Furniture &cabinetmaking

DESIGN • INSPIRATION • PROJECTS • TECHNIQUES • TESTS • NEWS • EXCELLENCE

Recipe for success

Hide glue and hammer veneering

On test
Neat hinge II

Masterclass
Piston fit drawers

Finishing tech
Turning the table on shellac

DESIGN THEORY
How to make chairs from the ground up

One Workcentre Many Tasks

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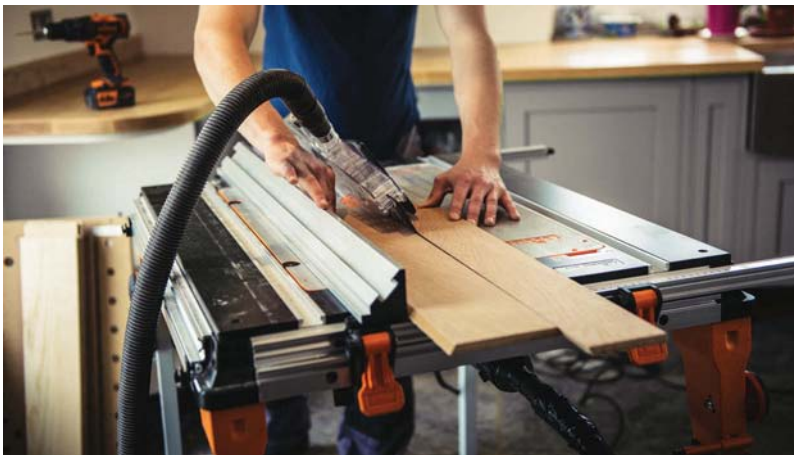

Contractor Saw Module Powerful & accurate table saw with full length fence

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Workcentre

Clamping Table Module

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Optional Modules

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Router Table Module

TWX7 CS001
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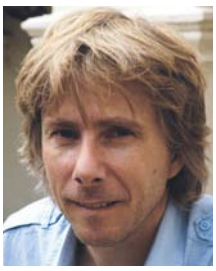

Welcome to...

...Enlightenment

PHOTOGRAPH COURTESY OF GMC/DEREK JONES

A barn-find beading plane and poplar, what's not to like?

Thrifty doesn't come close to describing the feeling you get when you find a good 'user' at the bottom of a pile of old tools. For the price of a pint I picked up a fine beading plane for a future project, with the intention of making something useful only using a set of rescued tools.

Sticking to that theme, if the expense of the past couple of months has put a strain on the workshop budget, then we have an article or two that will help you claw a little back. The first comes by way of regular reader Ray Smith, who presented us with a golden nugget of information that we couldn't resist putting to the test; harvesting shellac from old 78s. This won't make easy listening for music fans, so if that sounds like you, best look away now. If you're made of sterner stuff, see page 54. In the search for a suitable 78 to try out I turned to eBay and came up with a recording by the Everly Brothers. I wasn't aware I had feelings for the duo's work, but when it arrived in the post wrapped with all the love and care that only a serious aficionado of this format could muster, I felt more than a pang of guilt about its fate. As it happens my youngest daughter has just discovered 'vinyl', so we've invested in a low-spec record player. The disc was loaded and the volume cranked up high. What rattled from the tincan speaker was best described as sounding like a couple of highly strung bees trapped in a jam jar with only a kazoo for company. It didn't matter for some reason. The soundtrack to my youth was an eclectic mix to say the least. What was once just white noise to me suddenly had meaning. Phil and Don were spared. Rikki Henderson, however, didn't fare so well.

The second article that falls into the category of enlightenment is our main project – page 29. Piston fit drawers and trays are just as much a sign of good work as a neat row of exquisitely cut dovetails. Combine the two and you have something rather special. Needless to say the skills required to achieve these comes down to technique and a fair amount of practice. So to set you on the right path we have asked David Barron to share a few tips and tricks on how to create the perfect fitted drawer.

Chairs are often seen as the Holy Grail of furniture design and so to help you in your quest, we've enlisted the services of Will Neptune to dispel that myth and in a belated follow up to our gallery spread of Waters & Acland's 14-12 chair in *F&C* 238, we'll also be talking to the company's head maker, Tim Smith. So by the end of it, if you're not sitting comfortably, then at least you'll have the necessary wherewithal to do something about it.

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Furniture &cabinetmaking

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Woodworking is an inherently dangerous pursuit. Readers should not attempt the procedures described herein without seeking training and information on the safe use of tools and machines, and all readers should observe current safety legislation.

