters which are



6

Plain frame cutters create a simple style



4

With two separate cutters it helps to have two routers

a bit taller and are simply wound up or down in the router table to select either the scribing or profiling section of the cutter.

**4** There are also separate scribing and profiling cutters – you just swap one for the other. Or, if you have the luxury of two router tables, both could be set up for repeat runs without changing cutters or settings.

**5** Style-wise you can choose between a plain bevel, ogee (shallow reverse curve), Roman ogee (a steeper reverse curve), and classical (two opposing curves broken in the middle with a narrow quirk or step). Which one you choose is dictated by the situation the frame will be used in and how many sets you feel like investing in.

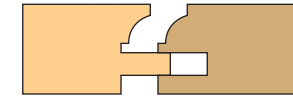
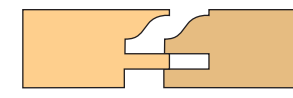
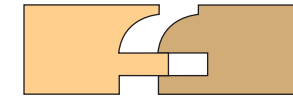
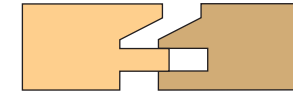
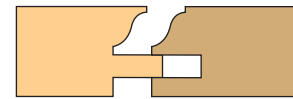
### Frame cutters

**6** The plain, square-frame router cutter is actually very versatile both for hidden panels, e.g. back or side panels, but will look good if you want



7

Flat panels can look good in the right situation



5

Examples of various different moulding styles

modern, clean-lined doors, painted to suit an earlier farmhouse or Shaker style.

**7** It can be used with flat or raised centre panels, as can the profile and scribe sets.

### Panel raisers

**8** Since all the frame-producing cutters usually have a 6mm panel slot, you can use a flat ply or MDF panel which can save cutter cost and look good. However, if you want traditional raised, solid wood panels, then you need to acquire at least one. ➤



8

An arch-top door can be used to suggest a specific 'look'



## Panel-raising cutter

**9** These are large-diameter cutters and, in some cases, fairly massive. It must be noted that these cutters must be used in a router table and all frame cutters should be used similarly, even if there appears to be no manufacturer's restriction on freehand use.

## Horizontal type

**10** These big cutters come in a variety of styles intended to complement the frame styles. So you can choose from Roman ogee, bevel, bevel with a swept edge, classical and dished profiles. They may also be available in different sizes, with the smaller ones suitable for drawer fronts if used with care in setting out the sizes. Whereas frame cutters always come with bearings, not all panel raisers do, but you need a decent fence to run against in any case, unless you are making arch-top doors, in which case a bearing is vital.

**11** Some cutters can accept a back cutter, which creates an even tongue so you know the panel must fit the frame slot without any adjustment. It gives a slight sweep on the panel rear face which looks deliberate and adds to the appearance of the door panel.

## Vertical type

**12** These cutters lend a couple of distinct advantages to panel-



**9** This panel raiser just fits in the table opening



**11** The small back cutter creates a perfect tongue

raising operations. First, they aren't as scary to use because they are much smaller in diameter. Second, they can be used with a small router, as long as it will take an 8mm collet and has sufficient motor power to run it.

**13** The downside is that you cannot do arch-top panels, only square ones, and the scribing cuts will tear grain out so you need to take steps to prevent this.



**10** There are panel raisers to match all frame sets



**12** Vertical panel raisers are available in all shank sizes



**13** Tear-out can result with the vertical type of cutter

## TOP TIPS

**1** A larger router table with a high through-fence fitted is essential, as is a fine height adjuster.

**2** Apart from vertical panel raisers, all cutters will need a ½in router, preferably with at least an 1800W motor input. Check all cutters will fit through the opening in the table.

**3** Always make the frames first as these define the actual size of the door or cabinet panel you are creating. Measure the openings for each one so they will be a correct fit and aim for a common size, even if slight trimming is needed after assembly. Inset doors and drawers should have no more than a 2mm gap on all edges when fitted.

**4** Do a carefully calculated cutting list expressing the sizes of stiles (vertical components), rails (horizontal



The through-fence on the router will prevent breakout



The router table that I made works really well



Precise measurements are essential when using a router



components) and muntins (vertical intersecting components). The stiles should be left over-length and 'horns' cut off later.

**5** All other components must be exact length and take into account the width of the stiles – or rails in the case of muntins – plus an amount that the scribing joints plug into the other components – usually  $2 \times 9.5\text{mm} = 19\text{mm}$  with most sets.

**6** Prepare all stock plus some spare sections for test cuts as accurately as possible. A planer/thicknesser will help assure this, but if you don't have that facility pick carefully through prepared stock at your timber yard. In particular, all frame components must be the same thickness since the process of scribing and profile cutting involves turning everything over for the second operation.

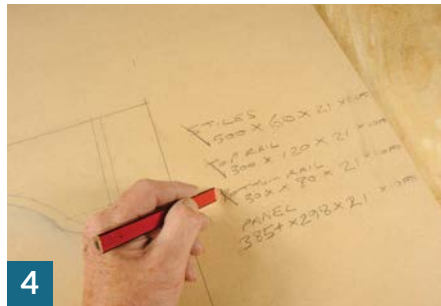
**7** Work methodically by stacking components like with like. Mark which component is which, e.g. stile, rail or muntin. In addition, mark the opposite face, which will be face down when machining – for example, if component ends are being scribed, mark the component's 'seen' face. When scribing is finished they will be turned over and all components can then be profiled.

**8** Test cuts are essential before you start. Get the scribe cut right, machine all those then do a test cut before profiling.

**9** Panels, if they are made from solid timber, need to be flat and true on the edges where they are joined in the middle. If you use biscuits to add edge strength you risk them showing at the ends when the panel raising takes place. It is better to make a good butt joint and avoid the biscuits 'grinning' through.

**10** The panel sizes are best checked against the dry-assembled frames. Measure for panel size by working from the flat frame section, excluding the moulding as this is the same depth as the groove underneath it. Now subtract no more than 2mm in length and width to obtain panel size.

**11** Machine the panel raise in more than one pass to depth – don't be too ambitious as it means removing



4

It is advisable to always start with a proper cutting list



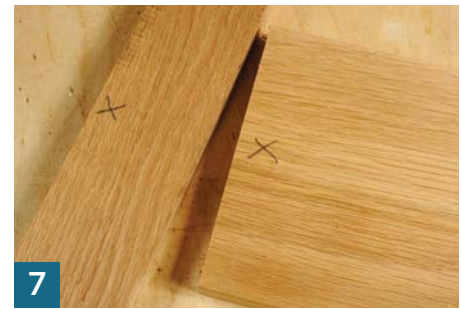
5

A stack of raw components, ready to machine



6

A test piece for panel raising



7

The crosses denote the face to be machined and on which edge



8

Scribing cuts need a through-fence for good support



9

Oh dear. A biscuit showing at the panel end – not good



10

You should always check panel fit before assembly



11

Even downward pressure is needed for consistent results

more wood than is safe. If you have a back cutter fitted, do the multiple passes by moving the fence back until you reach the correct cut width.

**12** Start with the scribing cuts so any tendency to tear-out is removed when you do the lengthwise profile cuts. Use even, downward pressure so the cuts are consistent and the mitres meet at the panel corners. A light final pass will help alignment. ■



12

It is important that the mitres meet at the corners



# Trees for life

## Cedarwood

Endangered Lebanese cedar forest, Tahtali mountain, Turkey

Cedar is a catch-all name for many different species of often unrelated tree – we show you a few of them

### Did you know?

Historically, there were various attempts at conserving the Lebanon cedars. The first was by the Roman emperor Hadrian, who created an imperial forest and ordered it marked by inscribed boundary stones, two of which can be found in the museum of the American University of Beirut.

In this series we have looked at a very few species of tree in each article. There cannot be a single, named tree in the world that isn't related to others or, in some cases such as cedar, frequently 'unrelated'. It does get very complicated – so much so that we thought it might be better to take several different 'cedars' as examples because they have such diverse properties that are useful to the woodworker.

## PINACEAE FAMILY (CEDRUS OR CEDAR)

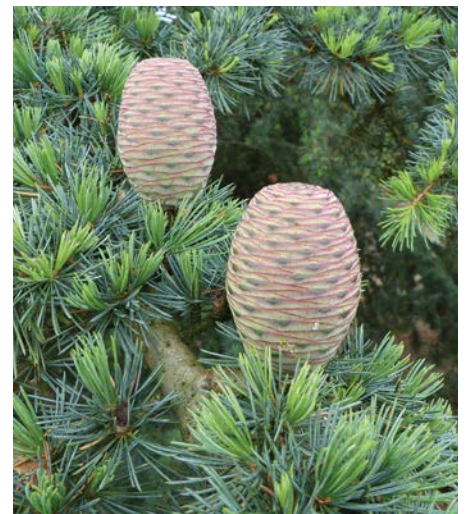
### CEDAR OF LEBANON

There are five species in this group, but Cedar of Lebanon (*Cedrus libani*) is well known and liked as workable timber.

