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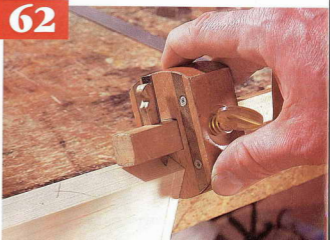
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# Japanese clothing chest

Just as **Tim Ashby** was planning a child's storage cabinet, he came across a book on Japanese furniture. The result was a project that blends the traditions of oriental design with the convenience of modern power tools, and which can easily be adapted to suit your own preferred way of working

**T**his is one of those projects that originally came about thanks to a mixture of accident and design. I'd been thinking for a while that Gus, my two year old son, could do with somewhere to keep his clothes and toys (somewhere, that is, other than every horizontal surface in our home), when a friend lent me a copy of Rosy Clarke's Japanese Antique Furniture.

I have to confess to knowing little about Japanese furniture; until this project, I'd never had to consider how such pieces, with their asymmetric cupboards and drawers, could be assembled. So please don't think that I'm passing on expert knowledge of authentic Japanese furniture here: rather, I'm showing you how I built my own interpretation of a clothing chest I read about in Rosy Clarke's book.

For my purposes, I adapted several facets of the original piece. Its construction uses both hand and power tools, for example, and in some cases I've employed biscuit joints where a shokunin would probably sooner jump off a cliff – no reason why you shouldn't take more time over it than I did, though. I also reduced its size somewhat; if you want to stick with the proportions of the original chest, it was 1170mm wide, 930mm in height and 430mm deep.



## Materials

Traditionally, pieces like this were built using a softwood such as cryptomeria for the carcass and a highly figured hardwood such as zelkova or chestnut for the drawers. The timber was stained in rich, deep wine hues.

I was therefore looking for contrasting timbers for the carcass and drawers, but a trip to my local timber yard revealed some nice sycamore, including one highly figured board with much evidence of ripple. This, I decided, would provide contrasting drawer fronts while

keeping the whole piece the same colour, and to add further interest I opted for American walnut for the handles.

## Carcass

My reading of the original piece is that the rails were connected to the chest sides and stiles

## INFO

This project was built, wherever applicable, with Bosch tools. For info on any Bosch product, call the Customer Service Line on 01895 838782.

# CUTTING LIST

All finished sizes in millimetres

	Qty	Length	Width	Thickness
<b>Components in solid sycamore:</b>				
<b>Main carcass</b>				
Chest top	1	975	430	20
Chest sides	2	778	430	20
<b>Upper H-frame</b>				
Front and rear rails	2	935	63	20
H-stretcher (excluding tenons)	1	298	63	20
<b>Lower H-frame</b>				
Front and rear rails	2	935	63	20
H-stretcher (excluding tenons)	1	284	63	20
<b>Vertical divider</b>				
Small rails	1	546	424	20
Small shelf	1	230	63	20
Middle rails	1	230	424	20
Middle rails	2	685	63	20
Plinth	1	935	60	20
<b>Top drawer</b>				
Front	1	935	132	20
Sides	2	400	132	18
Back	1	935	114	18
<b>Middle drawers</b>				
Front	2	685	154	20
Side	4	400	154	18
Back	2	685	136	18
<b>Bottom drawer</b>				
Front	1	685	198	20
Side	2	400	198	18
Back	1	685	180	18
<b>Top small drawer</b>				
Front	1	230	87	20
Side	2	400	87	18
Back	1	230	68	18
<b>Lower small drawer</b>				
Front	1	230	132	20
Side	2	400	132	18
Back	1	230	114	18
Door	1	287	230	20
(allow for rear battens to keep door flat)				
Drawer runners	10	ex 25 x 20mm		
(cut to fit allowing for shrinkage of chest sides and vertical divider)				
<b>Components in sycamore and walnut</b>				
Laminated handles	11	90	38	12
<b>Components in plywood – one 2440 x 1220 x 6mm board required:</b>				
Backboard (to fit 10mm rebate)	1	955	718	6
Drawer bottoms		Mark and cut to fit each drawer		
<b>Screws</b>				
1in No.8 csk for backboard				
1in No.8 rhd for runners				

Order timber oversize to allow for machining. Allow for the jointing of narrower widths to achieve wider boards. If using mortice and tenon or housing joints instead of biscuit joints, add extra material to accommodate them.

using mortice and tenon joints, and I'd guess that the small, solid shelf was either housed or dovetail housed into the right-side cheek and vertical divider. To provide a square and reliable shoulder, I did use mortice and tenon joints for the two main internal H-frames – but that apart, the internal joints are made with biscuits.

In a first-time experiment, I used biscuits without glue in place of the housing joint on the shelf, in order to let the side cheeks and vertical divider move without causing damage. For the same reason, the drawer runners that are screwed into the two side cheeks and vertical divider were fixed without glue and with enlarged clearance holes for the screws. A gap was left at the rear of the runners.

Traditionally, the top on a piece like this would be connected to the sides with wider versions of the modern finger joints. These related to the width of laminated boards employed, and bamboo dowels were often driven through the wide fingers to stop the joints drifting apart. In this case, I had wide boards, modern adhesives and access to a Bosch finger-jointing jig, so tradition once again took a back seat.

## Drawers

As far as I can tell, tansu drawers were simply rebated with bamboo dowels driven in the side, but I opted to use my Bosch dovetail jig. The plywood bottoms are housed in grooves in the side and front, and screwed to the underside of the drawer back.

## Handles

I always have problems designing wooden handles: once your ideas and test samples are underway, it gets difficult to choose between knobs, battens, strips, straps or recesses. Function and ergonomics are part of the design process, too. In the end, I used a workshop-made plywood laminate of sycamore and walnut that could be fashioned into a strip with a 'pinch hole' for grip ■



**1** Before starting the making, check the size of your drawer dovetails. This will determine the height of each drawer and the overall height of the chest



**2** On your rough-sawn boards, map out the components for the project. Always handy if you have an assistant to do this for you...



**3** Cross-cut the rough-sawn boards into manageable lengths



**4** Cut a straight edge on to each of your cross-cut boards, then organise them into component groups. Don't leave timber stacked upright like this for too long



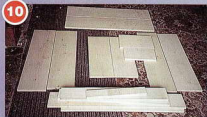
**6** Cut another straight edge parallel to the first. Make sure each component is oversize in width, to allow for any bowing that will occur (especially in the smaller widths) during the sawing process



**7** Surface-plane the concave surfaces of the boards, then thickness the opposing surfaces. Leave the boards oversize in thickness, then stack them somewhere dry and leave for a few weeks to settle



**9** Using hand planes and/or light passes through the thicknesser, take out any cupping and bowing from the boards as you bring them to their final thickness. As you can see from the shavings, health and safety at work is largely something that applies to other people...



**10** Arrange and mark the boards that will be jointed to form the main carcass components (left) and drawer fronts, then give each board a preliminary sanding with, perhaps, 120-grit abrasive



**12** Square-plane the edges of all boards that will be edge-jointed to form wider components, checking the joints to ensure there are no gaps



**13** Working from your straight edges, cut the opposite edge of each carcass board to its final width. Leave a little surplus for final hand planing



**14** Mark and cut the biscuit slots for the edge joints in the carcass boards.



**15** Glue and clamp the edge-jointed boards for the top, sides, vertical divider and small shelf, ensuring they are flat and true. When set, sand flat any unevenness



**16**  
Plane the two long parallel edges on the top and the two chest sides, so that they are square, flat and true



**17**  
Plane and thickness the two top and two base rails, the middle, base and short rails and the H-frame stretchers, to their final width



**18**  
On the inside surfaces of the two side cheeks, mark in tandem the positions of the top, middle, base and small rails, the small shelf, the backboard rebate, the finger joints (allowing 1mm surplus for projecting horns) and the overall length of the sides. Use these markings as a template to establish the



**20**  
Establish the positions of the middle rails on the vertical divider, corresponding with the markings on the left cheek. Do the same for the small rail and small shelf, this time working to the markings on the right cheek (not shown here)



**21**  
Cross-cut the carcass top and the side cheeks to their finished lengths, allowing 1mm surplus for the projecting horns for the finger joints connecting the top to the sides



**22**  
Set up and cut the finger joints on the dovetail jig, then give them a preliminary check for fit



**23**  
Route the stopped rebates for the backboard at the rear of the top, side cheeks and base rear rail, then square off their rounded ends



**24**  
Using the markings on the right cheek, establish the shoulder lengths for the top and base H-frame stretchers



**25**  
Cut the mortises and tenons for jointing the H-Frame. The position of the stretchers must allow the rails to be over-length at this stage



**26**  
Dry-assemble the H-Frames and establish the length of their rails, by matching them against the shoulder distance between the finger joints on the top board. Cut to size



**27**  
Mark and cut the biscuit joints connecting the H-frame rails to the chest sides



**28**  
Mark and cut the biscuit slots for jointing the chest sides and lower H-frame to the plinth. Glue and clamp the plinth and lower H-frame



**29**  
Cramp and glue the mortise and tenon joints on the upper and lower H-frames, checking for squareness and position of the stretcher, then leave to set



**30**  
Having marked and cut the biscuit joints connecting the vertical divider to the H-frames, position it on the lower of the two. Establish the shoulder lengths of the middle rails, small shelf and small rail, then cut biscuit slots for their joints to the H-frames, shelf sides and vertical divider. Remember that glue is not used in the small shelf biscuit joints; housing joints can be used if you prefer, again without glue

## STEP-BY-STEP GUIDE



Plane and thickness the drawer runners, then position them tightly in their final positions on the chest sides and vertical divider. Later on, you'll need to reduce their length to allow for shrinkage of the chest sides and vertical divider, but hold them in place for now with strong two-sided tape



Drill pilot, clearance and plug/countersink holes in the runners, chest sides and vertical divider, to accept 1 1/4 in No.8 screws (preferably roundhead). Number and remove the runners, then enlarge the clearance holes to slots to allow for shrinkage in the chest sides and vertical divider



Sand clean the internal surfaces of all the carcass components, pre-finishing them with an odour-free lacquer. Avoid applying finish to the joint surfaces. You are now ready to screw the runners, now trimmed to length, back in their finished positions



Cramp and glue the vertical divider to the upper and lower H-frames. Check for squareness and allow to set. Make sure the structure is on a flat surface, with its front surfaces pointing down



Position the small shelf against the vertical divider, using biscuits without glue



Glue the joint that connects the small rail to the vertical divider, then glue the right-hand chest side to the H-frames, plinth and small rail. Do not apply glue to the joints connecting the small shelf to the right chest side



Having glued the middle rails and left-hand chest side, cramp the rear rails then, with the help of an assistant friend, turn the structure on its back and cramp the front rails. Check for accuracy and allow to set



Using bevelled and finger-jointed softwood cramping blocks, glue and cramp the finger joints connecting the top to the chest sides



Plane straight edges on the drawer fronts, sides and backs



Cut the drawer sides to length and width to fit in their respective carcass openings, fine-planing if necessary to achieve a smooth fit.