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Issue 240 January 2016

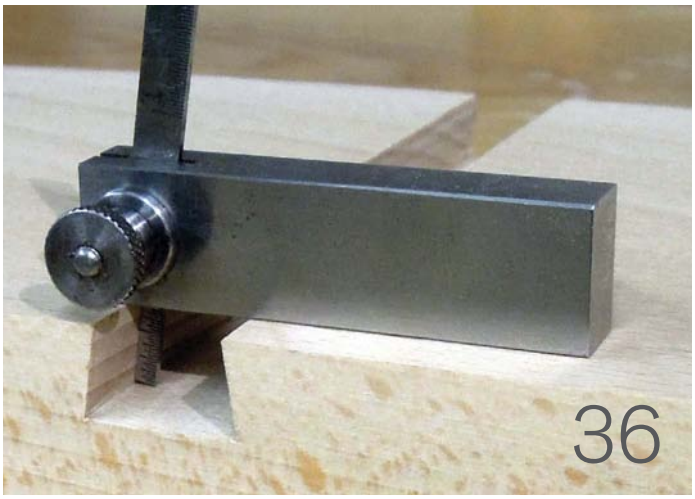
Restoration project part 3 – see page 63.
Front cover image by by Derek Jones/GMC Publications

Design & Inspiration

Don't forget there are plenty more articles and discussions to be found on the Woodworkers Institute ***www.woodworkersinstitute.com***

Projects & Techniques

Your *F&C*



Contribute to these pages by telling us about matters of interest to furniture makers. Call Derek Jones on 01273 402 843 or email derekj@thegmcgroup.com. Please accompany information with relevant, hi-res images wherever it is possible

News&Events

N.E.J. Stevenson in seamless display

PHOTOS COURTESY OF N.E.J. STEVENSON

It's been a busy few months for N.E.J. Stevenson with the completion of a number of prestigious projects and the commissioning of other exciting developments.

One of its most recent projects is the luxurious marketing suite at Lillie Square in London's Earls Court, which recently launched to the public. The Warwickshire-based company, which has a Royal warrant, was commissioned to create exquisite joinery in the gallery area, with the carcass and doors made in dark stained oak veneer with a lacquer finish.

"We were delighted to be asked to help with the marketing suite furniture," said the company's MD Neil Stevenson, "and very much look forward to working on the project as it progresses." As well as the gallery area, the commission features a 14metre, seamless run of bespoke cabinets, panelling and jib doors, with an elegant matching table in the marketing suite which displays a scale model of the property development.

Lillie Square is one of the most high-profile residential developments in the capital, transforming a large car park on Seagrave Road into more than 800 high-end apartments, many with panoramic views of the city.

DETAILS:
Contact: N.E.J. Stevenson
Web: www.nejstevenson.co.uk

Burbidge celebrates after winning key MGM award

Kitchen designer and maker Burbidge has been awarded the prestigious Manufacturing Guild Mark (MGM).

The company, which has been developing kitchens for more than 40 years, received the award after the MGM committee praised its "commitment to producing innovative kitchen designs, all while retaining exceptional craftsmanship, quality and attention to detail".

Ben Burbidge, MD of the Midlands-based firm, said: "We are proud to receive this highly-coveted accolade. We pride ourselves on always going the extra mile to ensure the highest possible level of manufacturing excellence. From scouring the globe to source the most luxurious timbers through to continuing to invest in the latest technologies, we take great effort in ensuring we deliver beautiful and innovative premium kitchens."

Founded in 1867, Burbidge started out specialising in wooden sports equipment before moving into the kitchen design sector 42 years ago, and most of its product is built on site at its Coventry factories.

Presenting the award to the firm's MD, chairman of the MGM committee, Paul von der Heyde, said: "Burbidge is a prime example of a British manufacturing business which continues to innovate, inspire and retain the very highest standards."

DETAILS:
Contact: Burbidge
Web: www.burbidge.co.uk

Architect urges small solutions as demand for housing grows

Innovative ideas for small spaces are essential if we are to meet the housing demands of an ever-increasing UK population, says architect Nicholas Kirk (right), responding to statements by leading figures in the industry that around 200,000 new homes need to be built each year.

"The real skill for architects going forward, particularly in the residential sector," said Nicholas, "is to think small. Multi-functional living spaces will become the mainstay of the future home. The challenge will be to create genuinely comfortable living spaces on smaller plot sizes, without compromising on the utilitarian value of the home."

This is no easy task as the plot shapes available, particularly in our inner cities, become more awkward and challenging. But Kirk, who over the past decade has designed sonic sheds, urban fantasy gardens, floating buildings and a pop-up restaurant designed to look like an aircraft cabin, insists it is possible.

"It's all about exploring the microscopic details that make a place unique," he revealed. "Instead of seeing plot idiosyncrasies as a challenge to the build, we need to celebrate them as opportunities for expression."

The rising tide of box-like city dwellings troubles Kirk. "It's a shame that constraints on space or budget become an excuse for a lack of creativity," he said, "rich or poor, everyone is entitled to good design. Let's not let it become the sole preserve of the elite."

Kirk's firm was recently commissioned to build a spacious home on a plot just 4.8metres wide. The project, which featured as an inspirational home on the BBC's *The House That £100k Built*, is nestled between two period properties in Islington, north London.

Other residential commissions have included a new rear extension (pictured below) to a period property in east London where the kitchen and furniture, fabricated by Constructive & Co, integrated clever storage and cabinetry to define different spaces in the extension.

DETAILS:
Contact: Nicholas Kirk Architects
Web: www.nicholaskirkarchitects.co.uk

PHOTOS COURTESY OF NICHOLAS KIRK ARCHITECTS

Sofa company expansion proves suite for local jobs

The Chesterfield Company has given Blackburn an employment boost after opening a second factory in the town.