### Location

Over the centuries, extensive deforestation has occurred, with only small remnants of the original forests surviving. Deforestation has been particularly severe in Lebanon and on Cyprus. On Cyprus, only small trees up to 25m tall survive, though Pliny the Elder

recorded cedars 40m tall. Extensive reforestation of cedar is being carried out in the Mediterranean region. In Turkey, more than 50 million young cedars are planted annually, covering an area of approximately 300sq km. Lebanese cedar populations are also expanding through an active programme combining replanting and protection of natural regeneration from browsing goats, hunting, forest fires and woodworms. The Lebanese state has created several forest reserves.



PHOTOGRAPHS COURTESY OF SHUTTERSTOCK UNLESS OTHERWISE STATED

The unusual cone shape of *Cedrus libani* and needles

### Uses

It is very prized for its fine grain, attractive yellow colour and fragrance. It is exceptionally durable and immune to insect ravages. It is used for furniture, construction and handicrafts. In Turkey, shelterwood cutting and clearcutting are used to harvest timber and promote uniform forest regeneration. Cedar resin (cedria) and cedar essential oil called cedrum are prized extracts from the timber and cones of the cedar tree.



Cedar of Lebanon drawer bottom from hall table by Brendan Devitt-Spooner

PHOTOGRAPH BY GMC/ANTHONY BAILEY



Lebanese French Protectorate five piastres coin with a warrior rowing ship on the face and Cedar of Lebanon tree on the other



## CUPRESSACEAE FAMILY

This is by far the largest group of trees and shrubs, of which western red cedar (*Thuja plicata*), Port Orford cedar (*Chamaecyparis lawsoniana*) and a variety of incense cedar (*Calocedrus decurrens*) are of interest.

### WESTERN RED CEDAR

#### Location

*Thuja plicata* is among the most widespread trees in the Pacific Northwest. It is associated with Douglas fir and western hemlock in most places where it grows. It is found at the elevation range to a maximum of 7,510ft above sea level at Crater Lake in Oregon. In addition to growing in lush forests and mountainsides, western red cedar is



Cones and foliage of the western red cedar



Cedar shingles are widely used on timber buildings in the US

also a riparian tree, growing in many forested swamps and streambanks in its range. The tree is shade-tolerant and able to reproduce under dense shade.

#### Uses

The soft, red-brown timber has a tight, straight grain and few knots. It is valued for its distinct appearance, aroma and its high natural resistance to decay, being extensively used for outdoor construction in the form of posts, decking, shingles, and siding. It is commonly used for the framing and long wood in lightweight sail boats and kayaks. In larger boats it is



The distinctive bark of the mature *Thuja plicata*

often used in sandwich construction between two layers of epoxy resin and/or fibreglass as it is about 30% lighter than common boat-building woods, such as mahogany. For its weight it is quite strong but can be brittle. It glues well with epoxy resin or resorcinol adhesive. Its light weight, strength and dark, warm sound make it a popular choice for guitar soundboards.

### PORT ORFORD CEDAR

#### Location

It was first discovered (by Euro-Americans) near Port Orford in Oregon and introduced into cultivation in 1854 by collectors working for Charles Lawson FRSE, of Lawson & Son nursery in Edinburgh, Scotland, after whom it was named as Lawson Cypress by the botanist Andrew Murray. The USDA officially calls it by the name Port Orford cedar, as do most people in its native area, but some botanists prefer to use the name Lawson cypress instead. The name 'Lawson's cypress' is widely used in horticulture.



Tight, round seed cones of Lawson cypress (*Chamaecyparis lawsoniana*)

PHOTOGRAPH BY MARC GRADY



Arrow shafts made from Port Orford cedar, AKA Lawson cypress

#### Uses

The wood is light, yet has great strength and rot resistance, and is particularly highly valued in east Asia, with large amounts being exported to Japan, where it is in high demand for making coffins and for shrines and temples. Its lumber is also known for its highly fragrant ginger aroma. Due to the straightness of its grain, it is also one of the preferred woods for the manufacture of arrow shafts. It is considered an acceptable, though not ideal, wood for construction of aircraft.



Single cone-shaped examples of *Chamaecyparis lawsoniana*

It is considered more than acceptable for use in stringed instruments. Its fine grain, good strength and tonal quality are highly regarded for soundboards in guitar making. ➤



## CUPRESSACEAE FAMILY continued

### INCENSE CEDAR

#### Location

*Calocedrus decurrens* is a species of conifer native to western North America, with the bulk of the range in the United States, from central western Oregon through most of California and the extreme west of Nevada, and also a short distance into north west Mexico in northern Baja California. It grows at altitudes of 160-9510ft.



PHOTOGRAPH: WIKIPEDIA COMMONS

The layered scales of *Calocedrus decurrens* exposed in their seed cones



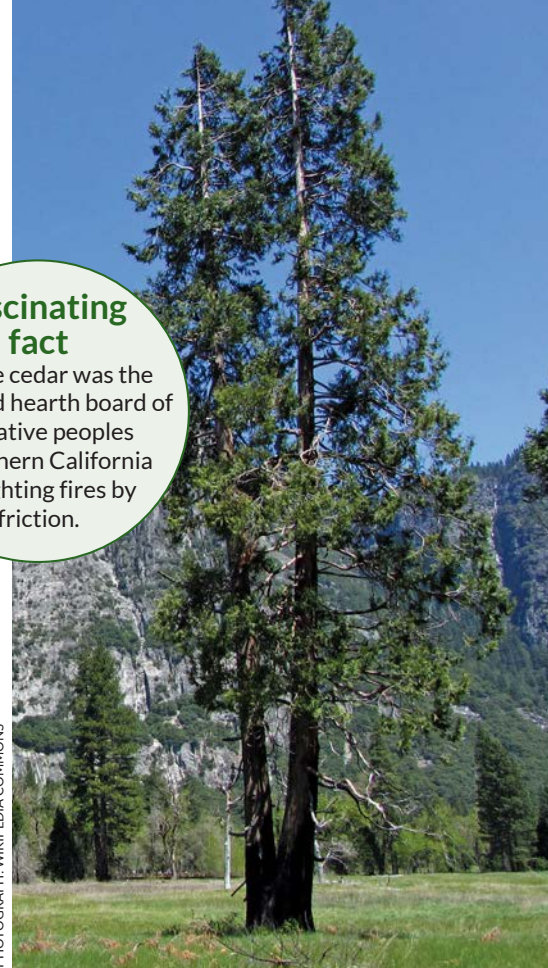
Pencils are typically made from the incense cedar *Calocedrus decurrens*

#### Uses

The wood of *Calocedrus* is soft, moderately decay-resistant, and with a strong, spicy-resinous fragrance. That of *C. decurrens* is the primary material for wooden pencils, because it is soft and tends to sharpen easily without forming splinters. The two Asian *Calocedrus* species were, at least in the past, in very high demand for coffin manufacture in China, due to the scent of the wood and its decay resistance. It is likely that past over-exploitation is responsible for their current rarity.

#### Fascinating fact

Incense cedar was the preferred hearth board of the native peoples of northern California for lighting fires by friction.



PHOTOGRAPH: WIKIPEDIA COMMONS

A majestic incense cedar against the backdrop of Yosemite National Park, US

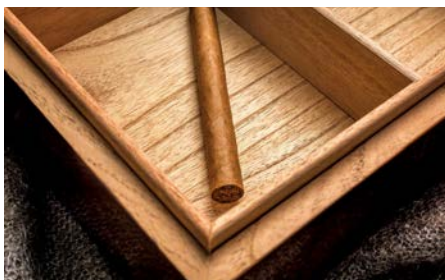
## MELIACEAE FAMILY

### SPANISH CEDAR (*CEDRELA ODORATA*)

An obvious choice, even though it isn't a cedar – this does get confusing...

#### Location

Cedro is a tree of Central and South America, appearing in forests of moist and seasonally dry subtropical or tropical life zones from latitude 26°N on the Pacific coast of Mexico, throughout Central America and the Caribbean, to the lowlands and foothills of most of South America up to 3900ft altitude, finding its southern limit at about latitude 28°S in Argentina. It has become a troublesome, invasive species in the Galapagos Islands. Cedro is always



The reason it is referred to as cigar box cedar, AKA Spanish cedar

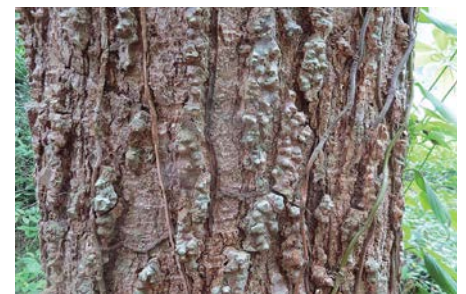


The fruit of Spanish cedar (*Cedrela odorata*)

found naturally on well-drained soils, often but not exclusively on limestone. It tolerates a long dry season but does not flourish in areas of rainfall greater than about 3000mm or on sites with heavy or waterlogged soils. Individual trees are generally scattered in mixed semi-evergreen or semi-deciduous forests dominated by other species. Mahogany is a close relative, being often found with cedro, and both suffer damage from the same pest, the mahogany shoot borer (*Hypsipyla grandella*).