Cut the drawers' dovetail joints, by hand or using a router and jig. Cut grooves to accommodate the drawer bottom then screw it to the underside of the drawer back, before assembling and fine-planing the drawers for a smooth fit



Mark and cut the backboard to fit in the rebates at the rear of the carcass. Mark the positions of the screw holes, then screw the backboard in position without glue



Plane the finger joints' projecting horns flush with the top and sides, then fine-sand all the carcass and drawers' outer surfaces



For the handles, make a three-core cross-grained plywood strip in contrasting timbers, to suit a 1/8 in or 12-13mm router cutter. The inner core needs to be planed to exactly a third of the final thickness: the outer cores are planed on their inside surfaces only, with a saw-cut surface to the outside



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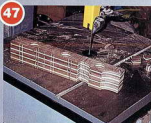
Cross-cut the laminates into manageable lengths (three handles per strip), then plane their parallel edges and outer surfaces until a tight fit is achieved with a test groove routed in scrap wood

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Clamp the edges of the laminates together and drill tight holes to accommodate cramping bolts in the surplus wood at the end of the strips as shown. Next, use a forstner bit to drill the handle pinch holes

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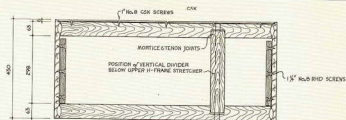
Using a template, mark the curves and rear rebates of the handles on the top cramped laminate, then cut the shapes on the bandsaw. With this done, cut the multiple handles to length and remove the bolts, then sand the curves clean

48

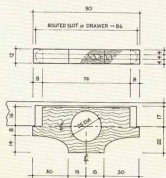


Mark and rout grooves in the drawer and door fronts to accept the handles. Note that this should be done prior to final assembly

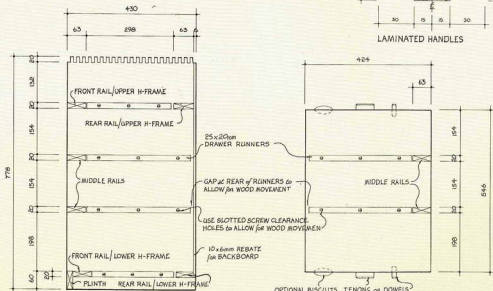
## JAPANESE CABINET



SECTION A-A (SHOWING UPPER H-FRAME)

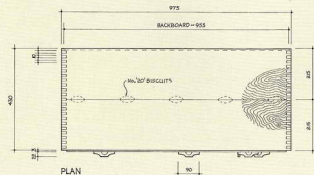
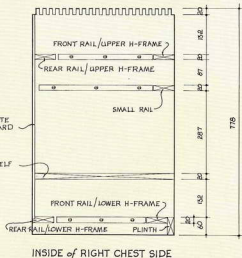
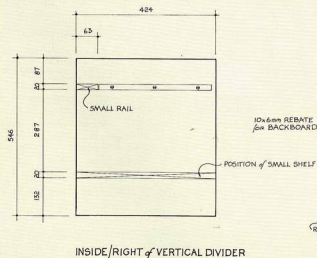
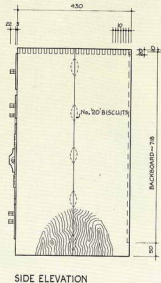
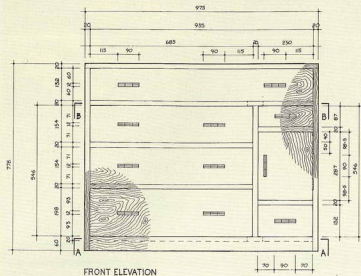


LAMINATED HANDLES



INSIDE of LEFT CHEST SIDE

INSIDE/LEFT of VERTICAL DIVIDER



# THE GALLERY

Want to show off your woodworking efforts? Send some words and pictures to The Gallery, Traditional Woodworking, The Well House, High Street, Burton on Trent, Staffs DE14 1JQ. As well as seeing your work in print, every reader whose material is published will receive a set of high-quality Faithfull chisels worth a handy £80. So get writing! What more incentive could you possibly need?



As you'll know if you're a regular *TW* reader, this page normally features a diet of furniture and other finished woodworking projects. So this month's Gallery is something of a one-off.

Harold Cox comes from Stretton, near Burton on Trent – a town whose brewing heritage makes it famous as a home of the coopering trade. He started collecting tools 35 years ago, buying a Norris A5 and a Spiers coffin smoother at Newark Collectors' Fair, and found himself wondering about how the base of such a tool is dovetailed into its sides. He didn't get very far, since his only woodworking training had been at school (which he left at 14) and his career had taken him into engineering – a discipline in which the gentle art of the dovetail can be, shall we say, peripheral.

Then, three years ago, a fellow student on an art course gave him a book that set him off on a new road. Called *Making and Modifying Woodworking Tools*, by a certain J Kingshott, it gave him an insight into how the items in his collection had come to be the way they were – and all of a sudden he was on the road



towards augmenting his collection with some creations of his own.

The three pictures you see here illustrate all seven of the planes Harold has made so far. And despite the fact that he doesn't use anything more sophisticated than a hacksaw, some chisels and a variety of

quality files, they display a mixture of fine craftsmanship and intriguing design. The jack plane, for example, has a quarter-inch Indian rupee coin let into its front 'bun' – believed to be silver, it shows the head of George V.

The three wooden planes seen together are a cooper's

topping plane (known in Scotland as a sun plane) – this is a pretty rare design, shaped as it is for left-handed use – and two crozes, each of them in what's come to be known as the Burton pattern. All are made from beech.

But the jewel in the crown has to be the Acanthus plane, with its distinctively shaped front handle, which Harold was prompted to have a go at after seeing a 16th Century plane being sold at auction for £3400. Made from mild steel and rosewood, it measures 11 inches overall and has a blade width of two inches – the steel for the blade, which is 7.5 inches long, first came out of Gilpin and Whitehouse (Cannock, 1868-1946). No brazing or welding was used at any stage, and the Acanthus leaf scroll was formed by blacksmithing – Harold formed them while the metal was in a strip, firing them to a bright cherry red before forming it over a bickern anvil.

The Acanthus took 54 hours to make and was completed earlier this year. Whether it or any of Harold's other home-made tools get used for woodworking is open to question – but we wouldn't mind betting that they'd show the average mass-produced plane a thing or two if you put them to work at the bench. ■



# Buying tools

Possibly the most important part of any woodworking career or hobby comes when you embark on buying the tools you're going to use. As Jim Kingshott explains, it's about a lot more than just picking out a likely looking set of chisels from a mail-order catalogue...

Of all the questions I receive from readers, it's probably not an exaggeration to say that the majority are to do with tools. This is because the quantity and quality of tools required by a woodworker perplexes most newcomers. A major problem is where to purchase them from, and how to judge the quality. Then there is the question of what tools are required. Over the next few months, I will endeavour to answer these questions in some detail.

In this, the first article in the series, I'm going to describe ways of buying tools, and the basic requirements you must consider. In forthcoming articles, I'll describe the various features of new tools which are currently available.

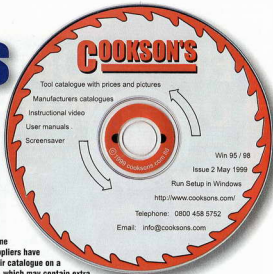
A few years ago, it was part of my job as apprentice master to purchase a basic kit of tools for each apprentice. Every year, there would be ten or twelve new apprentices, so I had plenty of experience at finding the best quality new tools. Fortunately for them, we dealt with the biggest wholesaler in this country and I was able to visit their main warehouse to make my selections.

Recently, on the other hand, I wanted to buy a number 4½ smoothing plane as a gift for my grandson. I went to the tool shop where many of my own tools were bought back in the late 1940s. There was no counter: it had been removed, and the helpful man in the brown overall had also disappeared. Instead, there was a girl sitting at a till located near the exit.

I spotted a young man in a smart suit, who appeared to be part of the shop staff, and asked if I could see some number 4½ smoothers. He pointed to one in a case. I asked if I could inspect it, only to be told that it could

not be handled, because it was the display model and I might leave finger marks on it which would go rusty. Well, could I at least examine the one I would get if I made a purchase? No need, sir, it would be identical to the one in the case, and all the 4½ smoothers in stock are

Some suppliers have their catalogue on a CD, which may contain extra items such as instructional videos and software. A computer is needed to read the CD



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### Hand Tools


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GO

All prices include VAT and delivery within the mainland UK

Most websites which sell tools have a home page which presents the user with a multitude of choices. By clicking on the images or buttons, a required tool can be located with ease – or one can just browse

## Axminster Power Tools Centre Shopping Basket

Security Information for Axminster Power Tools Centre

Product Code	Options	Personal Text	Description	Quantity	Price	Remove
				Units	Per Item Inc. VAT	
					£0.00	
					£0.00	
Total Value of Purchase(s) Inc. VAT					£0.00	

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Currency Converter

\$	The price of the goods currently in your shopping basket converted to American Dollars is	\$0.00
€	The price of the goods currently in your shopping basket converted to Euros is (rounded at 49.99)	€0.00

The above exchange rates were taken from UK Financial Times on 1 January 2001 09:15:02. The above prices are shown as approximate guidelines only and do not reflect current exchange rates.

Once you've chosen your items, you go to the 'checkout' page to confirm the details of your purchase

packed ready for the purchaser to take away. So it would be very inconvenient if the plane were not purchased once it had been unpacked.

Needless to say, I did not buy the plane. But I experienced what many would-be woodworkers must encounter – a shop assistant with little knowledge or interest in the tools he sells has replaced the ironmonger of old, who had a wide knowledge of tools and was so helpful.

### Four ways of buying

In this country, there are four ways to buy new tools: by mail order, from a retail 'high street' shop, direct from the manufacturer and via the internet. The larger mail order companies produce catalogues, which can be free or in some cases cost several pounds.

Some companies offer what they call an 'Order Hotline,' usually with a free phone number. Call one, and you'll normally find yourself talking to someone who can take your order but not much else. If you need help in choosing, or want details of a particular tool, there is usually a separate line for 'Customer Service'. This is rarely free, and you might have to wait in a queue while listening to head-banging holding music.

Buying from a web site is quite simple. These are usually arranged very much like a printed catalogue, from which the required tools are selected with a click of your mouse and added to a 'shopping basket.' When the selection is completed, you click a button and a checkout form appears,

asking for your credit card and delivery details. On most sites, these are automatically encrypted before transmission to prevent fraud.

Both mail order and web purchases have carriage charges to consider. Some list a price that includes both VAT and carriage, while others do not; this must always be considered when comparing prices. Good websites send an e-mail at the same time as the tool is dispatched, to let you know exactly when to expect delivery.

I have found that several suppliers on the web do not send an invoice with the tool. This can pose a problem if you run your own business and need one for tax purposes.

Other than a description and maybe a picture, there is often no help in choosing tools on the web, so you need to know exactly what you are ordering.

Some suppliers also offer their catalogues on compact disc. This is all very well, but you have to have access to a computer to read the CD. Except for the ordering procedure, it is almost like buying from a website.

I prefer to buy from a retail shop, where I can inspect tools and make a choice from several similar items. Even with modern mass-production methods, no two tools are identical. For example, cast steel planes can be ground off-centre, so one web is much thinner than the other, and the flatness of the face of chisels and plane irons varies. I have found that a proprietor, who has an interest in tools and the craftsmen who use them, runs the best tool shop. This person is usually chatty and, once you become a regular customer, will bend over backwards to help, even obtaining special tools that are not held in stock. The large DIY Emporia, on the other hand, pride themselves on being cheaper than anyone else; unfortunately, this is also usually reflected in the quality of their stock.

Very few manufacturers will supply direct. Those that do tend to be small companies producing special tools. They usually issue a free small catalogue or brochure, and also advertise in appropriate woodworking magazines.

All the above refers to new tools. I know many woodworkers prefer to buy second-hand; I will deal with this in a separate article.

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**IMPORTANT INFORMATION on the front of a catalogue**

## The tool kit

The tools you require depend on what type of woodwork you intend to do. The site carpenter needs different tools to those required by a cabinetmaker, for

example. A new breed of woodworker called the 'kitchen fitter' has appeared in the last few years, too; this craftsman uses power tools almost to the exclusion of hand tools, and

**JAPANESE FINE QUALITY WOODWORKING TOOLS & WATERSTONES**

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Our Chisel Cent range of Bachi Hemi are fitted with a steel bonded air-hard Diamond handle and are used for any class Downcut joint. The handle shows a distinctive color for joint cleaning. The end of the handle is made of clear black bakelite handle. The handle from the cutting edge. The tool has an overall length of 225mm and has a blade length of 100mm.

Price: £39.90

The web page on which the tool is featured will normally carry an illustration and description of it, along with the asking price

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Happy hunting!

The Thanet Tool Supplies sales team.

STAR BUY info BUY  
 STAR BUY info BUY  
 STAR BUY info BUY

Many websites have links to other sites, as shown here by the icons on the extreme left. In this way, one can go from site to site comparing products

often undertakes plumbing and electrical installation as well as woodworking tasks.