The high-end leather sofa specialist has employed 17 new members of staff. This includes a production manager and co-ordinator, sales advisors, accountants, floor manager, frame makers, sewers, wood machinist, frame assembler and an upholsterer.

The new building reaches almost 2,000 square metres and has further room for expansion. "The building offers a lot of factory floor space," said Dave Foster, director of The Chesterfield Company. "It will enable us to both store and manufacture products. As we now have room for lots of different production areas, this will ensure we can consistently make our products to the highest of standards, as quickly as possible. There is plenty of room in the building to accommodate our immediate growth plans and to allow further expansion in the foreseeable future."

The Chesterfield Company hopes to increase its number of handmade sofas, beanbags, sofa beds, footstools, armchairs, and much more and to bolster its existing team with more local recruits in the process. Many of its current team live within a few miles of the factory.

DETAILS:
Contact: The Chesterfield Company
Web: www.thechesterfieldcompany.com

TIMBER TRADE NEWS
Waterlogging

Waterlogging damage to trees occurs when water accumulates for long periods around the roots, cutting off their supply of oxygen and causing them to cease respiring and eventually die.

Waterlogging occurs rarely on well-drained soil but is more common on heavy clays or where drainage is impeded. Symptoms include red or purple tinges to the leaves, corky outgrowths on the underside of leaves, stunting and dieback of shoots. Roots will be dead, stained blue-black and sometimes smell unpleasant.

In trees susceptible to *Phytophthora* root disease, such as alder, it can be difficult to decide what is the cause of dead roots unless facilities are available to reveal the presence of the pathogen. The diagnosis is also complicated in winter because road salt can cause damage even when the roots are not waterlogged. Conifers are generally more susceptible than broadleaved trees. Holly and larch are resistant, magnolia, hickory and tulip tree are susceptible.

Control is achieved by attention to drainage, and not planting vulnerable trees on heavy clay soils or those prone to flooding. The main effect on timber quality is the same as other factors that reduce vigour and cause growth rings to be closer together.

Chris Prior

PHOTOGRAPHS COURTESY OF WIKIPEDIA COMMONS

Antique Dutch windmills used to pump water into the embanked river to prevent waterlogging of the lowlands behind them

Niall McLaughlin Architects secures prestigious accolade

Niall McLaughlin Architects has won the Arnold Laver Gold Award and Private Winner 2015 at this year's Wood Awards.

Made from European oak from France and Douglas fir from Southern England the hut sits in Hampshire, England, providing shelter for some of the best fly-fishing in the UK.

The firm's client wanted a place to store boats and fishing equipment that would be secure but also function as a meeting place for anglers. The structure can be fully opened up, maximising the views of the lake.

The building is supported on 18 pad foundations formed from precast concrete drainage rings placed on the manmade lake bed at 1.8m centres and filled with concrete. Nine galvanised steel goalpost frames are fixed to the pad foundations supporting the timber floor structure and glulam oak superstructure.

The roof is made of softwood rafters, clad internally with oak boards and externally with profiled aluminium sheeting on larch battens. The building's structure organises its plan into 10 bays of 1.8m. A pair of bays at each end form open decks, partly covered by the overhanging pitched roof.

DETAILS:
Contact: The Wood Awards
Web: www.woodawards.com

PHOTOS COURTESY OF WOODAWARDS.COM

Niall McLaughlin Architects' The Fishing Hut

Aram Gallery goes back to the future

Pinch

PHOTOS COURTESY OF THE ARAM GALLERY

Studio Weave

The aim of the eighth Prototypes & Experiments exhibition at The Aram Gallery is to "foster an appreciation of how designers really think and work," says its curator Riya Patel, "and the bulk of usually unseen work that goes into a project."

The show will feature models, samples, tests and iterations picked fresh from the studio shelves of architects and designers and cover a broad range of disciplines. Each exhibitor will present a finished project as well as the development work involved, while an accompanying commentary will explain the purpose of each exercise, its meaning to the final work and how it assisted the designer with making decisions along the way.

Exhibitors include Aberrant Architecture, Pinch, Plaid, Studio Vit, Studio Weave, Dean Brown and Tomoko Azumi among others.

DETAILS:
When: 30 November, 2015-16 January 2016
Where: The Aram Gallery, 110 Drury Lane, London, WC2B 5SG
Web: www.thearamgallery.org

Sussex museum unwraps Christmases past

Traditionally decorated houses reflect the spirit of Christmas throughout the ages – from Medieval to Edwardian times. Period music, historical demonstrations, traditional food and drink, plus crackling open log fires will bring history to life so visitors can discover how our rural ancestors celebrated Christmas.