#### Uses

*Cedrela odorata* is the most commercially important and widely distributed species in the genus *Cedrela*. Known as Spanish cedar in English commerce, the aromatic wood is in high demand in the American



PHOTOGRAPH: WIKIPEDIA COMMONS

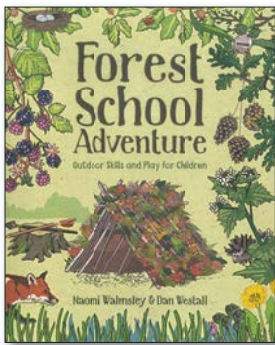
The lumpy bark of the Spanish cedar

tropics because it is naturally termite and rot-resistant. An attractive, moderately lightweight wood, its primary use is in household articles to store clothing. Cedro heartwood contains an aromatic and insect-repelling resin that is the source of its popular name, Spanish cedar, resembling the aroma of the unrelated true cedars (*Cedrus spp.*). Cedro works easily and makes excellent plywood and veneer and would be more widely used if it could be successfully plantation grown. This plant is often used for honey production in beehive and humidior construction. It is occasionally used for tops or veneers on some kinds of electric guitars and the wood is the traditional choice for making the neck of flamenco and classical guitars. ■



# BOOK REVIEW

If you go down to the woods today...you might find the **Editor** rubbing two sticks together in the hope of making fire



## Forest School Adventure – outdoors skills and play for children

**Authors – Naomi Walmsley & Dan Westall**

Normally I would review two books, but not only is this book not a good 'fit' with any others currently sitting on my bookshelf, I also believe it is an important

subject in its own right. In the modern world too many young people are disconnected from nature, from the landscape, too sedentary playing computer games, not learning practical skills, not being team participants and not getting essential exercise and fresh air. So this new tome from the GMC stable is the right thing at the right time. Yes, there are forest schools and outdoor activities available already, but we need to spread the good word much further and hopefully this book will help advance that cause.

Written in a fun way by two authors with plenty of experience of teaching bushcraft and Stone Age skills and leading forest schools, their knowledge and enthusiasm for the subject bubbles over. The book is split into four main sections – Nature Awareness, Bushcraft, World Foods and Games. To quote from the blurb at the front of the book 'young children will be immersed in imaginative, gloriously messy play and crafts, while older ones can get to grips with more complex activities like stone tool making and sourcing water'. To continue: 'Entertaining stories from the authors' own experience of surviving in the wild can be read aloud to children, bringing to life the thrilling reality of sleeping in a cave or savouring you're your first-ever foraged meal.'

It sounds like such fun and it is, with every subject backed up with plenty of step-by-step



photos showing how to make and do. It starts by discussing the

Importance of Play, which includes Respecting Nature and Safety Preparation. In the Nature Awareness section the book looks at nature crafts and skills and learning. Following on is Bushcraft, with some really useful advice on survival techniques such as knots, shelters and dens, fire, collecting water, camp craft, wilderness survival and primitive skills. If that hasn't whetted your appetite enough, the next section on Wild Food covers foraged food, bare-hands cooking and bread. Of course, no book on just being kids in the great outdoors would be complete without warm-up games and team energisers.

If you want your kids and their friends to experience what it is really like in the wild, then this fun, family-friendly, kid-friendly book is definitely for you. ■



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# Ask the experts



ANTHONY BAILEY  
Editor,  
Woodworking  
Crafts magazine

Another selection of awkward questions for our experts to answer

## GROUND COFFEE

**C** I recently found an old hand drill at a boot sale on our village green. I paid a fiver for it because it looked useful but it needs a scrub up and the handle is uncomfortable and looks a bit scabby because the finish is partly breaking off. Any advice to restore it? **S**

Garry Wilbrough

**Anthony replies:** I know these as 'coffee grinder' hand drills or, more correctly, a wheelbrace, made by various tool companies but most notably Stanley. If you have one with two gears running against the centre wheel that is the best, but a decent single-wheel version is still OK if not quite so smooth running. Make sure the three-jaw chuck opens and closes nicely, so long as it does it means the springs are correctly in place. Clean the whole thing down with a degreasing agent or wax cleaner and then set about removing the very crusty old original lacquer on the wooden handle (and centre knob if present). The new finish won't be the same but it will feel nice and smooth and make the tool pleasant to use. Lastly, lubricate all moving parts with a light oil.



Use the crisp, sharp edge of a cabinet scraper or chisel to drag the old, brittle lacquer finish off the wood. It is fairly easy to do this – don't use paint stripper, it isn't necessary



Sand the wood thoroughly to remove any roughness or remaining finish, but not hard enough to remove colour in the wood



Apply a deep-reddish wood dye in a colour similar to the original lacquer. Use more than one coat to make the colour deeper



Once the dye has dried, apply two or three coats of varnish, de-nibbing in-between coats



The finished job – not the same as the original factory finish but much more pleasant to the touch



## CUTTING CAPACITY

☞ I have a fairly cheap Evolution saw table which does most things very well but sometimes I want to make cuts in ply or MDF a bit wider than the fence will go. I've wondered about trying to make an add-on side table but fitting a fence would be difficult and I don't have the space or money for a much bigger machine. Any suggestions? ☹

Rick Mason

**Anthony replies:** The clue seems to be in 'a bit wider' – in other words, not increasing cut width a great deal. If that is indeed true, then you don't need to buy or make anything. Instead mark where you want to cut, turn the board around and set the fence to cut away the piece you don't want rather than the piece you want to keep, which is now on the opposite side away from the fence. So long as the sheet material is parallel, cutting the waste including the saw kerf means your good piece of board will also be cut accurately even though it is being treated as if it is a rather large waste piece. A word of warning – do check the cut width at the start and keep the board pressed against the fence as minor changes afterwards are impossible to do using this trick.



It is possible to extend your board-cutting capacity with a bit of artfulness

## TRUNK CALL

☞ Hi, I love your green woodworking articles and I really want to have a go but I'm not sure where to find suitable wood to use. Any pointers please? ☹

Nikki Osman

**Anthony replies:** This subject comes up regularly and even professional green woodworkers have difficulty pointing people in the right direction when it comes to sourcing 'green', i.e. fresh-sawn, wet timber suitable for conversion. For most purposes it doesn't have to be large in cross-section, although for making spoons and suchlike, a trunk needs to be big enough for splitting down to create tapered sections from which items can be shaped. I wouldn't say green wood is like gold dust because it isn't, but you do need to find suitable sources. It really does help to join a green woodworking group because it will



A stack of very mature hazel created by a volunteer work party

have sources that may be shareable. Also, volunteer groups caring for parks, footpaths etc. because they can often get some timber in return for their efforts – usually as future firewood but manna from heaven if you are a 'greenie'. If someone is having a tree lopped or felled ask them or the tree surgeon nicely and they might let you have some. Do ask what species it is, as some wood is more suitable for working than others. Lastly, don't just take – all wood, all land, belongs to someone.

## THAT'S MAGIC

☞ I'm looking for a way of fitting shelves that is strong, discreet and adjustable. Most types are rather too visible and wooden strips are too big and need fixing. Am I being a bit unreasonable wanting to hide the supports? ☹

Andy Tye

**Anthony replies:** No you aren't being unreasonable Andy. I'm obsessive about using discreet and appropriate hardware and fixings, especially when I build something for a client rather than for my own use. There are many kinds of shelf support which can be seen, however small they are. It is possible to have shelves that slide on to beech biscuits located in slots in the carcass sides. These aren't glued in so you can always remove them if you want to change shelf positions, but you are

left with empty slots. A better, more discreet, method is to use 'magic wires' sometimes referred to as Swedish-type shelf supports. They are shaped wires that come in different sizes to suit different shelf widths. The shelf ends are slotted so the shelves can slide straight on to the wires, which are hidden as the slots are 'stopped' before the front edge of the shelf. If the wires are removed you only have small holes remaining.