We need some description of the work to be undertaken before deciding exactly what tools are essential. Most readers I talk to have a small workshop and make furniture and small items of joinery, so it is their tool kit I will write about.

The tool kit can be broken down into three groups of tools: marking out, preparation, and cutting. I have further divided the tool kit into two parts: the basic kit and supplementary tools. Most workshops have some machinery, usually a table saw, band saw and planer-thicknesser; this does not significantly alter their requirement for hand tools.

The following list of tools is the basic kit every woodworker needs. Arm yourself with this lot, and you'll be in a position to tackle most woodworking procedures. The prices I have quoted, which include VAT, are taken from an up-to-date mail order catalogue.

## Basic kit

Jack plane	£48.19
9-inch try square	£10.44
2ft or 600mm steel rule	£ 5.88
Marking knife	£ 3.93
26in cross-cut handsaw 7ppi	£40.52
10in tenon saw 14ppi	£30.50
Combination marking and mortise gauge	£21.50
Steel smoothing plane	£42.41
Firmer chisels $\frac{1}{4}$ , $\frac{1}{2}$ , 1in	£63.71
Mallet	£ 8.39
Warrington 8oz (225g) hammer	£ 8.25
Combination sharpening stone	£11.79
Screwdriver, 8in cabinet pattern	£ 7.71
Fine nail punch	£ 1.55
Bradawl	£ 3.38
Pincers 9in	£ 8.71
Ratchet brace, 8 or 10in sweep	£29.95
Twist Bits $\frac{1}{8}$ , $\frac{1}{4}$ , $\frac{1}{2}$ in	£34.61
Countersink	£ 8.61
Total	£386.83

## Which manufacturer?

Some manufacturers were once highly regarded by the craft. For instance, carving tools made by Addis and braces made by Chapman were considered superior to any other make. Many manufacturers specialised in a particular type of tool, and these were the tools sought by the craft almost to the exclusion of any other make. Large manufacturers wishing to break in to the market bought these small companies and absorbed them into their conglomerates; thus the small, specialised manufacturers disappeared.

# MASTERCLASS

The major tool manufacturers have factories that require volume production. Most tools, if properly cared, for will last several human lifetimes, so a saturation point can be reached – after which the manufacturer has to look for new products or markets. Fortunately for some tool manufacturers, the DIY trade has provided a vast outlet for their products. In most cases, however, competition on prices within the DIY trade has led to a drop in the quality of the tools on offer, which means they are not up to the standard a craftsman requires.

Large manufacturers also stop making tools that only sell in low volume, and this has led to a reversal of history – small companies seeing a gap in the market are now producing quality tools in low volume. Record Tools ceased production of the 420 shoulder plane because of lack of demand: Clifton now produces it, together with a number of other planes that have been discontinued by Record. These smaller firms make the tools using traditional techniques, which are more suited to low volume production than mass production methods. This is very much to our advantage, as the tools produced in this time-tested way are usually far superior to those knocked out by the thousand.

## How much?

'There is nothing some man will not make a little poorer and sell cheaper.' The old saying is so true, particularly when applied to tools, so quality is a very important factor when comparing prices.

Because the steel from which cutting tools are made varies in type and quality, visual comparison is not always the best test. Unfortunately, it is only in use that a tool can really be assessed. Comparisons between different makes of a tool are regularly published in this magazine, and are a very good starting point when choosing a particular tool. Experience counts, so discussion with fellow craftsmen is also a way of determining a worthwhile purchase.

A few quality tools are worth more than a box full of mediocre ones. But the woodworker's urge to acquire tools can be very strong! I remember as an apprentice pressing my nose against the



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Die Besucher dieser Seite zählt WebHits

Java Script und Cookies müssen aktiviert sein. Eine Auflösung von 800 x 600 Pixel und ein Browser ab der Version 4.0 bietet Ihnen die beste Darstellungsergebnisse.

Some websites produced by companies with an international clientele give the user a choice of language

## Online shopping at its best!

The entire range of products found in our tool catalog is available through our online store. Use the Product Search function to find exactly what you need, add it to your shopping basket and send us your order with the click of a mouse. Replacement parts can be found by entering the product number of the respective tool in the Accessories/Spare Parts box below. If you already know the item-numbers of the products you wish to order, [click here](#) for a blank order form. We will make every effort to process and ship your order on the same day it is received. We believe in the quality of our products and therefore back every one with a 30 day money-back guarantee and a 3 year warranty. Buy at no risk! The SSL software which we use to secure the personal information you provide us with is the best available.

**Product Search**

<input type="text"/>	<input type="button" value="Search by Category"/>
<input type="button" value="Search"/>	<input type="text" value="Item-number (for example: 712808)"/>
<input type="button" value="Search"/>	<input type="text" value="Keyword"/>

**Accessories/Spare parts**

<input type="text"/>	<input type="button" value="Search"/>
<input type="text" value="Accessories/Spare parts (Enter item-number of product)"/>	

This introductory note, plus the search facility, is typical of a good website. The user can feel reassured that information given will be encrypted and handled securely

window of the tool shop and imagining just what fine things I could make, if only I had those tools. Apprentices were paid 11 shillings (55p) a week during the first year of their apprenticeship, and a number 4½ smoother cost £2.10s (£2.50p) – over a month's wages. We saved very hard for our tools, and as a result each was a cherished item.

It is very easy to be side-tracked into buying tools for tools' sake. I know of woodworkers who have become tool collectors. Tools are not made to collect, however – they are a means of production. I suggest you leave the collecting to museums; I can understand

the pride that comes with owning fine tools, but this should surely be an adjunct to craftsmanship, not the end goal. It is the craftsman's urge to express himself that is important – this he does by making something that will be useful and beautiful to look at, and it so happens that he can only do so by using tools.

Nearly every apprentice I instructed, and over the years they've amounted to several hundred, bought a Yankee Pump Screwdriver, even though the tool was not allowed in the workshop. Do try not to be distracted by tools that just take your fancy – building up a reasonable kit can be an

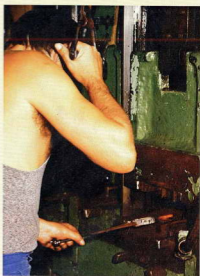
expensive procedure, but by channelling your funds into the essential tools that will be used, and not just looked at, you'll keep the cost to a minimum.

Very few people are in a position where they can buy a complete kit all at once; even if they could, I would not advise it. It might be a good feeling to use a new tool for the first time, but it is only when one has become accustomed to it through long use that it performs at its best. Only when you find you can 'ignore' the tool as you use it, instead concentrating all your attention on the task in hand, can it be said that the tool is actually performing well ■

# Bristol Designs: Forging a single tool by the traditional method



The end of a steel bar is heated in the forge



Forging by hand is a hot, sweaty job. A mechanical hammer relieves some of the effort



The initial shaping of the red-hot steel is done using a mechanical hammer



Repeated light hammer blows are used to form the tool's shape. These repeated blows impart characteristics to the steel that cannot be obtained by the single high-energy blow used in the mass-production drop-forging method



The tool's shape is made perfect by tapping the cold metal while it is still soft, prior to heat treatment

# WORKSHOP WISDOM



Got a woodworking question? Write to our Technical Consultant, **Jim Kingshott**, at Traditional Woodworking, The Well House, High Street, Burton on Trent, Staffs DE14 1JQ. If you don't want to wait until the reply is printed in the magazine, please enclose a SAE with your query. Alternatively, for a quick answer, you can also send an e-mail to [jimking@ntlworld.com](mailto:jimking@ntlworld.com)

## Less is more

**Q** I have just acquired a new over-and-under planing machine. On the infeed end of the thicknesser, there is a notice that states 'feed only single pieces.' As the cutter block is twelve inches wide, this seems a terrible waste of time and power when thickening narrow pieces of wood. Because of the notice, I have so far only fed single pieces, but before trying to machine several pieces at the same time, I thought I should seek some advice – just in case there is a legitimate reason for what the notice says. I do not want to damage my new machine, so what can happen if I do feed two or three pieces at a time?

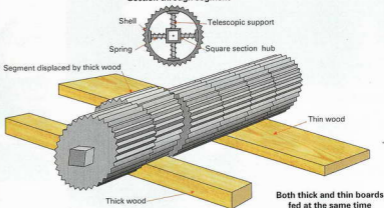
**Peter Fordham**  
via e-mail

**A** The notice is mandatory under the Woodcutting Machinery Regulations, and there is a very good reason for it being there – under no circumstances should you ever attempt to feed more than one piece of timber at a time into your machine.

The reason for this is that your machine has a solid infeed roller, which is pressed down by springs on to the wood being fed. The wood lifts

the roller as it passes under it, meaning the height of the roller is determined by the thickness of the wood. If two pieces are fed at the same time, therefore, the roller will only bear on the thicker of the two – it's held clear of the thinner piece, which is therefore not being fed at all. The wood goes into the

Section through segment



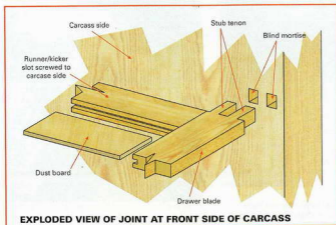
**Schematic drawing showing how a segmented feed roller deals with different thicknesses of wood**

cutters, which are revolving at 6000rpm, with predictable results – the thinner piece will be kicked back with tremendous force.

There will be anti-kickback fingers on your machine, but the force applied by the cutters can still cause very serious damage – not only to the machine itself, but to the

person feeding the wood in. Some machines have a segmented infeed roller to overcome this problem, as shown in the accompanying drawing – but however similar the apparent thicknesses of your various pieces of timber, it is a dangerous folly to ignore the notice on a machine with a solid roller like yours.

## Cross purposes



**EXPLODED VIEW OF JOINT AT FRONT SIDE OF CARCASS**

**Q** Could you help me on what I should do when tackling a cross-grain situation? I would like to know how to secure, for example, drawer frames into solid carcass sides. Any suggestions you can offer would be a great help.  
**Kevin Clarke**  
via e-mail

**A** From the very brief details you give, it appears that what you're asking is how the drawer blade is joined to the side of the carcass. This drawing shows the method which is customarily adopted.

WORKSHOP WISDOM



# Rocking chair

Can any item of furniture be more relaxing than a rocking chair? A seamless blend of traditional English and Shaker style design makes **Wade Muggleton's** rocker a piece anyone would be proud to have in their home

**T**hey conjure up images of sitting on the veranda with a large malt whisky, just taking it easy and watching the world go by. A good rocking chair is arguably the most relaxing piece of furniture one could own; in this project, I have blended a fairly traditional design with an element of my own interpretation.

The rocker is still a relatively rare item in this country – how many people do you know who have one? Not many, I suspect. As a design, its origin is rather obscure, having probably arisen in the late 18th Century. But it was during the following century that rockers became extremely popular in America, where they still are today. Here, Victorian society was less approving; despite claims that they aided digestion and were thus beneficial on medical grounds, they remained a far more obscure item.

In the States, numerous designs of purpose-built rocking chair were available. Here in Britain, on the other hand, the tendency was simply to add rockers to a standard Windsor or similar design of chair. In fact, some of the Wycombe factories offered chairs at a certain price for the standard item, and then for slightly more with rockers.

This meant that many English rockers had the traditional H-shaped stretcher arrangement which, with rockers added, tended to give a cluttered look to the under-frame. It's structurally unnecessary to have front-to-back stretchers when that job is actually done by the rockers themselves, so more recent designs have improved upon this by having the stretchers across the front and back legs and not down the sides.

As rocking chairs are comparatively rare, design, construction and style will vary.



The chair in the project was only the fifth rocker I have built, compared to many dozens of other assorted designs. Of the five, all have been different; this one has elements of traditional English style but also incorporates a certain level of Shaker approach.

### Materials

The entire chair is made from local ash – it all comes from the same tree, which grew in Pepperwood, Worcestershire. This is owned by the Woodland Trust and managed as a community wood, so the chair has a sound environmental pedigree from the start.

The butt had been felled two years previously and was milled

by a Woodmizer into two-inch boards (picture 1), which were then further seasoned over several months (picture 2). The boards, which were very straight-grained, were marked out into the various components from the cutting list. Careful marking out, using grain alignment to its best effect, is one of the great strengths of hand-made furniture.

The construction of this rocker, as with my previous chair projects in *Traditional Woodworking* (November 2000 and January 2001), falls very much into two parts. These are the seat and the under-frame, which are made and assembled first, followed by the arms, back and crest rail.

### Legs and stretchers

Having never been a fan of excessive turnery, I tried to incorporate a Shaker-style simplicity into the design. Instead of turned legs, I opted for the tapering hexagonal legs of my stick-back, which was featured in the November 2000 issue of *TW*. While Shaker furniture in its purest form is rather puritanically minimalist for my taste, the movement has a lot to offer in its 'less is more' approach to design.

I set out to build a comfortable, stylish chair in clean natural ash, a chair of subtle angles and a certain simplicity. So my preference is for plain legs; those of you who are more turnery-orientated may well decide otherwise. Having cut the leg blanks on the bandsaw (picture 3), I did the bulk of the rough shaping with a hand-held electric planer (picture 4) then sanded them up by hand (picture 5) – it's far easier to smooth them off now than after they're assembled.

There are only eight turned components in this design: the front and back stretchers and the six short arm posts, four of them plain and two of a more traditional turned form (picture 6). On this occasion, I abandoned the pole lathe and returned to my old Coronet Hobby in the back of the shed. As the timber was already seasoned, it was more suited to the electric lathe, the pole lathe being an essentially green woodworking tool.

I make no claims to being a master turner; my policy is to turn the first component to my satisfaction and then, using a cardboard marker and calipers, simply to copy it. Minor differences are totally acceptable, indeed it's these that give it the hand-made character that's so sought after – a copy lathe may produce perfect duplicates, but the result is



The chair you see on these pages was made from a single ash butt from Pepperwood in Worcestershire and was milled on a Woodmizer



Your boards should get a final season indoors, to bring their moisture content down to household levels



Sawing out the leg blanks is easy on a bandsaw



Hexagonal legs can be roughed using an electric planer



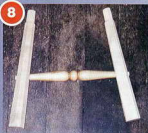
Sand the legs prior to assembly – this is far easier than attempting to sand them when assembled



There are only eight turned components in this chair: two stretchers and six arm supports...



...which are Danish oiled whilst still between centres



Note the angle of the front legs, and the decorative ball on the stretcher



The seat was made up from three pieces, which were sawn, squared, planed and marked prior to jointing



soulless. If you want a cheap, machine-made chair, why bother making one – just go to a furniture chainstore, where what you buy will cost little and probably be worth less. There really is no comparison in terms of longevity, design and quality. You can ruminate on that while turning up the components, before giving them a coat of Danish oil while they're still between centres (picture 7).

The legs and stretchers are all joined by turned peg mortice and tenons, so the pegs can simply be produced by turning on the lathe – thus avoiding the need to use rounders as in my previous chairs. The front

stretcher has a ball in the middle to add interest to the design, and reflects a slightly classical influence – it's seen in picture 8, during a dry-run which also shows the angle of the front legs.

### Seat

The seat is constructed from three seven-inch-wide boards, each of which is twenty inches long (pictures 9-10). These are doweled with three-quarter-inch pegs, which are set one third up from the underside rather than in the middle, so avoiding any risk of running into them when dishing the seat (pictures 11-12). Biscuit joints could equally be

used, although this has always seemed to me to be a very expensive tool for a simple job, and one which would never earn its keep in my workshop. So the doweled works fine for me – with PVA and sash cramps, an excellent joint is formed (picture 13). Be sure to mark the top, so you know which side to dish in relation to the position of the dowels – once it's glued up, it's the only way you'll be able to tell.

Dishing is an integral part of a good, comfortable chair, as the human behind was not designed for sitting on a flat plank. Even the slightest dishing adds immeasurably to the level

of comfort, though the best guide to obtaining the right amount is to keep trying it as you work – when it feels good to you as the maker, then that's good enough.

I marked out the area to be dished (picture 14) and used an Arbortech to remove the bulk of the timber (picture 15), followed by a Clifton convex spokeshave to refine the shape (picture 16). This is most effective cutting across the grain rather than with it, and once mastered it really is the perfect tool for the job.

You don't want to forget the underside of the seat, of course – in this case, I wanted to

# WORKSHOP PROJECT

## STEP-BY-STEP GUIDE



Use a forstner bit to drill the dowel holes; note the masking tape depth gauge. The holes are offset, to avoid any risk of running into them when dishing the seat



Dowels, PVA and sash cramps make for a strong joint



The glued and shaped seat, with the area to be dished marked on it



The bulk of the waste is removed with an Arbortech...



...before a Clifton convex spokeshave is used to refine the dished shape



To reduce the chunky look of the seat, the underside is rounded off



Screwing a batten to the underside allows the seat to be held in a vice while you're working on it



Having shaped the seat, clean it up with an orbital sander



A coat of Danish oil keeps the seat clean, and is easier to apply at this stage than when fully assembled



Sealing the underside of the seat with a coat of black matt paint is an old tradition



A maker's stamp in the back edge of the seat gives it an individual touch



When drilling the leg holes, use a pair of bevels as a guide to the angle



The legs pass through the seat and are glued and wedged across the grain



PVA and a cross-grain wedge hold the stretchers into the legs



The back uprights are best shaped with a spokeshave

reduce the rather chunky look its two-inch thickness threatened to give it. Just rounding off the edge is enough to fool the eye – it helps a lot, making the whole chair appear more graceful (picture 17). You may find it convenient to screw a batten to the underside of the seat, allowing it to be held securely in a vice while you're working on it (picture 18).

To finish the shaping process, I always turn to my trusty old Bosch random orbital sander (picture 19), working down through the grades to a really fine finish. Machine marks of any sort are unacceptable in a quality hand-made piece, and to me signify lack of attention to detail and care on the maker's part.

At this stage, I sealed the seat with a coat of Danish oil (picture 20). This keeps it clean, and doing it now is easier than trying to apply a finish when all the sticks are in place. One of the beauties of Danish oil is that if it does pick up a few scratches, it is easily sanded back and the finish retouched with more oil and a clean rag. It is essential also to seal the underside, as failing to do so could lead to disproportionate moisture intake and cause the seat to cup. Many traditional chairs were given a coat of matt black paint on the underside, a practice I am happy to continue (picture 21). It gives a neat finish and also seals the underside effectively.

At this stage, I also like to add my maker's mark. This is a steel punch of my name, which is hit with a large hammer into the back of the seat, leaving an indentation in the grain (picture 22). Many Windsor-type chairs carry a name or initials in this manner. It identifies the piece with the maker... so that if it appears on the Antiques Roadshow in 2101, they will know who made it!

Marking out the seat holes is best done using a cardboard template; the time you spend making these is well repaid should you ever build another similar chair. A few cardboard templates allow me to launch straight into making – in fact the templates, with their various holes, angles and a few scrawled notes, carry all the information necessary to make the chair. I never use working drawings – I find them time consuming and, with a level of experience, unnecessary. When drilling the leg holes, you can set up a

## CUTTING LIST (All dimensions in inches)

Components are solid ash throughout

Component	Quantity	Length	Width	Thickness
Rockers	2	32	2	1 ½
Legs	4	18	2	2
Stretchers	2	18	2	2
Seat	3	20	7	2
Arms	2	17	4	2
Arm supports	6	11	2	2
Long sticks	4	27	1	1
Corner posts	2	27	3	2
Crest rail	1	20	5	3



The legs pass through the seat and are wedged across the grain

couple of bevels at the required angle to act as a visual guide (picture 23).

The considerable radius on the back of the seat is designed to curve the back sticks, so giving a far more comfortable shape for the sitter's back to fit snugly into than a flat back would. Remember, a rocking chair is for relaxing into and maybe sitting on for long periods, so comfort is everything. A chair like this owes more to what looks and feels right than anything mathematical or scientific.

Experience is the greatest asset in the chair maker's armoury. The more chairs you make, the more your judgement will tell you what the 'right' angle is. A good rocking chair is all about the action of the rockers and the angle of the seat and back in relation to this. The



The leg, showing the through and wedged stretcher and the pegged-on rocker

two dangers are that if this combination is wrong, the sitter will feel as if he's either going to topple over backwards and brain himself against the floor or be thrown out from the front of the chair. Many mass-produced factory-made rockers suffer from one or both of these faults – if in doubt, go into a large apartment store or furniture warehouse and try them out. A good rock is hard to find!

It was in this quest for the perfect rocking movement that I decided to build the entire chair first, attaching the rockers at the final stage of construction – meaning that I would be able to try out various permutations until I was satisfied with the action. This way, I could judge the 'rock' in relation to the sitting position of the final glued-up chair.



The arms protrude through the corner post

### Assembly

The seat and under-frame are assembled first, minus the rockers. The legs come all the way through the seat and are glued with PVA adhesive and wedged, across the grain, with oak wedges (picture 24). I like this traditional method of construction, although others would argue that with modern adhesives, one could just as well glue them blind and so have a clean seat. The alignment of the wedges must be positioned across the grain, so that when they are hammered home, there is no danger of them splitting the seat.

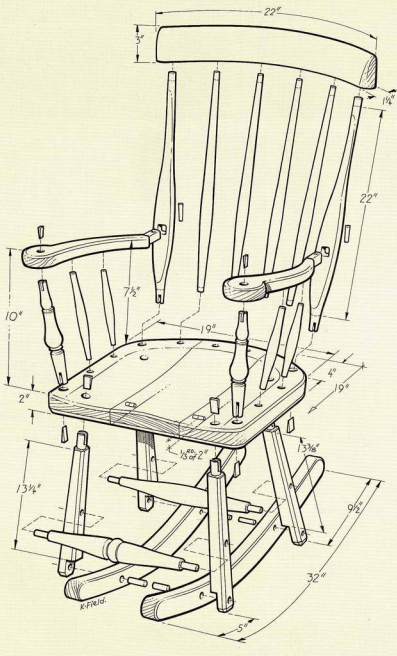
The stretcher rails are also run through and wedged in a similar manner (picture 25); again, possibly unnecessary, but I like the notion of joints being part of the piece's making and that they should be shown where appropriate. Again, make sure the wedge is across the grain of the legs.

### Back

The two back uprights have a slight curve, which throws back the top to give a better sitting position. Cutting this from a totally straight-grained board would mean the middle section being short grain, which in theory is a weakness. By carefully selecting the boards, however, I found one with a wavy section whereby the grain would follow the curve of the back, so giving me a stronger structure. This is an example of the superiority of hand-made furniture – in the factory process, components are just machined out, with no attention to the finer details of grain direction. Having selected the timber and roughed out the uprights, they can be shaped using a spokeshave (picture 26)

The four long sticks in the back are made by sawing out one-inch-square blanks with the straightest possible grain. Using

## ROCKING CHAIR



a three-quarter-inch rounder (picture 27), I take them down two thirds of the way to this dimension then, turning to a block plane and spokeshave, shape in the swelling by hand (picture 28). This way, they have an elegant shape which swells to

one inch and then tapers away to three-quarters. Again, it is this sort of subtlety in shapes and curves that gives the handmade chair its superiority over the blandness or even ugliness of the factory-made equivalent. The long sticks should be

sanded and oiled prior to gluing up (picture 29) – again, this is easier than attempting to do it after assembly.

The upper half of the chair is constructed by building up each side and then putting the back in afterwards (picture 30-31).

This way, the angles and slope on the arms can be aligned for a comfortable position. The front turned post and the long corner uprights pass right through the seat and are glued and wedged from underneath, a traditional form of construction that also gives added strength when the chair is picked up and moved around by its arms. Likewise, the front post passes through the arm and is wedged from above (picture 32). The short intermediate sticks sit in three-quarter-inch holes bored with a forstner bit, which allows the drilling of a deep, flat-bottomed hole without the worry of a spigot breaking through.

The arm sections can be marked out making use of the cardboard template technique I described earlier. Have a close look at your timber to see if there's any grain that will follow the shape of these components, and take advantage of whatever is there (picture 33). You can cut the arms out using whatever method you prefer, then shape them similarly – I find a rasp is useful when doing this (picture 34). The arms pass through the back uprights, where they are pegged (picture 35).

Once the two arm sections have been assembled, the roughed crest rail can be used to hold the corner posts in position while the glue dries (picture 36). Divide up the distance between the corner uprights and, using the same forstner bit, drill the holes for the back sticks. The corner posts splay out so the stick spacing on the crest is greater than in the seat, giving the sticks a slight splay – nothing drastic, just enough to add a subtle enhancement to the look of the piece.

The crest rail is hand-sawn out of a solid chunk of three-inch ash (picture 37) then shaped with a spokeshave (picture 38). Its curve should be of a greater radius than that on the back of the seat, making a comfortable sitting position. If the crest rail has too tight a curve, the sitter's shoulder blades will not fit into the back.

Dry-fit the sticks and drill the holes in the crest rail with the forstner (picture 39). Apply PVA and insert the sticks into the seat holes (picture 40), then align all the holes in the crest rail with their corresponding sticks and drive the rail down with a mallet (picture 41), using a piece of scrap wood to take the blows so as not to mark the workpiece itself.



**27** The long sticks can be produced using a  $\frac{3}{8}$ in rounder, which goes two thirds of the way down...



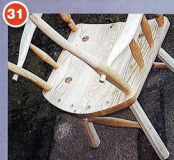
**28** ...before a block plane shapes the swelling in the bottom third section



**29** The long sticks are also oiled prior to assembly



**30** Build up the arm sections one side at a time



**31** The assembled corner posts and arm sections, minus the back



**32** The arm support passes through the arm and again is wedged across the grain



**33** When marking out the arms, look for any curves in the grain that follow the shape



**34** A rasp is useful when shaping the arm sections



**35** The back of the arm passes right through the upright and is also pegged



**37** The crest rail is bandsawn from a solid section of 3in ash...



**38** ...before being shaped and tidied up with a spokeshave



**36** The roughed-out crest rail is useful for holding the corner post in situ while the glue sets

# WORKSHOP PROJECT

## STEP-BY-STEP GUIDE



**39** Drill the holes in the crest rail with a  $\frac{3}{16}$ in forstner bit



**40** With the back sticks in place, the crest rail is ready to go on



**41** Drive the rail on to the sticks with a whacker, using a piece of scrap to avoid marking it



**42** An aesthetic touch: first drill 3mm holes through the crest rail on the centre of each stick, then drive small oak pegs through it to add visual appeal



**43**



**44** A cabinet scraper is useful for smoothing off the curves



**45** Finely sand the arm so that it feels right on the hand



**46** The chair is now complete, needing only its rockers



**47** Mark out the 42in radius on the rockers



**48** To achieve a match, clamp the two rockers together and sand them up



**49** The legs have a halving joint cut on them to accommodate the rocker



**50** With the rockers clamped in place, a trial and error session will let you identify their optimum position for the 'perfect rock'



**51** The rockers are glued and cramped in place, and then pegged

WORKSHOP PROJECT

The PVA will easily hold the back, but in traditional style and for a bit of visual detail I drill and peg each of the sticks through the crest rail, using a 3mm drill and then hammering thin oak pegs all the way through (pictures 42-43). It's all totally unnecessary, but it looks good!

Give the upper section of the chair a final going over with a cabinet scraper to smooth off the curves (picture 44), then finish up with a fine grade of sandpaper (picture 45) and apply a coat of Danish oil to the arms and crest rail. All the other components should have been oiled prior to assembly. At this stage, ignoring the alignment of the stretcher rails, you have a normal chair which sits well and looks good (picture 46). The next stage, which will make or break the project, is to get that elusive rocking action just right.

### Rockers

The rockers are cut from solid blanks – steam bending would be another option, but the work involved in making a jig is questionable unless you intend to make a number of chairs to the same patterns. The rockers are scribed using a 42-inch radius, a simple task involving a piece of string and a pencil (picture 47), then bandsawn out and planed down to thickness of an 1 1/4 inches.

Once again, you're looking for harmony between the rockers, rather than an identical match. Clamp them together using two three-inch G-clamps, so that the process of shaping and cleaning them up will give you a pair. I used my Makita belt sander to clean up the outside of the curve (picture 48), and then a foam drum sander on the electric drill for the internal face.

The rockers are attached by means of halving joints on the inside of the legs (picture 49). To mark the joints' positions, I clamped the rockers in situ, again using three-inch G-clamps (picture 50), then sat in the chair, moving the position of the rockers until it had a comfortable action. I then scribed the position of the rockers and cut the halving joints into the legs.

Cutting the joints on a fully assembled chair is not ideal, but I was not happy to commit the position of the rockers until I had been able to test the sitting position with it fully assembled. If I were going to make more of



The arm has a strong front to back slope, making for a more comfortable sitting position

these, I would of course take the angles and measurements from the first and cut the rockers prior to assembling the under-frame. What I describe here is more reminiscent of the processes involved in making a prototype: as I say, however, commissions for rocking chairs are few and far between, and each of those I have made has been different to the rest.

Having cut the halving on the legs, there is no joint cut on the rockers – they just lie on the legs and are pegged in situ after being glued and cramped in place (picture 51). A screw topped off with a plug would be the easiest option, however I opted to drill a hole and hammer home an oak peg, which passes all the way through. This is just my own

traditional interpretation, and enables me to say that there isn't a piece of metal in the chair – it is 100% solid timber, not a pin or screw in it, a real, traditional rocking chair made using traditional techniques.

### Finish

The finish is largely a matter of taste, and of fitting in with other furniture in the room in which the chair is to live. Personally, I like ash to be clean in its raw state, so I simply gave it a couple of coats of Danish oil followed by an application of clear Briwax. Ash changes over time and, with exposure to the air, turns from its raw, almost white hue to a more mellow fawn brown.

In addition to the coats I was giving as I went along, many of

the components were cleaned up and Danish oiled prior to assembly. This leads to a better quality of all-round finish, as polishing or oiling a fully assembled chair is a messy and time-consuming business – deposits accumulate in corners, beads and so on, leading to a gungey finish. By pre-oiling, the post-assembly finish is merely a question of touching up any unoiled areas and then giving it a couple of coats of a good quality clear wax.

A chair such as this should be waxed every three or four months for the first couple of years, to feed the wood and build up a rich sheen. For all the developments in modern lacquers and varnishes, there is no substitute for an oil and wax finish – which will actually improve over time.

### Reflections

One aspect of making any one-off piece of furniture is to sit and look at the finished product, reflect upon it and consider what went well, what went less well, what you like about it and whether it has been an overall success.

On this occasion, I am well pleased with the outcome. To me, the under-frame looks especially fine and fully justifies my decision to shun turning on the legs. The angles on the back are just right for a comfortable sitting position, and the way the arms angle back also makes for good posture. As for that elusive rock, I feel I got it 98% right: it feels secure on the rock back, and only barely breaks the horizontal on the way forward. The action is smooth, too, proving the 42-inch radius is just right. Overall, then, a good result – my fifth rocker and, I'm pleased to say, definitely the best yet.

Perhaps the enduring appeal of the rocking chair in America is the down-home image of sitting on the porch watching the Mississippi steamboats labouring back and forth, or gazing out at the New England fall foliage. We tend not to have the same 'big country' views over here, nor do we get as many lazy, warm evenings on which to relax outdoors – but wherever you sit and ponder in your rocker, you'll find that it is truly the most relaxing piece of furniture ever invented. Every home should have one and now that you know how, there's really no excuses for not making one! ■

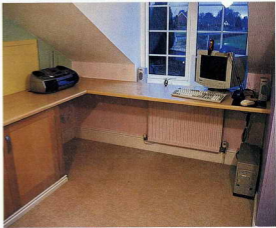


The arm is rounded in for a comfortable feel on the hand. Note the through and wedged joint



## Fitted home office suite

If you're used to building fine furniture, you'll also be used to people referring to you as a joiner. But here's a project with a bit of both – **Peter Bishop** gets to grips with a suite of built-in bedroom furniture that can be adapted to suit the space you've got and will look a lot better than the average flat-pack unit from a furniture shed



**T**here comes a time when you can't avoid getting to grips with those jobs you have been promising to do for ages. My young daughter is about to start secondary education and will be expected to do a lot of homework and reading, and she's going to need somewhere to do it. Her room had been decorated when she was much younger, and had lasted her well; but now it was in need of bringing up to date to reflect her age.

I had, of course, promised months ago to do something about it. At last, I could not prevaricate any further; I had no choice but to set some time aside and get down to work.

I guess the easiest way to achieve a simple home office like this would be to go to MFI or somewhere like that, buy ready-made bedroom and office units and have them assembled in time for tea. I decided, however, that this was not possible in the room in question – and, anyway, I wanted to make some more traditional built-in units. I also considered that I would be able to produce the desired effect more cheaply... providing, of course, that I didn't take the cost of my own labour into account!

### Preparation

The room in question has low, sweeping ceilings and dormers on one side that lend themselves to being 'built-in' (picture 1). I had ordered plenty of 2x2 PAR softwood from one of my local merchants, and was to use this for the studding and shelving inside. Having cleared the room, I stacked the bulk of what I would need in situ and left it for a while to dry off a bit more. My supplier had promised it would be kiln-dried, but I know from my time in the trade that it was probably still not dry enough yet. What I didn't want was too much movement after I had built the units.

If you have done anything like this before, you will have realised that builders are incapable of constructing a square room. Even if they get the studding or block work right, the plasterer will make sure it ain't square! There's not a lot you can do about this, but it's a good idea to check how far out it actually is (picture 2). I was aiming to build in a working surface using a couple of preformed worktops, and I didn't want to find that the base units were angling out too wide at one end. So I checked very carefully for square... as it

happens, I still got it wrong, but don't let that put you off!

The last time I did anything like this, I jointed all the studding with housing joints. I must have had time to spare in those days. This time I decided to butt-joint with screws and glue; once the whole lot was up and fixed in place, it wasn't going anywhere.

I also decided to fix the bottom, outer studding piece straight on to the top of the carpet. Yes, I can hear those anguished cries of 'you can't do that!' Well, I'm sorry folks, but I've done it before and it works! I'm no carpet fitter, therefore I have always found it easier to lay the studding on and cut the carpet after; at least then I get a good fit all round the unit – and as an added bonus, the units are all carpeted.

### Making the studding

It's a simple job to square-cut each piece of studding and fix it in place. Try not to make any one piece too long and force it between the others – if you do this, it will only distort the overall frame structure.

If you don't have a powered saw, I'm afraid you'll have to work up a bit of a sweat (picture 3). Either way, you'll need to

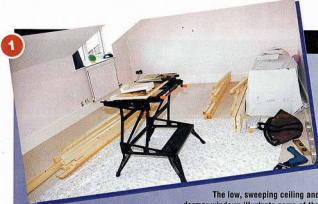
trim away the splelching created by the saw cut-off all round each piece, using a sharp chisel (picture 4).

If, like me, you are working with a sloping ceiling, then some pieces may have to be cut at an angle to fit (picture 5). Take the angle off a spirit level and transfer it to the saw fence. Don't waste the bits you cut off; these can be used in another location, once they're attached to a square piece (picture 6).

Joining the verticals into these angled ceiling pieces may require you to cut some 'bird mouths' (picture 7). These are simple angle cuts that will hold the vertical piece in place. Once more, take the angles off a spirit level and work to the piece already fitted. As with the rest of the studding, the most important thing is to get your joints right; do this, and a single screw in combination with some glue will hold virtually anything in place (picture 8).

The important thing with any studding project is to concentrate initially on trying to picture how the whole lot will go together (pictures 9-10). This includes any plasterboard, worktops, corners, skirtings and doors. Build the sequences up in your own mind. If you find this

## STEP-BY-STEP GUIDE



**1** The low, sweeping ceiling and dormer windows illustrate some of the problems faced when building fitted furniture for unusual rooms



**2** Check how square the room is before you start, if only to give you a guide on how bad it is!



**3** Fancy joints are wasted on something as simple as studding – in this case, it was all cut square by hand and butt-jointed



**4** Even studding shouldn't be left rough – remove the splintering from each end after the cut has been made, to ensure a good fit



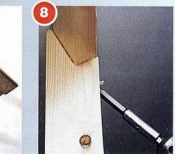
**5** To fit studding to sloping ceilings, some pieces will have to be cut on an angle...



**6** ...leaving offsets which you can make good use of by screwing and gluing them on to other square sections



**7** The vertical studding that fits into the sloped ceiling has to have a 'birds mouth' cut into it to make it fit



**8** If you get the joint right, a bit of glue and one screw will hold anything in place



**9** In this end of the room, the studding is finished. The support for the worktop is set to clear the top of the radiator on the extreme right



**10** Here, the other end is finished; you can see how it fits into the sloping ceiling



**11** While you've still got easy access to the innards of the assembly, fit the shelves...



**12** ...and hangers. These jobs are much harder once the plasterboard is in



**13** Cut your carpet to shape before continuing; here, the gripper rod is going down



**17** Fixing the plasterboard with too many nails means a lot of filling; try using one of the compound glues in a tube in a mastic gun instead



**18** Make sure the nails are knocked well in and flush with the surface; take care not to make dents around the nail – what used to be called 'half-crowns'



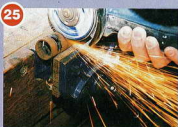
**19** Punch the nails well in, leaving plenty of room for the filler to take. The nails are only holding the boards in place while the glue goes off



**23** Follow the manufacturer's instructions when cutting the worktop; this will probably mean working from the underside. Use a strong, straight board as a guide if you are using a portable circular saw. Cut the mitres first then trim to length, just in case you get it wrong!



**24** Worktop jointers can be made out of an old box spanner and some threaded bar



**25** Take care when cutting metal, and wear all the safety gear. These sparks proved enough to melt a cheap fleece coat!

difficult, draw a full-sized cross-section on a plain sheet of ply or something similar. This will clearly identify any minor alterations you might need to take into consideration as you go along.

Once all the studding has been built, it's time to do some of the odds and ends before attacking the plasterboard. It's easier to fit any shelves and hangers (pictures 11-12), deal with the wiring and of course cut and fix the carpet (picture 13) before the plasterboard is fitted. When cutting the carpet, allow a bit more for a skirting if one is to be fitted. It goes without saying that you must not attempt to relocate any electrical sockets unless you are

know what you are doing, otherwise call an expert (picture 14).

### Fitting the plasterboard

Plasterboard comes with a variety of faces and, normally, in thicknesses of 10 and 13 millimetres. I chose the 10mm bog standard, cheap stuff with two plain faces, one white and one grey. Traditionally, the grey is fixed face outwards if it's to be plastered and the white if not – I had decided that with a bit of careful filling, I would not need to do any plastering.

The first time I cut any plasterboard I used a saw, which is okay if you don't mind creating a lot of dust! Eventually, however, a tradesman told me the easiest

and quickest way to cut it. Having decided where the cut is to be, one face is scored with a knife (picture 15). The board is then bent away from this cut, and the plaster in the paper wafer breaks. A second cut down this crease then completes the job (picture 16).

I wanted some nice, tight joints, so I cut with care. If you are going to plaster over the boards, you needn't be so fussy. Gaps are okay as long as some scrim is fitted over them and they are filled with plaster.

To help me avoid too much filling, I had decided to use one of the spot glue compounds that can be bought in a tube for a mastic gun, applying a series of regular blobs before the

plasterboard was offered up (picture 17). What nails you do use should be of the galvanized variety. Hammer them well in, without putting any 'half crowns' in the fragile board (picture 18), then punch them well below the surface (picture 19). After this, filler should be worked well into any cracks and nail holes and then as much excess as possible cleaned away (picture 20).

Another old-timers' trick I was shown is to fill a short length of any crack and then smooth it off with a wet paintbrush (picture 21). The wetness and the bristles force the filler into the crack and make a much better job of it. Filled nail holes and other flat

14



If you are able to do the wiring, do it now. If in any doubt, get someone qualified to do it for you

15



To cut the plasterboard, first score one side with a sharp craft knife...

16



...then fold the board away from the first cut and run the knife down the crease

20



Work your filler well in to any cracks and holes, before cleaning off as much excess as you can

21



To finish off the filling, a wet paintbrush run down the joint will smooth it out and leave it ready to paint

22



Once the plasterboard is in place and filled, you are ready to start painting or move on to other jobs

26



Drill right through both sides, using a bit big enough to accommodate the threaded bar

27



Working from the underside, drill out the recess holes for the circular collars with a Forstner bit. Stay at least three inches from the edges – any closer and you risk the joint breaking as it is tightened

28



Using a straight router cutter, link up the recess holes to accommodate the threaded bar. Alternatively, a fine saw and chisel can be used for this job

surfaces should be sanded off with a sanding block. Be careful you don't sand through the outer paper, like I did a couple of times!

By this stage, you'll have made a significant difference to the appearance of the room (picture 22). As you'll have worked out, this isn't a job that falls within the definition of fine furniture. But it's still a fairly big undertaking – and it's the skills and knowledge you've gained from pursuing your woodworking hobby that mean that you can tackle projects like this with confidence.

### Preparing the worktops

Cutting the worktops for the desk area was fun! If you use a

powered circular saw, you need to get work from the underside to avoid chipping out the top surface (picture 23). Even though I took great care, I still managed to get a small chip right in the front corner of one of the mitres – later, I had to blend some enamel paint to colour it in.

I have to admit that I did not get the worktop to fit as well as I could have. I ended up with a large gap down the back at one point, and this had to be filled. Fortunately (for me and my reputation), the pin board covers most of my embarrassment!

You can buy metal screw joints for worktops that will pull the joint tight up together. Unfortunately, I couldn't find

any when I went looking for them, and I didn't have time to order any; so I made some. An old box spanner, some threaded bar and a set of Forstner bits are essential (picture 24).

Using my angle grinder and a cutting disc, I sliced off some half-inch lengths of tubing from one end of the box spanner (picture 25). These have to be drilled to accommodate the threaded bar (picture 26). The next stage is to pick a Forstner bit that's slightly larger than the diameter of the tube, and drill a series of holes in the underside of the worktop to take them. These need to be about three inches in from the joint each side, opposite in pairs, and about  $\frac{3}{16}$  inch deep (picture 27).

Join them up with some straight trenches, cut with a router or a fine saw and chisel (picture 28). The idea is then to cut the discs in half and thread the bars through with nuts and washers (picture 29). Tightening these jointers up will pull the worktop together and make a nice tidy joint... at least, it will if you've cut it straight in the first place!

### Fitting the worktops

The worktops, which in this case had a beech finish, can be fixed in place from below by screwing up through the studing. I had acquired a couple of plastic cable access points that needed to have some holes cut to accommodate them. These come in a variety of forms, some



**29** The home-made jointer is used as shown here. In this case, the round recess holes have been eased to take a spanner (though this proved not to have been necessary), and some slightly larger nuts have been used as washers to get the clearance required



**30** Cable housing holes can be cut out with a router and straight bit. Three or four cuts will be required to get right through. To get the sides, parallel, use some straight spacers laid against the wall



**31** The plastic frame and cover can be fitted into the housing hole with a little glue



**32** Mitres for the skirting can be cut on a compound mitre saw; note that the material has been painted first



**33** The beech for the doors was cut laboriously from a the remnants of what used to be a good stockpile. Be warned - this took all day, and the workshop ended up in a cloud of dust!



**34** Components for the door frames are grooved to accommodate the beech-faced MDF. For 7mm MDF, use a 6mm straight cutter slightly offset first to the left then the right



**35** The same applies when cutting the mortices. By working from both faces, you centre the cut while also making it that little bit bigger



**36** Tenons can be cut on a pull-over cross-cut saw, using a series of stops. The haunches are cut afterwards to fit the mortice holes



**37** Having chosen the face surface of the MDF, cut each door panel by hand with a tenon saw



**38** The surrounds are clamped in place and screwed on from the back. Don't forget to protect the face surface



**39** If your ceilings are not level, you'll need to make up a cornice. A router table makes it easy to apply a moulding



**40** The cornice is screwed on through the face, before the holes are plugged, trimmed and sanded

# 9.6-volt cordless drill-drivers

Not an everyday woodworking tool, but an item every woodworker is bound to need, a compact cordless drill-driver makes easy work of many day-to-day joinery tasks. Jeff Loader puts four of the top contenders through their paces



## TOOLS ON TEST

DeWalt DW 926	£145
Fein ABS 9.6-2 EU	£210.33
Makita 6226D	£32.01
Metabo BST 9.6	£39.99

Prices are street prices including VAT

A professional handyman chum of mine recently wanted a new cordless drill. For some time, he'd been getting dissatisfied with his old pump-action 'Yankee' screwdriver, and a new-fangled electronic replacement seemed like a good idea. Like me, however, he is rather resistant to change, so he was a little

apprehensive and a tad sceptical about these new wonder tools. Which is why he came to me asking for advice.

What a daunting task, I thought. What's the difference between a NiCd and a NiMH battery? Why are they labelled with odd voltage ratings? What's all this about the battery's memory effect? Well, no sooner had I started explaining how a rechargeable battery contains a series of connected cells, than he told me to stop waffling and just tell him what to buy.

A trip to a local dealer was in order. I suggested that he

choose a fairly powerful model, because I always think it best, if possible, to err on the side of caution and equip yourself with a tool that's got more than enough about it to cope with the task in hand. That was when he admitted that the price he was prepared to pay was about half that of the models we were looking at... after which we settled on one of the better quality DIY models as a substitute for his old Yankee.

Some time later, I was driving a few relatively small screws with my large cordless drill, and it occurred to me that what I was doing was using a

hammer to crack a nut. With heavy, prolonged usage, this practice will become very tiring – which is why frequent users always have a smaller, lightweight model to go with their big stuff. It's these smaller, 9.6-volt cordless drill/drivers that we're looking at this month – if, like many woodworkers, you often find yourself being called on to fit a kitchen or otherwise distract yourself from cabinet making to wallow in the realms of DIY, these are tools you'll struggle to do without. The choice is enormous – we've tested four of the most likely models to attract your attention.



Always a strong all-rounder, DeWalt's DW926 offers a combination of good build quality and impressive performance at a realistic price. Its battery charger looks a little fragile but works as well as the others, while its carry case is especially robust. It sits well in the hand, with good access to its various controls, and changing batteries is a breeze. What's most impressive about this tool, however, is its ability to romp happily through drilling and driving tasks that make a mockery of its light-duty specification.



## Features

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

All four drills come in a carry case with two rechargeable NiCd batteries, a one-hour charger unit, user manuals and a screwdriver bit. Each of these is double-ended, with the exception of the diminutive item provided by Metabo.

In each case, you get features such as reverse drive rotation, a trigger power switch, electronic brake, keyless chuck (Metabo's

is single-handed), two variable speed ranges and a wide choice of torque control settings, from Fein's 12 to Metabo's 20.

What makes Fein stands out here is that its battery can be fitted either to the base of its main handle or the back of its motor housing. This feature will clearly enhance its flexibility in certain drilling/driving situations where access space may be limited.

## User manual

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

None of the manuals supplied with these power tools are exceptionally good or bad. DeWalt's and Makita's are the best, with a good range of illustrations (seven and nine respectively), while most are reasonably clearly written. Metabo's even has a couple of photographs, though it also covers six other models, which counts against it a little.

## Build quality

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

The shiny plastic of Makita's drill casing looks brittle – but this actually turns out to be a fairly well made power tool. None of the others offer any obvious cause for concern, either – DeWalt's build quality seems to match its rugged good looks, and there's little to complain about with Metabo. The unit from Fein has the very clean lines and contours of a



It may be pricey, but that doesn't prevent the Fein ABS 9.6-2EU from being an impressive all-round proposition, with an all-metal carry case that's both exceptionally strong and designed to minimise the danger of injury to users. Battery changing is simple and straightforward, though it would be nice if the user manual bore more of a resemblance to reality, and controls are neat – though the markings on the torque adjuster could be clearer. A real bonus is that its battery can be fitted either at the base of the handle or the back of the body, making it easier to manipulate in awkward situations.



wind tunnel test model, and its general quality of construction inspires much confidence in its potential longevity.

## Controls

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

In general, all four models sport a collection of pretty decent controls. The electronic brake

works very well indeed on each (Metabo's was rather clunky, but appeared okay), and the trigger switches are conveniently sized for one-finger operation. Each has a torque/clutch control ring (to avoid over-tightening, or even shearing the screws being driven), and these are clearly marked with paint – except Fein's, which at times required close inspection. Each model has sliding switches for selecting speed range and direction of rotation.

## Handling

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

DeWalt's drill is very well balanced, with excellent weight distribution, and all-round access to its controls is good. Some of its components tend to have rather severe edges, however, and this can cause the occasional moment of irritation.

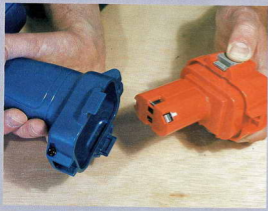
Metabo's single-handed chuck takes a little getting used to, but once you're there it handles well. Its main trigger power switch is particularly comfortable, although I didn't much like using its rotation selection switch – this is rather thin, and not the most convenient in use. In general, though, Metabo's drill is a nice tool to handle.

Once again, Makita's plasticky appearance tends to detract from the fact that it's a





Makita's casing looks a bit plasticky, but the 6226D is a deceptively well made tool that fits very comfortably in the hand and is as easy to use as you could want. Battery changing is quick and simple, and this is probably the best on test for drilling – though it doesn't do so well for screwdriving. No complaints about its sturdy carrying case, either, or the ease with which its controls are accessed and used. Overall, this looks like the bargain buy of the group.



very convenient drill/driver to wield. The contours of its handle combine to provide a particularly nice shape to hold, making it a tool with good overall handling characteristics.

The Fein unit, too, handles better than its appearance might lead you to expect. It doesn't sit with any great stability when set down, and tends to tip forwards with a zip (spade) bit fitted, but its design allows it to be handled comfortably and affords good all-round access to its controls.

### Performance

DeWalt DW 926	★★★★★
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

We put each drill through a variety of what could be termed 'appropriate' boring and driving tasks, and all four responded at least satisfactorily. What sorted them out, however, was their ability to cope with the sort of heftier tasks for which they're



TESTAREA



not really intended – but for which they're bound to be pre-ganged into action from time to time in the hands of the average owner.

As a general rule of thumb, these models are fine for drilling holes of up to 20mm diameter in wood (depending on the type of bit used) and driving up to no.8 size screws with ease. Going beyond this, we tried them with 75mm no.10s and 100mm no.12s, with and without pilot, clearance and

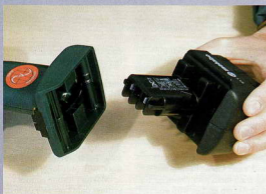
countersinking holes, and boring up to 25mm in wood.

The results proved very interesting. The DeWalt could drive the no.12s straight into wood without any trouble – as could all the others, but only with their torque/clutch mechanisms over-ridden by selecting drill mode – and could almost drill comfortably through wood with over-large bits.

Makita's torque control settings didn't provide enough shove to drive the no.10 or



A rather awkward carrying case doesn't get the Metabo BST 9.6 off to a great start, but although it doesn't live up to the standards of the others in some areas, there's little to criticise all-round. Its strongest suit is its handling, thanks to a vice-free design that makes it easy to hold, manipulate and control in use. Overall performance satisfies the demands you'd expect from a 9.6-volt tool, but unlike the others it's less happy when pushed beyond its specified limits.



## SPECIFICATIONS

Model	Weight (kg)	Battery cap (Ah)	Charging time	Speeds (RPM)	Street price inc VAT
DeWalt DW926K2	1.5	1.3	1	0-300, 0-1100	£145
Fein ABS 9.6-2EU	1.7	1.3	1	0-300, 0-1100	£210.33
Makita 6226D	1.4	1.3	1	0-350, 0-1100	£92.01
Metabo BST 9.6	1.5	1.4	1	0-350, 0-1100	£99.99

no.12 screws straight into wood, although it only just fell short with the former. It did an excellent job of boring through wood, however, and was probably the best on test for drilling purposes.

The Fein unit, on the other hand, had the opposite attributes, with much better screwdriving than drilling. It could just drive the no.12 screws into wood when set for maximum torque.

Metabo's drill really seemed to labour with the larger sizes, but as I've already said, it was in keeping with the rest of the group when it came to appropriate use. So its score of three stars (which is a good score anyway) should not be judged harshly. You could indeed argue that a tool which refuses to be bullied into doing jobs for which it's not intended (and which are therefore by definition dangerous) is doing you a favour by not letting you put it and yourself at risk.

## Bit changing

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

There's very little to make any of the four tools stand out here. Metabo's single-handed chuck is the only unusual feature, but I cannot honestly say that I found bit changing much easier with it.

This tool, however, like all the others, gives you absolutely nothing to complain about – an impressive area all round.

## Battery charging and changing

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

The four battery chargers look very different to each other, but each does its job – charging batteries, in approximately one hour – without any problems. DeWalt's seems to be constructed mainly from very lightweight, delicate-looking plastic, but I liked Fein's – not least because it looks like something out of an old-fashioned train set!

Removing and replacing the batteries themselves is easiest with the tools from Makita and DeWalt. Metabo's is okay, but not quite so simple, and so is Fein's – at least, once its secret has been mastered.

The trouble here is that its terminals are concealed in a T-joint; the drill itself provides the 'T' part and the battery the housing. According to the manual, the battery can be pulled off once its catch is released, but actually it has to be slid off. A black mark against the manual, but the actual act of changing batteries is fine once you've got over this obstacle.

## Carry case

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

Fein's excellent all-metal carrying case is well finished with orange paint, and has nicely rounded edges that should help keep it from injuring you when you clumsily bash your knee against it (and you will). In addition to this, good strong toggle clasps and black polystyrene interior compartments go together to minimise the danger of damage to its contents.

DeWalt's is constructed from tough plastic and has a comfortable fold-away handle and two metal toggle clasps for securing its lid. Its interior is compartmentalised, and everything fits without too much trouble. This is another case that should stand up to a fair amount of use and abuse.

Makita and Metabo provide cases made from blow-moulded plastic. The former is of better quality, with two strong plastic hinges and two sliding clasps to secure the lid. Metabo's case, on the other hand, has two somewhat bizarre red plastic side catches to secure its lid, and these tend to protrude rather irritatingly; in addition, its thin plastic strip hinge is, like the rest of the case, of only fair quality.

## Safety

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

Each of the four drills has a safety catch, operated by positioning the rotation selector to its central/neutral position, that locks off the power to avoid accidental start-up. This fundamental safety feature is complemented all-round by a level of design that means each tool is suitably safe to handle and use, and there's nothing here to present any obvious hazards so long as normal safety precautions are followed.

## TWVERDICT

DeWalt DW 926	★★★★☆
Fein ABS 9.6-2 EU	★★★★☆
Makita 6226D	★★★★☆
Metabo BST 9.6	★★★★☆

Praise is due all round for a quartet of cordless drill/drivers offering a level of quality and performance with which users in the market for a tool of this sort should be happy. We can't make definitive comments about their likely longevity, but there's nothing here to suggest you have anything to fear, whichever you go for.

In performance terms, each model does what it is designed to do, and does it well. The DeWalt and Fein models do go just a touch further in the capability stakes, but there are no bad tools on test this month.

For frequent, regular small drilling and screwdriving tasks, any of these models will fit the bill nicely. They would most certainly complement a larger drilling tool in your kit box, and should prove less tiring to use for the kind of work at which they excel ■

## AT A GLANCE

	DeWalt	Fein	Makita	Metabo
Features	★★★★☆	★★★★☆	★★★★☆	★★★★☆
User manual	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Build quality	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Controls	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Handling	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Performance	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Bit Changing	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Battery charging/changing	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Carry case	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Safety	★★★★☆	★★★★☆	★★★★☆	★★★★☆

## INFO

DeWalt  
Tel: 01242 545345  
Fein  
0121 789 7844  
Makita  
Tel: 01908 211678  
Metabo  
Tel: 023 8073 2000

## Axminster Deluxe Bench



The heart of our long-term workshop is clearly going to be the bench. And in the Axminster Deluxe, we've got one of the higher quality units for woodworkers who prefer to buy off-the-peg than build one of their own.

Despite coming in flat-pack kit form, these benches are assembled in the warehouse by Axminster and delivered whole. Problem number one: the *Traditional Woodworking* long-term workshop is very much of the real-life variety, being

located in the 16x16ft spare bedroom of a top-floor flat, and the bench had no intention whatsoever of being manoeuvred up the stairs to get there. Happily, therefore, its top is only held on by a couple of bolts, so a 13mm socket and

some enthusiastic ratchet driving was all it took to knock it back down.

Once sited, the bench has the opportunity to show off its qualities. It's a good looking piece – several visitors to our workshop have remarked that it's almost an item of furniture in itself – whose value as a work centre is considerably enhanced by the storage opportunities it presents. Before long, a variety of chisels, planes, gauges and assorted clutter was being stuffed into its cupboard and drawers.

The latter are, of course, purely functional, the fronts being held on by metalwork rather than dovetails. That's not a gripe, though they could do with sliding a bit more easily, especially the top one which needed a bit of persuasion in the early days. It's now fallen into line and slips in and out as happily as the others – still not what you'd call smooth, but it does the job. As for the cupboard, its doors are a particularly nice fit, and inside there's a thin chipboard shelf that's adjustable through three positions to let you store a variety of tools or whatever else takes your fancy.

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A feature of this bench's design is the gap between its storage unit and workshop, and this is proving handy for stowing tools you know you're going to need again in a couple of minutes' time. But doing this does require a certain amount of discipline, as the workshop overlaps the stowage surface, meaning you have to take a step backwards and crane down to see what you're looking for. The temptation is of course always there just to reach under the workshop and fish around for it, meaning that unless you're absolutely scrupulous about what you put there, you run the risk of grabbing hold of a stray router cutter or well honed edge tool, or otherwise winning yourself a lucky dip in the first aid box.

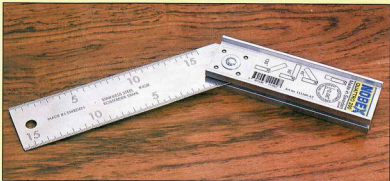
Finally for this month, our initial use of the bench revealed a certain amount of side-to-side rocking. Of course, it's all assembled with bolts, not traditional joints, but breaking the ratchet driver back out and torquing them right up made a big difference. Whether heavy use will make this a regular service job is something we're going to be finding out over the coming months.

## Nobex Quattro 200

The day after Jeff Loader's text for July's report on the Nobex Quattro adjustable mitre square arrived in the *Traditional Woodworking* editorial office, the editor went out and bought one. That's how convincing a case this neat little tool makes for itself (either that, or the editor is a complete mug who believes everything he reads in the press).

And what do you know? Amid a sea of try squares, old and new, we're finding it's the Quattro that tends to get picked up when the need arises. That's not only because it's small, and can be folded down into a simple, easily stored shape when not in use, but also because for square and mitre marking duties, it means you only need one tool where normally there'd be two cluttering the place up.

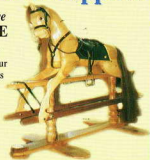
There may be times when only a traditional try square will do, but so far we've found that the Nobex unit means they're few and far between. It certainly put in sterling service while we were setting the fence on our Elektra Beckum planer-thicknesser – even if it managed to drive the editor to the brink of despair by repeatedly telling him that he still hadn't got it quite right. Well, someone has to.



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# Through barefaced housing joint

An extremely useful shelving joint, the through barefaced housing is fairly simple and straightforward to mark and cut. But there are pitfalls which you do need to avoid by getting it right throughout the process – Mark Finney explains how it's done

**W**here a joint is described as 'barefaced,' it has a shoulder on one side only. A barefaced tenon, for instance has the shoulder on one side of the joint, with the tenon itself lining through with the back face. This basic rule also applies to the barefaced housing joint.

In some ways, a barefaced housing joint is simple to mark out and cut. But there are still many pitfalls which can catch out the unwary. They are useful shelf joints and in addition are excellent as corner joints, allowing external cleaning up to take place without affecting the overall fit.

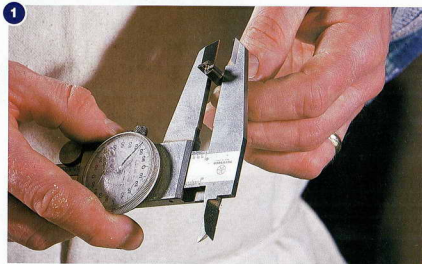
Like all through housing joints, there is a problem with the joint being visible along its front edge. This is taken care of by stopping off the front corner, a technique which will be covered later in this series.

Barefaced housings can be cut either by hand or with an electric router. The trench may also be cut using a radial arm saw, but care must be taken to stop the front and back edges from splashing out.

## Marking out the trench

Start by deciding on the width of the tongue and, if using an electric router, select a straight-flute cutter to match (picture 1). Use a square and knife to mark the top position of the trench on the sides, by working from the face edge (picture 2).

If you're cutting by hand, mark on the width and depth of the trench on both edges too (pictures 3-4) – this is to minimise the risk of accidentally cutting the trench on the wrong side of the line. When cutting with an electric router, the width of the trench does not



1 If an electric router is to be used to cut the trench, decide on the width of cutter to be used



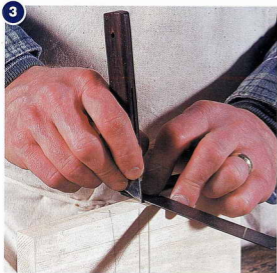
2 The position of each shelf is marked out, together with the width of the trench. This reduces the risk of accidentally cutting the trench on the wrong side of the line

need marking out, as the cutter itself will determine this position. Beginners who intend to use an electric router may benefit from marking out as if they were cutting by hand, however, as the potential for errors will be greatly reduced.

When cutting by hand, use a tenon saw to cut the shoulders of the trench and then chisel out the waste. A router plane can be used to clean out the bottom of the joint. Saw down the waste, following a cutting guide – which should be firmly clamped over the face. This allows for the saw to cut into the waste, as well as protecting the face should the saw slip.

## Using an electric router

When working with an electric router, one method is to use a guide (this may simply be a straight piece of scrap timber)

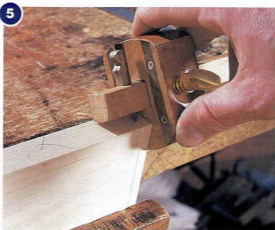


**3** When cutting by hand, drop knife lines down both front and back edges and mark on the depth using a marking gauge. This can be a good idea if you're using a router, too, though in this case it's not strictly necessary

which is clamped into place to 'steer' the machine. Take particular care near edges to avoid splashing out. On important edges, a scrap piece of timber of identical thickness can be used to support the edge and produce a clean cut. Never plunge deeper than half of the width of the shank in a single pass. Trenches are marked out and cut in sets, to mirror each side of a bookcase.

#### Marking out the tongue

The tongue of a barefaced housing joint is created by removing a rebate from one edge of each end. Unlike a through housing, it is the distance between the shoulder lines that is critical, not necessarily the overall length of each shelf. It is very important

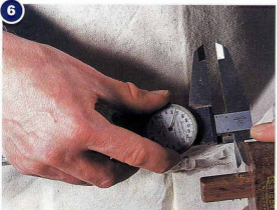


**5** The depth of the tongue can be determined using a cutting gauge. Alternatively, shoulder lines may be marked out using a square and knife

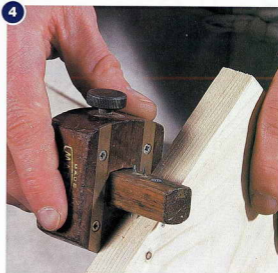
that each shelf is of identical thickness, otherwise there is a great risk of producing tongues of varying width.

Where the length of all the shelves is known to be identical, the depth of the tongue may be marked out using a cutting gauge in the same way as for a through housing joint (picture 5). Alternatively, and rather more commonly, shoulder lines may be marked on using a square and knife. The thickness of the tongue is marked out using a marking gauge, to match the width of the trench (pictures 6-7).

When cutting the tongue by hand, cut down the shoulder using a tenon saw guided by a cutting guide in the same manner as for the trench. The rebate is easily removed using a



**6** The width of the tongue must match the cutter used to cut the trench. It's marked out in the usual fashion



8



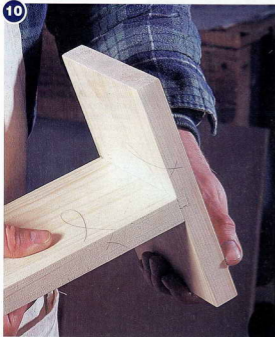
Clamp on a guide to stop the router from slipping, and check that the router will cut exactly down to the line determining the width of the tongue. Where necessary, adjust later with a broad chisel or shoulder plane

9



Cut the trench, using a straight-flute router cutter

10



Test each joint for fit with a dry-run. There's no point starting assembly work if it's too slack, or indeed too tight

broad chisel or shoulder plane.

When doing this with an electric router, much care needs to be taken. Let the router run along the guide, checking that the depth of the cutter matches exactly the marking line (pictures 8-9). Work carefully and slowly, but avoid any burning. After cutting, check the rebate for visible marking lines and adjust using a shoulder plane. The front edge may also require some cleaning up with a smoother to remove any slight splchelling.

### Gluing

Before gluing the carcass, you should first dry-assemble all joints to check that they fit and are neither too sloppy nor too tight (picture 10). Lay one bookcase side on a flat surface, with the trenches facing uppermost. Apply PVA adhesive to the trenches only, rubbing it well in with a finger. Next, insert the end of each shelf into its respective trench. Lay the second side on a flat surface, wipe glue into the trenches and lay it on top of the upstanding shelves. Work

quickly to avoid glue spillage. Initially, knock the joints together with the heel of your hand. Stand the bookcase upright and clamp it up, wiping off any excess adhesive with a damp cloth. Check for square by measuring the diagonals and adjust as necessary before the glue starts to go off.

The front edge may need cleaning up to remove any areas where slight splchelling out has occurred. Where staining is to take place, it is wise to clean up the joints prior to assembly then sand, stain and seal by part-polishing. Once the joints are assembled, the sealer resists any glue markings, allowing you to wipe off the excess adhesive and carry on with your polishing ■



# Shaking a leg

**C**hairs, like foxes, rabbits and buzzards, have their natural predators. A swift crack on the back of the neck, as it were, and all life is gone. I remember our class at school, which had the unfortunate RE teacher as form mistress, had a regular pile of broken chairs stacked behind the form door. I think they were regarded with some pride at the time but, as carcass followed carcass into the corridor, our own natural predator (the headmaster) visited us one lunch time. He towered above us, twitching his black gown and knotting his bushy eyebrows, and terrified us for about twenty minutes, threatening us with a swift crack or two, until the deadly menace to the remaining chair population in the form room was averted.

But if a bunch of 13-year-old boys can wreak chair havoc, so can a couple of 90-year-olds. For the last year or so, I have been watching my parents grow infirm. Ten years ago, my father fell off his workshop roof on to some cobbles and was told by his bemused doctor to take a couple of aspirin and finish putting the tiles back. Now, suddenly he is old and tired, and the spring has left him. It is a struggle for him to get up, and to sit down is to hover and drop. It is death to a good chair.

I have been watching the old Windsor chair he uses in the kitchen. My mother hogged it while she was alive, and it was even a little shaky then. The arms were loose, and it used to creak when she lowered herself into it. My brother-in-law fitted rubber pads to the feet and epoxied up the loose joints, and for a while the chair prospered.

But the remorseless destruction of the chair has continued, its joints loosened a little more by each crashing paternal descent. Every day, it inched further towards catastrophic collapse; finally, brother-in-law felt moved to earnestly notified me that it was becoming dangerously unstable.

I collected the chair and took it home to clean and reglue the joints. Only one back leg was seriously gone; but that was through the agency of another, much smaller natural predator. There had been my father banging and crashing about, publicly executing a family treasure – while all the time, a more discreet enemy had been chewing its way through its most vital organ. I whipped out the old leg, prised out the remaining dusty shards from the seat hole and turned a new one to fit.

I thought it might be a little interesting to describe the colouring process. Although this inheritance is doomed to return to the torture chamber, where its

By George Buchanan

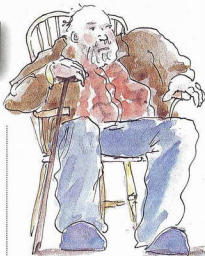
slow destruction will be assured, I thought it worth while doing a proper job with what few materials I had in my workshop. It was quite an interesting little episode.

First, it is worth noting the overall appearance of the chair, in terms of colour and tone. Colour I should think needs few explanations. The chair is brown. A greeny brown in places, almost yellow in others (off-ochre might be a better description) and quite a rich reddy brown in other parts. You can see the variety of colour, and although at one time there might have been a uniform colour, its current state is due to the lightening effects of sunlight, the wearing effects of backs and bottoms and the natural resistance of some of the wood in the first instance to absorb much pigment.

We will settle for a range of browns, from raw sienna to burnt umber, with a touch of red. At its brightest, there is yellow ochre to be seen. All these colours can be obtained in powder form from Fiddes and Son, Cardiff.

The variety of tones are remarkable, and this has been noted already. It is the lightness and the darkness of the wood. Some parts are almost a natural unfinished ash, others much darker. The chair leg in question is quite dark, ranging from a rich brick darkness in the middle area to pale at the ends. Note, then, that I was not trying to match the colour or the tone to the entire chair, but to only a small part of it. It is its variety of tone and colour that gives this chair its beauty.

Colouring does not take long, even when you are starting with brilliant white ash. The first thing to do is to tackle the



issue of tone. The tone has to be knocked back to almost match the prevailing tone of the original. It is a waste of time working on the exact colour match until the tone is right.

To assist in the take-up of the stain, I first subjected the leg to some rapid ageing. A broken brick leaves a myriad marks when bashed against the smooth wood, and the little indents take up the stain to give a mottled effect.

The vandalism over, I emptied my tins onto the new leg. They were thin, quick-drying and probably environmentally unfriendly... but very useful for cleaning tools smeared with wet epoxy!

Lowering the tone. The first coat was English Light Oak. This is not a bad stain to start with in any circumstances. It is so pale, it will warm you of short grain and so on without spoiling the job at the first strike. Hard on its heels was a mixture of Burmese Teak and American Walnut. The chair leg, and my fingers, were getting darker by the minute – but whereas my fingers absorb the stain evenly, the white of the ash was still showing through.

A dose of Peruvian Mahogany followed, and then some more American Walnut, which made the tone a little too dark. I wiped it off with rough wire wool, and left it to dry.

A quick paint with some yellow ochre dry colours, water and a blob of PVA introduced a yellow tinge to the leg. A richer brown in the middle area was painted on using Burnt Umber as the pigment and then dabbed off with a dry rag. Once dry, the thin paint was wiped down with fine wire wool and the leg was restored to its place in the beech seat plank. Shellac and wax completed the task.

The chair is back home now and only I creak and groan when I see father levering himself up and sitting back down with a bang. Longevity runs in our family. But I think even the chair has a chance. ■