DETAILS:
When: 26-28 December, 2015
Where: Weald & Downland Open Air Museum, Singleton, Chichester, West Sussex, PO18 0EU
Web: www.wealddown.co.uk

Woodworking shows & events 2016

TOP DRAWER
HOME | GIFT | FASHION | CRAFT

Top Drawer
When: 17–19 January
Where: Olympia, London
Web: www.topdrawer.co.uk

The AIS Furniture Show
When: 24–25 January
Where: Cranmore Park Exhibition Centre, Cranmore Avenue, Shirley, Solihull, West Midlands
Web: www.thefurniture-show.co.uk

Spring Fair
When: 7–11 February
Where: NEC Birmingham
Web: www.springfair.com

Boulle and wood marquetry
When: 28 February – 1 March
Where: Unit 7, The Foundry Business Park, Seager Road, Faversham, Kent
Web: www.marquetrycentre.com

The Midlands Woodworking and Power Tool Show
When: 18–19 March
Where: Newark Showground, Nottingham
Web: www.nelton.co.uk

Yandles Woodworking Show
When: 8–9 April
Where: Hurst Works, Hurst, Martock, Somerset
Web: www.yandles.co.uk

PULSE
is changing.

PULSE
When: 15–17 May
Where: Olympia, Hammersmith Road, London, W14 8UX
Web: www.pulse-london.com

MINERVA

Minerva Spring Exhibition
When: 17–18 May
Where: NAEC, Stoneleigh Park, Warwickshire
Web: www.minervafurnishers.co.uk

Spring Fair

CLERKENWELL DESIGN WEEK

Clerkenwell Design Week
When: 24–26 May
Where: Clerkenwell, London
Web: www.clerkenwelldesignweek.com

West's Woodfair
When: 25–26 June
Where: East Dean, Nr Chichester, West Sussex
Web: www.westswoodfair.co.uk

London Design Festival

The Manchester Furniture Show
When: 17–19 July
Where: Manchester Central Convention, Windmill Street, Manchester, M2 3GX
Web: www.manchesterfurnitureshow.com

Home & Gift
When: 17–20 July
Where: Harrogate International Centre, Harrogate
Web: www.homeandgift.co.uk

AUTUMNFAIR
4-7 SEPTEMBER 2016
NEC BIRMINGHAM UK

Autumn Fair
When: 4–7 September
Where: NEC Birmingham
Web: www.autumnfair.com

100% Design
When: 21–24 September
Where: Olympia, Hammersmith Road, London, W14 8UX
Web: www.100percentdesign.co.uk

The London Design Festival
When: 17–25 September
Where: Various London sites
Web: www.londondesignfestival.com

W16 Joinery & Furniture Manufacturing Show
When: 2–5 October
Where: NEC Birmingham
Web: www.wexhibition.co.uk

Wizardry in Wood
When: 12–15 October
Where: Carpenters' Hall, Throgmorton Avenue, London, EC2N 2JJ
Web: www.turnersco.com

Muirhead unveils student design competition

At the Young Furniture Makers exhibition in October Colin Wade, Managing Director of leather manufacturer Andrew Muirhead & Son, launched the Muirhead Leather Design Competition for students.

The winning student will be given the unique opportunity to gain valuable experience within real furniture businesses, receiving a three-week work placement at Muirhead in Glasgow; an additional work's experience at a furniture company; plus a £1,000 cash prize. There will be up to two runners-up prizes of £500.

Part of the Scottish Leather Group, a privately owned company with five specialist subsidiaries aiming to achieve the highest standards of quality and innovation, Andrew Muirhead & Son has been at the forefront of leather manufacturing since 1840. Over the past 175 years, Muirhead has supplied leather for many high-profile projects including the Houses of Parliament, Burj Al Arab and the Boeing 307 Stratoliner.

Muirhead®
HIGH PERFORMANCE LEATHER

Young Furniture Makers
furnishing the future

Today it is the UK's only upholstery leather manufacturer and the market leader in the global aviation industry. Its high-performance, low-carbon leather is supplied to airline, coach, rail, marine, automotive aftermarket and furniture industries across 60 countries.

Muirhead has developed the ground-breaking capability to print high-resolution digital images onto leather and is inviting UK furnishing students to submit designs for an upholstered piece of furniture using this technology while also being sympathetic to the quality and appeal of leather.

"There is such a wealth of young talent out there in our colleges and universities," said Wade. "We're excited about seeing which students can create the most innovative and potentially iconic use of printed design on leather. We're keen to see them push the boundaries of what this exciting new technology – and leather – can do."

The competition is open until 31 January 2016. Entries will be judged early in 2016 by industry experts including David Dewing, Master of The Furniture Makers' Company; Colin Wade, Managing Director of Muirhead Leather; Charles Vernon, Chairman of the Training & Education Committee; Rupert Senior, Chairman of the Guild Mark Committee; and Senior Design Academic Trevor Keeble. The winner will be announced during Clerkenwell Design Week in London, in May 2016.

Discover Axminster's education expo wins top marks

Renowned designer Robert Ingham drew the crowds at the networking event

Wally Wilson of Lee Valley explains the finer points of a Veritas plane

PHOTOGRAPHS COURTESY OF AXMINSTER

Billed as the first education expo of its kind from Axminster Tools & Machinery, the company's Business Services Team recently organised its first Discover Axminster networking event at Bridgwater College.

The event, aimed at lecturers, technicians, students and business contacts, attracted representatives from a number of colleges including Exeter, Bath & City, Axe Valley, Plymouth, South Gloucester & Stroud, Weston and Bridgwater plus apprentices from Pendennis Shipyard in Falmouth.

Steve Hopper, Programme Manager for Furniture at Bridgwater College, said: "We have a great range of demonstrators here using the usual high-quality kit that Axminster supplies. The level of detail of information from the exhibitors is excellent and we are particularly pleased to welcome Robert Ingham who is such a well-respected figure in the furniture-making world."

The day unfolded with a series of talks and demonstrations from well known names such as Bosch, Festool, 3M, Numatic and Wally Wilson from Canadian company Lee Valley who focused on the Veritas brand. Visitors were able to get hands-on experience with many of the tools and equipment being demonstrated. Robert Ingham, revered designer and maker of furniture and boxes, drew quite a crowd throughout the day with students and apprentices gathering round as Robert showed samples of his craftsmanship and explained certain techniques.

The Axminster Business Services team will be organising more events of this type at other colleges in the future.

DETAILS:
Contact: Axminster Tools & Machinery
Email: abst@axminster.co.uk

The Chippendale School

Students can make pieces to their own design

PHOTOGRAPHS COURTESY OF CHIPPENDALE SCHOOL

The school welcomes students from across the world

The Chippendale School, established in 1985, is set in beautiful rolling countryside just half an hour's drive from Edinburgh. Students of all ages attend the school from all over the world and spend nine months learning the enduring skills of designing and making bespoke furniture as well as the craft of furniture restoration.

The school's students make furniture pieces to their own designs – with a team of full-time tutors and visiting experts enabling them to achieve their ambitions. The school also employs a marketing and public relations professional who lectures on the essential elements of how to successfully set up, market and advertise a new business – and who is also available to support graduates through the vital first weeks of running their own woodworking business. The school is a non-profit making organisation, with the cost of all tools and materials being covered by the fees.

The Chippendale School also runs short, five-day 'Experience Courses' giving an opportunity to anyone who would like to try their hand at woodworking or to give the school a try before committing to the full-time course.

DETAILS:
Contact: The Chippendale School
Web: www.chippendaleschool.com

A beautiful piece by a Chippendale student, the Astral Table

If you're a member of a collective and would like to raise your profile then submit a story to derekj@thegmcgroup.com

Editor's round-up...

Having trouble sourcing the right tool for the job? Derek Jones sets about identifying the essential tools and equipment on offer this month

All sterling prices include VAT, correct at time of going to press

PHOTOGRAPHS BY GMC/DEREK JONES

Nothing beats the satisfaction of making your own tools and jigs, however simple they are. In fact simplest is normally best as they usually turn out to be working prototypes for a more fully developed version later on. The veneer cutting jig that features in our restoration project this month – see page 63 – is pretty much a direct copy of one that I used a few months ago at Yannick Chastang's studio while attending one of his marquetry classes. If you're seriously considering a low-cost route into high-end veneering I'd get cracking straight away on your own version. The material needn't be fancy as long as it is square and stable and if you can accommodate the scale of work you intend to tackle from offcuts so much the better. For everything else you'll probably need to put your hand in your pocket. For example, the Crown Tools veneer saw I'm using is very much an entry-level tool, but quite adequate if you're just starting out. Compared to Yannick's handmade veneer saw – see insert – it's a little plain but will do the job nicely. Check out the likes of Gramercy and Dictum for alternatives but be prepared to dig a little deeper for these.

Also featured in the Round-up this month – and at the other end of the spectrum – is the Dowelmax router lift. If you're familiar with the Dowelmax drilling jig, you'll know that their products are well designed and about as crisp and sharp as any premium tool out there. Although a router lift may seem like a bit of a gear change we've got high hopes. Anything that makes changing cutters in a router table easier already has my seal of approval. There's one on the water (or in the air) as we speak so watch this space to find out how we get on with it.

The other items that caught my eye quite unexpectedly this month were the little quick-release clamps featured in the mini-test over the page. I found them at my local B&Q. Everybody says you can never have too many clamps but what they actually mean is that you can never have too many of the right-sized clamps. My theory on this is that if you suddenly find yourself short of clamps it probably means something went wrong in the planning stage. Design and preparation should take into account all the equipment you have at your disposal. So on that note let's see if we can help you add a few more items to your next 'shop shopping list.

Quangsheng Luban No.043 plough plane

Investment cast stainless steel replaces cast iron in this redesign of the classic No.043 plough plane.

The essence of the tool as a simple, fast, quiet way to create grooves for drawer bottoms, back panels, windowsills, picture frames, etc is retained. But with better materials and a bit of lateral thinking, a few notable improvements have been made.

The greater strength of steel and a clever rethink of the rear fence rod hole has enabled Quangsheng to replace the knuckle grater with a larger, more comfortable, open bow handle that you can really tuck your fingers into.

The Quangsheng 043 comes complete with a set of eight metric and imperial blades. Most sheet material these days is metric, but the imperial cutters give you the option to choose a sliding fit to allow for expansion and contraction.

The other significant change is the addition of a clamping attachment so that a saw blade can be connected to the skate. This allows the plane to be used for cutting arrow-straight starter kerfs for rip sawing boards to width and for cutting accurate stringing from the corner of a blank for inlaid work.

Rather than expecting you to make your own, a removable rosewood sub-fence has been included with the tool, the larger contact area improves stability and accuracy. The fence is relieved so that you can still use a portion of a wide cutter to form a rebate on the edge of a board.

Like the original it also features the ultimate in state of the art airborne dust management – not producing any in the first place! Supplied complete with ⅛, ¼, ⅜, ½ inch, 3mm, 6mm, 9mm and 12mm cutters.

Dowelmax router lift

Dowelmax Ltd, the global leader in precision multiple dowel systems for fine furniture construction, recently announced the release of the new Dowelmax router lift, available for order now from the manufacturer.

As engineers and furniture design and construction enthusiasts, the Dowelmax team has combined the two pursuits to design an innovative, convenient and functional method of making adjustments to a table mounted router, without the inconvenience of having to work from below the table.

A preliminary version of the new lift was used successfully for many years in the Dowelmax workshop. Once an investigation of commercially available products determined that a comprehensive and effective solution to the problem was not available, the company proceeded to develop its workshop design into the new Dowelmax lift. *Furniture & Cabinetmaking* is set to take delivery of one soon so we'll let you know how we get on in due course.

Craft Pro planer blades

From Trend, the solid-carbide Craft Pro planer blades are manufactured from high-grade carbide and are supplied in pairs. The blades are precision ground with two cutting edges, and for an extended life, the blades are reversible. Before use, be sure to unplug your machines to fit the blades or to undertake any maintenance – refer to the manufacturer's instructions when making adjustments. The blades measure 80.5 x 5.9 x 1.2mm and they must be securely clamped so that they cannot work loose in service.

Chopstick Master

Bridge City Tool Works has developed the Chopstick Master, an innovative product that offers a new way to create an ancient tool. The product is easy to use and designed for non-woodworkers as well as the DIY market and all those who appreciate fine craftsmanship.

"Through extensive testing and market research, we've developed a product that contains everything you need to make your own gallery quality chopsticks," says designer and CEO John Economaki. "Anyone over the age of eight, regardless of experience, can join in the fun and make their very own set in 15 minutes. The response in China has been phenomenal and the concept of hosting chopstick-making dinner parties in the United States has been equally surprising. This is a universally fun experience."

During the past six months, more than 1,000 pairs of chopsticks have been produced with various Chopstick Master prototypes. This non-powered product is a professional tool with an all-metal base, and is designed to last multiple generations. The Chopstick Master design has been optimised and is now ready to hit the worldwide market. The product had a successful launch in China this September and is available in the US by pre-order only until 2016. "I've been designing tools full-time for over 32 years and can honestly say, nothing in my past prepared me for the reception of this tool," adds Economaki.

Chopsticks were first developed in China about 5,000 years ago, and were adopted by most Asian cultures. However, many Americans also enjoy using them. In fact, according to online research in a 2014 YouGov study, 23% of Americans prefer chopsticks to silverware.

Le Tonkinois varnish

Le Tonkinois varnish is a natural oil-based yacht varnish, using a Chinese formula dating back two or three centuries. And what a formula! It removes your brush-marks, brings out the natural beauty of the timber, doesn't crack or flake off and is permanent – simply add a further coat every few years.

Its attributes include brilliant penetration – even on oily timbers it establishes a permanent bond; no brush marks; the tough non-porous weatherproof coating is highly resistant to all the elements including U.V. and sea water; free of harmful and irritating ingredients, it is perfect for all indoor applications, yet also exceptional for outside purposes; will go on top of nearly all existing products except wax, although on bare wood it embellishes all natural features and colour; it is particularly good for boats, garden furniture etc; remaining flexible, once on it will not crack, chip or peel off; and its natural brilliant gloss can be matted as required.

Galbert Drawsharp

The Galbert Drawsharp by Benchcrafted is a clever, yet simple tool for putting a consistent, repeatable razor-sharp edge on any drawknife. Traditionally, the way to hone a drawknife is by hand, holding the drawknife in one hand, and a stone in the other, a skill-intensive and somewhat dangerous task, especially for beginners. The Drawship instead lets you focus on getting a keen, consistently polished edge without having to concentrate on how you're presenting your stone to the edge, or worrying about cutting yourself.

The drawknife spine rides on an acetal wear plate and two nylon bumpers which, along with the position of the two posts, determine the honing angle. One post is for honing the knife's bevel; the other for honing its back.

A clearly marked scale for each post allows you to record the setting for a particular drawknife, then return to that setting quickly for future honings.

Each post is fitted with a sleeve loaded with two abrasive pads: a fine diamond pad on one side, and a finer abrasive paper pad on the other. The diamond pad is used to bring up the initial burr, and the opposite side is used to polish the edge further. Each sleeve rides on its post via a Velcro loop bearing, so the sleeve can rotate to follow curved knives and stay in full contact with the edge. The posts are adjusted by means of two large knurled nuts, allowing precise, incremental adjustments.

To expose fresh abrasive to the edge, simply slide the sleeve up a bit; it will hold its position and still rotate. Each sleeve can also be flipped end for end to expose even more abrasive. The Drawsharp comes packaged with enough abrasive for dozens of sharpenings.

MINI TEST: Quick-release clamps

We have a wide range of quick-release style clamps in the *F&C* 'shop and their light weight and convenience means they get more use than some of the heavyweight, traditional F, G and sash clamps.

On occasion they double up as spreaders when required and, although they won't give you anywhere near the same amount of clamping pressure as other clamps, they'll cope with most general-purpose needs.

In a way, using a low-pressure clamp acts like a warning to any undue amount of pressure required to close a gap. Joints should, after all, come together easily without force and with the clamp just holding things in place.

These miniature versions fell into my basket at the local DIY shed. A mere 205mm long they will clamp from 115mm and spread from 75mm up to 195mm.

At this size they are perfect for box makers, restoration and all manner of fine work. They feature slide on soft rubber shoes on both heads that means you won't have to fiddle about with blocks to protect your work. They work with a squeeze trigger and release button just like the larger versions. Dare I say it, but no collection of clamps will be complete without them.

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Contacts

Airshield Visor overlay
Contact: Trend
Tel: 01923 249911
Web: www.trend-uk.com

Chopstick Master
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Web: www.bridgecitytools.com

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In the workshop with Tim Smith

In a new series of workshop profiles, we unveil the makers who turn designers' dreams into reality. First up is master craftsman Tim Smith

It's a familiar story, as old as time almost, that behind every masterpiece there is an unsung hero. It may be in the guise of a benevolent patron with an eye for spotting talent or as family and friends providing succour to the struggling artist. At least that's how these things are often portrayed in history books and screenplays. The reality is often quite diferent and nowhere near as romantic, as the unsung hero will usually turn out to be a talented craftsperson who is able to interpret the mind and drawings of a conceptual designer to produce work that would otherwise never see the light of day.

Philanthropy and furniture making go hand-in-hand and throughout history the more notable workshops, such as Chippendale, Gillows and even Alan Peters have relied on skilled craftsman in order to run a successful business. Designers don't always make good makers, however, and the best makers are often far too disciplined or practical to be a designer.

In this first of a series of new articles, *Furniture & Cabinetmaking* is going to burst through the 'staff only' door into no-man's land to meet the talented makers producing work that carries someone else's name.

Our first 'unsung hero' is Tim Smith, master craftsman and head maker at Waters & Acland. He can now consider his anonymity gone!

The 14-12 Chair under construction

Will Acland's Dover sideboard – detail here – and 14-12 Chair – overleaf – were made by Tim – left – and his colleagues

Tim, how did you get into making furniture?

I started out working for a company that made and restored furniture alongside larger joinery-based projects. I quickly realised I enjoyed the furniture-making side more, so in the late 1980s I set up my own workshop to make bespoke pieces. Seven years later I moved to a well-respected furniture maker, where I stayed for 19 years and since 2013 I have been a maker at Waters & Acland.

Do you work with any materials apart from timber?

We do work mostly in solid timber and some pieces are veneered if movement would be an issue. The seat and back for Waters & Acland's 14-12 Chair – see page 18 and *F&C* issue 238 – in are made from fibreglass, padded and leather covered.

You're obviously comfortable making pieces that have been designed by someone else. Do you ever feel that it is depriving you of your own creativity?

My creativity comes from transforming a pencil sketch or a drawing on a piece of A3 to the finished form.

What's the piece you would most like to have made?

I've made writing desks of various designs in the past. But I think something bigger and more ornate, such as a secretaire or an escritoire with lots going on like secrets and clever mechanisms, would be fun.

Would you say you are more reliant on hand tools or machine tools?

I'm happy using both. The balance between machine use and handwork can vary greatly between jobs. Chairs, for example, usually require a large amount of machining, as high as 70%. This chair – the 14-12 – however, is the other way, perhaps only 20% machining and the rest by hand.

As the senior maker at Waters & Acland, how comfortable are you at being a mentor for impressionable young minds?

Before working at W&A I headed up a workshop with some six or seven makers. We always had at least one apprentice, so I'm comfortable with the many aspects of training and mentoring young people. After moving to W&A it soon became obvious that there was a huge difference between learning cabinet making in a commercial environment to that of a furniture school. An enthusiastic apprentice will make good progress but still be constrained to a degree by the very nature of learning while working on a costed job. Someone in the furniture school, on the other hand, has a much more intense learning experience. They can practise a technique until they get it right before moving on to something else. And with the dedicated time of a highly skilled trainer they can be making pieces to a very high standard in half the time.

What's the tool you can't do without?

If we're talking recently, then the tool that's never far away is a wonderful Auriou cabinet maker's rasp – grain 10. It's not actually mine, but just one of a great variety of new, best-quality tools available for the students in the furniture school to try, so they can get an idea of what tools they will need and get a feel for them before buying their own. The rasp cuts really quickly, but without tearing, great for following on from the arbortech. Generally, though, a favourite tool of mine is a Moseley & Son's mitre plane which I love. It ➤

was given to me by an uncle who shared a love of woodworking. Even if it's just sitting on the bench it looks good and in use as a low-angle, bevel-up smoother it leaves an amazing finish.

With something as experimental as the 14-12 Chair, how do you go about planning your workflow for the project?

This was one of those jobs that had a natural progression. First off, the formers were made to shape the fibreglass seat and back. Next, I wanted to mock up a framework to hold the seat and back in their respective positions according to the drawing, so designer Will Acland could check the ergonomics and their relationship to each other within the frame. Once that process was complete I had built up a clear idea of how the rest of the chair would be made. The chair progressed with a cycle of jig making, laminating, jointing and sculpting. As with any job some careful planning has to happen to ensure an efficient workflow.

Was there ever a point when you thought it might not work?

I don't think I doubted it would work. It was always going to be a challenge, but once I'd worked out the geometry and the relevant jointing points, things moved along well.

When you are making something as unique as the 14-12 Chair, do you ever stop to think how it might be received in, say, 50 or 100 years' time?

That's a very interesting question. If you look back over the past 50 or 100 years you would see that things haven't changed that much in terms of technique. Now, though, there seems to be great changes happening in the way things can be made using new machinery. When I first heard about 3D printers, for example, and what they would be capable of I was blown away and couldn't quite believe it. Who knows what a maker will be using in 100 years' time, but I would hope that they would still have an appreciation of the handwork that had gone into this chair.

As *F&C* understands it there are more 14-12s in the pipeline. How do you feel about that?

The first two chairs are now finished and delivered. Chair number three is well under way. With all the jigs and former made, the job now takes on a different feel. It has moved from the challenge of a new epic project to the now familiar job that can be moved along at a pace and enjoyed because of that familiarity.

Do you think that part of the chair's appeal is that it has overcome some extremely challenging feats of engineering and construction in wood or do you think people warm to the overall shape and visual experience?

I would hope both, but I realise that a maker will have more of an appreciation of the methods involved in the process whereas someone without that knowledge would enjoy the chair's aesthetics.

Do you think it would it have the same appeal if it had been made on a 3D printer?

The idea of that scares me a little bit. If it could be done I would imagine that it would be a poor, soulless imitation.

Can you see yourself investigating new methods of technology to make furniture?

Yes, of course! But only if that technology was an aid to the furniture maker's skill, not a replacement.

You must have a favourite designer, but is there also a maker that has had a significant influence on your work?

As we're talking chairs, then my favourite designers would be Charles and Ray Eames. The Eames 670 or lounge chair has been one of my favourite pieces of furniture for years. A more recent designer who has influenced me would be Will Acland. My appreciation of many of his wonderful designs helped make my decision to come and work for the company and I haven't looked back. *F&C*

Sitting pretty: side and detail images of the 14-12 Chair, designed by Will and brought to life by the studio's head maker Tim and his team

Tim and his fellow W&A workers crafted Will's Ozone sideboard

Discover *The World of Charles and Ray Eames* at London's Barbican Gallery

Charles and Ray Eames are among the most influential designers of the 20th century. Enthusiastic and tireless experimenters, this husband-and-wife duo moved fluidly between the fields of photography, film, architecture, exhibition-making and furniture and product design.

The Eames office was a hub of activity where the Eameses and their collaborators produced an array of pioneering designs, communicating their ideas with a boundless creativity that defined their careers. The Eameses embraced the joy of trial and error and approached design as a way of life.

From personal letters, photographs, drawings and artwork, to their products, models, multimedia installations and furniture, *The World of Charles and Ray Eames* includes not only the designs for which they are best known, but provides an insight into the lives of the Eameses, the Eames Office and the breadth of their pioneering work, bringing their ideas and playful spirit to life.

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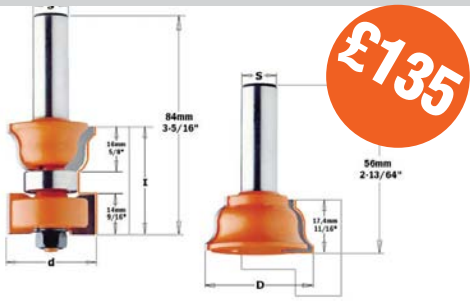
These new bit sets are excellent for producing adjustable tongue and groove joints with a bevel, in order to eliminate the panel rattle that may come up with the production of standards cabinets. Cut precise grooves into your plywood veneered panels and make perfect rattle-free fits. To *be used on table-mounted routers. Avoid using these bits in hand-held* power tools.

CMT 955.801 Window Sash Set



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CMT designed this set so you can create window sashes that are as beautiful as they are functional. As an additional feature, the CMT window sash set will also mill perfectly joining 35 mm rail and stile parts for custom made doors.

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Watch this space

The Furniture Makers' Company showcases the next generation of craftsmen and designers with the support and backing of the some of the industry's most prestigious brands. Here are just a few names and faces to remember for the future

De Montfort University students

The 2015 Young Furniture Makers Exhibition included exhibits from talented students of all levels drawn from the many colleges and universities supported by the Company. Also on show was work from enthusiastic schoolchildren who won the DFS Poster Competition and the Proskills/MakeIT Competition.

New this year were the Bespoke Award, won by Connor Holland and sponsored by Festool, and the Design Award, won by Christa Sylvana Tjong and sponsored by Gabbertas Studio and Crofts & Assinder. Awards were also made for numerous industry partnerships, where companies such as Crofts & Assinder, Ercol, Hands, