

THE MAGAZINE FOR ALL WOODWORKERS

# TRADITIONAL WOODWORKING

LOW BENCH  
STEP-BY-STEP



MAY 1999 £2.45

## ELEGANT SIDE TABLES

*Project plans  
inside*



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STEAM  
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# TRADITIONAL WOODWORKING

NUMBER 108 MAY 1999



This is the last month for the old Traditional Woodworking. June's issue heralds a new era, and our design team, led by Foremaster Steve Stoner, has been working night and day to transform your favourite woodworking magazine into a more user-friendly format.

That's not to say that this month's TW is not filled with meaty goodness. Get your hands dirty with our low bench project, stable doors or guide to steam bending. Alternatively, put up your feet and marvel at de Havilland's Wooden Wonder.

At last we've been dragged kicking and screaming into the 20th century - we only just made it - and have launched Webwatch, which you can surf on page 4. It gives you sites of interest and plucks occasional pearls from the web.

Unfortunately, you can't yet e-mail us, but we'll have that sorted out by the June issue.

That's just a taster of the woodworking cornucopia that is May's Traditional Woodworking. As the song says: 'Things can only get better...' HELEN ADKINS

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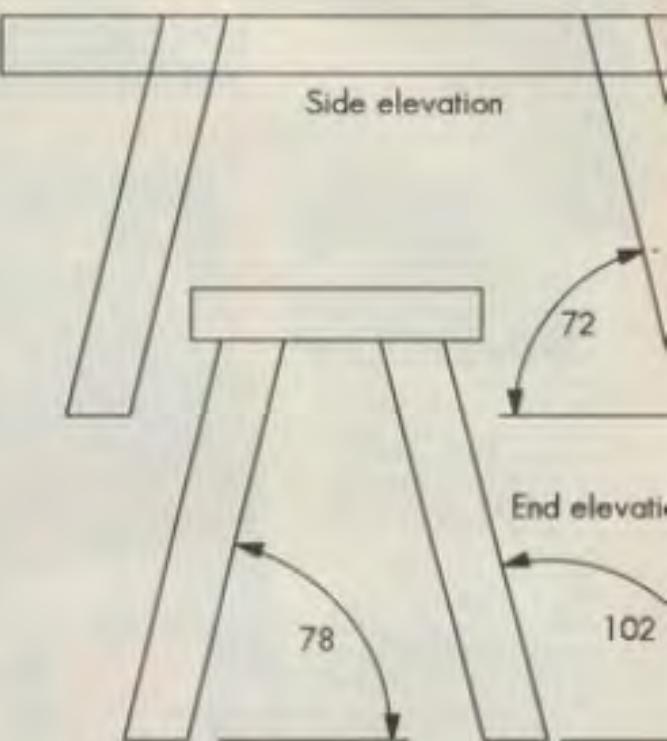
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# Woodcuttings

*This month is a slow news month so we take the opportunity to announce how your tips could secure you a set of Faithfull chisels*

## More Mail

Further proof that Traditional Woodworking reaches those parts of the globe that other magazines simply can't comes in the form of our latest exotic subscription enquiry. Hello to Mr Hassan Ali Al-Arabi and all of our other Middle-Eastern readers. I'm still on the lookout for more evidence of TW's international appeal, so if you're carving sticks on an Outback cattle station, drop me a line.



## Saw head

Readers who have been beavering away on their saw horses (see TW's March issue), will doubtless find the attached

diagram useful. It shows the angles of the legs from the side and end elevations.

The person responsible for omitting this information from the original project has since been

## COMPETITION

### Tips win prizes

In response to the steady flow of readers tips that fall from our bulging postbag, we've decided to dedicate an entire page to these woodworking gems.

What's more, the best of each month's tips will win a set of six Faithfull chisels worth over £80. With shatterproof handles and wooden case, these top-quality tools would be an asset to any workshop.

So if you have a tip you'd like to share with our readers, get it on paper and over to us ASAP. It doesn't have to be earth-shattering — sometimes a simple 'why didn't I think of that' idea can save our readers a lot of head scratching.

Send your tips to Traditional Woodworking, The Well House, Burton-on-Trent, Staffordshire DE14 1JQ. Mark the envelope 'Top Tips.' Remember to include sketches (if appropriate), and full contact details for yourself. The first Top Tips will appear in our June issue, so dust off those typewriters.



## Our new column highlights all things wood on the World Wide Web

We kick off the first Webwatch with a look at some interesting US sites. There are plenty to choose from, although as every surfer will know, it takes a certain amount of perseverance to sort out the good from the bad and the ugly.



Amish footstool on [www.amishhouse.com](http://www.amishhouse.com)

■ Acorn to Oak... The Oak Factory Home Page (<http://theoak.com>) offers an interesting woodworking forum (more below), but also has a link to W3: Woodworking on the World Wide Web. This comprehensive site covers listings, product best bets and buys and has a (US) magazine article database. The data base lists features by magazine and topic. Very useful for rooting out those projects...

■ If it's design inspiration you're after, check out the custom furniture by Michael Schupp ([www.chippendale-wood.com](http://www.chippendale-wood.com)) and Ayers Amish Furniture House ([www.amishhouse.com](http://www.amishhouse.com)). Mr Schupp has an interesting line in organic chairs and tables. The Amish site is run by a mail-order company and has loads of colour pics of its products (see photo). There's some good stuff here - it looks like Amish could be the new Shaker.

■ [www.wood-worker.com](http://www.wood-worker.com) is a comprehensive magazine site encompassing articles and projects, tips and tricks and a buyers guide. It also has a good listing of other woodworking-related sites.

■ For those with a love of all things gear and kit, Shopsmith has its own site ([www.shopsmith.com](http://www.shopsmith.com)), with full product information and news. Readers concerned with the price of tools in the UK should log on to [www.gtr.com](http://www.gtr.com). The General Tool and Repair Inc. site can tell you exactly how much our US comrades are paying for tools by all the major players. Judge for yourselves.

■ Closer to home we have [www.craft-supplies.co.uk](http://www.craft-supplies.co.uk). The Home of Woodturning has come up with a broad and user-friendly site taking in all of its

Bosch users below. The Ryobi death squads, seeking to overrun the Black & Decker horde, with simple Shaker pegs in hand. The land of Elu bounbarred by artillery from Unisaw cannons, launching lovely turned Rosewood shells with light bunting.

Word has it that Intarsia has been taken! Lee Valley stands ready to fall next. Some forces were overcome there and they retreated like rabbits, making a dada or a groove to the nearest stronghold. And who is left to take part in the charge for San Hill? Oh, sure, Freud is behind the lines trying to make sense of it all, but how does that help the assembled forces of Brigadier General Norm and the Damn Yankee brigade? Behind enemy lines, lay helpless soldiers, strapped to laminated maple wood carvers benches, with K-clamps applied, bravely resisting the question "Hook and Loop or PSA?", until the dreaded Inca jig is brought out from the Tool Crib. Where will it all end?

And when all the big machines were destroyed and the smoke began to clear, thanks to the dust collectors, out would come the hand tools, and the bloodiest battle of them all would ensue. Followers of the Lie Neilsen cult battling hand to hand, against the lowly sandpaper people from Porter Cable. Racial visors lowered as they clash. Block planes and cabinet scrapers in hand, they fight to the bitter end. Snipers hiding in the trees with their 340 Deltas. Bailey's vs the Stanley's, the battles ensue on Hollow Ground. Ultimately, someone ends up with a nasty abrasion. War is hell, indeed.

If it's a Grizzly story, one which we must avoid if possible. We shall keep our finger joints crossed, as our fallen heroes are laid to rest in shallow mortices. Can we not apply the strip blocks, somehow? Who will help us? If only Bob Vila was on base...

■ Okay, I lied...I will make a comment - this man needs to get out more!





# LOW BENCH

*Based on the traditional pig bench, this oak and yew form is graceful, strong and seats a good crowd. George Buchanan explains how it's made.*

I would have thought that in my short life I had made enough chairs for Elizabeth. Up to three weeks ago, the total must have amounted to about 20 (which doesn't include the myriad stools dotted about, or the chairs we have sold). These days the house seems a little crowded.

And that is the trouble with chairs – they take up too much room. Elizabeth warned me that there would be difficulty in seating 17 at supper if I didn't make her a dining-table length form.

There are many simple designs of trestles and forms that are a variation of the four-legged pig bench. This is essentially a plank with four rough legs tenoned into its corners. But I thought a little extra time spent would make a

piece that we would be happy to live with. Still basic carpenter's work, but graceful and strong.

I used some offcuts of oak for the legs, stretchers and rails, and a plank of yew for the top. Any wood will do, but find a decorative piece for the top.

## Construction

Cut the leg blanks to length, adding an extra 1/4in at the top of each one.

The order for turning the legs is straightforward. Mark off on the blank the extent of the area to be turned, leaving the extra quarter-inch of waste at the top (headstock) end. Reduce the marked area to a cylinder using a gouge or point (Pic 1).

Cut the cove at the bottom

end, using a small gouge (Pic 2). Enter the cut first from the bottom to the middle, then the top to the middle. Define the width of the bead immediately above the cove, using a skew chisel (Pic 3). Then, using a large gouge again, rough out the taper towards the top. Stop just short of the top bead.

Use the skew to shape the bottom bead and then the taper (Pic 4). Define the bead at the top of the gunbarrel with the small skew and then lower the rest. Cut the radius at the bottom of the foot. Once completed, sand the legs carefully.

Cut the rails and the stretchers to size. Two tenons enter the top joints in the centre legs. This is not an ideal arrangement as these joints will be particularly stressed on an uneven floor. A bridle joint here would be preferable if you have the timber. I didn't have sufficient oak to make the rails from single lengths so I bridged the joints on the inside of the frame to add strength.

Mark off all the shoulder marks for the side rails and stretchers. These are all at right angles to the legs. Strike



1 Reduce the blank to a cylinder



2 Shape the bottom bead and then taper



3 Shape the upper edges of the stretchers

off the tenons with a gauge set to slightly over 1/8in and offset from the face edge by about the same amount. Cut the tenons.

Mark off cut-off points on the top of the legs. Notice that the legs taper in towards the top plank. The outward facing surfaces will be cut at right angles, the end facing surfaces will be sloping. Cut these ends accurately and then mark in the tenons, working from the top of the leg.

Excavate the tenons (Pic 5). I used a router and held the legs in a router box which I use whenever the legs have an inadequate flat surface or

## Cutting list (in inches)

Component	No.	Length	Width	Thickness	Comments
Top	1	52	8	1 1/2	Yew
Legs	6	16	2	2	Oak
Side stretcher	4	26 1/4	1 1/4	1 1/2	Oak
End stretcher	2	6 1/2	1 1/4	1 1/2	Oak
Side rails	4	26 1/4	3 1/8	1	Oak
End rails	2	5	3 1/8	1	Oak



**2**  
*Cut the cove at the bottom end*



**3**  
*Define the width of the bead*



**5**  
*Excavate the tenons*



**6**  
*Cut four free-hand grooves*



**8**  
*Scribe the bead at the bottom edges of the rails*



**9**  
*Screw the top to the bottom*



**10**  
*The unfinished bench*

regular edge to guide the router. Square off the lower ends of the mortises and cut a sloping haunch in the upper edge. Fit the tenons.

## Fit the stretchers

Mark and cut out the end rails. The shoulders of these are sloped to the taper of the leg. Cut out the tenons and fit them. Clamp the top joint and mark the shoulders for the end stretchers too. Cut them and fit. Some slight tapering on its under edge will enable the tenons to fit into the sloping leg.

Before joining up, age the



**11**  
*Fume the bench with ammonia*



**12**  
*Apply pigment and even off with a hot air gun*

inner surface of the rails with an adze. Cut four decorative freehand grooves down the centre of each rail with a sharp paring chisel (Pic 6). Shape and distress the upper edges of the stretchers with a draw knife (Pic 7). Use a screw moulding cutter to scribe the narrow head at the bottom edges of the rails and stretchers (Pic 8).

Join up the framework, clamping each length together and pegging it as you go. Leave the framework for the glue to dry, but sight down the legs and feet to make sure they are lined up without any twisting.

The top is a single plank. Cut it to size, and trim the edges smooth. Rout a  $\frac{1}{2}$ in wide rebate round the top edge and then finish the shaping of the moulding with a rebate plane. Mark off the underside bevel and cut it with a plane. Sand all the surfaces, and roll over any hard edges with the corner of a hard piece of wood.

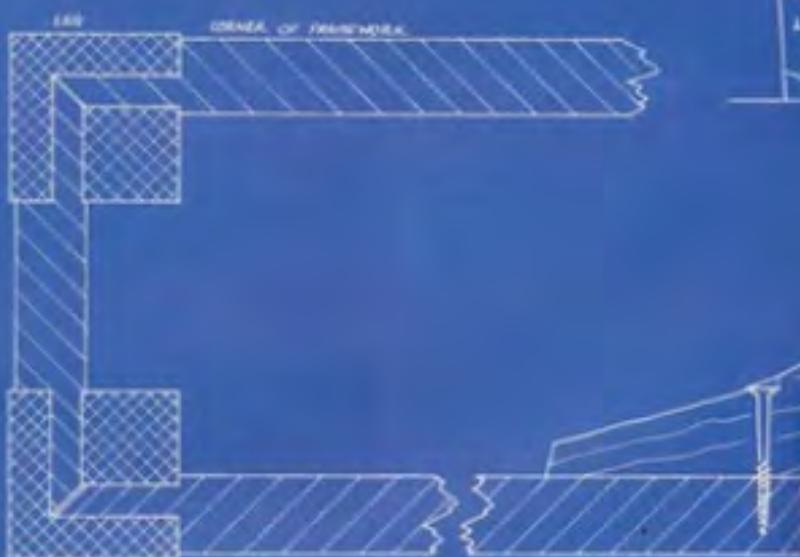
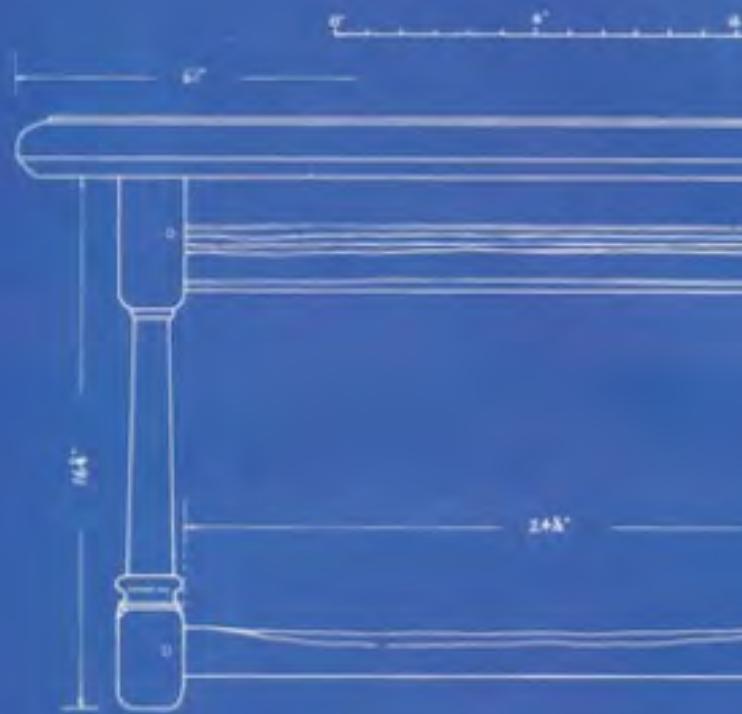
Screw the top to the bottom, working from the underside (Pic 9). This completes the construction (Pic 10).

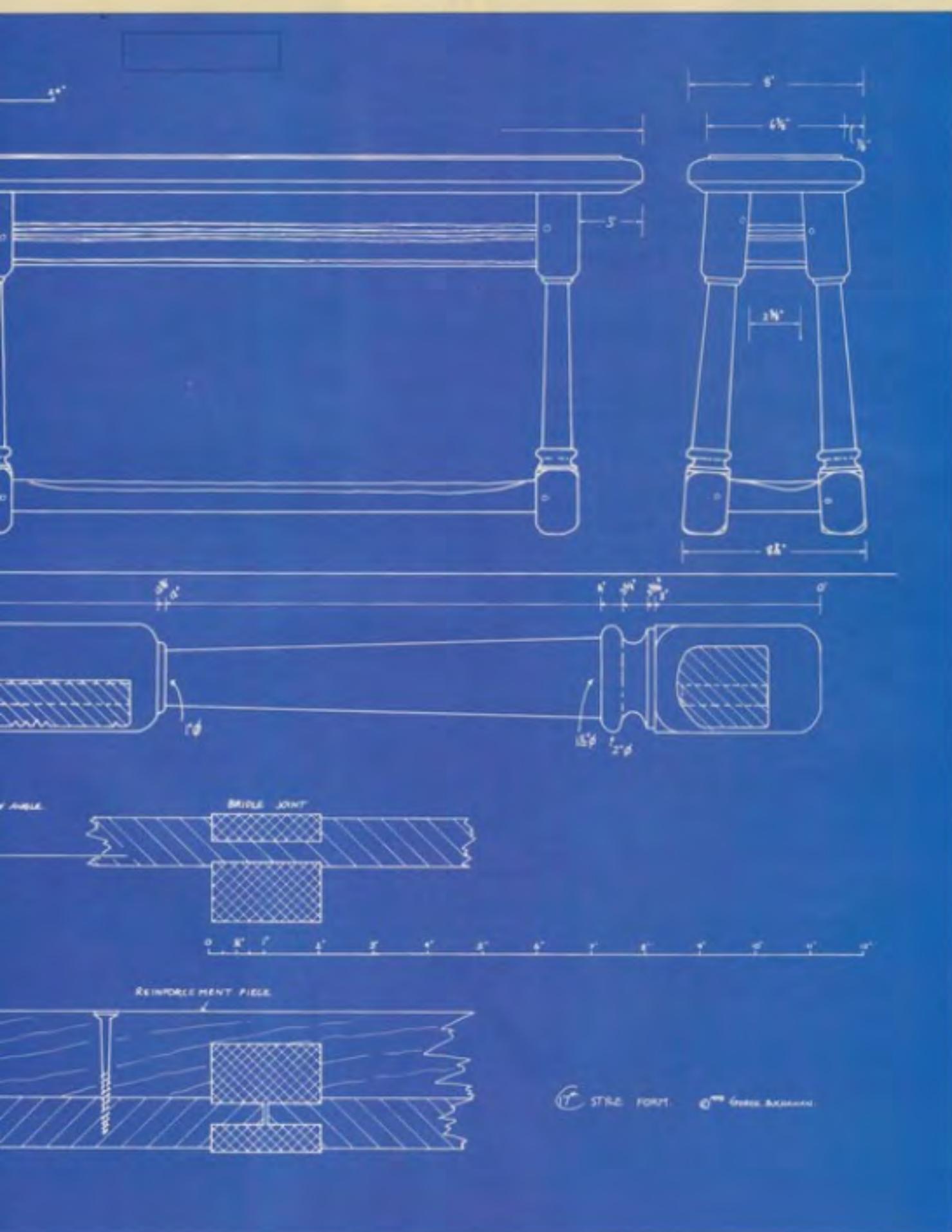
## Finishing

For an antique feel you'll need a wax finish. Wash the yew with a solution of tannic acid, and then fume the entire piece. Wrap it in a large polythene bag and blow air across a dish of ammonia using a small fan (Pic 11). Once the top and the frame have darkened, mix some beeswax and carnauba wax flakes with a little crushed tree resin and warm them in a double pan.

When the ingredients have melted to form a slightly yellow liquid, add a few grains of brown umber pigment and apply the mixture using a short-haired brush. Even off the application with a hot air gun (Pic 12). The finish on the top may be a bit irregular, but subsequent use and coats of wax will smooth it.

The form took me 16 hours to make, plus finishing. I usually wonder how a job could have taken so long, but in this case it included sawing some wavy edged boards to size and taking the photographs. Anyone following these instructions will probably do it in half the time.





# Product News

## Positive vibes

This month's Product News is very much a hands-on affair.

Appropriately, we start off with the hammer most ancient of tools and yet ever ripe for reinvention and reinterpretation.

First up is the Stanley anti-vibe hammer, claimed to reduce vibration and 'on-the-job' fatigue. Stanley states that this new Birmingham screwdriver, featuring a polished head, high grade steel I-beam core, polyurethane jacket and vinyl grip, has demonstrated a four-fold reduction in user fatigue when compared to an everyday steel-shafted hammer.

The anti-vibe hammer is available in two weights and styles: 16oz and 20oz with either curved or ripping claw. The 16oz



goes out at £24.95, and the 20oz at £26.95.

Chesterman Marketing, meanwhile, is launching a head-on assault on the rather more genteel upholstery market with its magnetic tack hammers from US company Vaughan & Bushnell.

The 5oz SBP5, with its 4 1/4in magnetic head, can be yours for £9.30 plus VAT. £13.90 plus VAT gets you a 5 oz ST 5 which has an enhanced 5 1/8in head coupled to a long thin tack-pulling head. Top of the range is the SU7, a 7oz, 5 3/4in head enforcer. As with the SBP5, it has a magnetic face for holding tacks balanced with an opposite driving end. Pick up the SU7 for £15.90 plus VAT.

*Stanley Europe, Drakehouse Plant, Brighton Road East, Drakehouse, Sheffield S20 7JZ, tel: 0114 276 4067. Vaughan & Bushnell hammers from Chesterman Marketing Ltd, 5 Greyfriars Business Park, Stafford ST16 2RF, tel: 01785 250 341.*

## Verde que te quiero verde

I don't know who started all this colour business, but Sandvik is not now the only manufacturer to offer idiot-proof colour coding.

Plasplugs 4-in-one Sharpener System claims to be the world's first multi-task sharpening system. It's a modular set-up which can put an edge on just about anything: blue module 1 covers all straight-edged chisel and plane blades up to 50mm wide. Grinding angle is adjustable from 20 to 80 degrees; orange module 2 handles high-speed drill bits between 3.1 and 10mm; red module 3 includes a silicon carbide grinding wheel which hones masonry bits up to 10mm; green module 4 has an automatic blade guide for household straight-edged knives and scissors.

All of the modules store in the base unit when not in use. The whole set-up comes in at a reasonable £49.95 RRP and is available from the usual DIY outlets.

*Plasplugs Ltd, Wetmore Road, Burton-on-Trent, Staffs DE14 7SD.*



## Purple haze

Sound Wood, the musical instrument wood division of Craft Supplies, has launched its new 16-page 1999 catalogue. Contained within is everything of orboreal origin that you might need to make a violin, acoustic or electric guitar.

The company is also running five-day guitar making courses under the tutelage of David Thompson. The course centres around the construction of a guitar-making kit, the idea being that after the five days you leave with a guitar worth in excess of the kit and course cost.

All tools and consumables as well as refreshments and lunch are provided to the five student maximum.

*Craft Supplies, The Mill, Millers Dale, Nr Buxton, Derbyshire SK17 8SN, tel: 01298 871636, fax: 01298 872 263, e-mail (for catalogue): sales@craft-supplies.co.uk, web: www.craft-supplies.co.uk.*



## Saw of many colours

For those of us who could never tell a rip from a dovetail, Sandvik has kindly launched a colour-coded range of saws to facilitate instant workshop identification.

Its blue mark means aggressive teeth for cross and rip cutting; green indicates a universal tool for general use;





## Give me more

If you believe, as I do, that flicking through page after page of no-nonsense kit is one of life's great untaxable pleasures, then grab a copy of the Shesto Essential Tool and Reference Guide.

It's got 100 colour pages which include a comprehensive guide to more than 2,000 quality precision tools considerably more than can even be outlined here. Ring Shesto and they'll send you a copy.  
**Shesto Ltd, Supcote Trading Centre, 374 High Road, Willesden, London NW10 2DH, tel: 0181 451 6188, fax: 0181 451 5450.**



red is getting into the realm of cabinet-making; yellow is for specialised sawing requiring a very fine kerf.

What all of these saws have in common is Sandvik's stealthy black powder coating offering low friction and top rust protection. Prices start at £14.79.

*For a 16-page booklet send an A4 s.a.e. with a 31p stamp to: Sandvik Saws and Tools UK, Manor Way, Halesowen, West Midlands B62 8QZ.*



## Cut to the quick

Good news for anyone who's ever tried to cut a 15mm copper pipe under the floorboards has arrived in the form of the Stanley high-tension, low-profile hacksaw.

The saw's arc-shaped back makes it easy to use in those tight corners while its deep throat gives you good depth-cutting capability. The tool's cast aluminium frame is both light and strong while applying a high tension to the blade which maximises speed of cut and minimises blade breakage. The retail price is £16.99.

*Stanley details as above.*



## Ever Faithfull

Faithfull, redoubtable manufacturer of sash clamps and other workshop staples, has broadened its output with the release of eight woodworking chisels. These range from 1/4in (6mm) to 1 1/2in (38mm) tools of drop-forged chrome vanadium steel mounted in impact-resistant PVC handles. The largest model will suck £10.52 RRP from your wallet, but buying a pre-packed set will save you a couple of quid.

*For further information write to Faithfull Chisels, FREEPOST, SEA 1889, Dartford, DA1 1BR.*

## Box clever

More from Stanley in the form of the clamping mitre box. The box secures a variety of materials - from flat sections to round pipe with cam-shaped pins slotted in a honeycomb base. It does the usual 45 and 90 degrees as well as a 22 1/2 degree setting for those tricky octagons. The high-impact plastic construction conceals storage compartments for cam pins and pencils. It retails at £9.99 individually, or £14.99 complete with saw.

*Stanley details as above.*



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# STEAM BENDING

*New face Danny Lister gets all steamed up.*



**A**t the top of this article is a chair from the *Traditional Woodworking* archive. Items like these are extremely popular, but if you want to make one yourself, you'll have to get into steam bending.

Steam bending requires some simple equipment, a certain amount of strength and, above all, patience. Failures are all part of the process, and some bits of wood just won't play ball.

## Timber preparation

There are plenty of woods that you can bend – ash, beech, birch, oak and yew are commonly used. You must select wood that is knot-free and straight-grained. Flaws will only precipitate structural failure during bending.

Kiln dried wood can be bent, although it's a tough nut to crack. Air-seasoned timber is preferable and green wood

works best of all.

Reduce the timber to the required dimensions, remembering to allow for subsequent working with a drawknife or spokeshave. The length should be about 100–120mm longer than the intended finished length. Note also that green wood will shrink later as it dries.

## Equipment

My steam bender is a bit of an experiment. I normally work with the old plywood box, but I thought I'd give PVC a go. Pic 1 shows the pre-assembly components. Figure 1 shows the general layout. Note the chicken wire shelf that supports the timber (Pic 2). The soil stack vent has a screw lid allowing access to the pipe. Assemble the components using pipe weld cement and allow to dry for around 24 hours.

The pipe is supported on two wooden tripod stands which can be knocked up from any scrap timber. I've attached a rough cutting list, and Figure 2 shows an arrangement that gives a good working height.

Steam is provided by a wallpaper stripper (Pic 3). The outlet pipe is shoved unceremoniously up the 50mm PVC inlet pipe. Use a length of copper wire round the steam outlet pipe to attach it to the inlet pipe. There are probably

better ways of connecting the two, but this works fine.

The pattern is made from 25mm MDF. I didn't have any of this lying around and so I bolted two sheets of 12mm together. Mark your required shape onto the MDF (Pic 4), and cut out with a jigsaw (Pic 5). I prefer to use an MDF template for the marking out, as shown. Now bolt the pattern to a solid surface such as a workbench. If you're using my peg and wedge

## Step - by - step guide



1



2



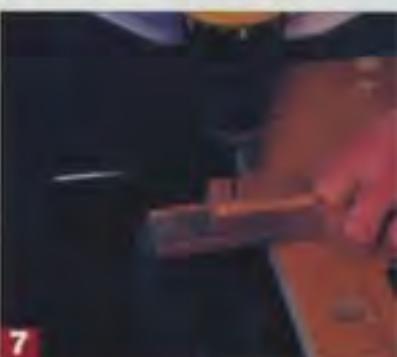
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5



6



7



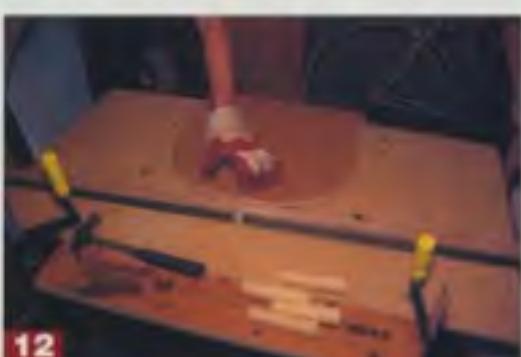
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10



11



12



13



14

method, you probably won't want to drill enormous holes in your bench to accept the pegs. You can bolt the pattern to a further sheet of MDF, drill the holes in that and then attach the whole thing to something else. Just make sure you've enough clearance underneath for the pegs to be hammered through.

The holes for the pegs are approximately 25mm. Figure 3 shows the whole assembly in

use. Note the centre mark at the top of the pattern. Position the peg holes to allow the wedges to be driven between peg and strap (Pic 6). Taper the pegs so that they can be driven hard into the holes.

For the particularly accommodating piece of ash I was bending, a nylon webbing strap is fine. You'll need a steel strap for thicker sections or timbers such as oak. The handles are oak off-cuts and are

designed to sit on the ends of timber, pulling the strap tight as per Figure 3. Fashion handles that are comfortable for you – there's no set design. The slot for the strap should be a tight fit for the doubled-over strap end. Force the strap into the slot with a wallpaper stripper, drill (Pic 7), and secure with bolts. The strap length should be the same as the timber being bent. It will stretch around the external

radius of the timber as you start to bend. The finished strap and pattern are shown in Pic 8.

### Bending

Mark a line on the centre point of the timber. This is very important. Fire up the wallpaper stripper and when it has got a good head of steam, push the timber into the pipe (Pic 9). Screw on the end cap



- 1: Steamer components  
 2: Chicken wire shelf  
 3: The steam source  
 4: Mark the shape  
 5: Cut the pattern  
 6: The peg holes  
 7: Drill the handles  
 8: The finished items
- 9: Insert the timber  
 10: Screw on the cap  
 11: Remove timber  
 12: Position strap  
 13: Bend  
 14: Peg and wedge

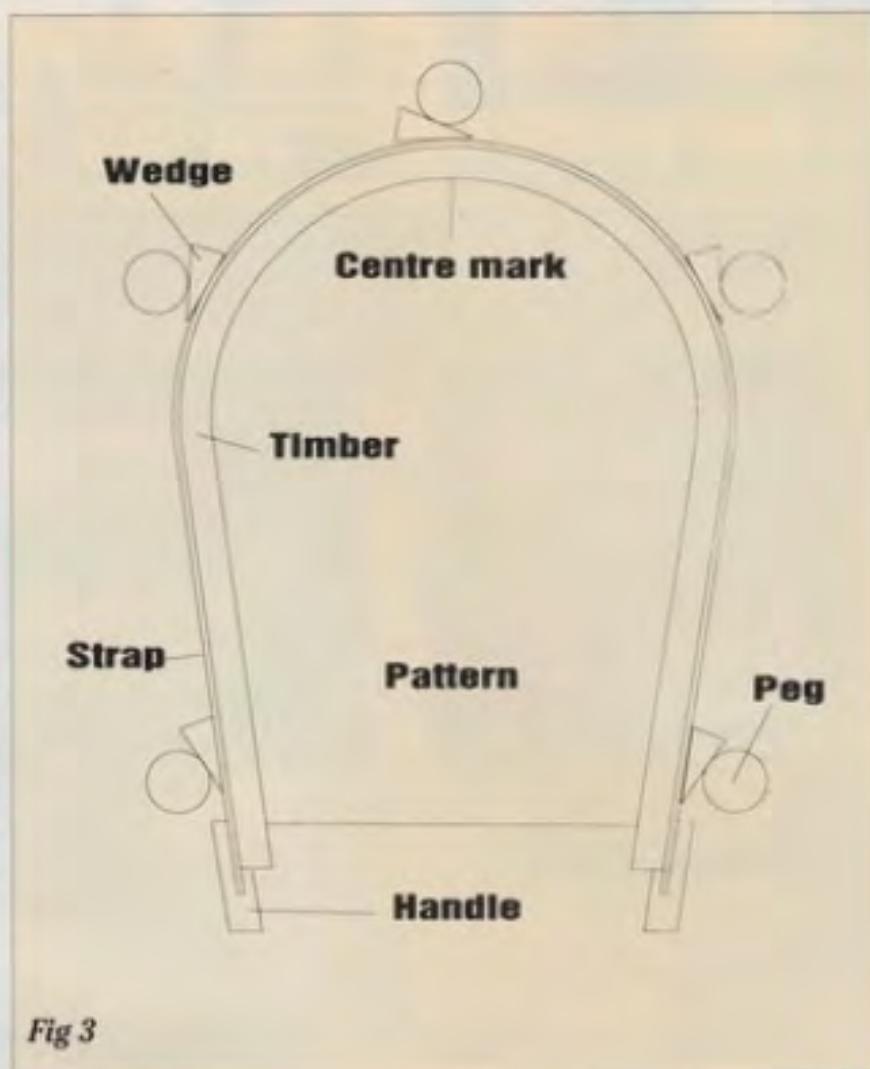
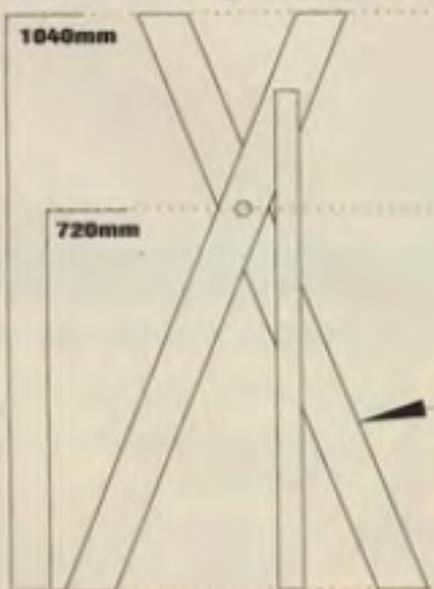
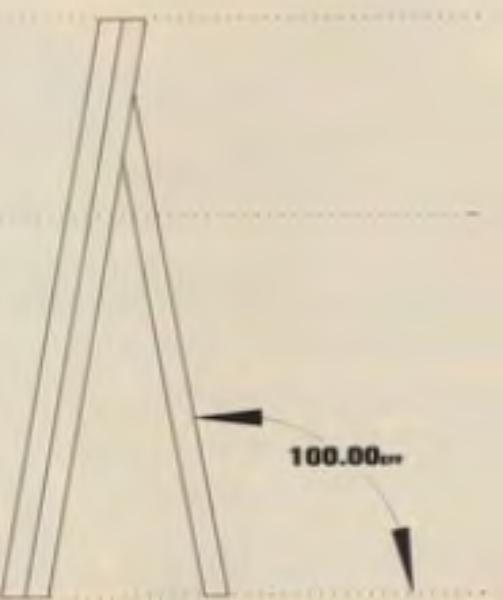


Fig 3

## Stands (not to scale)



Front view



Side view

Fig 2

## Alternatives

Over the years, individual craftsmen and women have come up with their own methods for clamping the wood to the pattern. All work equally well. Pic a shows an ingenious overhead arm system. The strap is metal and held in place with strips and blocks of wood



a

bolted hard up against the ends of the timber being bent. These strips and blocks do the same job as the strap handles in my method.

Pic b is a common way of replacing the pegs and wedges. Slots are cut into the pattern which allow g-clamps to hold the work in place - very neat.

Pic c shows a traditional steam box. It's nothing more than a plywood



b

chamber with a wooden rack inside to support the wood. Each end is sealed with a plywood door. The plywood must be varnished, but the thing will still disintegrate after a while.

All of these methods are valid and worth exploring. Indeed, steam bending is a very hands-on, experimental process. Experience will decide what works best for you.



c

## Steam bender

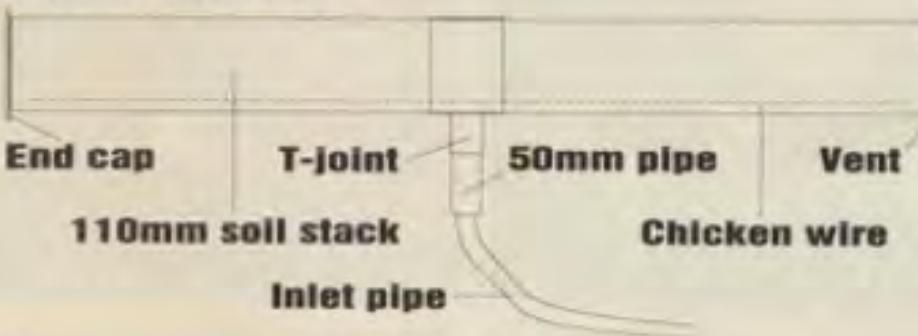


Fig 1

(Pic 10), get a nice cup of tea and sit back with a copy of *Traditional Woodworking* - you've got a wait on your hands.

The timber should be left in the steamer for one hour for every 25mm of thickness. At least, that's what they say. The fact is that there are so many variables you can only rely on this as a rough guide. You'll need to experiment with the material you're using, and this is where experience comes in. Incidentally, don't leave the steamer unattended at any time.

When the moment arrives, don thick gloves and remove the timber from the steamer (Pic 11). Work quickly and get a friend to help. Stretch the strap over the timber, locating the strap handles on the end

(Pic 12). Line up the centre mark of the timber with that on the pattern, peg and wedge at the top and begin to bend (Pic 13). Peg and wedge as you go

(Pic 14). The bending is completed.

The timber can be removed from the pattern when it's cool (after around an hour), and

you'll then need to lash the two ends tightly together with sash cord or rope for at least two or three days. A week is preferable, or even better, leave the timber on the pattern for the whole week.

## Conclusions

So there you have it. I must admit that my PVC pipe got a bit wobbly in the middle after about an hour, although it wasn't terminal. Some lateral wooden supports run between the supports would've sorted that out. Steam bending is a real get-down-and-get-dirty sort of process. And you get to sit around chatting while the timber is steaming naturally. It still counts as work! □

### CUTTING LIST (in mm)

Component	No	Length	Width/diameter	Thickness	Notes
Steam bender					
Pipe	1	To suit	110	-	PVC soil stack
T-joint	1	-	-	-	For 50mm pipe
End cap	1	-	110	-	PVC
Screw cap	1	-	110	-	Soil stack vent
Steam inlet	1	40°	50	-	PVC
Stand and pattern					
Legs	2	1050*	63	38	Pine
Leg support	1	800*	38	50	Pine
Pattern	1	To suit	To suit	25	MDF
Wedges	5	75°	50°	To 25°	Dak
Pegs	5	120°	25°	-	Hardwood
Strap handles	2	200°	40°	40°	Dak
Strap	1	To suit	To suit	-	Nylon

\* Approximate dimensions

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# PLANE IRONS

**Jim Kingshott examines the composition of that most crucial component - the plane iron**

**H**aving dealt with most of the planes found in the cabinet maker's workshop we now come to the heart of every plane - the iron. Referred to in the trade as the 'iron', but described by manufacturers and retailers as the 'blade', this is the most important component of any plane, for, after all is said and done, it is the iron that actually cuts the shaving.

As you would expect, the technology behind this important component can be very complicated. What we ask of it is that it is capable of taking a sharp edge and retaining it in use for as long as possible. Not much on the face of it, but we all know from bitter experience just how frustrating achieving the optimum performance from an iron can be.

So, the craftsman must know something about

metallurgy - both in the composition and treatment of the material that plane irons are made from.

The ancient woodworkers used copper that was work-hardened. They obviously did not refer to their blades as iron, and were, no doubt, pleased when steel was discovered.

## What is steel?

Steel is an alloy (mixture) of iron and up to 1.7% of carbon, sometimes with small amounts of other elements. The label from a pack of steel shown on page 20 is sold as suitable for making plane irons. This label contains a lot of information.



Above: Japanese Samurai irons

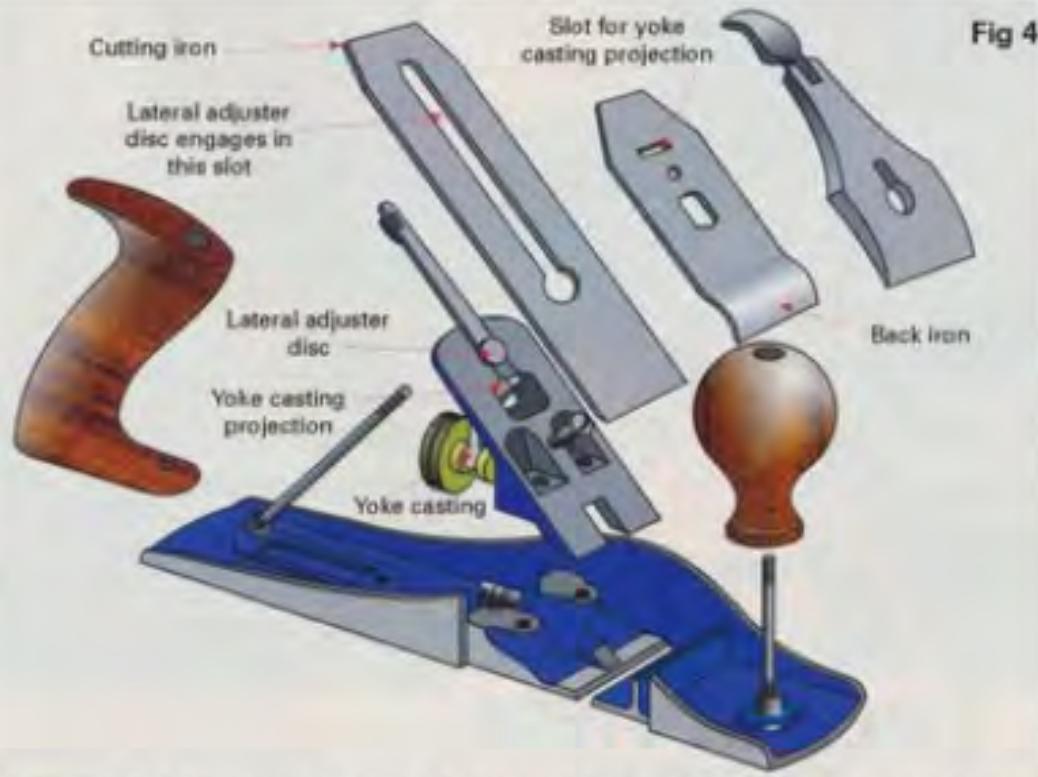
Below: Plane iron made in the USA by Gerry Glazier



Fig 6



Fig 4



BAILEY PATTERN PLANE STRIPPED TO SHOW COMPONENTS

The composition is stated below the heat treatment box; C = carbon, Mn = manganese, Cr = chromium, W = tungsten and V = vanadium. So what are we to infer from this information? This brief description of the main constituents of steel will help.

### ● Plain carbon steel

The main difference between cast iron and steel is that whilst cast iron has around 4% carbon content, plain steel has less than 1.7%. By varying the

amount of carbon content, from as low as 0.15% to 1.7%, the characteristics of the metal can be completely changed.

• **Mild steel**, containing from 0.15% to 0.3% carbon, is malleable and ductile and is easily worked, but it is incapable of being heat-treated (discussed later).

• **Medium carbon steel** has a carbon content of 0.35% to 0.5%, and is much stronger than mild steel. It is capable of being heat-treated.

• **High carbon steel** has a carbon content of 0.55% to 1.7%. This steel is suitable for making plane irons. Most of the older irons are made from this material and stamped cast steel.

• **Alloy steels**. In recent times, various substances other than carbon are added to iron to make it suitable for special applications. Modern steel-making technology allows the

*Right: A fine example of a mitre plane*



Thin back iron fitted to most irons made for Bailey pattern planes



Thin bent metal back iron fitted to cheap Bailey pattern planes



Standard back iron fitted to most British pattern and wooden planes



Long screw pattern back iron fitted to some British pattern planes



Above: Plane iron made by Karl Holtey

## VARIOUS TYPES OF BACK IRONS

Fig 8

*Right: A cast steel iron made by Ward & Payne around 1900*

*Centre: An early Record iron*

*Far right: An impressive name stamp on the 'Victor' iron*



removal of all impurities and trace elements, then various substances are added in exact amounts. The main substances are:

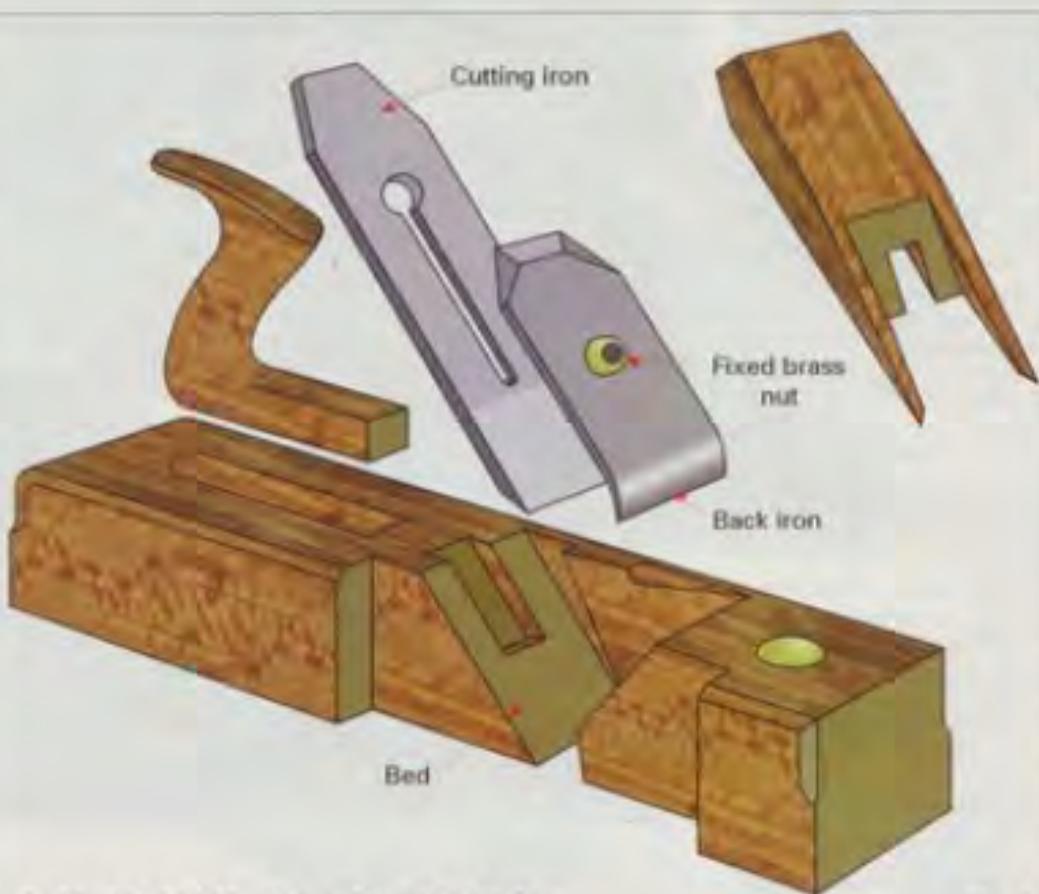
**Manganese** improves the steel's mechanical properties. Using steel with high manganese content reduces wear on earth-moving equipment blades.

**Chromium** and molybdenum are added to increase hardness, but not brittleness. Chromium also improves the corrosion resistance of the steel, while molybdenum reduces temper brittleness and allows an alloy to operate at high temperatures without becoming brittle.

**Vanadium** improves the elasticity.

**Tungsten** is a very hard element. It improves the grain structure of the steel to which it is added. It also confers the property of red hardness, i.e. the ability to hold an edge even at red heat.

- **Silver steel** is a tool steel with a carbon content of 1.1% to 1.2% with 0.35% manganese, 0.45% chromium and varying small amounts of silicon, 0.2% being typical. Major tool stores stock this material in round bars of various diameters. It can be forged with some difficulty and heat-treated to make woodcutting tools.



## WOODEN JACK PLANE

Fig 5

• **Stellite and Tungsten Carbide** both maintain their hardness even at dull red heat. They are not steels and cannot be softened by any heat treatment. They are usually brazed to steel to form a cutting edge.

*Left: Japanese Samurai plane irons are available to fit most everyday planes*



## Heat Treatment

When steel is heated its temperature rises at a uniform rate until it reaches 700°C. At this point the temperature remains constant for a short time, before rising at a slower rate until it reaches 800°C, above which the temperature rises at the original rate.

When the metal is allowed to cool, this procedure is reversed. The point where the pause occurs when heating is known as the decalescence point. The point at which the temperature remains stationary when cooling is called the recalescence point.

Decalescence and recalescence occur at the lower critical point of the steel, the point at which the structure of the steel begins to change. This structural change continues until the steel is heated to its upper critical point, which varies according to the carbon content of the steel.

If the steel is allowed to cool naturally, the internal structure of the steel reverts to its original state. If, however, the

rate of cooling is properly increased or decreased the internal structure of the steel will remain permanently changed.

## Annealing steel

The object of annealing is to make the steel as soft and ductile as possible. This is achieved by heating the steel to its hardening temperature and holding it at that temperature long enough to reach an even temperature throughout. It is then allowed to cool slowly.

## Normalising steel

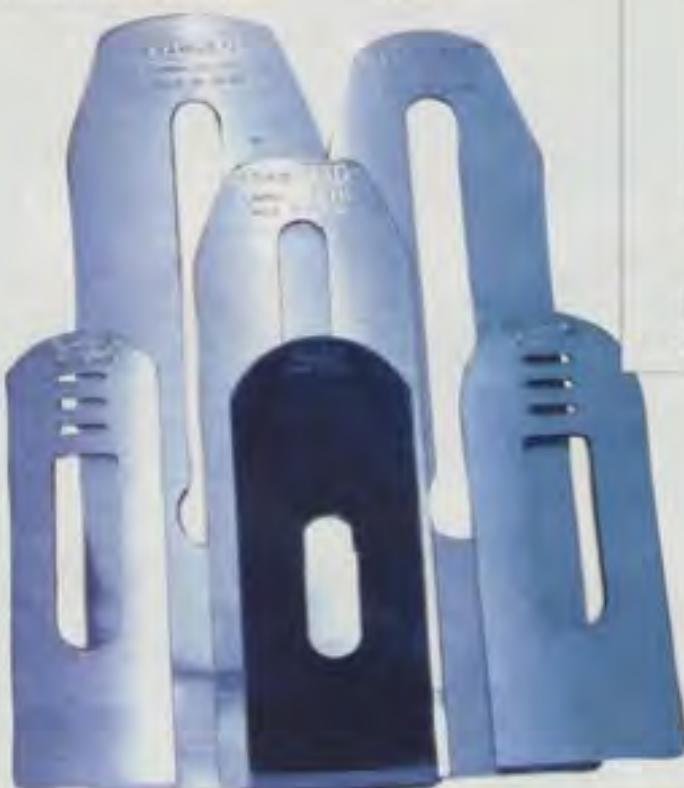
Normalising is a process used to relieve stresses set up in the steel by working it, or to put the steel back to its original condition. The procedure for normalising is similar to that used to anneal steel, except that the steel is allowed to cool naturally in the atmosphere.

## Hardening steel

Hardening is carried out by heating the steel to a cherry

red and then cooling it suddenly (quenching). Steel should not be overheated as this coarsens the crystalline structure. Quenching is usually carried out in water. Some smiths use brine that is a saturated solution of rock salt in water. Oil is recommended for quenching some steel. Each different quenching agent imparts a different characteristic to the steel.

*Below: A further selection of Japanese Samurai plane irons*



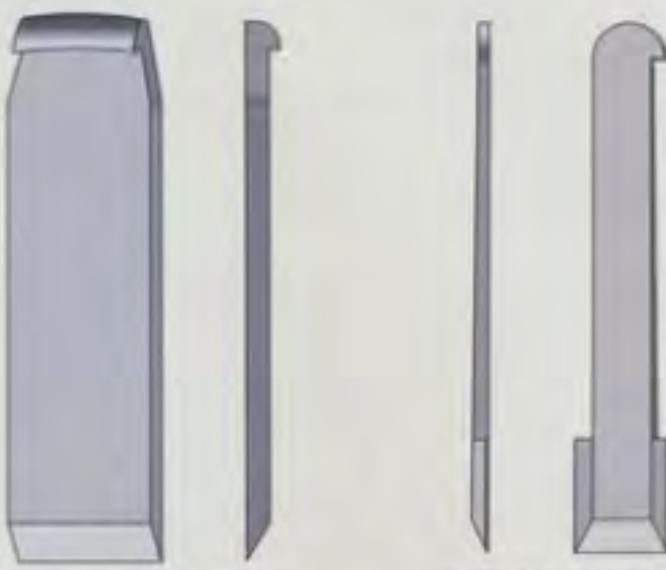
## Tempering

Since steel that has been hardened as described above is too brittle for our use, some degree of toughness has to be restored. Reheating the metal to a point well below decalcification and then quenching it does this.

## Hardness

There are several different methods for specifying the hardness of metals. Most woodworking tool manufacturers use the Rockwell C system. The hardness of the metal is determined by a machine that pushes a 120° diamond cone into the surface of the metal. The same machine measures the depth the diamond cone has penetrated.

The deeper the penetration the softer the metal. Most plane



## NIBBED PLANE IRONS

Sometimes referred to as 'Snecked Irons'

Fig 2

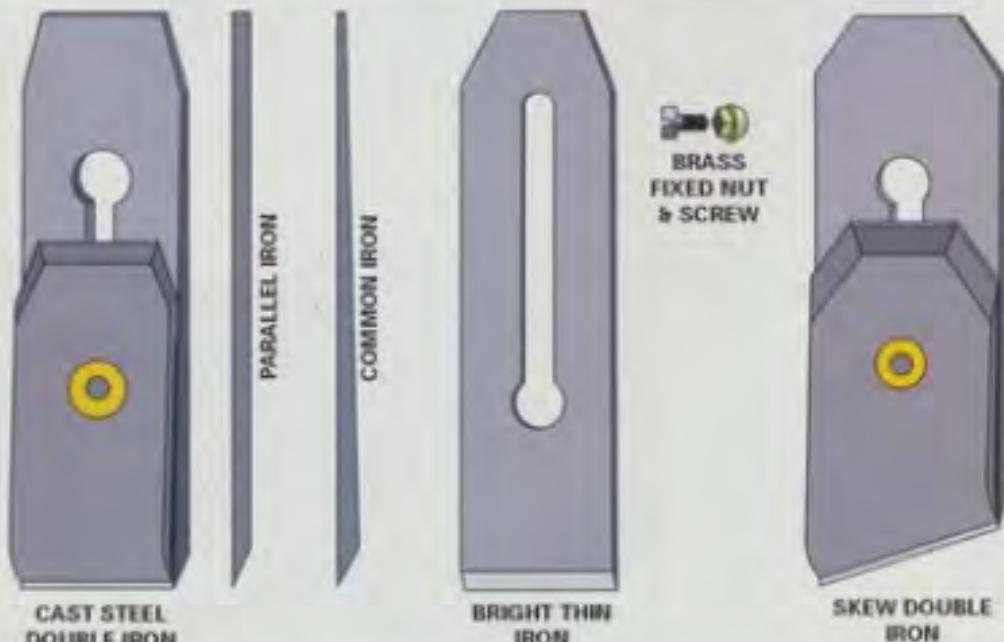
irons fall into the scale between Rockwell C 58° and 61°. Incidentally, the indentation made by the diamond cone is so small it is almost imperceptible.

## The practical stuff

So far I have briefly described the technical side of the steel that our plane irons are made from, but how do we choose an

iron? It is not until we have used a plane iron for a period that we can evaluate it. The work the iron is used for effects the characteristics we are looking for.

For instance, teak is very abrasive and mahogany is not abrasive. An iron that will stand up to continued use on teak might not take the very sharp edge required on wavy grained mahogany. Over the



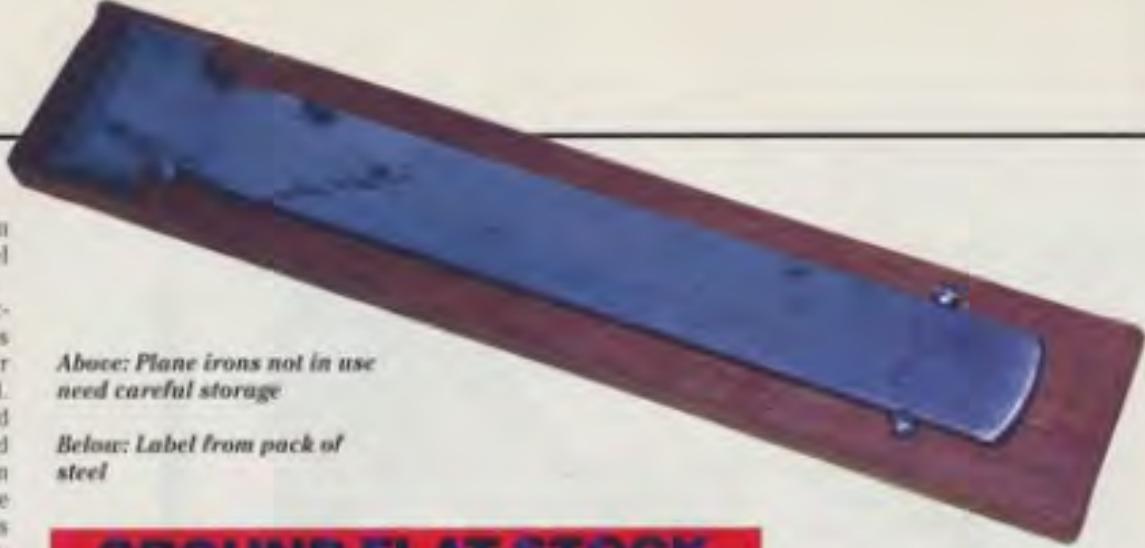
## PLANE IRON DETAILS

Fig 7

years plane irons have been made from different steel alloys.

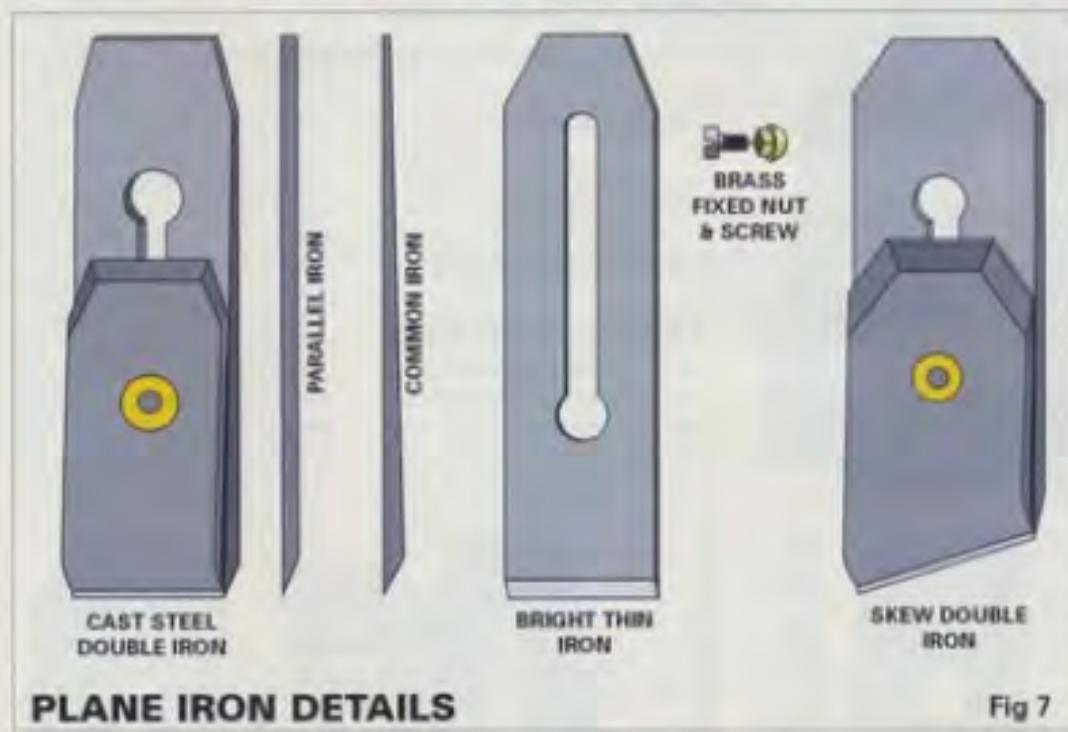
Today several manufacturers offer replacement irons which are said to be better than those originally fitted. There is a Japanese laminated iron to replace the standard iron fitted to a Bailey pattern plane. Some of these replacements cost almost as much as the plane did in the first place. I have tried most of them. Although they all have individual characteristics, there is not one of them that stands out head and shoulders above the rest.

Most of my planes are fitted with Samurai irons. These have been available for some time, and suit my type of work. They can be made very sharp and



*Above: Plane irons not in use need careful storage.*

*Below: Label from pack of  
steel*



## **PLANE IRON DETAILS**

they hold their edge well, but the edge is brittle and easily chipped if used on wood with hard knots.

The irons made by Karl Holtey are superb examples of fine engineering. They are extremely flat and very well finished, holding their edge very well. The hand-forged Victor iron, made by Clico for Axminster Tools, is a good all round replacement. The Holtey and Victor irons are thicker than the standard Bailey

*Right: Nibbed plough irons*



pattern iron. This helps prevent chatter and I have found that these thicker irons cut a thinner and more precise shaving. The thickness of the iron is controlled by the projection of the yoke casting (Fig 4) as it has to reach through the iron and engage in the back iron.

Some of the older irons fitted in British pattern and wooden planes are superb. The very early ones are laminated because cast steel was expensive. Unfortunately, being ground on high speed grinding machines has spoiled many second-hand irons. This has heated the steel and drawn the temper. The iron becomes soft and will not hold an edge for any length of time.

## Back irons

If a bench plane is to perform well the back iron is as important as the cutting iron. Rarely is the back iron in a new plane fitted properly. The tip of the back iron must make perfect contact with the cutting iron throughout the entire width of the blade. This is a hard-fitting task usually undertaken by the woodworker himself.

Several manufacturers have tried to do a price engineering job on their back irons (Fig 8). The method of attaching the back iron has varied over the years. Originally it was held in place by the wedge. Nowadays, it is secured with a bolt, but there are several variations.

The Record stay set (Fig 9) is a typical example. Clifton now makes copies of this back iron. The long screw back iron (Fig 8) is a joy to use and well worth handing on to if you find one.

Space precludes me from going deeper in to this subject, but I will be happy to answer any questions sent to my e-mail address, which is: jkings5579@aol.com

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**NEW**



# OILSTONE BOX

**Jeff Loader explains a great way to house precious sharpening stones.**

I cannot remember who advised me to have a pair of stones for sharpening, rather than just one combination stone, available for use at the same time, but I am grateful and glad I took heed.

Possessing only one combination stone meant having to turn it over to use the other grade of grit, which frequently resulted in messy

fingers. Using two stones meant utilising two wooden oil stone boxes, a practice that did not appeal, so I constructed a double one.

I made my first double oilstone box out of plywood,

because that was what I had close to hand. It proved so useful over the years that I devised the box I now use. This is a triple oilstone box with a compartment to house slip stones. It is only made from scrap 1/4in ply and pine, but it has served me well over the last 10 years.

*Below: The components of the box. From top left to right: edging, top piece, stone well section and base piece*

*Below right: Pinning the edging in place*

## Cutting list in imperial

Component	No	Length	Width	Thickness	Comments
Base	1	9 1/2	6 1/2	1/2	Plywood
Stonewells section	1	9 1/2	6 1/2	1/2	Plywood
Lid top	1	9 1/2	6 1/2	1/2	Plywood
Side edging	2	9 1/2	15/16	3/16	Hardwood strip
End edging	2	6 1/2	15/16	3/16	Hardwood strip (for mitre joints, if butt jointed use 6 1/2 long)
Spacing strips	2	9 1/2	3/8	1/8	Plywood or hardwood strips
Spacing strips	2	6	3/8	1/8	" "



*Left: The box ready to use*

## Construction

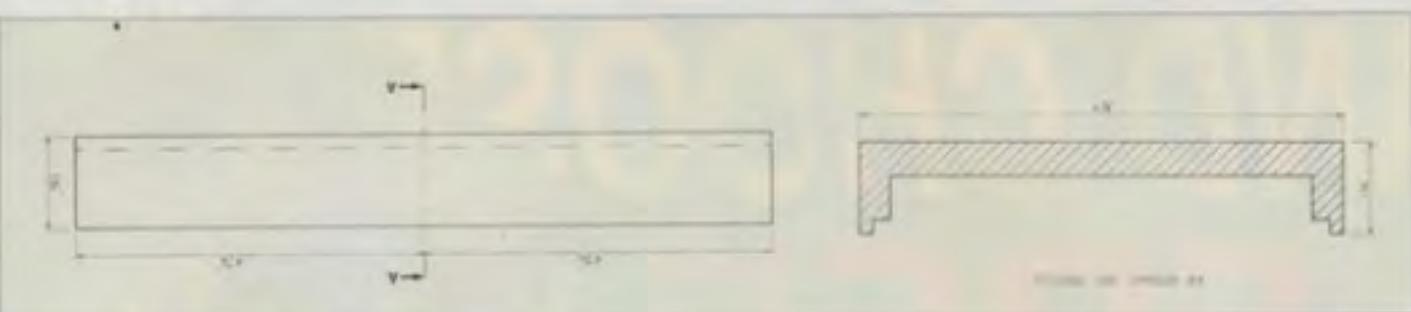
**1** Prepare and dimension a piece of plywood for the stone well section. Mark the dimensions of the two stone wells onto it. Ensure that the wells will be large enough for the stones to fit easily (bear in mind that the wood/plywood may swell slightly when it has absorbed oil.) You may like to mark and cut out the wells oversize and secure the stones with small wooden packing pieces.

**2** Cut out the two stone wells. I did mine with a machine fretsaw. Alternatively, you could use a coping saw.

**3** Prepare lid's top piece. If you are careful, you can make it a fraction larger all round to ensure the lid will fit without fettling.

**4** Prepare the base piece. You may find it prudent to cut it out a fraction larger than its cutting list dimensions, the reason for which will become clear later.

**5** Glue the stonewell section to the base piece. You could use some moulding pins to help



secure them together. If you prepared the base piece slightly larger you will not need to ensure that the edges line up.

**6** When the glue has set fully, trim the edges of the combined base and stonewell section with a plane.

**7** Prepare and attach the edging to the lid with moulding pins and glue. You could mitre their ends. I simply butt-jointed them.

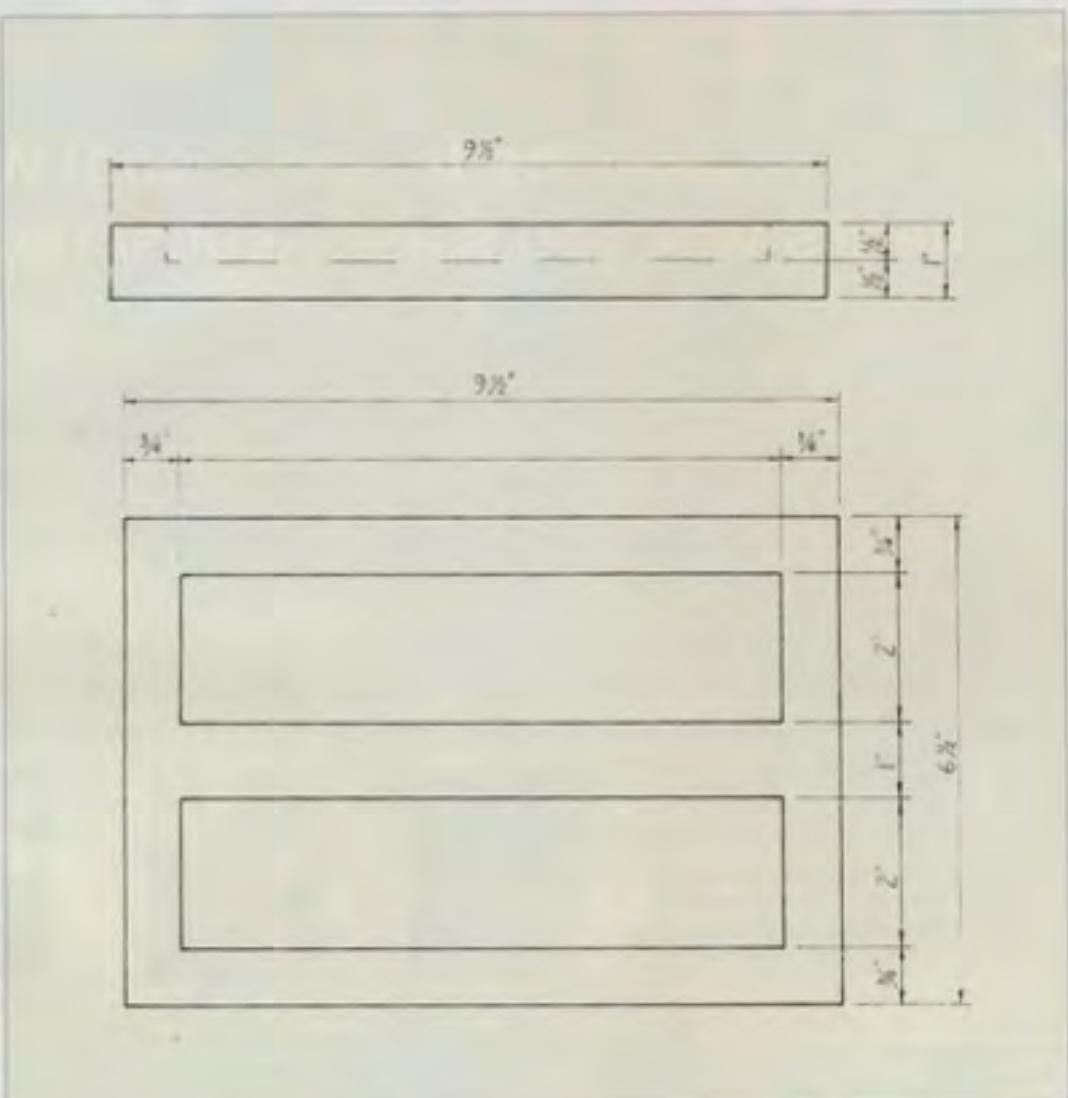
**8** Prepare and glue the spacing strips in position to the underside of the lid. These will prevent the lid from resting on the stone when fitted.

**9** To prevent the box from sliding on your bench during use, you will need to fit some rubber to the base. I stuck self-adhesive rubber feet to mine (termed 'Kitchen and Homewear Feet' by B & Q).

**10** Fit the stones and use. Happy sharpening!

*Below: Rubber feet attached to the underside*

*Below right: The combination oil stones in place*



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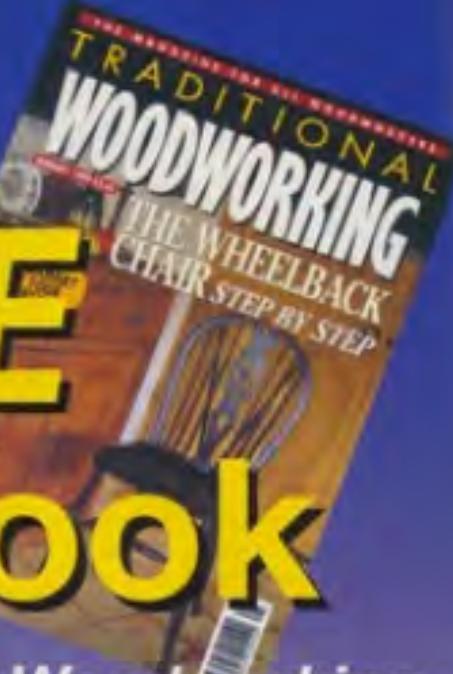
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# THE WOODEN WONDER

**G**eoffrey de Havilland's Mosquito ranks, along with the Spitfire, Mustang and Lancaster, among the all-time greats of aircraft design. Rarely can a design have attracted so much scepticism and yet proved such a brilliant success.

The Mosquito was born in response to the Air Ministry's 1936 specification for a twin-engined bomber. De Havilland realised that the expected defensive armament – notably a gun turret – would slow the aircraft to such a degree as to negate the benefits of the twin-engined design. The company decided to eliminate all armament and to look for defence in speed. The Ministry would take some convincing.

Another sticking point was the aircraft's proposed wooden construction – a field in which de Havilland excelled. Fighter and bomber construction was now principally metal, notably aluminium, and it was hard to convince the powers that be that wood was anything less than a backwards step. De

Havilland did, however, have some allies and they backed the company's dogged belief in the viability of the design. It's as well they did – the Mosquito made an invaluable contribution to Britain's war effort. It's difficult to see what

*Lester Haines examines how a 'piece of furniture' took to the air.*

other contemporary design could have achieved as much.

## Construction

De Havilland's rejection of the metal aircraft construction prevalent in the late 1930s



certainly caused the agitated ruffling of a few handle-bar moustaches. However, the company had a proven track record which justified its reasoning.

The de Havilland company made its mark with its WWI military aircraft. The post-war collapse of the military

aircraft market led to a penetration into the burgeoning civil aviation field. The company scored some notable successes and continued its relationship with the military by supplying trainers such as the Gypsy Moth and Tiger Moth.

It was, however, the elegant 1937 D.H.91 Albatross which paved the way for the Mosquito. Development of the 22-seat airliner's wooden structure involved technological advances which would later be applied to the Mosquito. Two factors were central to the success of the Mosquito design – the use of casein glue and the use of early plastics.

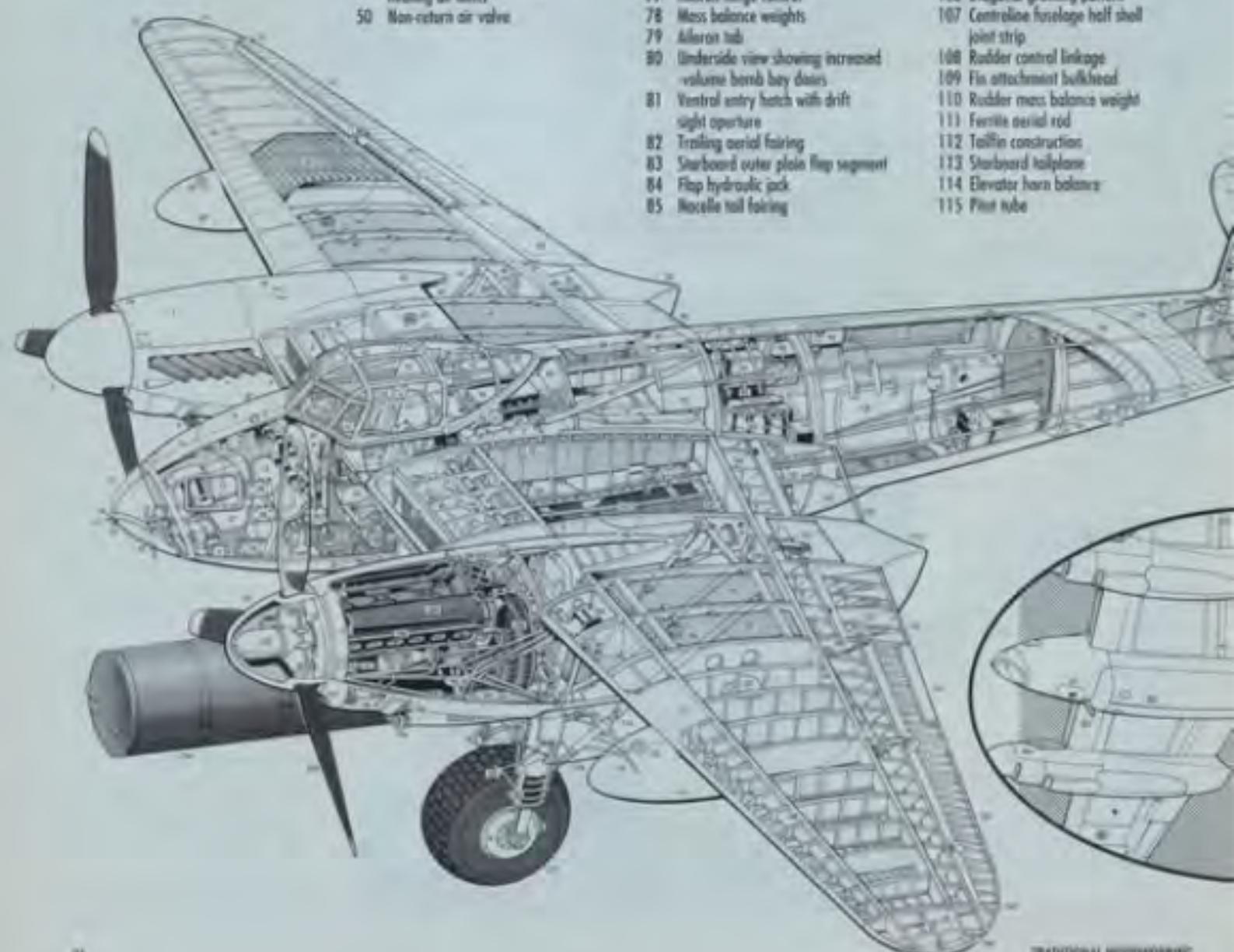
Although the ancient Egyptians had exploited the possibilities of casein glue – milk protein mixed with lime to form a relatively water-impermeable adhesive – it was not until around 1800 that the West re-discovered this viable alternative to hygroscopic animal derivatives. 1930s boat and aircraft manufacturers enthusiastically adopted casein as an alternative to mechanical fasteners.

Strong as it was casein had one fundamental weakness, especially in the tropics. It was attacked by micro-organisms, and at least one fatal Mosquito accident caused by structural failure eventually resulted in casein glue being substituted by phenol-formaldehyde glue once a technique had been

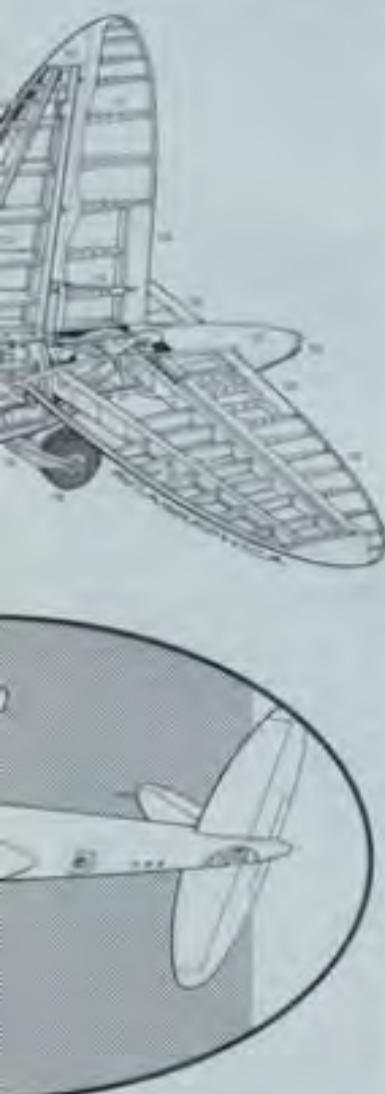
*Left: A Mosquito production line (Imperial War Museum)*

## PROFILE

- 1 Three-bladed de Havilland type 5000 hydraulic propeller  
 2 Spinner  
 3 Starboard engine cowling panel - Merlin 73 engine  
 4 Exhaust stabs  
 5 Starboard oil radiator  
 6 Coolant intake  
 7 Radiator air intake  
 8 Carburettor air intake and guard  
 9 Fuselage nose skinning  
 10 Windscreen de-icing fluid nozzle  
 11 Instrument panel  
 12 Parachute storage  
 13 Junction box  
 14 Fire axe  
 15 SYKO apparatus storage  
 16 Nose compartment side windows  
 17 Portable oxygen bottles  
 18 Mk XIV bombight  
 19 Nose glazing  
 20 Forward navigation/identification light  
 21 Temperature probe  
 22 Windscreen de-icing fluid nozzle  
 23 Optically flat bomb aiming window  
 24 Bomb sight mounting  
 25 Bomb selector switches  
 26 Camera remote control box  
 27 Bomb timer's kneeling cushion  
 28 Signal pistol cartridge racks  
 29 Rudder pedals  
 30 Compass  
 31 Control linkages  
 32 Oxygen system economiser units  
 33 Elevator trim handwheel  
 34 Port radiator ram air intake  
 35 Oil and coolant radiators  
 36 Throttle lever  
 37 Ventral entry hatch  
 38 Control column handwheel  
 39 Folding chart table  
 40 Windscreen panel  
 41 Trailing aerial winch  
 42 Cockpit rear escape hatch  
 43 Seat back armrest plate  
 44 Navigator/bombardier's seat  
 45 Rearward vision blister fairing  
 46 Pilot's seat  
 47 Intercom socket  
 48 Portable fire extinguisher  
 49 Cabin pressurisation and heating air ducts  
 50 Non-return air valve  
 51 Engine control ram  
 52 Wing root rib  
 53 Centre section fuel tanks  
 54 Wing upper surface attachment joint  
 55 Centre fuel tank filler cap  
 56 ARI-5083 receiver  
 57 IFF transmitter/receiver  
 58 Signal pistol aperture  
 59 Cockpit aft glazing  
 60 Rear pressure bulkhead  
 61 Starboard inboard fuel tanks  
 62 Fuel filler cap  
 63 Nozzle fairing  
 64 Starboard main undercarriage bay  
 65 Hydraulic retraction jack  
 66 Outboard fuel tanks  
 67 Wing struts  
 68 Starboard auxiliary fuel tank  
 69 Fuel filler cap  
 70 Plywood leading edge skinning  
 71 Wing top skin paneling; double plywood sandwich construction  
 72 Starboard navigation light  
 73 Wing tip fairing  
 74 Formation light  
 75 Resin light  
 76 Starboard aileron  
 77 Aileron hinge control  
 78 Mass balance weights  
 79 Aileron tab  
 80 Underside view showing increased volume bomb bay doors  
 81 Ventral entry hatch with drift sight aperture  
 82 Trailing aerial fairing  
 83 Starboard outer plain flap segment  
 84 Flap hydraulic jack  
 85 Nozzle tail fairing  
 86 Flap inboard segment  
 87 Oil filler cap  
 88 Dingly access panel  
 89 Two-man dingly storage compartment  
 90 Wing fixer housing  
 91 Rear fuselage equipment heater air duct  
 92 Long range oil tank  
 93 Hydraulic reservoir  
 94 TR1143 transmitter/receiver  
 95 Mk XIV bomb sight computer  
 96 Batteries  
 97 Hydraulic and pneumatic system servicing panel  
 98 Pneumatic system air bottle  
 99 De-icing fluid reservoir  
 100 Picketing equipment storage  
 101 Camera motor  
 102 TR1143 aerial  
 103 Fuselage struts between inner and outer skin laminations  
 104 Heat conserving covers  
 105 Bulkhead cover  
 106 Fuselage half shell sandwich skin construction (plywood/balsa/  
 plywood)  
 107 Diagonal graining pattern  
 108 Centreline fuselage half shell joint strip  
 109 Rudder control linkage  
 110 Fin attachment bulkhead  
 111 Rudder mass balance weight  
 112 Fairlead aerial rod  
 113 Starboard tailplane  
 114 Elevator horn balance  
 115 Pilot tube



- 116 Rudder horn balance
- 117 Fabric covered rudder construction
- 118 Rudder tab
- 119 Tab operating rod
- 120 Elevator tabs
- 121 Tailcone
- 122 Tail navigation lights
- 123 Fabric covered elevator construction
- 124 Tailplane construction
- 125 Ferrite control rod
- 126 Elevator operating linkage
- 127 Tailwheel housing
- 128 Tailplane spar attachment joints
- 129 Tailwheel leg strut
- 130 Retracting tailwheel
- 131 Levered suspension tailwheel forks
- 132 Fuselage skin fabric covering
- 133 Identification code lights; white, amber, green
- 134 Beam approach aerial
- 135 Camera mounting
- 136 F.24 Camera
- 137 Tailplane control cables
- 138 Rear fuselage entry hatch
- 139 Crew equipment storage hatch
- 140 Bomb bay tail fairing
- 141 Bomb door hydraulic jacks
- 142 Beam approach receiver



- 143 Oxygen bottles
- 144 Flap shroud ribs
- 145 Inboard fuel tank bay ventral access panel
- 146 Bomb carriers
- 147 500lb (227kg) short-finned HE bombs
- 148 Port engine nacelle top fairing
- 149 Main undercarriage hydraulic retraction retraction jack
- 150 Undercarriage leg rear strut mounting
- 151 Flap hydraulic jack
- 152 Nozzle tail fairing
- 153 Port plain flap segments
- 154 All-wooden flap construction
- 155 Port outer fuel tanks
- 156 Fuel filler cap
- 157 Retractable landing lamp
- 158 Aileron tab control linkages
- 159 Rear spar
- 160 Aileron hinge control
- 161 Aileron tab
- 162 Aluminium aileron construction
- 163 Resin lamp
- 164 Port formation lamp
- 165 Detachable wing tip fairing
- 166 Port navigation light
- 167 Leading edge nose ribs
- 168 Front spar; box beam construction
- 169 Wing lower surface single skin/stringer panel
- 170 Wing rib construction
- 171 Plywood leading edge skinning; fabric covered
- 172 Port auxiliary fuel tank
- 173 Fuel filler cap
- 174 Main undercarriage rear strut
- 175 Mudguard
- 176 Mainwheel doors
- 177 Port mainwheel
- 178 Mainwheel leg strut
- 179 Pneumatic brake disc
- 180 Rubber compression block shock absorber
- 181 Spring loaded door guides
- 182 Main undercarriage pivot fitting
- 183 Engine oil tank
- 184 Cabin heater
- 185 Firewall bulkhead
- 186 Two-stage supercharger
- 187 Intercooler
- 188 Heywood compressor
- 189 Rolls-Royce Merlin 72 V-12 engine
- 190 Exhaust port
- 191 Alternator
- 192 Engine bearers
- 193 Carburetor air intake duct
- 194 Intake gauze
- 195 Intercooler radiator exhaust
- 196 Intercooler radiator
- 197 Engine mounting block
- 198 Coolant header tank
- 199 Spinner armoured backplate
- 200 Propeller hub pitch change mechanism
- 201 Spinner
- 202 Intercooler radiator intake
- 203 Port 3-bladed de Havilland hyromatic propeller
- 204 4000lb (1815kg) HC bomb



Above: The two halves of the fuselage (IWM)

developed for employing the latter on structural joints.

However, one such glue, a derivative of Bakelite, was widely used in the original Mosquito design. Because these glues had to be cured under heat and pressure, they were difficult to use. This technical requirement meant that they were initially impractical for structural joints. They could, nevertheless, be employed for bonding veneers. The result was a very strong waterproof plywood.

The basic structure of the Mosquito used two main materials - laminated spruce and ply. Lamination of the spruce components was employed in order to maximize supply of the material. Solid spruce components simply wasted too much timber.

The use of spruce was ingenious but largely conventional. It was in the construction of the fuselage that de Havilland made its most audacious stroke. The fuselage was made in two halves on male moulds. A layer of plywood was laid over the mould. Balsa wood was then glued to this and the outer skin attached. Incredibly, the inner and outer plywood skins were a mere 1.5 to 2mm thick.

Where greater strength was required (around doors, etc.), the balsa was replaced with spruce. When completed, the two halves of the fuselage were removed from the moulds and the doors and other openings cut through the ply and balsa. An incidental advantage of this construction method was that many of the internal control



Above: Checking the armament (IWM)

lines and hydraulics could be fitted before the two halves of the fuselage were mated. The fuselage halves were joined and the joint covered with a sprue strip.

The wing surfaces were covered with two layers of birch ply. The box wing spars were bonded under heat and pressure, resulting in enormous strength.

The Mosquito's design meant that simpler construction elements could be subcontracted out to cabinet makers' and carpentry workshops. It also offered two operational advantages. The wooden structure proved very resistant to gunfire and its lightness meant that the Mosquito was fast - very fast.

The last bomber variant, the B.Mk XVI and the unarmed photo-reconnaissance PR.Mk XVI used their two Rolls-Royce



Above: B.MK IV (IWM)

*Left: Geoffrey de Havilland straps in for a test flight (IWM)*

bomber development was briefly put on the back burner.

This was to be a temporary measure. The Mosquito proved so outstanding that it was quickly realised that it could perform a number of roles. Indeed, it could do so many jobs with such flair that there were never enough aircraft produced to meet demand. Space precludes an in-depth analysis of all of the versions developed, but the following partial list gives some idea of the design's flexibility:

- B.MK IV – Unarmed fast bomber variant
- B.MK XVI – Last bomber variant with 4,000lb (1,814kg) bomb capacity
- F.MK II – Radar-equipped night fighter
- FB.VI – Coastal Command rocket-equipped anti-shipping variant
- FB.XVIII – Anti-shipping Mosquito with 57mm anti-tank gun
- PR.MK XVI – Pressurised high-altitude photo-reconnaissance version
- T.III – Unarmed dual-control trainer
- TR.MK 33 – Torpedo bomber

Merlin engines to achieve a maximum speed of 498 mph (656 km).

When the first bomber prototype rolled out of the hanger at de Havilland's Hatfield works on 19th November 1940, this was all in the future. The technology, and indeed the whole concept of the Wooden Wonder, remained unproven.

## Furniture goes to war

If the Air Ministry had been initially sceptical about the Mosquito concept, its December 1940 demonstration flight before Lord Beaverbrook, Minister of Aircraft Production, laid any doubts to rest. An initial order for 150 included a large proportion of photo-reconnaissance versions –

with folding wings and arrester hook.

The British were to develop over twenty variants which saw service in all theatres of operation. Mosquitos fought their way to Berlin as part of Bomber Command's Pathfinder force. They rocketed German Shipping in the fjords of Norway. Night fighters intercepted high altitude bombers.

The most unusual, although untried, variant was the 'Highball' B.MK IV. It carried an anti-shipping bouncing bomb designed by Barnes Wallis. Hoping to repeat the success of the Dambusters raid, this idea was intended for use against the German battleship Tirpitz and Japanese ships in the Pacific. Numerous tests were carried out, but the war ended before it could be tried in earnest.

The Mosquito also scored some notable successes in the ground-attack role, even though its leading-edge radiators were particularly vulnerable to ground fire. One of these attacks will serve as a fitting tribute to the Wooden Wonder. In February 1944, Mosquitos of the 2nd Tactical Air Force carried out a daring raid on the Gestapo headquarters at Amiens. Coming in at roof-top height and in bad weather, they succeeded in

breaching the prison wall and 'liberating' some 250 resistance prisoners. The controversial design proved itself here and on countless other occasions. Geoffrey de Havilland's vision was vindicated.

## Postscript

A total of 7,781 Mosquitos were built in Britain, Canada and Australia. The aircraft served with the post-war airforces of Belgium, France and Sweden, among others. They were supplied to Nationalist forces in China, and a few FB.VIs found their way to Czechoslovakia.

The Mosquito continued in RAF service until 1963, seeing action in Burma. Its final role was as target tug and this would have been a sad end to the career of this legendary aircraft had not the five remaining airworthy examples been acquired for the film 633 Squadron.

Sadly, the last flying Mosquito, owned by British Aerospace, was completely destroyed in a fatal crash several years ago. Ironically, it is the long-term deterioration of the Mosquito's wooden structure, coupled to technical difficulties in restoring it, mean that it's unlikely that we will ever see the Wooden Wonder take to the air again.

*Surely, nothing can be more simple than sanding wood! Not so, says Mark Finney, who outlines abrasive use and abuse for foolproof finishing.*

# ABRASIVE LANGUAGE

**S**urely nothing is simpler than sanding wood," replied a friend when I asked him what he knew about the subject. "You just buy a sheet of sandpaper, wrap it around a block and start rubbing until the wood is smooth, don't you?"

Well, he's right in principle but there's a lot more to it than that. Starting with abrasive papers themselves, sandpaper, as such, doesn't exist these days. As an early form of abrasive it was superseded by powdered glass, yet most abrasive papers are still known by the name sandpaper. Glass paper isn't an effective abrasive either as it blunts quickly - but it is cheap to produce.

Sanding wood with slow cutting abrasives is very frustrating. The temptation is to use a harder and tougher abrasive which, it is assumed, will last longer and do the job more efficiently. But is this true?

In the case of the glass paper there is one grade known as '00' grade cabinet paper or 240 grit glass paper. It is also known as flour paper. This very specific paper is actually used to cut back soft polishes such as French polish or shellac sealers. It is a soft abrasive that tends not to damage or scratch the surface as much as some of the alternatives. It is not used

straight from the pack - as a 240 grit abrasive it is too coarse and has to be first flattened off on bare wood, usually during final sanding. After being prepared it is used as fine cutting denibbing paper. As glass is not coarse cutting, this product is suited to this very specific task.

On the reverse side of the coin, the very hard or tough abrasive may leave deep scratches on the surface of wood which are hard to remove and are easily visible after polishing.

The conclusion is that there is no product that will perform on all types of woodwork. Knowing what each type of abrasive is best suited to, combined with selecting the correct grades and working through them in a logical

order, are what make for the perfect sanding of wood. This article is all about choosing and using abrasives not just rubbing down wood with any old paper you happen to have lying around.

So what types of abrasives are available? The main categories are as follows: glass paper, garnet paper, aluminium oxide and silicon carbide. All can be glued onto different backing sheets, especially paper, and are available in several grit sizes and grades.

## Glass paper

A tan, pale brown or yellow coloured paper, glass paper blunts easily. Grades of glass paper are unusual in that they do not necessarily follow a system. Glass papers may also

be known as flint paper and, as already mentioned, there is one very specific grade, '00' grade, also known as flour paper.

## Garnet paper

Manufactured from industrial garnet crystals which have the tendency of breaking, thus creating new cutting edges. This paper does not blunt as quickly as glass paper and is a favourite amongst cabinet makers. Generally brown in colour, garnet papers are kind to wood and used for fine cabinet work and close textured hardwoods.

## Aluminium oxide

Generally mid-brown to grey in colour, aluminium oxide is a very tough and hard-wearing abrasive. It is much harder-wearing than garnet paper and tends to be used for machine sanding such as belt and orbital sanding machines as well as for the hand sanding of very dense or difficult timbers.

## Silicon carbide

Familiar as the black/dark grey 'wet and dry' paper, silicon carbide paper is available in extremely fine grades and is used extensively for cutting back paints and varnishes. As its name suggests, it can be used either wet (with water as



**TIP** Try not to plane previously sanded wood as it blunts the cutting edges. Move onto an intermediate grit size of the same type of abrasive that you're using. Pine is generally finished on 180 grade aluminium oxide paper or garnet paper, so 80, 120, 180 would be a good selection of grits. On fine-grained hardwoods such as cherry, 320 grit garnet paper is the usual final grit size, i.e. 80 or 100/120, then 120/150 and finish with 240 or 320 grit.

Finally, on open-textured hardwoods like oak, use 80, 120, 180 and 240 grades. Self-lubricating aluminium oxide paper will usually give the best results.



a lubricant) or as a dry abrasive. Where water would damage a surface (most polishes used in woodwork fall into this category) self-lubricating versions are available (see below).

### Self-lubricating papers

Silicon carbide papers are available as a self-lubricating paper. Treated with zinc oxide, it is usually identified as being pale blue/grey in colour and may also be known as a stearated silicon carbide paper. Used for cutting back varnish or lacquer, the natural lubrication gives a very silky feel and produces an effect similar to that of a much finer grit paper. Grades 320 and especially 400 grit are most commonly used for denibbing (i.e. rubbing down surface coatings).

Aluminium oxide is also available as self-lubricating paper. It is used to sand bare



wood rather than surface coatings and again produces a silky feel to the surface. Being a very effective abrasive in its own right, even grit sizes as coarse as 120 grit can be used to fine sand timbers such as pine ready for their final finishing processes.

Confusingly, self-lubricating aluminium oxide paper is also usually pale blue/grey in colour but should not be confused with silicon carbide paper. A well-known trade term for self-lubricating silicon carbide paper is lubrisil.

### Backing paper

The above abrasive types give a full range of abrasive hardness from relatively soft glass paper to fine cutting garnet papers and silicon carbide, through to fast cutting aluminium oxide. However, the backing paper can also play an important part in sanding too.

Papers are available in different thicknesses known as



weights. So, an 'A' weight paper is much lighter than say a 'C' weight paper. Heavier papers will usually last a little longer than a lighter one but care needs to be taken. Sometimes, selecting too heavy

a backing paper actually means that on machined or fine work a rogue corner may dig in as it cannot be folded over properly. This will create deep scratches on the surface which are difficult to spot at the time.



**TIP** Always clean off the dust after sanding. This can mean simply wiping over the wood with a rag and then using a tack cloth to remove any fine dust; or you can soak a rag in white spirits and use to remove all traces of dust. Leave to dry before resanding or applying any wood stains and finishes.

Because of this 'A' weight papers are sometimes preferred even though they may not last as long. For most non-industrial use, the lighter weight papers are much easier to use than very heavy ones. Sometimes, abrasives are coated onto cloth or are resin bonded giving more life to the paper. As with heavy weight papers this can also make the paper too rigid for flexible sanding or contour work.

## Grit sizes and grades

Grit sizes for most papers follow a simple comparable numbering system (see chart). It is important to remember though that as each type of abrasive blunts at a different rate exact comparisons are difficult to make. For example, 240 grit ('00f' grade) flour paper loses its cutting edge so quickly that within two or three strokes of sanding its probably cutting equal to a 320 or 400 grit silicon

carbide paper.

Coarse grades, especially some cheaper papers can be very 'scratchy' to use for hand sanding and sometimes don't feel like they're digging into the wood as they should be. Very coarse papers run the risk of damaging the wood in the early stages so never start off with too rough a paper such as 30 or 40 grit. 80 grit is usually coarse enough for most

general woodwork. Some papers are also coated to help reduce clogging.

## Abrasive systems

As we know, abrasives can be stuck onto all manner of backing sheets including belts, strips, discs, rolls, sheets, sponges and flexible pads, and by using a little imagination some excellent sanding systems have been developed.

Abrasives, usually aluminium oxide or silicon carbide, are used in conjunction with sanding cylinders and flap wheels for removing coarse or flaky paint. There are drums for the quick sanding of pine and edge sanding and there are sponges for contour sanding. Velcro backed paper and sanding blocks are also very effective.

## Comparative grades of abrasive papers

Glass Paper	Garnet Paper	Aluminium Oxide	Silicon Carbide
Blunts easily	Suitable for hand sanding	Suitable for woodwork machinery	Use finer grades for denibbing; coarser for metal work
		400	400*
	9/0 or 320	320	320*
	8/0 or 280	280	280
00 or Flour*	7/0 or 240	240	240
0	6/0 or 220	220	220
	5/0 or 180	180	180
1	4/0 or 150	150	150
1 1/2	3/0 or 120	120	120
F2	2/0 or 100	100	100
	0 or 80	80	80

**TIP** Curved edges can be easily sanded by fitting a drum sander into a drill stand. Then you can hold the wood by pushing it against the drum. Once the initial sanding has taken place carefully check the surface in good light.

## Other types of abrasive

Steel wool is a common abrasive. Made from strands of wire in a very open texture, coarse grades are used for stripping furniture (in conjunction with paint and varnish removers) while very fine grades, (the finest being known as '000f') are used to apply wax polish and cut back finishes such as French polish and sanding sealers.

Similarly, Scotchbrite pads are an open textured flexible abrasive pad which serve both for the removing of paint and varnish in conjunction with a stripper and for fine finishing depending on the grade. They have one distinct advantage over wire wool in that they do not break up leaving fine particles on the surface but can sometimes slide over the surface. Quite often, using a combination of both products gives the best results.

## Safety

Whatever method you use always think safety first. Rotating discs and belts in electric drills are dangerous and fine particles of dust can



## TECHNIQUES

are difficult to remove. Always take extra care when using belt sanders as these can easily dig into the wood leaving deep ridges.

### Stripping wood

Abrasives are used extensively to remove old paint and varnish. An abrasive paper used on its own is usually a slow process, although for cutting back sound paint and varnish ready for recoating, self-lubricating aluminium oxide or silicon carbide papers will give excellent results. Papers with coated surfaces will also produce much better



end results than ordinary glass paper. For the full removal of an old surface coating there are several methods.

These are:

1. Burning off with a hot air gun or a blow lamp is risky in untrained hands and is both a smelly and messy process. It is effective though and produces a sound clean surface ready for refinishing. A final sand with 180 or 240 self-lubricating aluminium oxide paper is recommended.

2. Using a scraper to scrape old paint off is a relatively clean process but you can unknowingly damage the surface of the wood leaving much lighter-coloured markings which are then easily visible after finishing.

Cabinet scrapers are used to remove torn grain - not

easily become caught in the eye. The dust from old lead paint is also dangerous and the correct use of masks to reduce the risk is advisable. Fine dust is always a problem in woodwork and finishing so always take suitable safety measures.

### How to sand

I'm often asked this too, so it's not as daft a question as it sounds. Any fine surface marking left on wood is removed by sanding. Large defects and holes should be filled and refinished before sanding begins.

Select a sanding paper or system that best suits the needs of the work in hand and starting on a coarse grit (say 80 grit paper) working along the grain. This will smooth the wood but will not remove any bumps or hollows, so if these become apparent during sanding take relevant action. Small hollows can be detected easily by spotting pockets of dust appearing on the surface as you sand. Do not ignore any unusual markings that appear either as these usually become more distinct and often glaringly obvious during later staining and polishing.

Always sand along the grain. On curved work or awkwardly shaped components a paper wrapped around a block covered in cloth can be used or a flexible sanding pad or a sponge may be preferred. Never be tempted to sand across the work. And never use an orbital sander on scratches will become very obvious and

**TIP** Never oversand open textured woods such as oak, ash or elm as this creates a 'washboard' effect which looks uneven. Work carefully through the grades allowing the finer grits to remove any scratches left by the previously used paper.

If you're using water-based products such as stains or acrylic varnishes on quality work it is wise to raise the grain of the wood first. This means sanding, as described above, then wetting the wood and leaving it to dry. When dry, lightly resand using the same grade paper as the final sand. This will refinish the fibres of the wood. If you oversand, exposing new wood, the grain will lift again during the application of the wood stain.

paint - and will usually clog up quickly if so used. A proper decorator's scraping tool gives better results but can still mark the surface. The use of glass is not recommended.

3. Removing paint and varnish with a chemical stripper is a very good method, but they can be messy so cover the floor with old newspapers. Some strippers are more effective than others - check first by buying a small quantity of stripper to ensure it will remove what you need it to.

While the stripper is taking effect and is softening the paint, you can use a decorator's wallpaper scraper to remove the excess. This is followed by using either coarse (no.3 grade) wire wool or a coarse Scotchbrite pad with water or white spirit as a lubricant. It is important to neutralise the stripper after use by wiping the surface over with water, white spirits or methylated spirits depending on the stripper being used.

4. Paint and varnish can be removed using special sanding discs which rely on an electric drill. As with belt sanders they can easily dig in or round over edges so take extra care. All methods of removing old paint and varnish are never as quick as you'd like them to be so take your time and try not to leave the job half finished. Any old surface colouring or coatings left are always clearly visible during new finishing so it's a wise policy to do the job right in the first place.

### One final thought

As I've said on many occasions, I find sanding extremely boring since it always takes longer than you would expect. It is, however, the time spent creating the perfect foundation that produces a totally professional result.

Because of this, try not to think that you're selecting the combination of abrasive papers and pads to necessarily speed up the process, but rather to make it more enjoyable. This sounds perverse, but it might prevent you from lapsing into a coma. Then, if you do actually succeed in speeding up the job, you can count it as a welcome bonus.

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How did a Brit end up bodging amongst the Zulu? Well, I had an offer from a friend, Chrissie Nienaber-Roberts, from South Africa. Some three and a half years ago we met on a guided walk I was leading as part of my work as a countryside ranger in Wales. She wanted to learn about the natural history of Wales and my hobby bodging. I had always dreamt of visiting Africa.

She immediately saw the pole lathe as appropriate technology for remote rural areas. On a visit back to her homeland she had organised workshops for me to demonstrate and teach the art of the pole lathe at the 'Turn Table Trust' near Bulwer. That



Above: Kudu cottage peering through the Acacia thorn. Life can be remote in Zulu land

magnificent curled horns), who mowed the lawn, to the spitting cobra-king of my cellar. Then there was the leopard that appeared one day while I was checking the water tank. What to do? The biggest wild animal

I had confronted before was a badger, and this was no badger. The tank, some nine feet high, soon had me sitting on top. To my relief, the leopard left, unperturbed by the whole incident. Unlike me!

*A chance meeting sent Ian Warburton and his pole lathe to South Africa. Here, he describes how this traditional English craft has been adopted by the remote villages in the heart of Kwa-Zulu Natal.*



# A BODGER AMONG

was over two years ago. Little did I then know that this would become my life's work. I now spend most of my time in Kwa-Zulu Natal teaching sustainable development to unemployed Zulu.

In July 1997 I moved to Pietermaritzburg to live with Chrissie's family while I found my feet. Three months later found me in Estcourt, thanks to a kind offer from Dave and Dorothy Green. This was the Africa of my dreams. I lived in a remote Kudu cottage, without electricity and water from a borehole. I converted the kitchen into a workshop and spent six months living and working there. It was heaven!

I'm also a wildlife freak and there was plenty of that, from the Kudus (large antelope with



My first work was an invitation from Sue Greenberg of the South African Crafts Council, to demonstrate bodging at the International Conference Centre in Durban which was being opened by President Nelson Mandela. Television and newspaper coverage soon followed as well as a meeting with a Zulu queen.

A week later I met Branda Lock from Enbocraft Trading. The organisation was set up to meet the needs of unemployed rural communities, supplying training to would-be entrepreneurs. Bodging fitted the bill and I was asked to run courses using the pole lathe, and teach life skills.

*Left: Side axing a piece of Jacaranda*



# THE ZULU

*Below: Goblets turned on the pole lathe - the inside is hand carved with a type of hook knife made from an old knife blade and bicycle seat stem for a handle*



During the three-week courses my students learn basic carpentry by building their own lathe and shave horse. This is followed by learning how to turn kitchen and craft items and make simple furniture. We cover health and safety; measuring, marking and cutting of timber and joints; tool sharpening and maintenance; forestry practice and marketing and business skills.

The Trust supplies a basic tool kit comprising a gouge, skew and flat chisels, timber for the pole lathe and shave horse, a drawknife and side axe. The latter two are handmade - the drawknife from old car springs, the side axes from re-forged new springs.

Setting up a course for ten students is a long process. It might be a thousand kilometres away. You have to arrange transport, timber, purchase of tools, manufacture of the drawknives and side



## SOUTH AFRICA



*Above: After just one week a student designed and made this chair*



*Above: Making the puppets for the lathe*



*Above: Drilling holes in the puppet that will form the slot to house the wedge*

axes, and accommodation. The locations are remote, usually with no form of communication except the bush telegraph. Fortunately, this often works better than the telephones!

Of all the courses I have completed, two stand out. They were at Nzimakwe and Wasbank. Nzimakwe is 200km south of Durban and rich in sugar cane and banana plantations.

Up to 1996, there had been tribal wars and few Europeans had ventured in. My course was bang in the middle! I had 12 students, ranging in age from 17 to 69. Some of the men were stick makers, producing elaborately carved walking sticks. Once the lathes were up

and running we looked at turning a stick blank. They were amazed at the speed. It takes a day to shave one before they can start carving - we made a blank in fifteen minutes. There was a lot of talent unleashed in those weeks.

Wasbank, once a thriving mining town, now has nothing. The mines have closed and the people struggle. There I met a remarkable woman, Jeanette Tshabalala, who single-handedly raises funds to train her people. She lives on a small farm raising a family on the meagre income from her cattle and turkeys. To date she has managed to run training courses for around 50 people,

Every day she invited me for tea. Knowing how poor she was I would make a second cup with the same teabag. My hat goes off to Jeanette and all the

woodful people involved in grassroots development work. Special thanks to Ted Brooker and to the Pietermaritzburg Woodworkers Guild.

### INFO

Ian Warburton, 49, is from Scotland and an engineer by trade. He changed direction in life 15 years ago and went into countryside conservation. He is now a training facilitator and spends most of his time teaching and training rural skills for trusts and aid foundations in Africa.

Ian return periodically to the UK to raise much-needed funds

and find sponsors for future projects. He gives talks on wildlife and his work to groups, societies and schools. He also gives demonstrations and workshops to any interested party.

Contact Ian on 01786 850 315 or e-mail him on [ian@greenwood-training-freeserve.co.uk](mailto:ian@greenwood-training-freeserve.co.uk)

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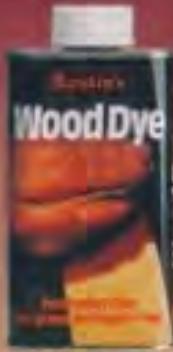
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*Richard Jermy uses contrasting timbers to considerable effect.*

# WALNUT & CH



## Design brief

The pieces were designed specifically for a local exhibition (Crosby Hall Educational Trust) and as such allowed us some freedom to put some of our own design philosophy into practice. Students new to design have visions of themselves working in an environment completely free of external constraints.

However, the reality is invariably very far from this and the designer craftsman is normally working to the requirements tightly set by time, the client and cash. Although in this case we were free from some of these usual constraints, even in an exhibition, one is limited by space available, the suitability of the design to its surroundings, the type of viewer and, above all, the amount of time one has to



5



6



7



8

- 1 The walnut planed up
- 2 Mortise and tenon for leg and rail
- 3 The front rail doweled into leg
- 4 Cramping up
- 5 The runners and kickers
- 6 The rebated top
- 7 Through dovetail at back of drawer
- 8 The lapped dovetails

some beautifully figured boards for the tops.

### Timber preparation

With exhibition work the emphasis is on the very highest level of craftsmanship and the preparation of the timber must be done with great care and thoroughness (Pic 1). Therefore, even though we knew the timber to be well seasoned and to have been in our own store for over a year, we cut and planed the timber many weeks before use and laid it on skids in a flat corner of the workshop. This is because once any wood has been cut there is a loosening in the structure of the fibres and therefore a tendency for movement immediately afterwards. By this method we allowed the timber to stabilise before cutting and planing to finished sizes; always, of course, selecting and marking the face and edge.

### Marking up timber

The traditional method for marking up timber starts with the rod or set out. This should be taken from the drawings and, in effect, is a scale record of all the necessary measurements to make the piece. Then each item is measured and marked out – repeat not – with a rule but against the set out. This method minimises the chances of making mistakes and ensures that all identical measurements; for example the length of legs are identical.

# ERRY TABLES

spar on work that may not necessarily lead to a sale.

Bearing this in mind, firstly, although in a top position in the exhibition, the space was limited and this dictated that the pieces had to be quite small. Secondly, due to our heavy work schedule, we only had a limited amount of time so the pieces needed to be relatively simple. This did not mean we could produce something that was passed by, so we had to design something that made people take notice.

With this in mind we came up with the idea of producing a set of furniture that included pieces that were matching and contrasting. This also fulfilled another of our intentions, namely to allow people to see how different timbers could be used together in different pieces of furniture. This, of course, is no new idea! The cabinet makers of the eighteenth century took this

theme to a level unsurpassed before or since, using a tremendous variety of timbers in contrasting and complementary settings. With our background in traditional cabinet making and furniture restoration, it was inevitable that these earlier masters have had a strong influence on our design philosophy.

The design that we came up with was a pair of small matching but contrasting side tables with their own boxes and mirrors. This hopefully fulfilled all of our requirements. The emphasis was on delicacy and elegance: the narrow bodies of the tables with long slim tapering legs. The overall feel was Sheraton but in a modern setting.

### Materials

Black walnut (*Juglans nigra*) and American cherry (*Prunus serotina*) were our first choice,

partly for the contrast in colour but also because of the attractive figure found in both of these high quality hard woods. For the drawer linings we chose English sycamore (*Acer pseudoplatanus*) due to its colour of brilliant white in its unstained state. For the drawer bottoms we decided on Cedar of Lebanon (*Cedrus libani*). This light brown softwood, in addition to being a traditional remedy against moths, gives off an attractive and distinctive scent when the drawer is opened.

We also intended to add some restrained decoration. For this we decided on using a timber with a strong contrast: the black of ebony (*Diospyros ebenum*) against the light cherry and the white of sycamore against the dark Walnut. It goes without saying that these timbers were carefully selected and defect free. We were also able to get

Once you've done this, and before any cutting to final sizes, you should mark all lengths, mouldings, chamfers and joints on the timber. I am a great advocate of this traditional way of work as I believe it is quicker, minimises risks of mistakes, and ensures greater accuracy.

## Construction

The tables follow the traditional English method. Start off by tapering the legs on the two inner sides (not the face sides which produces a clumsy inelegant look). Use whatever method suits you best; we did it using a jig which holds the leg at the angle of the taper and running it through the thicknesser.

We cut the legs to just over the finished size since no matter how sharp the blades of the thicknesser, small scoops are always left caused by the cutting action of the blades. It is, therefore, necessary to finish off the final millimetre or so with a hand plane.

Now mortise the top of the legs. As we do not have a mortising machine in the workshop, we use a router with a long blade to cut out the mortises (Pic 2). It's not quite as quick but just as accurate. Cut the back and side rails. Remember these are not flush but set back about 1/16in. The reason for this is speed – with a flush fit, it is necessary to get a high degree of accuracy, whereas if the rails are stepped back any slight variation is not noticed. The front rails run horizontally; the bottom one is stub tenoned and the top dovetailed into the front legs (Pic 3).

Although the carcass construction is very simple there are problems to be faced when gluing up. With this type of construction, where there is no stretcher rail, it is important when clamping up to check the legs for parallel and square. The best approach is to have a dry run first, double checking every time. Then, ideally, the two side rails should be treated as sub-units and glued and clamped first, preferably leaving overnight. Following this, glue and clamp the back and front rails (Pic 3), checking in particular the diagonals.

You'll find that just the smallest adjustment to the sash clamp puts the legs out of square.

Some craftsmen recommend pinning a temporary stave at the bottom of the legs cut to the exact length, but the danger with this is that if over-tightened, the legs will spring to where the pressure has been applied once the staves have been removed. My recommendation is to do it without – just be scrupulous in checking until the legs are exactly right.

Once you've glued up the main carcass, fit the drawer runners, kickers and guides by gluing and/or screwing (Pic 5). We chose sycamore for these pieces. The reasoning behind this is that it is a good principal where drawers are concerned to have like timber running against like, thereby minimising wear.

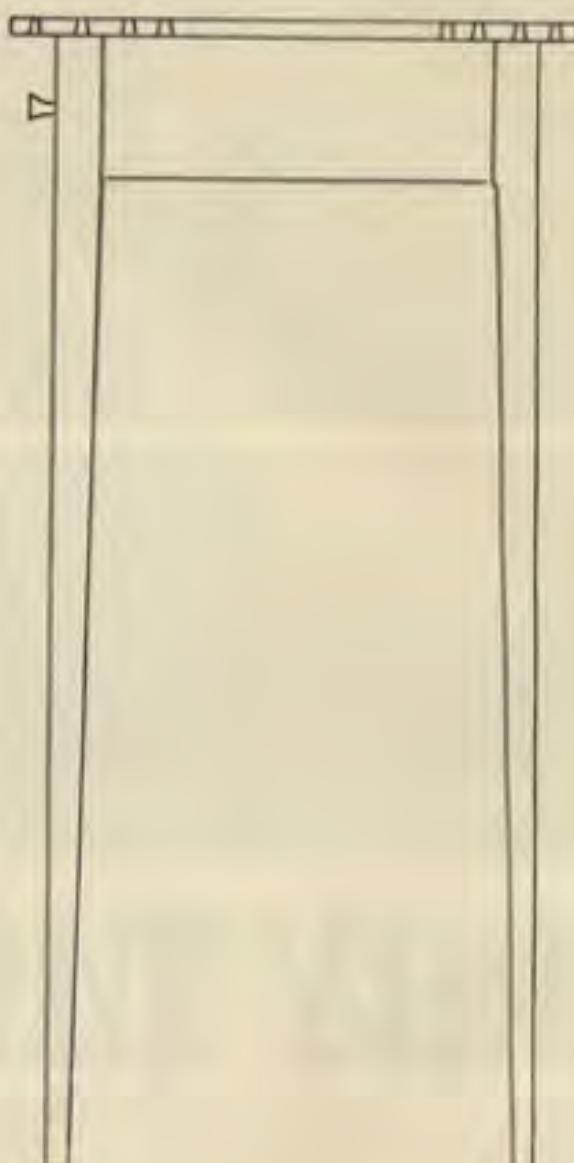
It is not uncommon to find antiques with drawer sides in oak and runners in pine. The results are usually horrendous with deep grooves worn in the runners which often make drawer operation virtually impossible. Where a craftsman has gone to the little extra expense of fitting oak against oak, it will be found that the drawers usually still work well.

The top features a non-standard construction. To increase the feeling of lightness and delicacy we wanted a narrow top edge so we rebated the top in (Pic 6). This maintains its strength while giving an appearance of a very narrow edge (12mm). Secure the top with pocket screws passing through the rails. Fit them loosely to allow for timber movement.

## Drawers

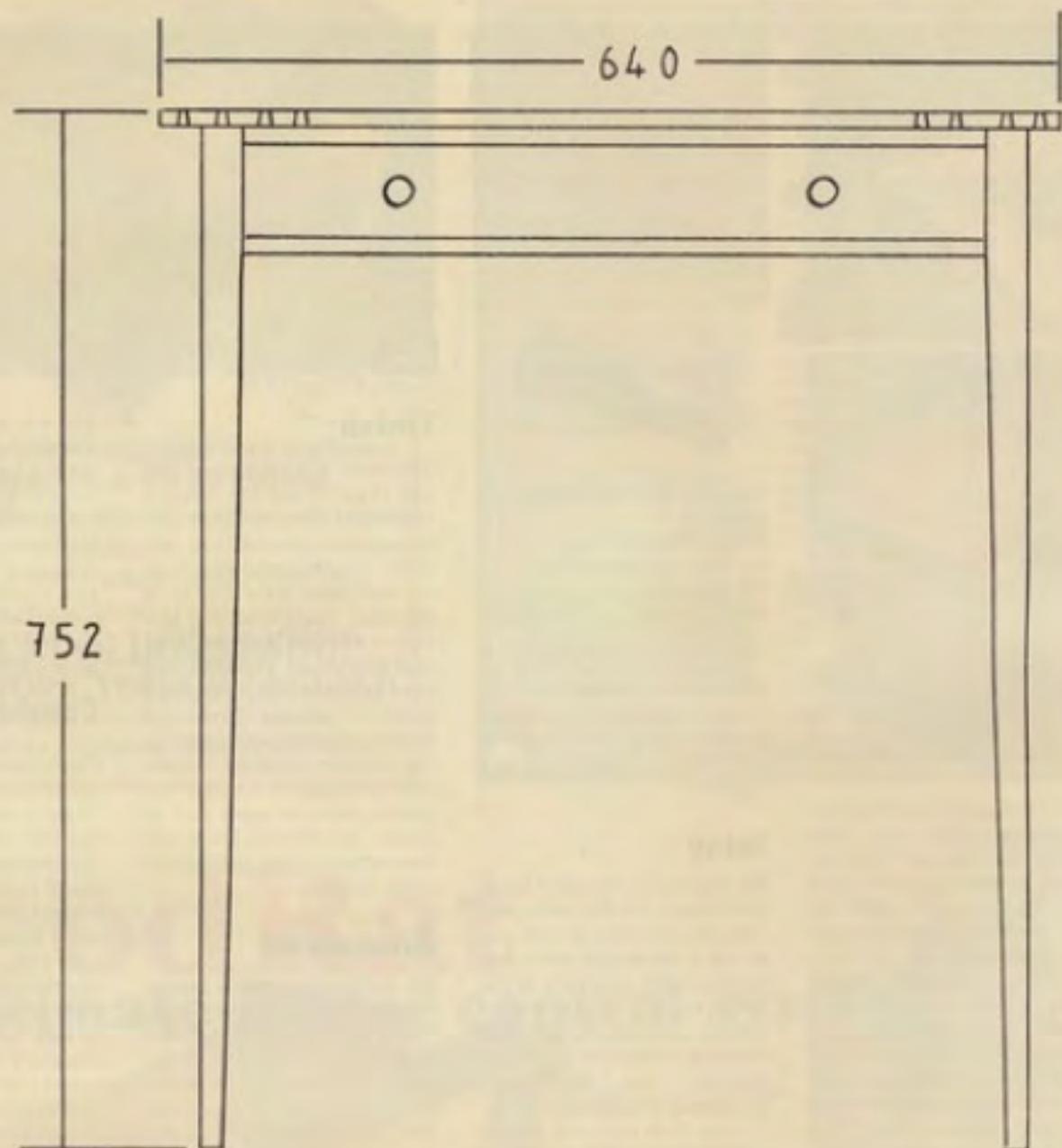
Drawers, and in particular dovetails, are traditionally a demonstration of skill. It is therefore essential that the work here is faultless. Whatever the level of knowledge of potential clients, they will always know to check the dovetails. They will usually inspect this area of the work closely. Minor faults here and you will probably lose the sale.

Once again, classic English construction is appropriate: through dovetails for the back



### Cutting list (in mm)

Item	No	Length	Width	Thickness	Notes
Legs	4	740	27	27	Taper to 16mm
Side rails	2	306	89	22	
Back rail	4	588	89	22	
Front rails	2	588	28	12	
Top	1	640	357	12	
Runners	2	280	15	12	
Kickers	2	280	15	12	
Drawer int	1	530	65	20	
Back	1	530	65	12	
Sides	2	250	65	12	
Bottom	1	536	260	10	





13

**9 Inserting the decorative dovetails**

**10 The dovetailing jig**

**11 A turned ebony knob**

**12 Before applying finish...**

**13 ... and after the first coat**

a flush fit the front has to be exactly right – the slightest gap or misalignment of the front becomes immediately apparent.

## Inlay

We wanted some restrained decoration for the table top. The idea we came up with was to use a dovetailed inlay that mirrored the dovetails in the drawers. We considered a number of variations including running different sizes or running the decoration completely around the top.

Our final decision was to restrict the decoration to the corners and to use a strongly contrasting wood – ebony for the cherry and sycamore for the walnut (Pic 9). To cut the dovetails we made a simple jig from a block of hardwood (Pic 10). The block has a 12mm deep groove running across the back which slots snugly over the edge of the table top. Each end of the block is bevelled at 10 degrees to the vertical. To cut the dovetails simply fit the jig over the table edge at the required position and use the bevelled end as a guide for your dovetail or Japanese saw. The grooved side acts as a depth guide. Chisel out the waste and then make and glue in the pins.

The drawer front is flush fitting. When you try this method for the first time you'll discover how much more difficult it is to fit than a drawer with a cock head. With

(Pic 7) and lapped dovetails for the front (Pic 8). The traditional drawer front is usually wider than the sides and back. This is to allow the front dovetails to be cut longer for aesthetic reasons.

The thickness of the drawer sides is determined by a number of factors. Following the cabinet makers of the eighteenth century, my preference is to have the sides as thin as possible. The limiting factor is to have enough meat to take the groove for the drawer bottoms. In this case we made drawer sides and backs of 8mm which allowed a groove of 4 mm depth. If the sides are much thinner then it would be necessary to have drawer slips.

Once you've constructed the drawer, fit the drawer bottom with a chamber on the base side of course, with the grain running across the drawer. Glue the bottom only on the front edge and screw it into the back rail. This allows for timber movement and should prevent splitting.

The drawer front is flush fitting. When you try this method for the first time you'll discover how much more difficult it is to fit than a drawer with a cock head. With

## Finish

The finish is traditional oil and wax (Pics 12 and 13). Apply a Danish Oil, thinned down with turpentine for the first few coats, and then gradually build up over many days. Cut back between coats with 400 grit silicon carbide. Apply a final coat of beeswax with 0000 wire wool and then buff it up with a cloth. I always favour a traditional beeswax paste to the cheaper man-made waxes, mainly because it seems to me always easier to apply and, of course, for the familiar scent. Remember to wax the insides of the drawers.

## Accessories

We decided to make a box as an accessory to each table. These were designed to match and be placed on top of the tables but also work as pieces in their own right. Again the idea was to produce a piece

that was slim and elegant. We therefore produced sides made from a large cove moulding edged by the contrasting timber mitred and glued. We laminated the lid in order to minimise timber movement and lined the insides with cedar. Balze on the underside ensures that the top of the table was not scratched.

## Conclusion

Exhibition pieces are always something of a challenge. There is always the worry that the idea will fall flat and that the designs one has spent so much time and effort on will attract little interest. On the other hand there is also the lift one gets when on the first night within minutes of opening one makes a sale – as in this case. It's not just the monetary reward, but also that other people like and appreciate your work enough to dig into their pockets!





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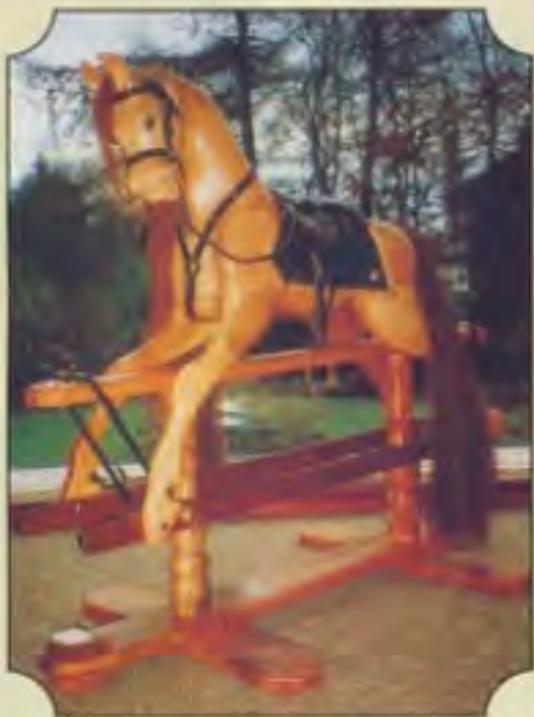
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Jigsaw and sabre saw

When I want to reduce a whole sheet of plywood to working sizes, I tend to attack it with a jigsaw. Maybe I am getting lazy because at one time I would have used a handsaw. I even have to cut a plank to length with the jigsaw. None of these jobs is what a jigsaw

is supposed to be for. It is a tool for cutting curves.

Whenever possible, I cut curves on the bandsaw. Sometimes the work is too big or part of it will not go between the blade and the frame. Sometimes it is better to take the tool to the job and that means using the jigsaw.

But what about inside curves? That is somewhere where the bandsaw cannot go.

I remember a bandsaw being offered with a brazing device. You cut the bandsaw blade and threaded it through the job, brazed the ends together and carried on. It never came to anything.

Peter Barton looks at the numerous ways of cutting curves.

## CUTTING CURVES



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keyhole saw  
and coping saw

Where it can be used for curves in general woodwork the bandsaw produces the best results for square-cut clean edges. You can use a jigsaw for outside curves that might have been cut by a bandsaw, but as the blade is only held at one end, it often bends or wobbles and edges don't finish square.

Jigsaws, as we know them, are not very old. I had a crude one that had to be powered by an electric drill. Before bandsaws or jigsaws there were bow saws (Fig. 1A). The blade was pin-ended, so could be released to thread through a hole in a job and then tensioned by twisting the cord. I find them very cumbersome to use, yet they



**Holdfast and block allow safe cutting**

the other way and have the work upright in a vice, with two hands on the handle and the face side towards you.

There is now a sabre-saw version in which the blade is in line with the handle. I cannot think of many occasions when this would be preferable, but the one I have is cordless, so it goes where there is no power supply.

If you are new to using a jigsaw, make sure the work cannot move and there is clearance underneath – it is disconcerting to find you are also cutting the bench! It is possible to start a jigsaw cut in wood by tilting the tool so only the tip of the blade cuts and can worry its way through. However, it is usually preferable to drill a hole that the blade can pass through.

If you need to cut a sharp corner with any of the internal cutting saws, cut up to it, then back off and cut the other side (Fig 2A). If it is a complicated internal shape, it is usually best to go into the finer angles first and cut away waste before dealing with the larger masses. (Fig 2B)

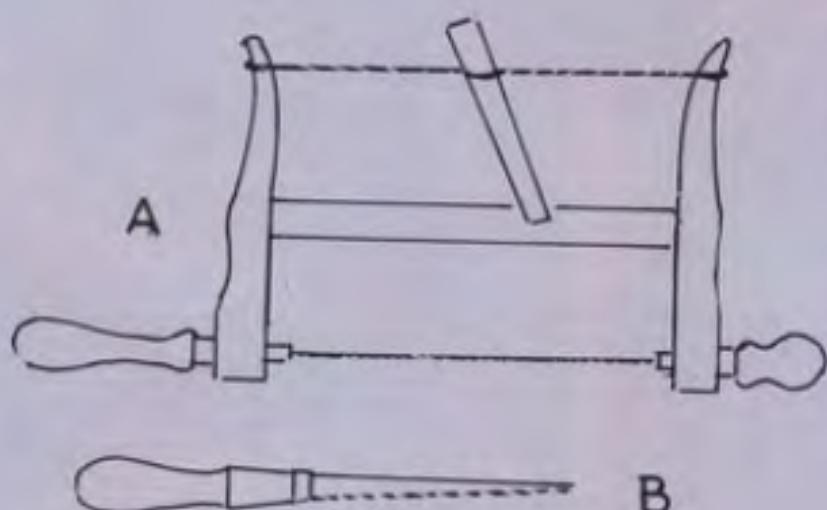
are still the favoured means of shaping in several mid-European countries, where sizes range from tiny to massive.

I remember my father using a keyhole saw (Fig 1B). This had a short thick blade tapered to almost nothing in a straight handle and was originally intended for the big keyholes that went with massive locks.

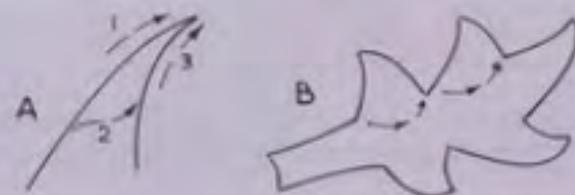
My father was a fretwork enthusiast and used a hand frame. I have enjoyed sitting down to use one of these with the work on a notched board. Now I use a powered scrollsaw.

Akin to the fretsaw frame is the coping saw, which does not go much further back in history than the jigsaw. With stouter blades than the fretsaw, it does hand work similar to the jigsaw. You can fit the blade to cut towards the handle and use it like a fretsaw. Or, you can fit it in

**Fig 1. Bone saw and keyhole saw**



**Fig 2. Directions of inside cuts**



# Help Wanted

**Over 150 Essential Jigs, Aids and Devices For Today's Woodworker**

V.J. Taylor, David and Charles £16.99

**Woodworkers' Questions Answered**

Alan and Gill Bridgewater, Marshall £16.99

Since we're announcing our new *Top Tips* page (see *Woodcuttings* pp. 2-3), it seems an appropriate moment to peruse a couple of problem-solving books.

V.J. Taylor's *Over 150 Essential Jigs, Aids and Devices For Today's Woodworker* is structured around two main sections - the first covers jigs, accessories and techniques for machine work, the second investigates the same for hand tools. The rest of the book features an introductory chapter on the workshop and timber, techniques and devices for measuring and sharpening devices and techniques, among others. The book is, therefore, broad in scope and content.

The publishers have opted for a simple design and layout. The (relatively large) text is run in two columns and backed up with perfectly good line drawings. Following the old adage 'form should follow function', they've come up with a product that's easy to use and logical in content. Glamorous it may not be, but it works.

So, what can the book offer the woodworker? In the power tool section there's plenty of meaty stuff on bandsaws and table saws. These include a taper cutting jig and pattern cutting jig for the bandsaw, while the three table saw tenon

cutting jigs are very good. Routers are well represented by a plethora of intelligent problem-solving devices. The parallel routing and long dovetail jigs merit a special mention. If that's too simple for you, Taylor offers a multi-purpose jig which should keep anyone busy for a while.

Hand tool users also receive the benefit of Taylor's ingenious mind. His dowel sawing jig is one of those blindingly simple

other. Coincidentally, this chapter shows how to calculate the pivot point for a swivelling table top (see this month's *Workshop*).

I'm sure that plenty of the ideas in *Over 150 Essential Jigs, Aids and Devices For Today's Woodworker* have already been adopted by our more experienced readers. Nevertheless, there's always something new to surprise.

Those of you who are on the look-out for ingenious ways to exploit your tools' full potential will undoubtedly find this book a source of inspiration.

From a design standpoint, Alan and Gill Bridgewater's *Woodworkers' Questions Answered* is a very different beast. Its slick and glossy presentation and colour



devices that we all wish we'd thought of. The Workmate cramping jig will allow you to solve one of the great big board headaches - how to cut a full-size sheet of MDF or ply on your Workmate without killing yourself.

There's a short chapter on sharpening, as well as brief looks at finishing, woodturning jigs and veneering. All contain useful ideas. The measuring chapter is more substantial. I don't know a single woodworker who hasn't come unstuck on measuring or marking out at some time or

photography make for a very modern publication.

The book is, as the title suggests, structured around a question and answer format. There are 50 questions ('My lacquered finish is a mess! What am I doing wrong?' and 'My poor maths skills are getting in the way of my woodworking...' etc.)

and a range of solutions. In reality, the questions are just a neat device on which to hang a broad range of techniques. Nothing wrong with that.

The chapters run from 'The Workshop' to 'Keeping up Power Tools' via 'Planing', 'Construction' and 'Wood Finishing.' This allows a large number of techniques to be explored. Taking an example at random, the 'Sawing' chapter kicks off with: 'I am cutting four tenons. I have cut two already, and they are loose and sloppy. How can I make them tight and good-looking. And how can I cut good tenons the next time?' This allows the authors to firstly explain how to rectify the bad joint, and then how to cut a good mortise-and-tenon joint. This way, you get everything you need in one hit.

Another question asks about curves. Of course you get three solutions - jointing and carving, laminating and steam bending. The latter shows three grown men bending an improbable width of timber to make a stool. If you've read Danny Lister's *Classic Techniques* on pp. 11-14 you might like to check this out and see how far you can go.

*Woodworkers' Questions Answered* scores well on presentation and format. Aimed at the inexperienced or improving woodworker, it contains plenty of useful information which will help you advance in the craft.

*Over 150 Essential Jigs, Aids and Devices For Today's Woodworker* and *Woodworkers' Questions Answered* are very different books which succeed in their chosen format. I personally believe that you can never have enough jigs, devices or 'how to's' available to guide you out of a tight corner. (Lester Haines)

## FURTHER INFO

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ALSO AVAILABLE  
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You don't need to own a horse to have a stable door. Although more common in the countryside on farmhouses and cottages, these traditional doors, also known as Dutch doors, hang just as comfortably on urban or even suburban homes.

One of their original uses in the countryside was to allow ventilation through the open top while keeping out unwanted animals with the bottom closed. These advantages are still relevant today. Fresh air and sunshine can be allowed in, but pets and children can be kept safely indoors.

The stable door is a framed, braced and battened door made in two parts and rebated

# STABLE DOORS

*Andrew Crawford explains how to make this attractive stable-type door for your house.*

where the central rails meet to minimise draughts and keep out the weather. Before making a door of this type, you need to consider certain factors which affect the way that the door is made.

The first consideration is which side of the frame the door will be hung as this will affect the direction of the braces. For the braces to be effective they need to slope up

from the bottom rails on the hinge side to the top rails on the closing side. Therefore, bear this in mind at the planning stage.

The second consideration is whether you want the door to open inwards or outwards as this will affect the rebate where the two halves meet. If you are replacing an existing door which has a sound frame there isn't any alternative than

to have the door opening as the original, but if you are replacing the frame you do have a choice.

If the door opens outwards the top section will need to overlap the bottom section on the outside. This gives better weather protection but it doesn't make you too popular when you push open the top section and knock over the caller on the doorstep. The better way is to open the door inwards and provide weather protection in the form of a drip moulding where the two halves overlap.

The dimensions given here are for a standard sized door (1980 x 760mm) but adjustments may need to be made to suit your own circumstances as many frames, particularly in old houses, are non-standard. On the cutting list the widths and thicknesses given are finished sizes, but the lengths have an allowance for trimming. If buying timber already planed make sure that it is straight, square edged and free from wind (twist).

## Setting out

To ensure compatibility between the two sections these doors are traditionally made in one piece with provision made in the middle for separation. Therefore, mark out the stiles as a pair and all four rails together.

Note that the top section is 12mm longer than the bottom

section. This is to compensate for the rebate across the middle where the doors meet and will disappear when the door is hung. Note also the waste area where the doors will be separated.

All the joints are through, haunched, mortise and tenon wedged on the outside of the stiles for added strength. As the bottom rail is twice as wide as the others, a double mortise

and tenon is used. The tenons need to be 12mm shorter on the face side to fit into the rebates on the stiles.

## Making the door

Having marked out the stiles and rails it is now necessary to rebate them to take the matchboarding. I prefer to rebate them before cutting the joints as I find router control better with the timber still intact, particularly if routing freehand.

Next, cut the mortises making sure that you have marked them immediately behind the rebate – otherwise you will be left with a gap. The mortises can be cut by mortising machine, router or by hand. If cutting them by hand, drill out most of the waste first before finishing with a chisel. With a through mortise it is better to cut from both sides of the stile as a much neater joint will result. On the outside of the stiles the mortises need to be lengthened slightly at an angle to accommodate the wedges.

Now the tenons can be cut. With a sharp saw it is possible to cut them by hand but this is hard work, especially on the wide bottom rail. I cut mine with a dado head on the radial arm saw. Failing this, the easiest way is by running a router across all four rails at the same time using a batten cramped across to guide the router base.

When the joints have been cut, assemble the frame dry to make sure it fits together snugly. If all is well take it apart and sand all of the inside edges. Reassemble using waterproof adhesive. When the frame is cramped check that it is square by measuring that the diagonals are equal. Correct any discrepancy by cramping across the longest diagonal. Cut wedges from scrap timber, spread adhesive on them and drive them in beside the tenons.

When the adhesive has cured, the two sections can be separated by cutting through the waste area. Saw off any surplus timber and wedge and plane flush.

Next, take the timber for the braces and clamp them to the backs of the frames in the

## Cutting list in mm

Components	No	Length	Width	Thickness	Comments
Stiles	2	2117	95	44	P.S.E Softwood
Rails	2	780	95	44	P.S.E Softwood
"	1	780	107	44	P.S.E Softwood
"	1	780	195	44	P.S.E Softwood
Braces	2	1300	95	32	P.S.E Softwood
Window framing	1	2900	30	32	P.S.E Softwood
"	1	2000	30	12	P.S.E Softwood
Beading	1	3000	15	12	P.S.E Softwood
Battens	1	1550	90	12	Matchboarding

Glass and furniture: 1 pane of bull's eye glass, 2 pairs of 100mm brass butt hinges, 1 pair of lever handles, 1 mortise lock, 1 window casement fastener, 1 security bolt with key. Weatherboard. Grooved off-cut of matchboarding for drip moulding.

required position and mark the angles for cutting. Cut to the waste side of these lines for a tight fit. The bottom brace is now ready for fitting but the top brace needs further work to incorporate the window frame. Take the 30 x 32mm timber allocated for this and make a simple mitred frame big enough to allow 2mm clearance around the glass. Glue and pin the corners.

Now lay the top section of the door on a flat surface with the brace occupying its eventual position. Place the window frame on top of the brace in a position central to the main frame and mark where the corners touch the brace. Remove the brace and cut it to fit the corners of the window frame which can be joined to the two pieces of the brace with adhesive and screws.

While this assembly is drying, cut the matchboarding to fit in the rebates. Lay out the boards from the middle of the doors so that any boards that need to be ripped to width will be equal at each side. Sand the backs of the boards. Treat all tongues, grooves, ends and rebates with clear preservative before planing the boards in place with 38mm hot head galvanised nails. Pre-drill the boards to prevent them being split by the nails.

Take the brace for the bottom door and fix in position with adhesive and nails. Nail at an angle through the brace into the rails. Now nail through the face of the matchboarding into the brace. Punch the nails below the surface and fill with wood filler.

Lay the top door face down and place the brace/window

frame assembly in position. Mark the cut out for the window on to the back of the matchboarding. Cut out for the window and nail the brace/frame in place. Take the beading material, round over one corner and mitre-cut lengths to create beading to fit inside the back of the frame. Pin in place, insetting it a little for the sake of appearance. This will form the rebate for the glass.

Round over the 12 x 30 timber on one corner and make a mitred frame to fit around the window opening on the face side of the door. The square edge needs to be the inside of the frame. Nail this to the door, sealing behind it with waterproof sealer. The beading for the front of the frame can be cut now but do not pin into place as the glass will be fitted when the door has been hung.

All that remains to be done now is to form matching rebates on the middle rails, sand all that hasn't been sanded, treat with preservative and hang the door.

## The frame

Again, any dimensions given in this article may need to be adjusted to suit your own circumstances. As long as the frame is made to fit the aperture and the door is made to fit the frame, there should be no problems. If you intend to hang the door to an existing frame follow the section on hanging the door but remember that there will be some repair work necessary where the existing hinges and lock were situated. Stick slips of wood into these areas, fill and sand smooth.



## Setting out

As with the stiles of the door, the jambs of the frame should be set out as a pair. As the section of the timber is wide but relatively thin, I like to use twin through mortise and tenon joints for greater rigidity. When the horns (waste wood) are cut from the assembled frame they will become open mortise and tenon joints. Having made sure that the ends of the jambs are square, mark them out together with the head following.

## Making the frame

Compared with the door this process is relatively painless. The only part that might present problems is clearing the waste wood from between the tenons. This can be done with a coping saw and cleaned

up with a chisel. There is little point in wedging these joints as the twin tenons, with their greater gluing area, are quite strong. Having cut the joints and tried them for fit you can now apply adhesive and clamp the frame together.

As the frame will be open at the bottom it will be necessary to fix a scrap piece of wood, known as a distance piece, across the bottom to keep the jambs parallel. Also, screw a block of wood to the outside of each jamb about 150mm from the head. These blocks are for cramping the head down, allowing the use of smaller cramps, and can be removed when the adhesive has cured.

## Fixing the frame

Remove the old frame by sawing through the jambs and prising carefully away from the wall. If the horns of the head have been built into the wall the head will also need to be sawn. Otherwise it will be impossible to remove without damaging the brickwork. Next, check that the aperture is sound and free of anything which will impede the new frame. Remove the cramping blocks and saw off the horns from the head, then cut the jambs to length. Sand, treat with preservative and allow to dry. When dry, slide the frame into place making sure that it is plumb and square.

Drill through the jambs into the brickwork using a masonry bit appropriate for the size of frame fixings that you are using. I find that 8mm fixings 400mm apart are quite adequate. Position the holes so that they will be covered by the door stopping when the door has been hung. Countersink the holes and tap the plastic sleeves of the fixing devices into place followed by the metal screws until flush with the wood. Remove the distance piece from the bottom of the jamb. Now apply a band of sealant around the frame to prevent the ingress of water.

## Hanging the door

The trouble taken to ensure that the frame is true will make this stage of the proceedings much easier. Fit the bottom section first, rebating it to clear



the water bar on the doorstep. Plane if necessary to ensure a good fit between the jambs. Remove the door and mark the positions of the hinges, avoiding the joints where the rails meet the stiles. Fold the hinge back to form a square and draw around it on to the edge of the door. Chisel out this area to a depth equivalent to the thickness of the hinge and screw the hinge into place.

When both hinges are fixed to the door, replace it in the frame, pack the bottom to give 5mm clearance and mark the hinge positions on the jamb. Chisel out to the thickness of the hinge and screw the door to the frame.

Place the top section in place, packing to give 5mm clearance at the central rebate. This is necessary because the rails can swell substantially in damp conditions. Place to fit, and hang following the steps outlined for the bottom section. Open and close the doors to make sure that they

are operating satisfactorily and adjust if necessary by planing the doors or packing the hinges.

**B e f o r e**  
fixing the door stopping it is better to fit the lock and fastenings as door stopping is easier to adjust than locks. As the doors need to operate as a single unit at times, we need a means of fastening them together.

Traditionally a tower bolt would have been used but I have found that a window easement fastener makes an attractive alternative. Also you will see that I have used a modern security bolt with a key to close the bottom section when the top is open. This is better than an ordinary tower bolt because the key can be removed out of the way of children.

To fit this, drill an appropriately sized hole for the barrel of the bolt into the edge of the stile. Insert the barrel, mark round the plate and chisel out to sink this into the stile. Mark the position of the key-hole on the inside face of the stile and drill through to the hole for the barrel. Next screw on the escutcheon plate to surround the key-hole. Mark and drill the hole for the striking plate in the frame and sink this in flush with the surface.

The 5-lever mortise lock is mortised into the stile of the top section just above the middle rail. Mark the position of the mortise from the lock itself. Drill and chisel a slot, appropriate for the thickness

of the lock body, centrally in the edge of the stile. Place the lock in the slot and draw round the lock plate. Remove the lock and chisel out this area to accommodate the thickness of the plate. Holding the lock against the face of the stile, mark the position of the key hole and the bar for the lever handles. Drill holes for these and screw the lock and handles into position. Mark the position of the lock bolts onto the jamb, chop out mortises for them and fix the striking plate, insetting it to be flush with the surface.

Now we can fix the door stopping. Take the 15 x 45 material allocated for this and round over one corner for decoration. Cut this into lengths to fit inside the frame. Mitre them where they fit in the top corners as this will give them the appearance of being an integral part of the frame. Close the door and nail the stopping to the frame leaving about 1mm clearance between it and the door. This has formed a quick and easy rebate. Punch the nails below the surface and fill the holes.

All that is needed now is to fit the glass, drip moulding and weatherboard ready for a coat of paint. Run waterproof sealant around the rebate of the window frame and press the glass firmly into this. Seal around the face of the glass and pin the beading that you prepared earlier into place to retain the glass.

Take an off-cut of matching boarding [groove-side] about 30mm wide. Round over one corner, cut to fit the width of the door between the stopping. Pin and seal to the face of the top door section just above the middle rebate. This makes an excellent drip moulding.

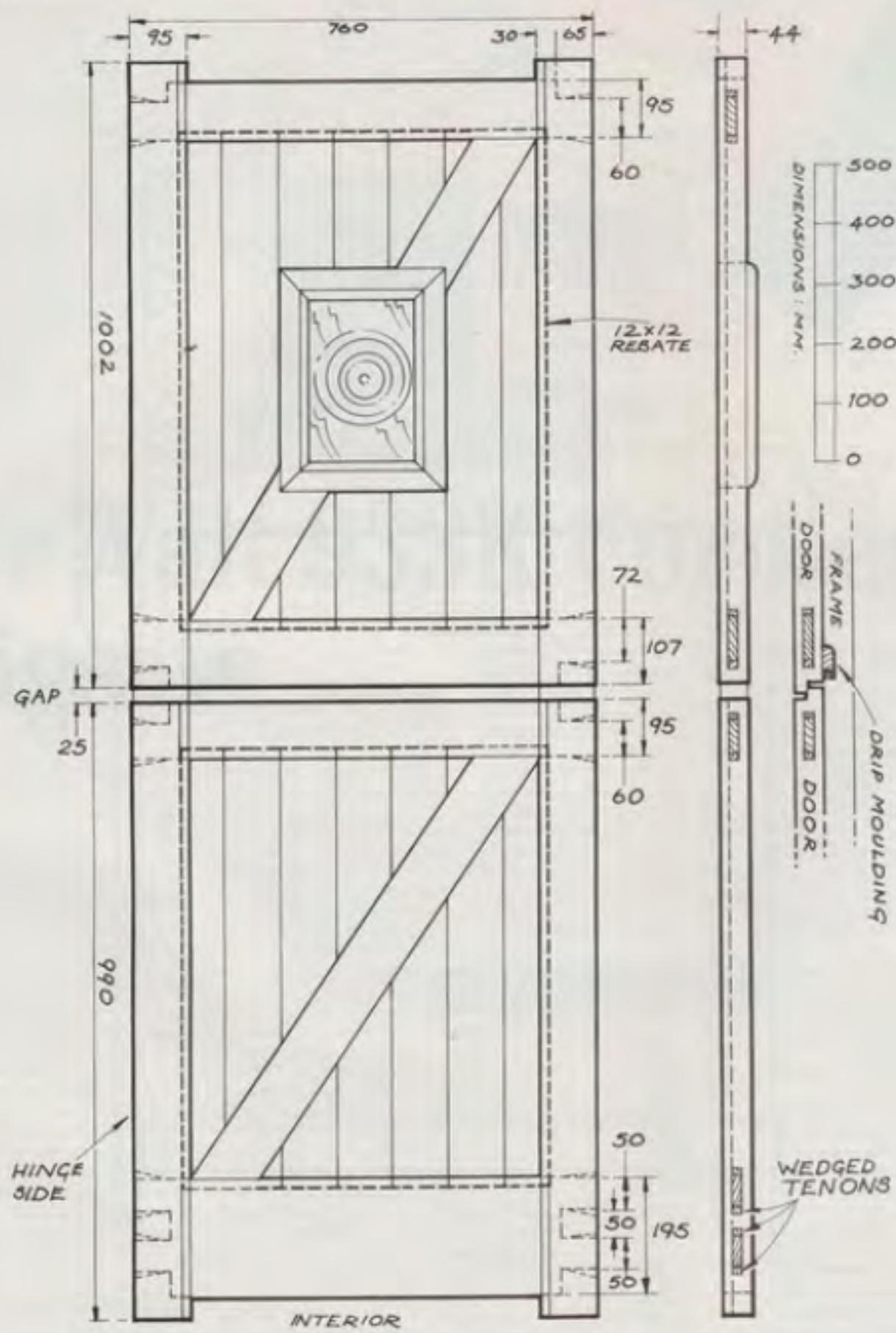
Cut the weatherboard to length in the same manner and screw and seal to the bottom of the door. Fill and sand the screw and pin holes. Treat anything that hasn't been treated with preservative.

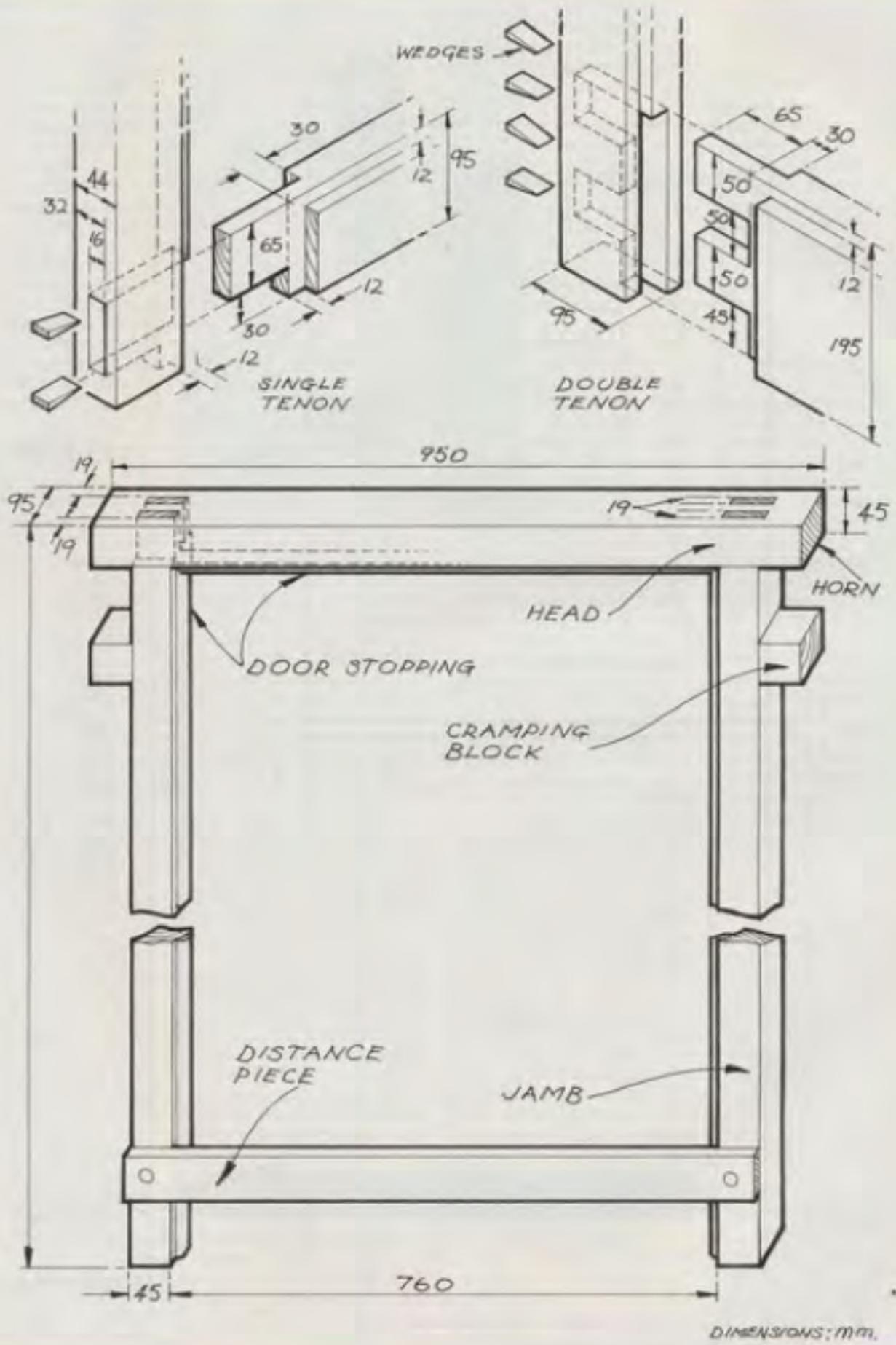
The door can now be stained or painted. I chose to paint mine white which contrasted well with the black furniture for a country cottage look. All that remains to be done now is to screw the bay rack to the wall and fill it with Bowers.

### Cutting list in mm

Components	No	Length	Width	Thickness	Comments
Jambs	2	2080	95	45	P.S.E Softwood
Head	1	950	95	45	P.S.E Softwood
Door					
Stopping	2	2080	45	15	P.S.E Softwood
	1	950	45	15	P.S.E Softwood

Fixings: 8 or 10 hammer-in frame fixings





You know how it is when you're cutting sheet material with a jigsaw - you've dutifully kept the cable behind you so you don't slice it through and blow the fuse box off the wall and then the b\*\*\*dy thing snags on the corner of the sheet. Since I am increasingly hacked off with mains cables, it was a very happy morning indeed when a smartly-dressed operative presented himself at my door bearing the DeWalt 933K.

First impressions are positive. There's an old adage: if it looks right, it is right. This jigsaw certainly looks right - it feels right too. Despite an all-up-weight of 3.3kg, it's well balanced and scores highly on ergonomics.

It has all of the standard features you'd expect to find



# DeWalt 933K Cordless Jigsaw

on a mains model: adjustable sole; anti-scratch sole plate cover; three-stage pendulum action (including off); selectable blower; plastic guard and anti-splinter plate.

One unfamiliar feature is the switch to lock the machine off and prevent accidental operation of the trigger. This function is served by the centre detent position on the forward/reverse switches of cordless drills and is essential for both safety and battery charge preservation.

There's an ingenious shoe lever which locks the sole plate into position. It's very difficult to set an accurate bevel angle whilst fiddling around under a jigsaw with a hex key. DeWalt has dispensed with this and its new lever system is a positive pleasure to use.

DeWalt has its own blade-locking system too. It's one of those rotating handle jobs which takes a bit of getting

used to, but once mastered is an aggro-free and time-saving boon.

Having given the 933K the once over, I was now faced with two options - stand it on the mantelpiece for all of my friends to admire or get down and dirty with some MDF. Hands-on bloke that I am, I chose the latter. It doesn't take much cutting for an overwhelming sense of freedom to wash over you.

The machine operates as well as any mains model and you just don't have to worry about the cable. Another huge advantage is for those of us who have to cut large boards out in the garden - there are no extension leads to be run and no associated safety risks.

To get a really clean line of sight you need to dispense with the plastic guard and anti-splinter plate. I never use them

anyway. Once you've got the machine set up to your liking, it will run smoothly and positively. I ran it through a sheet of 25mm MDF without hassle.

You'll be wondering, as I was, how far this baby will go. DeWalt states that it will cut 6.5m of 38mm chip at 87cm per minute on one battery charge, although obviously that depends on material, load, etc. The 933K comes with two batteries. This is just

as well as you don't want to run out of steam halfway through a cut. Additionally, the batteries are available separately. Incidentally, the cells are the same as those used on other 18V DeWalt cordless tools such as the excellent DW995 drill. If you're thinking of getting into cordless technology it makes sense to opt for one manufacturer that offers a wide range of tools running on the same batteries.

The pendulum action worked well for thick sheet material. The blower was OK. Note that this jigsaw, logically, does not have a dust extraction facility.

All in all, the 933K is a pleasure to use. It's not cheap but it really makes life a lot easier. And if you are filled with lust and desire for this top piece of kit but are feeling a bit strapped for cash, don't despair. June's Traditional Woodworking gives you the chance to win one of three. A big prize for the new-look magazine. Need I say more?

## SPECIFICATIONS

### DW933K

Voltage	18V
No-load speed	0-2,000
Stroke length	26mm
Cutting depth wood	65mm
Aluminium	20mm
Steel	10mm
Bevel angle range	0-45 degrees
Weight (without battery)	2.3kg
Ex-VAT list price	£490.00
<b>Battery DE9095</b>	
Capacity	2.0Ah
Weight	1.0kg
Charging time	50 mins
Ex-VAT list price	£87.00

This is something new for me - a tool that you put together yourself. The Woodsmith Project of Des Moines, Iowa, is offering its range of six Ready-To-Assemble (RTA) tools in the UK.

RTA tools come as a complete boxed kit with full instructions. The instructions are very clear and comprehensive and the exploded view lets you see exactly what's what. I tried out the Set-Up Gauge which is a brass and hardwood assemblage comprising some 22 pieces.

The tools required for construction are listed and will certainly be in most people's toolbox. You start by gluing on the ruler-retaining magnet and



Above: Everything you need

# Woodsmith Set-up Gauge



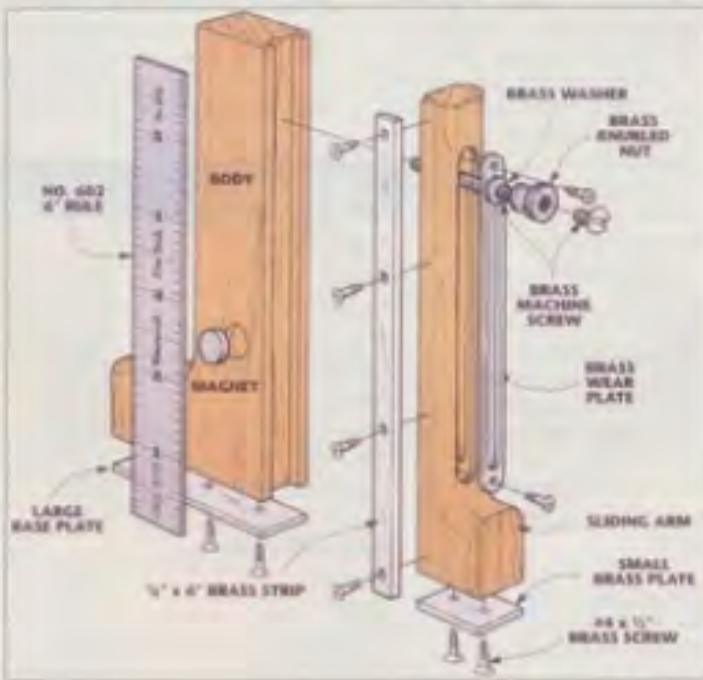
brass plates. Instant glue is recommended, although 2-part epoxy is a better bet. Then you have to put in the screws, file the heads down and finish the brasswork with sandpaper. Wet-and-dry is the ideal medium if you want a really slick finish. You'll need to do some sanding work on the wood as well. The only other operation is to saw off the head of the bolt on which the brass knurled locking nut sits. Finish off the body with a couple of coats of Tung oil and you're away.

The whole thing took a couple of hours in total. You'll need a reasonable level of skill but it isn't rocket science. What

you end up with is a good-looking piece of kit that has the added bonus of your own sweat equity.

Overall quality of the parts is high, as it should be. Everything fits together nicely

and you get the impression that they've put plenty of effort into the design of the tool. This gauge is a very useful piece of kit - especially for router tables. It enables very accurate setting up of depth and height



Right: Excellent exploded view

cut. It will also no doubt get plenty of use on the table saw and around the workshop. At least it would in my workshop if I worked in imperial. The supplied American ruler is, inevitably, marked in inches on both sides. A born-and-bred metric whippersnapper like myself will have to go and buy a small metric steel ruler. This is a drag.

In fairness, this criticism doesn't apply to the other tools in the range. Chesterman Marketing tell me that they're looking into this issue with the manufacturer and are considering sourcing rulers in the UK. I think they should - I'm sure there are plenty of potential sales around in Europe as well as in Britain.

These tools are fun. It's a great way to while away a dull rainy March evening when there's nothing on the telly. Highly recommended.

## Information

The full range of Woodsmith products is available from Chesterman Marketing, 5 Greyfriars Business Park, Stafford ST16 2RF, tel: 01785 250 341, fax: 01785 250 345. Prices are:
Chisel Plane £45.95
Hand Plane £61.95
Scraper plane £45.95
Set-up Gauge £40.25
Bevel Gauge £29.45
Marking Gauge £29.45



# Power Devil PDD2197K

This is a very strange beast indeed – a 19.2V cordless hammer drill from budget tool manufacturer Power Devil. We've had a look at a couple of the company's products in the past. They're not, as I've said, the greatest tools in the world, but the prices are unbeatable if you're on a very tight budget.

Strange, then, that Power Devil should have launched

has a nasty raised ridge where the two halves of the moulded body meet. If you used the tool for any length of time you'd have to deploy a file. The trigger and forward/reverse lever are primitive in operation. I'm also concerned about the durability of the trigger.

The front end offers a 13mm Jacobs keyless chuck

which is good. Behind that is the 15-position clutch control ring which includes a hammer drill setting. The ring is a bit stiff and doesn't click into position as positively as it might.

Enough moaning. How does it perform? The 2197 works perfectly well as a cordless screwdriver. The decent chuck is a boon for quick bit

## SPECIFICATIONS

Voltage	19.2V
No-load speed	0-950rpm
Weight	2.4kg
Guideline retail price	£79.99
Battery charge time	60mins

changing. Power Devil supplies a decent range of bits with the tool and this is something other companies might consider. Even if the customer never uses most of them, it looks as if the manufacturer has made the effort.

The hammer action works very satisfactorily. Obviously, if you're used to a mains-powered hammer drill, then a cordless alternative isn't going to provide the same raw power. Nevertheless, it'll get a good bite into most masonry.

The 2197 comes with only one battery. It charged in about 70 minutes. The charger has an on/off indicator which is an improvement on some budget offerings. Spare batteries are not available through retail outlets, so if you want to get an extra unit, call the spares department on 0181 787 3100. No price was available as we went to press.

So what's the verdict? The PDD 2197K works. The



Above: Charger  
Above right: The front end



Above: Primitive controls  
Left: Lots of bits



what is effectively a foray into the professional end of the market. I'm not sure what their reasoning is, but let's put that aside and judge the tool on its merits.

The construction is the first thing that catches your eye. The plastic moulded body feels insubstantial. How long it would last under even the most clement site conditions must be a concern. The handle

construction is poor and the controls flimsy, but it has a good chuck and a smooth motor. And what about the price? Frankly, it seems incredible that Power Devil can knock out a tool at this kind of price and still make a profit. A very good bit of kit for the cash-strapped individual who needs a bit of hammer power.

Power Devil sales is on 01788 547 547.

# DANCING MASTER'S FIDDLE

## *Fitting the bass bar*

**B**efore beginning to fit the bass bar you'll need to cut out the slot for the neck dovetail using a fretsaw. Be sure to keep well inside of the line.

Marked on the plans of the instrument is a near vertical line running almost parallel to the centre line of the belly and, to its left, converging slightly as it nears the top. This line indicates the bass bar which you can now fit.

Choose a length of clear quartersawn pine and plane it to a fraction over 1/8in thickness and 1/2in wide (Fig 1). The growth rings should run parallel with the sides so that they lie perpendicular to the belly when the bar is attached.

The bass bar sits beneath one foot of the bridge (Fig 2). When the bridge is activated

by the bow, giving it a sideways rocking motion, the bar helps excite the belly over its entire length. This is such a small instrument with such small resonating surfaces that I think it is worth fitting the bass bar, with the expectation of having to remove the belly and adjust the strength of the bar and the thicknesses of the belly once the instrument has been strung up. This is perfectly normal practice anyway, and in this case should be very interesting as small changes to the whippiness of the bass bar and to the thicknesses of the belly could bring quite noticeable alterations in tone.

Having planed up the bass bar, cut it to length and hold it in position on the belly. You might find it a help to grip it

temporarily with some Blue-tac at each end while you run a pencil, resting on a dumb stick, to transfer the curve of the inside of the belly to the sides of the bar (Fig 3). Before you remove the bar, mark its exact location on the belly. This facilitates fitting.

Remove the bar and, referring to the lines on its side, trim it to fit the belly. Once you have a close fit improvements can be achieved by rubbing chalk onto the belly and bedding the bar against it, removing high spots revealed by chalk marks with a chisel.

Once you have a good fit, make up a couple of simple clamps illustrated in Pic 1. They obtain their grip by a thick rubber band wound several times round the two arms.

Before gluing, take a small plane and slice away a shaving or two from the ends of the bar (Fig 4). This gives the bar a

**The two clamps**

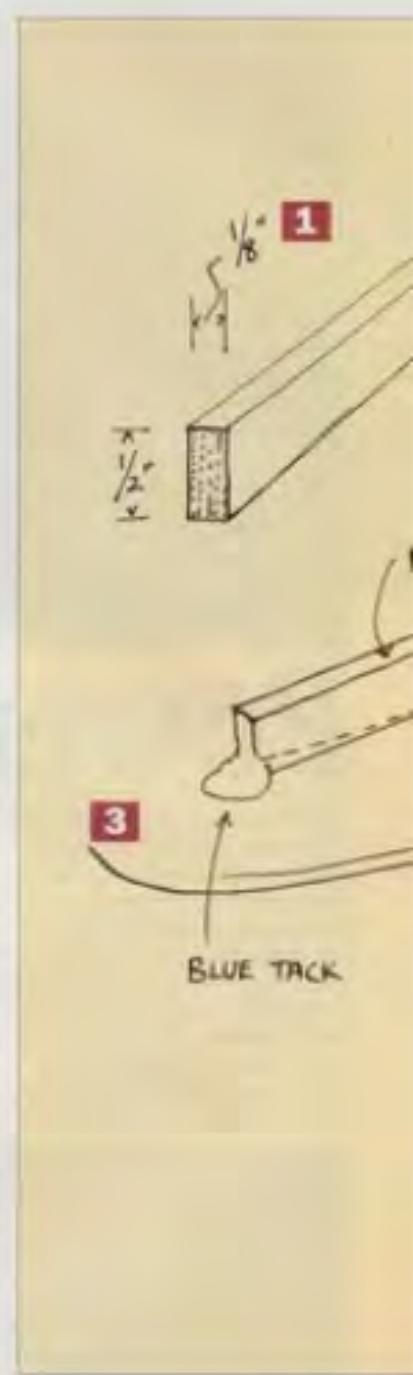


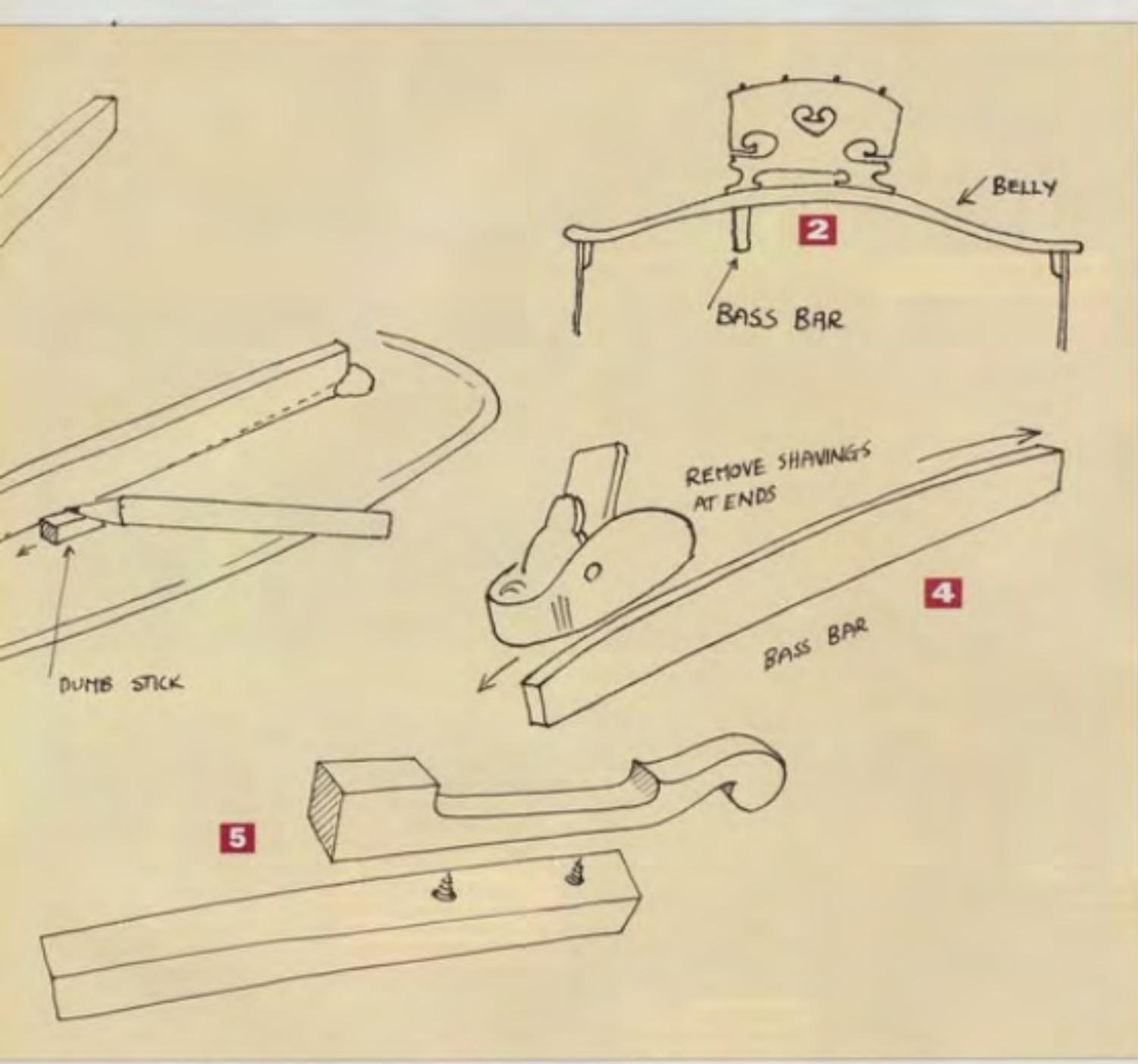
**1**

**Trim the bar**



**2**





*Cut with the fretsaw*



*Trim*





**5** Saw away the waste



**6** Trim to the finish line



**7** Use a tenon saw



**8**

slight spring. To fit it, slight pressure will be needed at each end. These are the points where it is clamped.

Once you have glued the bar in position, hold the belly against a bench hook and, using a chisel, trim the bar so that it tapers to the ends, leaving its greatest strength at the mid-point of the l-hole (where the bridge will be positioned (Pic 2)).

Now reglue the body using a dilute animal glue. Wipe away any excess with a damp rag.

Take a file and finish trimming the dovetail slot at the top so that the neck can be fitted.

## The neck

Mark out a cardboard template of the neck and cut out its outline with a fretsaw (Pic 3). Select a piece of figured sycamore or maple that is about 1½in wide and long enough to form the neck, including the dovetail joint at the body. A piece nine or ten inches long will be ample enough. Arrange the surplus at the joint end.

Cut round the outline and trim the sawcut to the line with a chisel and rasps (Pic 4). All the surfaces must be square

Above and right: Carve the sweep of the scroll

with the sides and the curves smooth and regular. Time taken in setting up the final shape at this point is well spent. Don't throw the waste wood into the bin - it might be useful later in supporting the scroll when the pegbox is chiselled out.

Scribe a centreline right round the scroll and neck and then, referring to the plans, mark off the taper of the neck and the fairing of the pegbox.

At this moment you do not need to saw the taper of the neck, but once you have drawn in the detail of the scroll on each side, and the widths of the pegbox at the front and the back, you can saw away the tapered waste each side of the pegbox. Stop before your saw even nicks the block that is already shaped into the curve of the scroll (Pic 5).

Take a spare square section piece of wood and screw the neck to it, leaving the pegbox and scroll overhanging the end (Fig 5). This block will enable you to hold the neck while it is carved. It will also hold the violin once the neck is fitted to the body. Two screws are sufficient, but do not drive them in so far that their points

will show when the neck is carved to its finished section. If you use sharp 10 gauge screws, 3/8in penetration at the centreline, it will be quite sufficient to hold it.

With the neck attached to the block, take a tenon saw and saw a termination point on each side of the pegbox, just short of the scroll, so that the sides of the scroll can be fairled without touching the scroll block.

Trim the sides to the finish line, using a sharp chisel. Note that this is not a straight line, but one that swells slightly at the middle of the pegbox (Pic 6).

## Carving the scroll

You will notice that this is a very simple scroll, only having a single curl which sweeps forward from the eye and fair directly into the line of the pegbox.

Draw in the spiral of the scroll on one side. On the adjacent surface draw on the sweep of the spiral on both sides of the centreline.

The easiest way to cut the scroll is to use a tenon saw (Pic 7). Working back from the

pegbox sides saw a release cut and then carve the sweep (Pics 8 and 9). Move on a bit further, and repeat. As the carving proceeds, it is clear that the saw cuts will get shallower until they are right up by the eye and at the most only 1/8in deep.

Provided that the saw is held perpendicular to the sides (so it does not undercut the curl) and the carving chisels work parallel with the sides, you will end up with a basic very heavy scroll. It will need the lightening cuts which scoop out the sides of the curl to give it delicacy.

If you are in doubt at this stage, take a sycamore off-cut and try carving a practice scroll. When you begin carving, bear this in mind: the centre of the scroll should resemble a rod driven right through the scroll.

Mark the curl on one side. As soon as you have made the release cut with the saw, remove the waste with a chisel. Repeat on the other side, working to the depth lines marked each side of the centreline. Keep the saw perpendicular and the chisel horizontal.

We're in the home straight now, so stick with it!

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# NEW LOOK!

As announced  
in April's  
*Woodcuttings*,  
June's  
Traditional  
Woodworking  
has been  
redesigned

TRADITIONAL

# Woodworking

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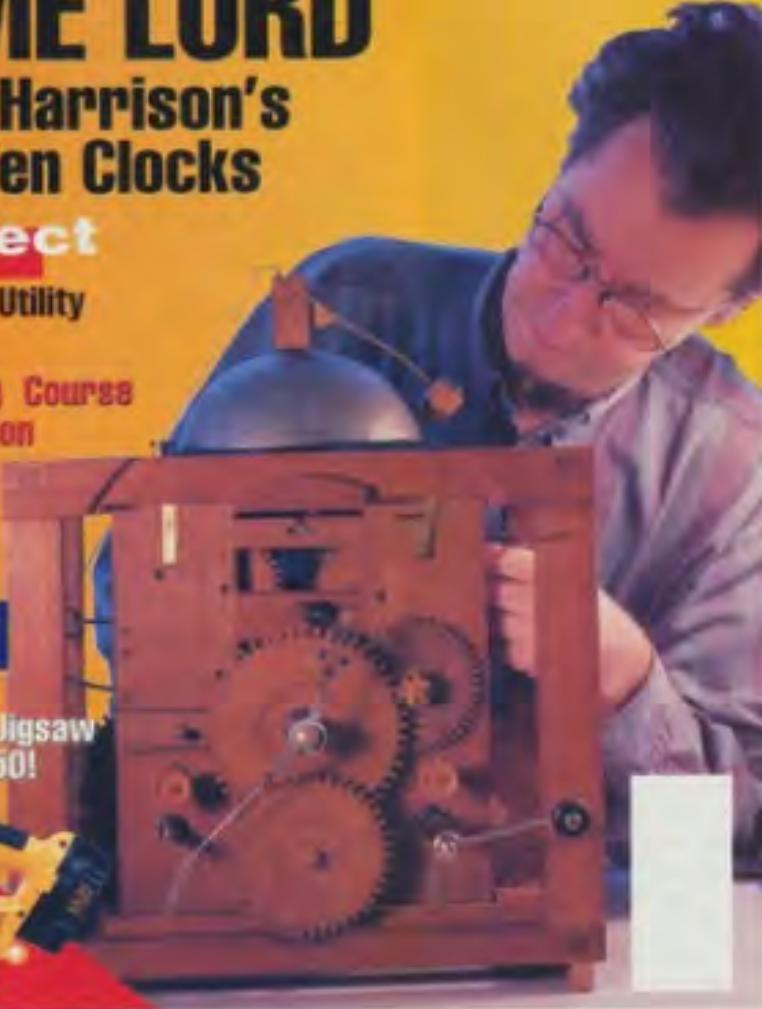
## TIME LORD

### John Harrison's Wooden Clocks

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- Practical Utility Trolley
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A photograph showing a man wearing glasses and a blue shirt, focused on working on a large wooden clock. He is holding a small wooden piece near the intricate mechanical gears inside the clock's case. In the bottom left corner of the magazine cover, there is a smaller image of a yellow and black DeWalt cordless jigsaw.

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# Writeback!



**Write in with your problems, views or advice and we will give the writer of the star letter this Skil Sander. With a list price of £79, the sander has a 180 watt motor, integrated dust extraction and operates at extra high speed. It should be a great incentive to air your views.**

## Plane speaking

The article on moulding planes by Jim Kingshott was first class (see March '99 issue).

Whilst few woodworkers now use these planes and, therefore, the knowledge of how they should be used becomes less, Jim's article explained a great deal.

Like me, he is of the opinion that some planes still to be found in good condition, despite their age, were largely impractical since few had the strength to push the planes through the length of timber.

For short runs of moulding, however, the old planes are much preferable to the noise of a power router, and just as effective.

R. Barker

*Stokesley, Middlesbrough  
Thanks to you and all of the other readers who have commented on the excellence of Jim Kingshott's plane articles. They really are of the highest quality.*

*I recently acquired a few old moulding planes in a junk*

## Our Ken

I have just finished reading the March edition of the magazine and as usual found it to be as instructive and informative as ever. Your practice of using a white background for your articles is a real plus to those of us whose eyesight is not as it once was. Please don't go all trendy and start using bright-coloured paper.

In the pull-out plan article for a games table (P.37), Ken Schenck suggests, in his useful tips box, using trial and error to establish the final position for the tabletop pivot. I made a sewing centre for my wife some years ago and used a similar method to obtain a larger work area. You and your readers may be interested in a way of working out exactly where the pivot should be. As with most things it looks more complex than it really is. See the diagram and try it.

If you are contemplating having a column about the Web (Writeback, March, 'Missing Web'), may I suggest that it is confined to useful

web addresses only, with perhaps the site of the month as a feature. There are enough specialist web magazines available for surfers to read without using valuable print area on non-woodworking topics? Looking forward to the next issue...

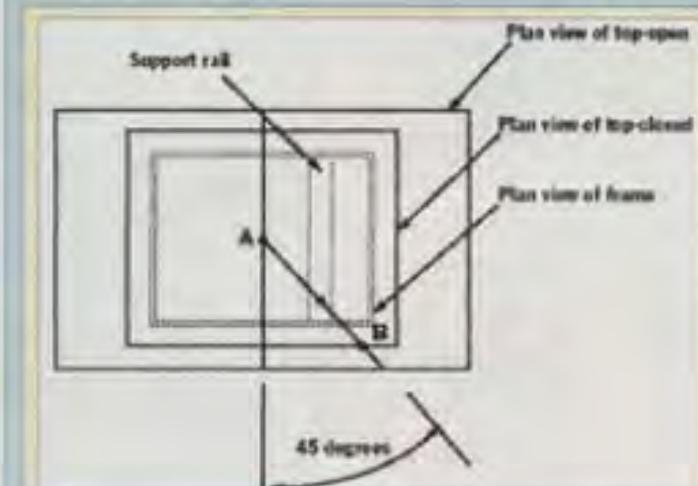
Allan McRae

*Southfields, Northampton*

*Don't worry, there's not going to be any trendy coloured paper in Traditional Woodworking – we'd rather spend the money on projects and features. I hope that you'll find our new-look June issue even easier to read.*

*I like your idea of a site of the month for Webwatch. I'll incorporate it into the next column. I do think, though, that a straight site listing would be a bit dry. Have a look at the first Webwatch on page 3 and let me know what you think.*

**STAR LETTER**



1. Lay out the parts as in the diagram
2. Find the centre A of the table by drawing diagonals from corner to corner
3. Draw a line from the centre point A at 45 degrees joining the edge of the closed table at point B
4. Halfway along this line is the position of the pivot, which in turn gives the position of the support rail

*shop. I haven't had time to do any more than give a couple a quick go, but I must admit that there can be little more satisfying than running off a bit of moulding with one of these tremendous tools; and I got nosey for the price of a couple of fancy router cutters.*

## A further 15 minutes

Having lain dormant since my Andy Warhol 15 minutes of fame, when you published a letter from me (Writeback, September 1998), I thought that I had taken literary retirement. Given your response at that time – 12 column inches or 305mm of disbelief and piety from the moral high ground – you probably wish I had done so.

Nonetheless, I was spurred into action by the two letters

from Ian Douglas (Writeback, March and April 1999). I was intrigued by the references to 'honest dealings with our readers' and, of course, Mr Douglas's concerns about international price differentials. I wholeheartedly agree with his points on prices. As you may remember, (how could you forget), this was the subject of my original letter. Your dismissal of my concerns did seem somewhat disproportionate in its tone and content: 'The lady doth protest too much, methinks' (Hamlet). You now seem to have altered tack, and Mr Douglas's points are dismissed by the use of the old, but effective comedy routine. It does not seem that either approach represents the honest dealings that you mentioned.

I am uncertain as to how

seriously your top investigative journalist is going to take the task in between all this lip smacking. Even if it were to be 100% genuine, it would be covering old ground. You cannot have missed the fact that a certain Sunday newspaper has researched this area of prices rather fully, and has found huge areas of discrepancy. It is not just tools and timber, but food, clothes, designer goods, financial services and cars, etc.

All the tired old excuses and platitudes trotted out by retailers and manufacturers, and, sadly, repeated by yourselves, do not really stand up to close scrutiny. The real answer seems to be straightforward indecent profit margins.

Even if the Department of Trade can begin to accept this, it would indeed be pleasant if

you could use the pages of your otherwise excellent magazine to further the interests of your readers, and provide tangible evidence of your commitment to honest dealings with our readers.

*Alan McDonald*

*Pagnoor, Barnsley*

I'm going to demonstrate our commitment to honest dealings by being perfectly honest about your letter. Before I start, I'd like to say that I didn't write the reply to your previous missive, although I think that both letter and riposte were equally matched in tone and content.

You believe that both yourself and Mr Douglas have been dismissed. If someone disagrees with you it is not that you have been dismissed, it is that you have been disagreed with. I don't feel, frankly, that I did dismiss Mr Douglas's comments – indeed, it was his letter that finally decided TW to run a piece on this subject. Regarding the comedy routine, we all have our methods for spicing up the letters pages, be it a couple of jokes or the old Shakespearean quote routine.

We are going to investigate this subject as honestly as we can in our June issue. I think that our journalist will be able to curtail his lip smacking long enough to get some facts on paper. On the other hand, why bother? If a certain Sunday newspaper has already covered this subject, then it's pointless flagging a dead horse. What I'm saying is, do you want us to investigate this subject or not? Surely an important matter like this can never get enough coverage...

Finally, I'm not saying whether I agree or disagree with yourself or John Ewing (see below). Our conclusions will appear in June.

## Highly charged

I am writing to you with reference to the cordless drill test featured in February's Traditional Woodworking. In the article, battery chargers are mentioned stating that both Bosch and DeWalt offer fast charging options that charge the Ni-Cd batteries in around 20 minutes. It is then suggested that repeated fast charging of Ni-Cds can seriously reduce battery life.

This seems to completely contradict Bosch in what they say in one of the cordless tool catalogues I have. Bosch, with reference to the model AL 12 FC quick battery charger states that their charger 'uses computer control to ensure that batteries are always charged at the ideal charging current. Controlled charging can also triple the working life of batteries.'

This leads to some confusion on the issue and I hope you will be able to help. I own a Bosch 12V cordless drill and have a 1-hour charger and the optional extra-fast charger mentioned above. I would like to know which of the two chargers is best to use for the ultimate life-span of my batteries.

*J. Reading*

*Marchwood, Southampton*

I have always been, and still am, utterly convinced that repeated fast charging of Ni-Cd batteries will shorten their life. Bosch's fast charger uses computer control to optimise battery life. Its claim regarding triple life must be in comparison to a non-computer-regulated fast charger.

Fast chargers have been developed largely in response to the needs of site work. I don't normally find it necessary to use a fast charger unless I'm in a

real rush. My advice is to use the standard charger.

## Price still not right

In his star letter (see April's Writeback), Mr Douglas asks why tool and wood prices are higher this side of the Atlantic than in the US? The short answer is: you wanted it that way, you voted for it.

The price of all commodities, not just tools and wood, reflect more than the vendors' profit – they contain the social security coverage he pays on his salaried staff, the tax he pays on his premises, and the taxes he pays for the privilege of running a company. They contain his own social security coverage and his pension plan, and the duty he pays on the petrol he puts in the road-taxed vehicles that convey him and his produce wherever he has to go to sell it. And they include exactly the same taxes for the importer of the articles and the printer that prints his fliers and the agency that handles his ads and the magazines that run them.

All of these taxes and duties are hefty because the UK and Europe in general provides a far more elaborate socio-economic safety net than does the US. You may or may not agree with the way it's run or with the fact of its very existence, and certainly most company owners would breathe deep sighs of relief were they not bludgeoned every year in the interest of the recession man; but they and you and your fellow voters elected the people that set it up, and the solution is yours. All you have to do is persuade the umpteen million other voters to

vote it your way.

*John Ewing*

*Preuschdorf, France*

This is a right old can of worms we've opened here! I'm saying nothing as to whether I agree with John or not. The reply to Alan McDonald's letter reveals all.

## Yet more Ken

I was very pleased to read Ken Shemilt's clear instructions as to how to make your own dovetail jig (see March's TW).

It will be of great help to me and no doubt many other readers. Also, I would like to say that I am grateful to Mr Jarvis for his tip on how to get an extra 0.1mm with a router – it is so simple that one wonders why I did not think of it myself.

This just goes to show that a page dedicated to readers' questions and tips would be useful to all when one considers that your problems could be solved by one of the many readers of Traditional Woodworking.

I would add that articles by craftsmen like Ken Shemilt are the ones I look for – classic, good-looking and practical pieces of furniture with good drawings and explicit explanations on how to tackle the project. I look forward to more of these articles by such craftsmen. Keep up the good work.

*D.J. Wilkinson*

*Thetford, Norfolk*

Thanks for those positive comments. A tips page really would be useful and this month's star letter features a readers' tip as a way of announcing the Readers' Tip page in our June issue – see Woodcuttings for full details as to how you can win a set of Farnell chisels.

## Crème de la crème

On page 52 of the March issue in the article *Finishing School – Cleaning up*, Mark Finney writes that burnishing creams are solvent based. Rustins' burnishing cream does not contain any solvent and will not therefore affect any finish on which it is used.

*R.E. Rustin*

*Rustins, Cricklewood*

## What's in a name?

Often when contemplating material for inclusion in Traditional Woodworking we find ourselves dealing with a complex dilemma: what does the word traditional actually mean? Some argue that our projects should be traditional in style but accomplished with all the benefits that modern technology can bring; others that it is the classic techniques and skills that define the ethos of the traditional woodworker. What do you think? Is it a Welsh dresser fashioned with the router and dovetail jig, or a cutting edge design courtesy of the spokeshave and cabinet scraper? All correspondence on this subject is most welcome – we'll print the best. Send us your thoughts.



# HELP!

Need information, help with finding suppliers or locating equipment? Send or fax in your query and we'll see if we or fellow readers can help.

## Questions

▲ One for our woodturning readers. Mrs S. Hales of Swadlincote, Derbyshire writes: 'I am writing on behalf of my husband. About three years ago he had a serious illness which left him disabled. Since then he has taught himself to woodturn from his wheelchair.'

He only has the use of his left hand and when he is turning a bowl he can't seem to get the bowl deep enough.

Could you please tell him which tool or chisel will help him to do so. Could you also tell us if there are any local woodturners who give lessons?

You're in luck! Craft Supplies runs woodturning courses from its Derbyshire base. Contact Craft Supplies, Millers Dale, near Buxton, Derbyshire SK17 8SN, tel: 01298 871 636, fax: 01298 872 263. Details of courses are on the web site at [www.craft-supplies.co.uk](http://www.craft-supplies.co.uk). Any suggestions out there about the bowl turning?

▲ I am restoring an old table which is fitted with cabriole legs (I have heard similar legs also described as Queen Anne legs). Two of the legs are damaged in that the spherical pieces at the bottoms have broken off. Many years ago wooden cabriole legs were commonly available in DIY stores, etc., but recently I have been unable to buy them. The table and the legs are made of mahogany. Does

anyone know of a supplier of such legs?

H.R. Williams  
Solihull, West Midlands

▲ A.C. Browning of Longford, Gloucester, has a 3 in 1 Record 311 plane and needs a new blade. He's had no luck with Record or his local stockist. Who can supply a replacement?

▲ Alan Barr of Leamington Spa would like to hear from anyone who has the maintenance manual for a c.1960 Tyzack and Sons 10in table saw. He says it's called a Zytos or Zytoz and has a Huddersfield-made Brook Motors Ltd 1.5 hp motor. Call him direct on 01926 612 765. Any assistance will be gratefully received.

## Answers

▲ Thanks to E.C. Easterbrook of Falmouth and Norman Shaw who provided details of Mother of Pearl suppliers as follows: Manchester Minerals, Geores Road, Stockport, Cheshire SK4 1DQ, tel: 0161 477 0435, fax: 0161 486 5095.

It's also available from Meadows & Passmore Ltd. They can be contacted on 01892 662 255, fax: 01892 662 277. Their catalogue shows guaranteed square 60 x 33 x 1.5mm Mother of Pearl, or packs of five odd strips 1mm thick with a total area of 60 x 40mm.

Further thanks to J.D. Gray of Derbyshire who came up with another two suppliers: Rod Layer, 208 Devizes Road, Hilperton, Trowbridge, Wiltshire BA14 7QP, and Original Marquetry, 2 Ashley Down Road, Horfield, Bristol BS7 9JW.

Send in your problems or queries to Traditional Woodworking, The Well House, Burton-on-Trent, Staffordshire DE14 0AN.  
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## APRIL

The Midlands Woodworking and Woodturning Exhibition, 16th to 18th April, Warwickshire Exhibition Centre, Fosse Way, nr Leamington Spa.

A vast range of products, tools and machines on show, along with many of the UK's leading experts demonstrating their skills. Open daily from 10am to 5pm. Admission: adults £7.00, senior citizens £6.00, children £3.00, family ticket £16.00. Advance sales will save £1.00 per ticket. For details phone the Ticket Hotline on 01926 614101, or fax 01926 614293.

Ickworth Park Wood Sale, 17th & 18th April. Ickworth Park, Horringer, near Bury St Edmunds. Ring 01284 735270 for further details.

The chance for traditional craftspeople to stock up on raw materials and exhibit and sell their wares. The timber comes almost exclusively from the 1,600 acre National-Trust owned park, laid out in part by Capability Brown. Woods on offer include yew, sycamore, oak, ash, cherry, beech and the more unusual cedar and redwood Wellingtonia or sequoia. The flail is available in pre-cut boards from around £5 or in the round as logs costing £200 to £300. Two mobile sawmills will be on hand to saw to order. Admission: adults £2.20, children 70p.

## MAY

The Out of the Wood Show, 15th & 16th May. Weald and Downland Museum, Singleton, Chichester, Sussex PO18 0EL, tel: 01243 811363, fax: 01243 811473.

A celebration of all things wood, from the products of traditional forests to exquisite wooden carvings, from buildings to fine hand-made furniture. Open from 10.30am to 6pm. Admission: adults £5.20, children £2.50, family ticket £14.00. Telephone information line 01243 811348. Website: [www.wealddown.co.uk](http://www.wealddown.co.uk)

Surrey Association of Woodturners 4th Annual Exhibition, 16th May. The Mytchett Centre, 140 Mytchett Road, Surrey.

Demonstrations by professional turners and club members. Many trade stands, sale of members work and a raffle with valuable prizes. Open from 11am to 4.30pm. Admission: adults £1.00, children are free. For further information call Jim Thomas on 01276 281137.

## DEMOS AND CLUB DATES

The Berkshire, Hampshire and Surrey Fellowship of Woodworkers, 20 Pirbright Road, Farnborough.

# DIARY DATES

Hampshire GU14 7AD, tel: 01252 542901.

The Fellowship is now in its sixth year, with around 60 members, many of whom are nationally-known craftsmen. During winter and spring the club meets on the 4th Thursday of each month at the Mytchett Centre, Mytchett, Surrey, beginning at 7.30pm. For further details on these and the summer programme call 01252 542901.

John Boddy's Fine Wood and Tool Store Limited, Riverside Sawmills, Boroughbridge, North Yorkshire YO5 9LJ, tel: 01423 322370.

### April

3rd - Woodturning with Harry Middleton

10th - Gilding with Pamela Keeton

11th - Woodturning with Tim Hope

17th & 18th - Finishing with Alan Waterhouse

24th - Robert Sorby Machinery

25th - Woodturning with Reg Sherwin

### May

1st & 2nd - Woodcarving with Dave Johnson

8th & 9th - Marquetry with Harry Jackson

15th & 16th - Reson Machinery with Rexon

22nd & 23rd - Finishing with Stephen Hardcastle

29th & 30th - Woodcarving with Peter Berry

British Gates and Timber Limited, Turning Point Club - Courses and Classes, Biddenden, Nr Ashford, Kent TN27 8DD, tel: 01589 291555.

Admission: £6 for members, £8 for non-members. Ring for further details.

Craft Supplies, The Mill, Miller's Dale, Buxton, Derbyshire SK17 8SN, tel: 01298 871636.

Craft Supplies hold free demonstrations at The Mill every first weekend of the month. Saturday demos are from 10am to 4pm. Sunday demos from 12pm to 4pm. Ring for further details on times and prices.

5th June - French Polishing with Stephen Simmons

6th June - Using the Bordet Machine with Dave Johnson

Colchester Woodturning, New Quay, Haven Road, Colchester, Essex CO2 8HT, tel: 01206 869597.

Demonstrations held on the first Saturday of every month at Colchester Woodturning Centre between 10am and 4pm. Ring for further details.

Hawk Machine and Tool Company, 52 Mill Street, Armthorpe, Doncaster, tel: 01302 830073.

Woodturning demonstrations: 10th April, 15th May, 12th June.

Isaac Lord, 185 Desborough Road, High Wycombe, Bucks HP11 2QN, tel: 01494 462121. Details Cliff Rayner - 01494 462121.

E Mail: [info@isaaclord.co.uk](mailto:info@isaaclord.co.uk)  
Woodturning Club Events Diary - 10am to 4.30pm

5th June - French Polishing with Stephen Simmons

6th June - Using the Bordet Machine with Dave Johnson

Malvern Hills College Courses, Wyvern Trust (Malvern) Limited, Albert Road, Malvern, Worcester, WR14 2TW, tel: 01684 565351.

6th to 10th April - Chairmaking Course with Rotary Planes with Peter Hindle. Cost of course is £185 (materials not included)

9th to 13th August - Five day chairmaking course. Using rotary planes to make a chair of the Windsor, Clisset or Shaker style. Daily sessions from 9.30am to 4.30pm. Cost of course is £195.

Robert Sorby, Athol Road, Sheffield S8 0PA, tel: 0114 255 0700/fax: 0114 225 0710. Email: [sales@robert-sorby.co.uk](mailto:sales@robert-sorby.co.uk)  
Web Site:

<http://www.robert.sorby.co.uk>  
Demonstrations

9th to 10th April - Yandle and Sons, Martock, Somerset, tel: 01935 822207  
24th April - John Boddy's, Boroughbridge, Yorkshire

7th & 8th May - Poolewood, Stockbury, Nr Sittingbourne, Kent, tel: 01622 884651  
15th May - Wokingham Tools, Wokingham Road, Reading, tel: 01189 661511

22nd May - Norfolk Saw, Dog Lane, Norwich, tel: 01603 608695

Trent Valley Woodturners, Kegworth Community Centre, The Dragwell, Kegworth, Leics. For full details call 0115 9855 5434 or 0115 946 1511.

This new woodturning club meets on the 2nd Wednesday of each month at 7.00pm. Demos and events are as follows:

14th April - (Event to follow)

12th May - Dave Kelly

9th June - Tim Hope

**Win two years' subscription!**

**Over to you...**

# Under lock and key

**Leslie Broomfield  
Southampton**



I'm an arts graduate who worked for the local authority and then in the aircraft industry where I found my cabinetmaking skills - I'm a first-class City and Guilds finalist - of value in the construction and repair of wooden aircraft.

I'm a thoroughbred 'technical wallah' and list my main recreation as 'making things'. I feel that many craftsmen limit themselves to one material where, with a little more intellectual application, their ranges could be increased. For example, they could transfer their tool skills from wood to metal and vice-versa. My own practical activities include boat-building, bookbinding, embroidery, various country crafts and cabinet-making where I follow traditional styles and methods.

If you've got a quality project you'd like to share with other readers, send us the following:

- A small selection of photos of the project, including one full view
- A photo of yourself
- Some personal background information
- A brief description of the project highlighting points of interest



After reading one of the Margery Allinghams - so long ago I forget which - where uncle Willy's mother hid the key to his tantalus, I was determined to own one myself. From an even earlier time I remember one belonging to an uncle. It was mahogany and stood on his sideboard and served as the inspiration for my own design.

Traditionally used to prevent unauthorised consumption of expensive liquor, the tantalus merely consists of a device to prevent two or three decanters from being poured. Some modern designs contain glasses as



To be considered, every submission must contain all of the above. Material will be returned. Featured projects will win the maker two years' subscription to *Traditional Woodworking*.

Send projects to: *Traditional Woodworking*, The Well House, High Street, Burton-on-Trent, Staffordshire DE14 1JQ.

well as decanters, but I feel that this is just a substitute for a sideboard. Additionally, most modern designs incorporate a poor-quality till lock.

My tantalus had to be completely simple and straightforward but of quality. To match the dining-room suite previously made over a period of seven years, it had to be in oak with through dovetails. I was determined that the key should enter on the centre line of the tilting top.

The swivel mechanism and lock were to form one unit, but where to start? I took a cheap old till lock and gradually replaced its component parts one by one and enclosed the result between two 2in diameter brass discs. The top edge of the shoot was shaped to include a device which allows the top of the tantalus to tilt just far enough for the decanters to be removed. Similar brass discs formed the basis of the swivelling mechanism for the far end of the top. The pivots were purpose-made screws inserted from the inside of the body with the aid of a special spanner.

The locking mechanism and swivels occupied my time for approximately two weeks and the woodwork took another two. The tantalus has lived on my sideboard for several years now and has been entirely successful - that damn butler simply can't get his hands on my malt whisky!

# BOOKS

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**By George Buchanan**

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### The Toolbank Collection

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£17.95 180pp pbk 103 colour photos.



### Woodcarving by Numbers

**By Mike Davies**

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- Learn woodcarving techniques
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### Repairing and Restoring Antique Furniture

**By John Rodd revised and re-illustrated by V.J. Taylor**

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£12.99 224pp pbk 90 b/w photos, 90 line illus.



### Woodturning with Ray Key

Covers woodturning techniques from the development of an idea, choice of timber, using turning tools and lathes through to finishing methods. It features 10 projects with step by step instructions and colour photographs showing the entire process in close up detail.

£17.99 128pp pbk 120 col photos, 50 line illus.



### The Children's Room

The Children's Room presents twelve projects for a child's room aimed at the intermediate to advanced level woodworker. All of the projects have full step-by-step colour photography, easy-to-follow diagrams, full lists of materials, project variations and hints and tips. A special chapter on finishing is also included covering the purchase of child-safe and non-toxic paints, plus freshwater painting, decoupage and staining. £8.99 80pp pbk 120 colour illustrations.



### The Kitchen & Dining Room

The Kitchen and Dining Room presents twelve projects for the kitchen and dining rooms aimed at the intermediate to advanced level woodworker. All of the projects have full step-by-step colour photography, easy-to-follow diagrams, full lists of materials, project variations and hints and tips. A special chapter on finishing is also included focusing on liming and French polishing. £8.99 80pp pbk 120 colour illustrations.



### The Living Room

The Living Room presents twelve projects for the living room aimed at the intermediate to advanced level woodworker. All of the projects have full step-by-step colour photography, easy-to-follow diagrams, full lists of materials, project variations and hints and tips. A special chapter on finishing how to apply a basic wax - which can be applied to all of the projects in the book is also included. £8.99 80pp pbk 120 colour illustrations.



### The Garden

The Garden presents twelve garden related projects aimed at the intermediate to advanced level woodworker. All of the projects have full step-by-step colour photography, easy-to-follow diagrams, full lists of materials, project variations and hints and tips. A special chapter on exterior wood treatments which can be applied to all of the projects in the book is also included. £8.99 80pp pbk 120 colour illustrations.



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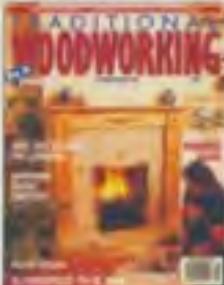
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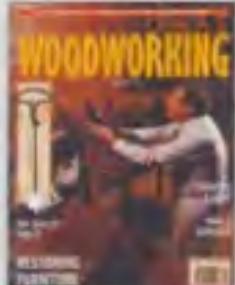
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Each issue of *Traditional Woodworking* brings you up to five different workshop projects. In addition there is a wide range of features on equipment and techniques. *Traditional Woodworking* builds into a complete library of resource material for your projects and other needs. Our Back Issues Service gives you the chance to complete any gaps in your collection. Browse through the issues below to see what you are missing or identify that special project.

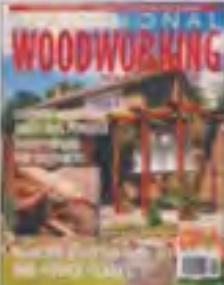
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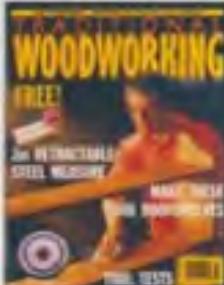
No. 13 FEB/MARCH 1981  
Projects: Pine fire surround, Fitted wardrobe, Door conversion  
Features: Veneers, Sash windows, Timber floors, Measuring and marking tools, Woodcarving, Dovetail joints



No. 14 APRIL/MAY 1981  
Free Cabinet  
Projects: Window shutter, Bureau table, Foldaway lampstand, Oak sideboard  
Features: Wedged mortise and tenon joints, Repairing furniture (part 1), Rose windows, Timber framings, Wood turning (part 1), Shaping, Veneers (part 1), Woodturning (part 1)



No. 15 JUNE/JULY 1981  
Projects: Pine Picnic Bench and foldable set, Glass-fronted display cabinet, Wood veneer chess board  
Features: Repairing furniture (part 2), Rose windows, Timber framings, Wood turning (part 2)



No. 16 AUGUST/SEPTEMBER 1981  
Free! INSTRUMENTS  
Projects: Oak bookcases, Storage chest, Pine alcove  
Features: Cladding walls and ceilings, Block planes, Various Workbench tips, Furniture repairs (part 3), Choosing timber



No. 17 OCTOBER 1981  
Free! 2m Steel Measure  
Projects: Oak bookcases, Storage chest, Pine alcove  
Features: Timber wall paneling, Unusual planes, Hacking, Planing, Chiseling and using hand saws, Buying planed timber



No. 18 NOVEMBER/DECEMBER 1981  
Projects: Glass-fronted bookcases, Workbench for a child, Oak stool  
Features: Timber wall paneling, Unusual planes, Various Workbench tips, Furniture repairs (part 4), Choosing timber



No. 19 JANUARY 1982  
Projects: TV/video cabinet, Oak windows (part 1), Cherry alcove cupboard  
Features: Workshop gadgets, Timber moldings, Repairing and restoring a storage box, Mounting tools, Modeling plane, Marquetry (part 4)



No. 20 FEBRUARY 1982  
Free cabinet scraper  
Projects: Corner cupboards, Dressing bench, Workbench (part 2)  
Features: Faceted wood turning, Marquetry (part 3), Make a trinket box, Choosing charps, Workshop gadgets



No. 21 MARCH 1982  
Projects: Cherry wood glass front bookcase, Glass storage cabinet, Venetian blind  
Features: Making dovetail joints, Choosing and using chisel, Faceted wood turning (part 2), Timber terms and abbreviations, Using a brace/floor saw



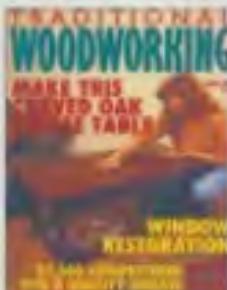
No. 22 APRIL 1982  
Projects: Cherry wood glass front bookcase, Cherry wood side table, Cheval mirror  
Features: Barley-twist legs, Choosing and using chisel (part 2), Timber terms and abbreviations, Using a brace/floor saw



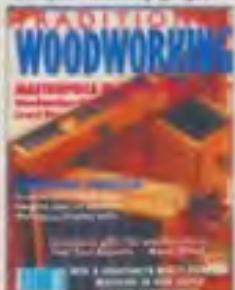
No. 23 MAY 1982  
Projects: Fitted wardrobes, Cherry wood side table, Cheval mirror  
Features: Barley-twist legs, Choosing and using chisel (part 2), Timber terms and abbreviations, Using a brace/floor saw



No. 24 JUNE 1982  
Projects: Nest of tables, Children's car, Outfitter's trolley, Oak bar stool, Garden arbour, Glazed display unit  
Features: Dowel joint joints, Chestnut, Planer/Thicknesser system



No. 25 JULY 1982  
Projects: Curved oak coffee table, Limed oak kitchen units, Cherry side table, Wooden candlesticks, Barley twist  
Features: Spindle moldings, Screwdrivers



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No. 27 SEPTEMBER 1982  
Projects: Pine dresser 3, Pine drawer chest, Tilt-top pedestal table, Veneered table repair 2  
Features: Hand sand 1, Graining, Turning furniture knobs



No. 28 OCTOBER 1982  
Projects: Mahogany Writing Table, Fitted Pine Wardrobe, Oak drop-front Bureau  
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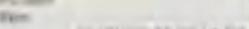
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# ALL AT SEE

*George Buchanan*

Those who try their hand at woodwork often doubt their ability to see a project through to the standards they have set themselves. There are so many factors involved, and it isn't always easy to be master of them all. For many of us, woodworking is a hobby, not a full-time occupation. It is in the nature of hobbies that they take second place to more important duties. Juggling the demands of the house and the hobby is part of the challenge.

And quite apart from other demands on our time, there is the relentlessly testing nature of the hobby itself. Standards are there to be improved upon - there is no place for complacency.

Certainly, a full-time cabinet maker will know his craft: how much time he will need to fulfil a commitment, and what it will cost. He will know where he can relax his standards and where they must be at their most rigorous. But even here, for the work to be satisfying there is a requirement to improve.

So when people very kindly profess admiration for my furniture, I feel genuine pleasure and a slight embarrassment. Pleasure for obvious reasons, embarrassment because I know the shortcomings in the work and am not pleased with them.

When these admirers continue with their praise, I have to take exception and point out that anyone could do it. The evidence is all around. Wander into any antique shop and look at the variety of handmade furniture. What survives is only a minute proportion of the total made. There is nothing extraordinary about making furniture.

I've always believed that the great wealth of old furniture that can be found in even the most out-of-the-way hamlets reflects the industry and not the brilliance of our workmen. Furniture making was a trade, a manual craft. Once the methods and

techniques have been mastered, conscientious craftsmen could (and still can) carry on turning out the most beautiful individual creations.

The abundance of old furniture probably reflects a stable, prosperous community, slowly changing life styles, a well-regulated market and an intelligent use of materials, but not an unusually talented workforce. Machines have replaced men these days and we are no longer so familiar with the effectiveness of an apprenticeship system with its thorough training in manual and aesthetic skills. We see skill and inspiration in works of the past, and are less likely to attribute the same qualities to toolmakers and computer programmers - our modern equivalents.

The line I adopt is that anyone with a bit of time and some sharp tools could do equally well, if not better. Of course, they need to have an appropriate method and be familiar with some useful techniques. If they need a special talent it is for dogged patience and determination.

Don't we take a lot for granted? A short while ago I was working in the workshop, busily marking out the mortises for a door frame. Things were not going too well so I switched on the lights to get a better view. That wasn't

good enough either. On went the halogen lamp (and off came the hat). Much better! There were only four mortises and I decided to cut them by chisel. I hadn't used this chisel for a while, and held the edge to the light to see if it was damaged. I couldn't quite make it out. Was it dented and glinting or not? Off came my spectacles and at 4 inches range I decided it was undamaged.

Then I started the initial cuts. Could I lodge the chisel between the parallel lines? What lines? I couldn't even see them! I found I was having to whip off my specs each time I positioned the chisel. Of course, once I had started, the rest of the mortise excavated easily, but what about the ends? I peered at them in disappointment. I had inadvertently bruised and rounded them and the mortise looked sloppy. This wouldn't do at all!

A short time later I found myself anchored into a plastic chair with a friendly optometrist breathing up my nose and gazing into my eyes with a telescope. He was muttering worrying sounds, fidgeting with the dozen or so temporary lenses balanced across my nose and asking me to perceive small differences in a board 60 miles away on the other side of the darkened room.

*I can see perfectly well thank you...*



We finally agreed over his artwork and then began a soothing and well-rehearsed monologue describing my time of life, those tired old eye muscles, the stiffening lenses and the happy panaces of reading glasses or perhaps variables which he could prescribe for my particular condition.

He moved smoothly onto the next test and pressed an illuminated manuscript into my hands. Could I read the test? For a while the tiny letters swam in a grey mist, then slowly surfaced into clarity. Even the smallest letters were crystal clear. Brilliant!

'Who needs reading glasses?' I crowed. 'You do,' he said.

I resisted his blandishments. If the muscles were tired, I would exercise them more that way they would remain supple.

'Not so,' he said. 'That's what everyone says,' he added just to irk me. Then, shouldering his mantle of prophet and doom-monger he continued. 'It will take an increasingly long time for your eyes to adjust to close-up work.'

Well, I finally gave in to the reading specs. So now I wander down to the workshop putting my trousers. In one bulging pocket are my working spectacles, in the other, my reading spectacles. What would I do without them?

I can work with greater speed and confidence. I am used to the new activity of swapping goggles. It happens every four minutes. One day, when I am as rich as the dreams of avarice, I shall invest in some variables!

What was I saying? A bit of time, some sharp tools, and oh yes, most definitely, good eyesight.



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## SPECIAL ANNOUNCEMENT

### Basato Bandsaw price

Josef Scheppach & Co, GmbH, KG Ichenhausen, announce discovery of miscalculations in the costing of their Basato bandsaw range. To compensate this error, Scheppach advise an increase of 15/20% effective from 1st April 1999. In an endeavour to minimise inconvenience to UK woodworkers, current Basato prices will be held until 30th April. All customers who are contemplating the purchase of a Scheppach Basato bandsaw are urged to contact their nearest participating stockist now and beat this substantial price rise.

#### 60 day pre increase promotion

Beat the Basato price increase and buy at these special promotion prices. Offers close 30th April

- **Basato 5-2 £899.00**
- **Basato 5-4 £999.00**
- **Basato 6-1 £1599.00**

All prices are for 230v models to standard specification and include V.A.T. In some instances shipping charge may be added

for further information call one of our Basato Stockists

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