The shelf ends have stopped slots making the magic wire supports invisible

STAR  
QUESTION  
PRIZE

The Tool Marketing Company, or TOMACO, as it is known, which sells a variety of tool brands, including COLT, Sharp Edge and Narex Tools, is pleased to be sponsoring the Ask the Experts section in collaboration with GMC Publications. Each issue's Star Question

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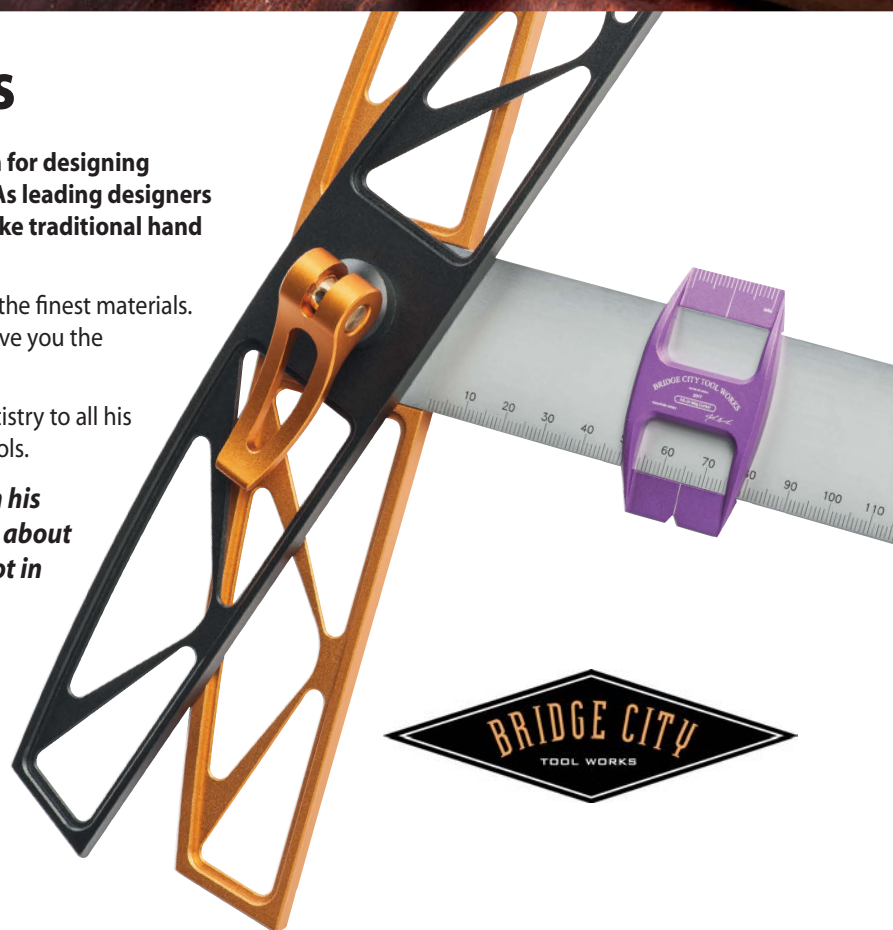
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# Iroko bench seat

**Jamie Lake** makes a practical outdoor bench with storage for his parents

**M**y Mum and Dad had a cheap plastic box bench in their garden and when they sat on it they fell through it. I decided it was time to make them a proper bench out of iroko.

I set to work taking measurements of the area it would go and created my plan. I had some 4m rough-sawn iroko boards left over from another project that would be perfect.

I started cutting the timber to more manageable sizes then planed and thickened them down to size. The legs needed to be thicker than the timber I had so I glued two pieces together to make the legs. Once dry I

cut them to length. Next I cut the top and bottom rails for all four sides to the right dimensions, marked out and cut domino joints. I used the router table to groove the rails to allow for the tongue and groove panels. I did this to the legs but stopped just short of the domino joints.

I put some timber through the thicknesser which became the boards for the tongue and groove panels. I put the boards through the router table to form the tongue and grooves. I sanded the components down to 180 grit and applied some Osmo UV protection oil to the tongue and groove panels.

Now came the time to glue it all ➤

## Cutting list

All dimensions are in mm

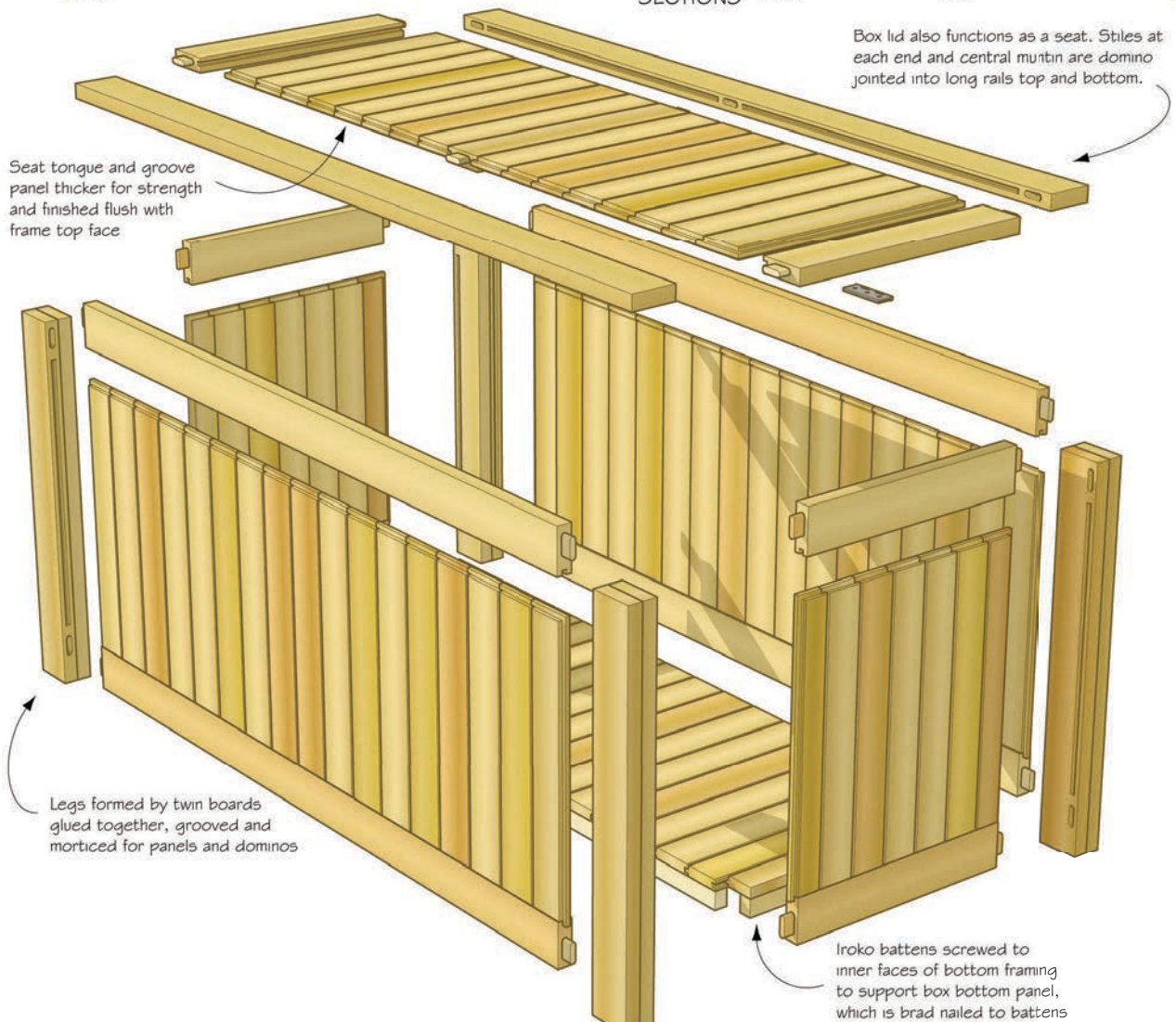
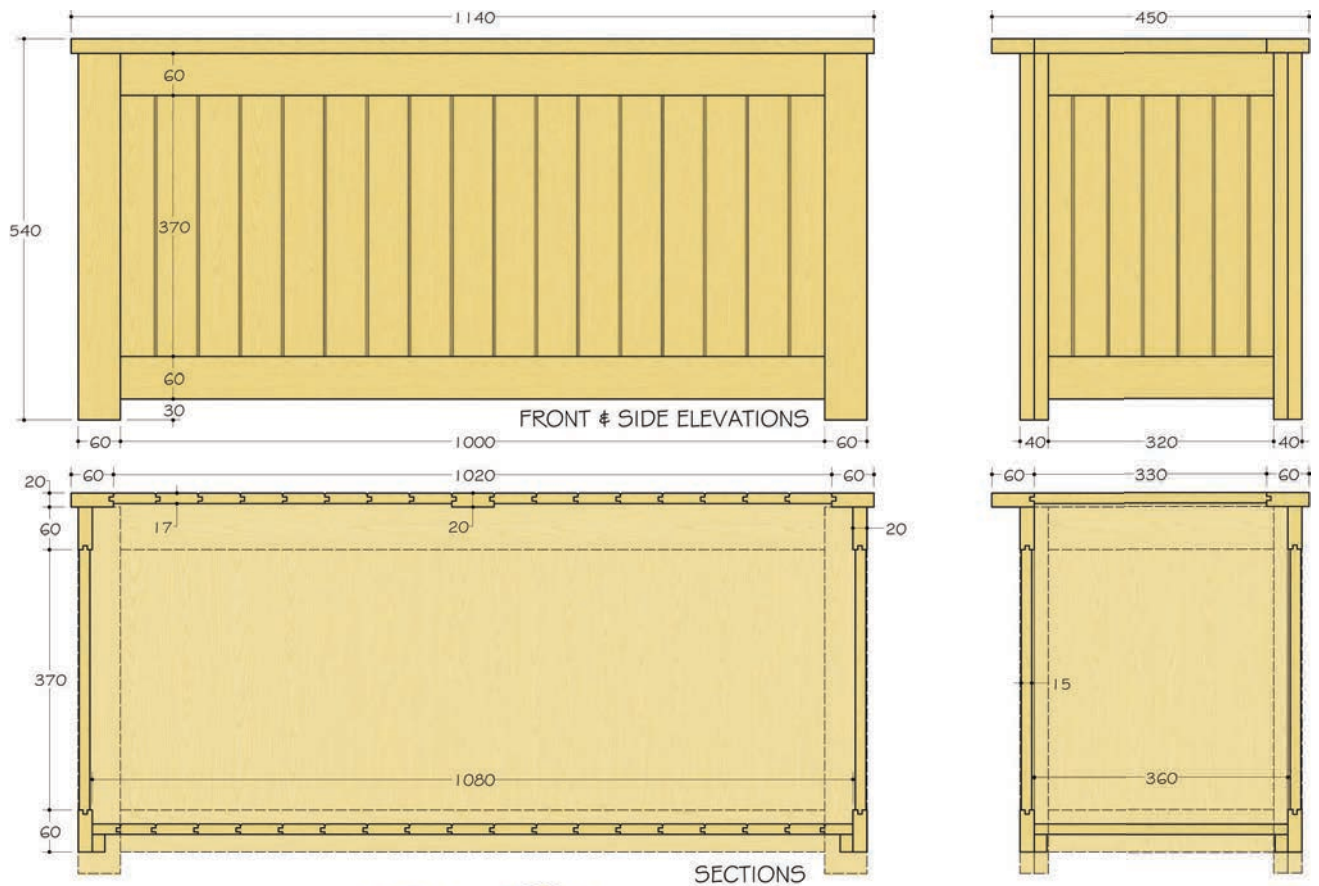
### Box

4 legs 520 x 40 x 60  
2 top rails long 1040 x 60 x 20  
2 bottom rails long 1040 x 50 x 20  
2 top rails short 300 x 60 x 20  
2 bottom rails short 300 x 50 x 20  
T&G panels cut to fit

### Lid

2 rails 1140 x 60 x 20  
3 stiles 330 x 60 x 20  
T&G panels cut to fit







together. Starting with the long sides, I applied glue to the dominos and faces then fitted the top and bottom rails to one leg. I slid the tongue and groove panels into their grooves after which I applied glue to the end of the rails, fitted the other leg and applied the clamps. I checked it was square and put it aside to dry. I repeated this for the other side.

Once the front and back were dry I glued the sides to them in the same way as before. As this piece is quite big I did this on the floor. I clamped it up and checked the box for square and wind.

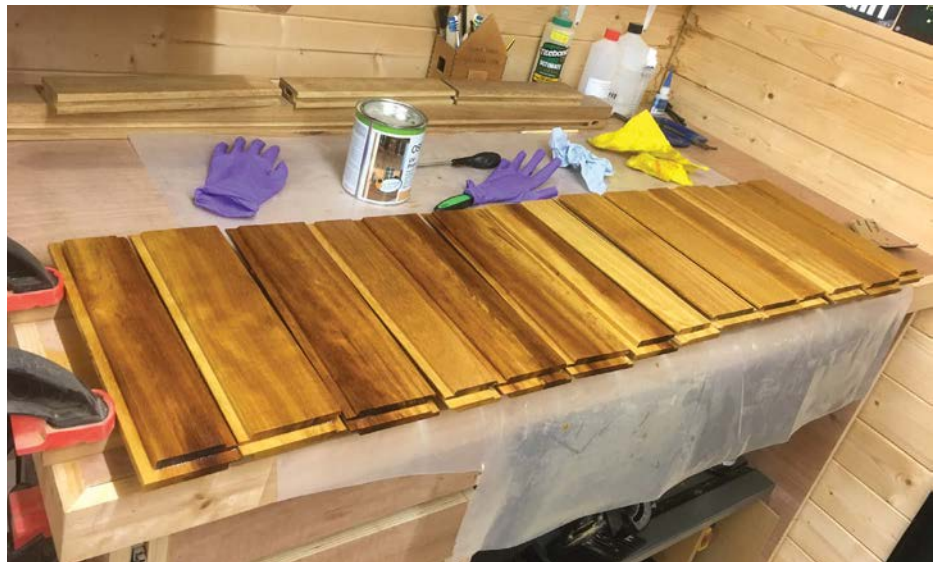
Now that the box was together I glued and screwed some iroko battens to the bottom rails inside the box. Then I made some more tongue and groove boards. I brad-nailed these to the top side of the battens inside the box.

The lid is made in much the same way as the box. There are two long rails and three stiles that were all grooved. On the long rails the grooves stopped short of the domino joints. The tongue and groove panels were made slightly thicker as they would be sat on. I wanted the top of the lid to be level so the T&G panels were rebated to allow for this.

When all the components for the lid were made, I sanded them to 180 grit and applied two coats of Osmo to the T&G panels. Now dry, I glued the lid together, again checking for square, and put it aside. Out of the clamps I gave it a final sanding and routed a round over on the edges.

Now all of the woodworking was done I fitted two hinges and two catches to the lid and box. A little sanding to the areas that didn't have finish and two coats of Osmo finished the box.

I delivered it to Mum and Dad and they loved it. Job done. ■



Freshly applied Osmo wax oil being left to dry overnight





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# *Lloyd Loom stool*

The **Editor** tackles an awkward 'mid-century modern' stool repair



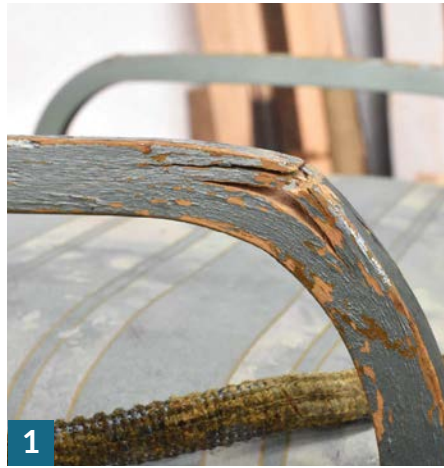
I have a penchant for what is termed mid-century modern furniture – roughly 1945-1975 in date. Some is good, some not so good and some ‘just-so-retro’, such as this charming box stool, which I found in our local furniture charity Furniture Now. It sometimes has unusual or eccentric pieces and this broken, woven stool instantly caught my eye. Why? First, it had to be a Lloyd Loom piece. These are relatively cheap but very retro and perfect for repainting. The chairs in particular are very comfortable and light in weight, but this was a bedroom piece. It looked tatty but it had history too. The colour took me back to my childhood – my wife’s as well, because we both recognised the pale green fabric from our respective parents’ homes. In my case a further reason that has never left me is that I had a toy car – a Matchbox Models of Yesteryear cast model of a 1907 Rolls Royce Silver Ghost in an exquisite pale green metallic finish. Green is the most complex of all colours, ranging from khaki to leaf green to traffic light green and so on, but I always loved this light, soft metallic shade and here it was on a stool. I had to have it.

### Detective work

**1** The hand holds were steam-bent beech but both were split open, one more than the other. It suggested it had been in the home of an elderly, perhaps quite heavily-built, person who used to bear their weight on these rather too much and hence the breaks – being a furniture detective as usual....

**2** The finish was spray applied and very thorough, including the underneath of the stool. Various bits of fluff and dust needed to be removed.

**3** More detective work – the label detached itself very easily as the glue had failed. With difficulty I could just make out the Lloyd Loom label. It had various details, such as British Made, woven fibre furniture, the manufacturer W Lusty & Sons, Lloyd Loom trade mark and some less readable details too – ‘standard including gold & silver’. I looked up the current manufacturer’s website and it is emphatic that its product labels are never obscured. It was pretty obvious this piece had been resprayed by a dealer, probably back in the sixties as we had both recognised the fabric pattern.



### Structural repairs

**4** The only serious structural problem was the breaks on the curves of the hand grips. No amount of pressure would force the wood back into shape. What to do? They were stable and not about to break off completely so it was more a case of filling and remodelling them. I happened to have some clear two-part epoxy resin with a low viscosity – runny, in other words. If I could dam up three sides of each of the four breaks, I could fill the joints with resin.



**5** This took a number of goes as the resin seemed to keep disappearing – some leaked but the rest must have just penetrated further into the wood, which was no bad thing. The right proportion of hardener to resin proved essential to getting a really hard result. Plenty of time was left for it to cure.

**6** To avoid unintentionally re-profiling the sides of the hand grips, I used a very sharp chisel to pare the epoxy down flush with the wood. It was now that the original paint colour showed underneath the green – a metallic gold.



**7** Next a reasonably coarse rasp to recreate the correct curve shapes. I chose a rasp because it was less likely than a file or coarse abrasive to get clogged by resin. Once the shapes were all as correct as possible, I used 120 grit abrasive to get a smooth profile.

**8** Standard one-part woodfiller came next to ensure all small crevices were filled, then fine aluminium abrasive paper was used to get a nice finish ready for repainting.

**9** I wanted to get the shape as close as possible to original, although the wood had become distorted over time. I also made sure the arrises of the repair sections were slightly rounded to match the wear on the rest of the beech wood.

### Paint matching

**10** This was the stage I had been rather trepidatious about. I only started this project once I had bought the correct paint – except it never was and I knew it. I had searched through every paint range and I could find nothing that was a decent match. In the end, despite my reservations, I settled on two colours from the Jacquard Lumiere Pearlescent range. The intention was to mix them and, if necessary, add a bit of acrylic yellow to warm the colour up.

**11** My restorer's palette got ever more messy with the paint trying to find a close enough match somewhere on the board. You see the problem wasn't so much the colour as the name – pearlescent. When this stool was sprayed green it was metallic – pearlescent hadn't been invented. Now it's everywhere, from cars to nail polish. It was, frankly, very bright.

**12** I got remarkably close in colour, even if its level of reflectance was way above a simple metallic colour. The next problem was touching in the multitude of areas where the finish had worn off, with special treatment to grubbier parts of the stool.

**13** Highlights, lowlights – where do I stop? The general slight aura of grubbiness of this vintage piece sometimes showed up starkly against the brilliance of the new paint. ➤





**14** Paintwork done but the new areas were easy to see – possibly not so in this photo, but I could see them and I wasn't happy. I should explain that, although this wasn't a conservation project, I didn't want to just obliterate the old finish with an overall paint job.

**15** Next strategy – use a mix of pale and garnet French polish to touch down the brightest areas. Better, but not overcoming that pearlescent effect.

**16** Getting slightly desperate, pale French polish with a bit of blue spirit dye – nah. That didn't work either. This was proving a lot harder than 'painting in' damage on antique veneered furniture.

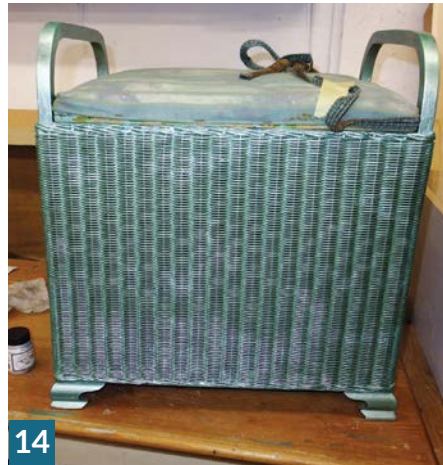
**17** Last throw of the restoration dice – dabbing dark, almost dry wax polish on to give an aged look. Um, no... so I did what I always do in these situations – walk away from the problem.

**18** It's the very act of going away and freeing my mind by thinking about something else that solves my woodworking or restoration problems. Yes, I will have to do what I have avoided so far, repaint the whole exterior. A car parts place for some metallic aerosols? No, they'll never match. But I do have two pots of expensive pearlescent paint sitting here. Just mix it all up, get the same shade I've used on the hundreds of tiny defects on this stool and apply it all over.

**19** Ignore the result for the moment and reglue the loose braid using the upholsterer's adhesive, Copydex. It's rubbery but quick to apply and stick and it rolls off your skin easily.

**20** Now for a foam upholstery cleaner to smarten up the tired fabric covering and bit of a scrub to loosen dirt and marks. I wouldn't do this to an antique – which it isn't, of course.

**21** After all that worry about getting a match, strangely, as it is now painted overall it doesn't look wrong at all, in fact it now looks rather lovely – the way I imagine my Matchbox 1907 Silver Ghost must have looked all those years ago... ■



14



15



16



17



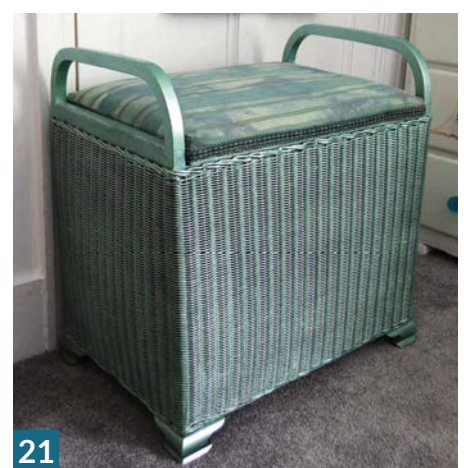
18



19



20



21



# Lloyd Loom furniture – *All wrapped up*

Even good ideas and good design can go in and out of fashion, Lloyd Loom is one such an example

If you aren't familiar with Lloyd Loom it may just be that you haven't paid much attention to 'that funny little chair in the corner of Granny's sitting room'. Sometimes a bit scruffy and careworn, invariably comfortable and once repainted and sitting in the front window of a 'retro' shop, looking rather cute, this unique but since much-copied form of woven furniture deserves respect for being such a success over the decades. It was a simple idea that spawned various designs of furniture that are often quite stylish, compact, light in weight and easy to revamp with a tin of paint and a new fabric covering and will fit into almost any setting. But how did it ever get started?

## The Lloyd Loom process

The process was patented in 1917 by American Marshall B Lloyd. He developed a method of twisting kraft paper around steel wire and then

Right: A Lloyd Loom commode chair, in its original form and refinished in gold

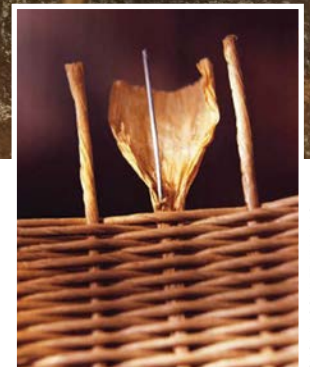
putting the paper threads on a loom to create the woven material which then formed the basis of chairs, ottomans, stools, tables etc. In 1921 he sold the British rights to W Lusty & Sons, who used the woven material known as fabric, to create a simpler range of designs. In the 1930s Lusty Lloyd Loom furniture was at the height of its popularity and could be found in hotels, restaurants, cruise ships and

A 'krafty' idea: simple paper wrapping of steel threads

ocean-going liners, tea rooms and many private homes. The Lusty family created more than a thousand designs and more than 10 million pieces were made in the US and Great Britain before the Second World War.

## Changing fortunes

Inevitably there have been various changes in fortune for the Lusty family and the Lloyd Loom brand over the years. However, latterly private investors keen to secure the original legacy of Marshall B Lloyd have ensured that the name and manufacturing tradition has survived. Today Lloyd Loom pattern furniture and many synthetic material derivatives are manufactured in many parts of the world, principally the Far East. If you want to discover more visit the website of the current Lusty family business: [www.lustyfurniturecompany.com](http://www.lustyfurniturecompany.com)



PHOTOGRAPH COURTESY OF WIKIPEDIA/COMMONS



A laundry bin in the original gold with which the Lloyd Loom was first introduced



Found sitting in a flea market and waiting for a new home



## Clarke TABLE SAWS

LEG STAND KITS  
FOR CTS10D  
AND CTS11  
ONLY £27.59  
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FROM ONLY  
£72.99  
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INCLUDES  
LEFT  
& RIGHT  
TABLE  
EXTENSION

| MODEL   | MOTOR | BLADE | EXC.VAT | INC.VAT |
|---------|-------|-------|---------|---------|
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| CTS10D  | 1500W | 254mm | £169.98 | £203.98 |

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SELLER**

CTS10D

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MODEL MOUNTING JAW (WIDTH/OPENING /DEPTH)mm EXC.VAT INC.VAT

|                      |  | (mm)mm     | /DEPTH)mm | EXC.VAT       | INC.VAT       |
|----------------------|--|------------|-----------|---------------|---------------|
| Clarke Bolted        |  | 150/152/61 |           | <b>£14.99</b> | <b>£17.99</b> |
| CHT152               |  |            |           |               |               |
| Stanley Clamped      |  | 72/60/40   |           | <b>£18.99</b> | <b>£22.79</b> |
| Multi Angle          |  |            |           |               |               |
| Record TV75B Clamped |  | 75/50/32   |           | <b>£21.99</b> | <b>£26.39</b> |
| Clarke VW7 Bolted    |  | 180/205/78 |           | <b>£29.98</b> | <b>£35.98</b> |

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airmaster

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\* 'V' Twin Pump

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| 7/250    | 2HP 7 24ltr     | £94.99  | £113.99 |
| 11/250   | 2.5HP 9.5 24ltr | £109.98 | £131.98 |
| 8/510    | 2HP 7.5 50ltr   | £119.98 | £143.98 |
| 11/510   | 2.5HP 9.5 50ltr | £139.98 | £167.98 |
| 16/510*  | 3HP 14.5 50ltr  | £209.00 | £250.80 |
| 16/1010* | 3HP 14.5 100ltr | £259.98 | £311.98 |

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| CVAC20PR2  | 1400W 16/12ltr | £64.99   | £77.99   |
| CVAC25SS*  | 1400W 19/17ltr | £67.99   | £81.99   |
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| CPT800  | 8"            | 120mm               | £219.98  | £263.98  |
| CPT1000 | 10"           | 120mm               | £299.00  | £358.80  |

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900W

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| MODEL  | MOTOR | FLOW RATE             | BAG CAP. | EXC.VAT | INC.VAT |
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| CDE35B | 750W  | 450 M <sup>3</sup> /h | 56Ltrs   | £144.99 | £173.99 |
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| CON18Ni | 18V   | 2 x Ni-Cd  | £69.98   | £83.98   |
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| CBF20      | 20" Box Fan      | £36.99  | £44.99  |
| CFF18C100* | 18" Floor Fan    | £39.98  | £47.98  |
| CFF18B100* | 18" Floor Fan    | £39.98  | £47.98  |
| CPF18B100  | 18" Pedestal Fan | £49.98  | £59.98  |

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\* Black & Decker

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| CPF13   | 400W/230V | 13x457         | £49.98  | £59.98  |
| KA900E* | 350W/230V | 13x455         | £59.98  | £71.98  |

| MODEL    | VOLTS | BATTS           | EXC. VAT | INC. VAT |
|----------|-------|-----------------|----------|----------|
| CON18LiC | 18V   | 2x 2.0Ah Li-Ion | £109.98  | £131.98  |
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|---------|---------------|---------------------|----------|----------|
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| CPT800  | 8"            | 120mm               | £219.98  | £263.98  |
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|---------|-----------------|---------------------|-------------------|---------|
| CMS210S | 210/30          | 60/120mm            | £59.98            | £71.98  |
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| MODEL          | POWER (W) | DEPTH OF CUT (WOOD/STEEL) | EXC. VAT | INC. VAT |
|----------------|-----------|---------------------------|----------|----------|
| CJS380*        | 420W      | 55/6mm                    | £15.99   | £19.19   |
| CON750H        | 750W      | 80/10mm                   | £27.99   | £33.59   |
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Top Quality Bandsaws - ideal for professional workshop use. Strong steel body with solid cast iron table

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| CBS225 | 228mm/9"     | 90mm        | 50mm        | £199.00  | £238.80  |
| CBS300 | 305mm/12"    | 165mm       | 115mm       | £399.00  | £478.80  |
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|------------|-----------------|---------------------|-------------------|---------|---------|
| CMS210     | 210/30          | 60/120mm            | £59.98            | £71.98  |         |
| Einhell    | 210/30          | 55/120mm            | £59.98            | £71.98  |         |
| TC-MS 2112 | Einhell         | 62/310mm            | £129.98           | £155.98 |         |
| Einhell    | 250/30          | 75/340mm            | £159.98           | £191.98 |         |
| TC-SM 2534 | Einhell         | 250/30              | 75/340mm          | £159.98 | £191.98 |

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CBM1B

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CWTS1

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**£99.98** INC.VAT

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|---------|-------|-----------|----------|----------|
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| CSS16VB | 90W   | 550-1600  | £94.99   | £113.99  |
| CSS400C | 90W   | 550-1600  | £114.99  | £137.99  |

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• Run big 3 phase woodworking machines from 1 phase supply  
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**£274.80** INC.VAT

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|-------|-------------|--------|---------|---------|
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# Restore your rasp

With a recent surge in the popularity of their French cousins, **Geoffrey Laycock** looks at replacing handles on a range of British-made rasps

**W**hen I wanted to quickly shape a template for routing a curve on a recent project, I immediately reached for one of my old rasps. Over the past few months, much has been written about the amazing rasps available from France and I'm sure they are as good as everyone reports. Auriou rasps are available from Classic Hand Tools and Liogier rasps can be purchased direct from the maker.

I'm pleased to know that I have a wide collection of rasps, all British-made, which are just as good. Sadly, I don't think you can buy them anymore. All of my rasps are hand-stitched – that is to say all the teeth have been individually formed by the file-cutter using a punch and hammer.

## RIP rasps

Two things probably led to the extinction of the trade in the UK: cost, obviously, as this is intensive, time-consuming work; and health, as the likelihood of contracting various serious repetitive strain disorders was second only to the problems of inhalation of lead dust from the stocks used to support the files while cutting. We even had the literally-named and now long-extinct File Cutting by Hand regulations of 1903 to provide basic health protection. If you look at a hand-stitched rasp you can see that the teeth are not in straight lines – this is what makes them produce such a



PHOTOGRAPHS BY GEOFFREY LAYCOCK

good finish, even though they look and feel so vicious. With practice you can achieve remarkably finished surfaces.

I have included an image which shows a variety of the most typical shapes of rasp, which are half-round, plus one round rasp. Two types of handle can be seen, the one on the largest rasp being the heavy-duty type and, of course, more expensive. If you really want to spend money on handles you can source hardwood Holtzapffel pattern ones from Workshop Heaven – [www.workshopheaven.com](http://www.workshopheaven.com) – which also supplies good-quality rasps. I

decided to refurbish all my rasps, as one of my next projects is making a rocking horse, and started by cleaning and treating all the handles. None had ever been protected in any way and after stripping they were treated to a coat of sanding sealer then two coats of Danish oil. Two of the smallest handles were previously treated to two coats of acrylic spray as most of my files are used for metalwork and being oil-proof can be useful. I had treated a batch and keep spares and I used two of those. For woodwork they just feel nicer with an oil finish.

## Polishing rasps

My polisher is actually a Brook Gryphon electric motor with adaptor shaft and has served for more than 20 years so far, happily spinning 200mm mops at 1425rpm. It lives on the end of my engineer's bench by the door and is simply screwed down once slid into position, debris leaving the workshop naturally as the plywood is not normally there. I prefer not to use a rear enclosure for this type of work as there is less for out-of-control workpieces to get caught in if they go flying. In this case, gloves are a good idea due to the very sharp teeth should the wheel catch and pull the rasp from the hands. For most other work involving either polishers or grinders, think carefully whether gloves should be used and what type as, when worn near anything rotating, they can increase risks rather than reduce them. When using any metal bristle wheel, eye protection is absolutely essential as metal wires can cause very serious eye injury. Always use the bottom three-quarters of the wheel as seen, never the top half.



Polishing with my electric motor



## FITTING NEW FILES AND HANDLES



Straightening the tang of a 4in Parkinson's rasp held in an engineer's vice

To fit new files or handles, many older books make it sound simple: heat the tang of the file – the pointed handle end – until red, then ram the file handle – with a suitable hole already drilled down the centre – on to it. I've tried this and wouldn't recommend it. For one thing, if you are not careful you might just lose some of the heat treatment of the teeth nearest the tang. So here is a simple but very effective method.

### Straightening the tang

The rasp pictured with the tang held in an engineer's vice is at least 50 years old. It's a 4in Parkinson's, which were always better quality than Record and recommended if you can find one in good condition. What I am doing is straightening the tang – you can see it is not straight and is positioned so the bend is close to the jaws. Little effort is required to straighten it as the tang is not heat treated, so left soft and flexible – think Japanese chisels: an extremely hard, brittle edge with a soft backing.

After the rasp is straightened, you need to check it in the other plane. Be careful not to bend the tang excessively or repetitively as you will eventually have a crack and fracture. You can also see that this rasp looks slightly golden as I have cleaned it using a high-quality brass bristle wheel on my polisher. This tends to leave a rather pleasing, slight golden sheen on metal surfaces, but I am careful not to use it if there is a possible contamination problem with workpieces later. It works brilliantly at removing wood waste stuck in the rasp teeth.

### Attaching the handle

Although it looks as if I am holding the file handle in this picture, I am basically screwing it on to the tang. Note the soft jaws being used to prevent any damage to the rasp surface. This assumes the handle is pre-drilled. This assumes the handle is pre-drilled, and you should find all new ones are. Without any modifications, the tang will act as a good scraper and produce a tapered hole of increasing depth. Keep withdrawing and tapping dust out. Stop when you are a couple of millimetres short of where you want the handle and, using a mallet, piece of wood or, in my case, the back of my workshop brush, hit the end of the handle. You do not need much force to firmly push the handle those extra millimetres with the edges of the tang cutting into the sides of the close-fitting tapered hole. Make sure you cannot pull the handle off and you are done. The alternative is to remove it from the vice and, wearing a suitable glove, rap the handle end on the bench top.

### Removing handles

Using this method you should end up with handles that are firmly attached to the file or rasp and straight. To remove, the easiest method – assuming you have an engineer's vice – is to open the jaws wider than the file thickness, but less than the diameter of the handle collar and, holding the file, move it down between the jaws sharply. The file should continue, leaving the handle rolling around on the floor and then under the bench – as these things always do. ■



The same technique can be used to correct the tang in the other plane



With the rasp held in soft jaws, twist and push the handle on to the tang



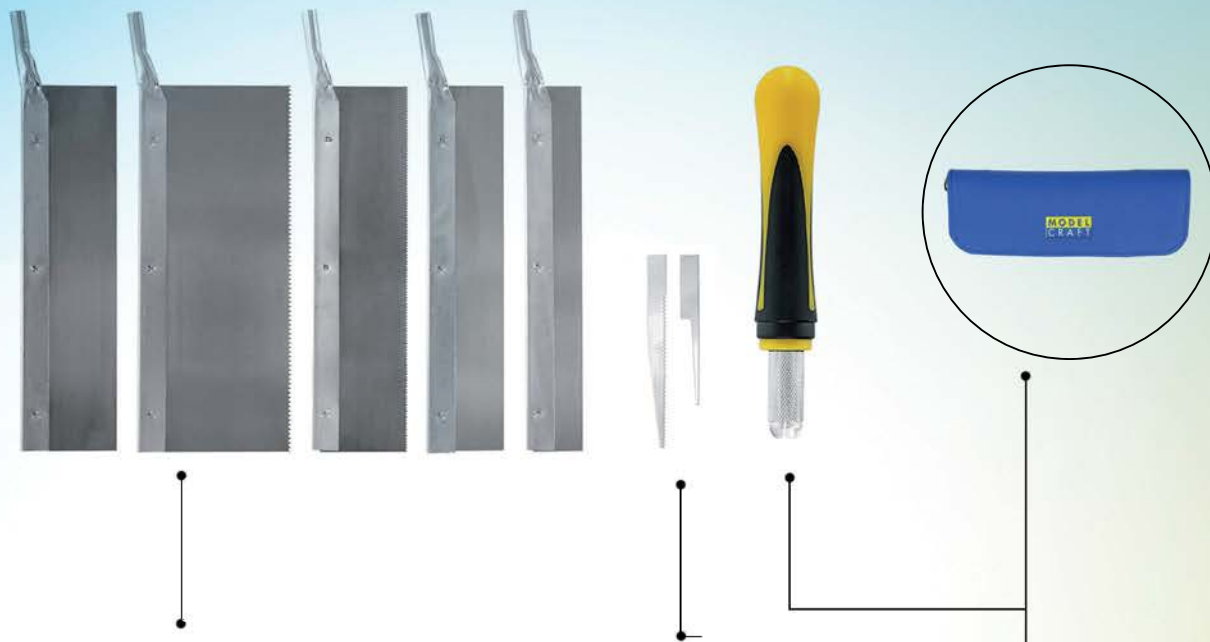
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# Tricks of the trade...

A conventional bench hook is meant for forward cutting

Sometimes things go better backwards than forwards...

A bench hook is a workbench essential if you hand-saw wood to length. Coupled with a typical Western-style hand saw it seems to be the perfect combination. It's OK until you try using a Japanese pullsaw. The blade is thinner because it isn't under compression, only tension. It is also easier to aim and start the cut with finer teeth pulling into the wood than it is starting a tenon saw cut. However, you still need a bench hook, but you no longer need to press firmly against the workpiece. Instead you need a variation on a bench hook where you pull the wood against a fixed batten. So here it is, a simple bench hook where the workpiece sits in front. Alternatively, you can still use a tenon saw, placing the workpiece in front of the batten if you must. Once you start pullsawing your tenon cuts you won't want to go back to the old ways as it is so quick and easy to use. ■

This bench hook suits both pull and push saws



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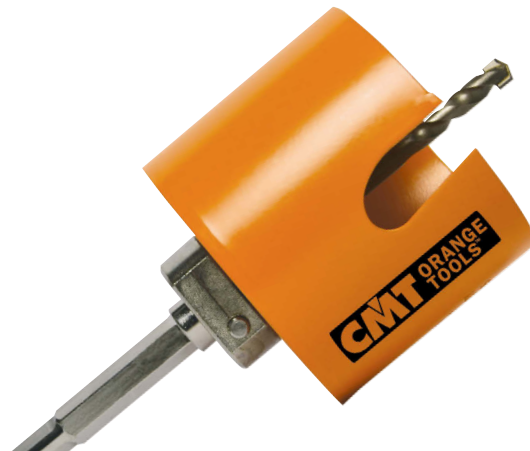




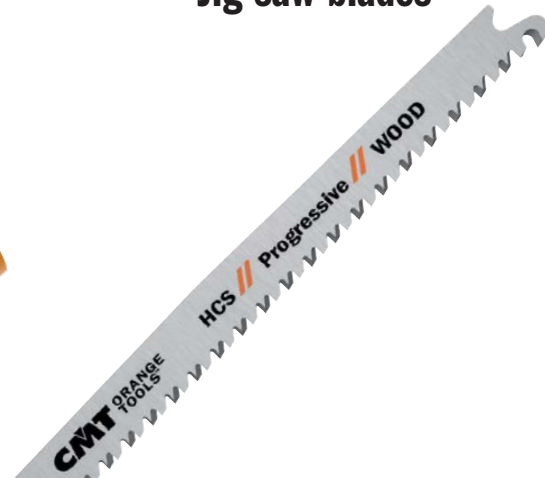
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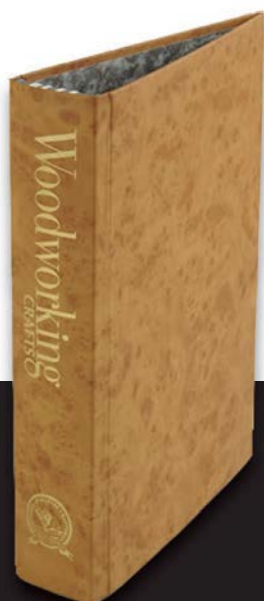
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Focus on....

# Edward Hoppus

When it comes to squaring the circle it was **Edward Hoppus** who first solved the problem of timber calculation

**H**oppus was an English surveyor of the 18th century. He wrote several important and useful books, such as *The Gentleman and Builder's Repository, or, Architecture Display'd*, which claimed it contained 'the Most Useful and Requisite Problems in Geometry' and *Hoppus's Measurer*: 'a book of early wood frame construction tables & guides for the mathematically disinclined' first published in 1736, later retitled *The Hoppus's Measurer, or Measuring*

*Made Easy to the Meanest Capacity*.

While *The Gentleman and Builder's Repository* would have been most invaluable for architects and builders of the time, especially creating such imposing Palladian style buildings of the era, his legacy to us, even to this day, has been the hoppus measure.

Set out in his book *The Hoppus Measurer*, it describes the means by which you can take a round tree trunk (or stone as there is a similar wastage factor to wood) and calculate the usable timber content.

If you consider how much may potentially be lost in conversion, being able to put a figure to this is very significant from an economic point of view. A newly felled 'wet' tree has potential to be converted into dried useable planks but it is necessary to figure out what that value might be.

The 'hoppus cubic foot' (or 'hoppus cube' or 'h cu ft') became the standard volume measurement used for timber within the British Empire and other countries in the British sphere of influence before the introduction of metric units. It is still used in the hardwood trade of some countries.

The hoppus ton (HT) was also a traditionally used unit of volume in British forestry. One hoppus ton is



equal to 50 hoppus feet or 1.8027 cubic metres. Some shipments of tropical hardwoods, especially shipments of teak from Myanmar in the Far East, are still stated in hoppus tons.

## Calculation of timber volume in round logs

The following calculation is used to estimate the usable timber in round logs using a 'girth tape' that is calibrated in 'quarter-girth inches', i.e. 12in when measuring a 48in circumference log.

Hoppus volume (h ft) = 'quarter girth' (in) × length (ft)/144 = circumference (ft)/4 × length (ft)

Equivalents: 1 h ft = 1.273 ft<sup>3</sup>/ 27.74  
h ft = 1 m<sup>3</sup>/ 1 h ft = 0.03605 m<sup>3</sup>

Nowadays we have better, computer-aided means of timber calculation, generally in metric units. However Edward Hoppus's legacy lived on well into the 20th century. ■



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**The new CT pre-separator with cyclone technology.**

Large sanding areas and large quantities of dust place a great amount of strain on the main filter, which in turn affects the suction power. Mineral sanding dust from renovation sanders or long-reach sanders such as RENOFIX and PLANEX clogs the pores of the filter system and consequently reduces the suction power. The CT pre-separator separates and collects approx. 80% of the accruing quantity of dust before it reaches the mobile dust extractor. This takes the strain off the main filter and guarantees consistently high suction power throughout the entire work process.

**For more information, go to [www.festool.com](http://www.festool.com)**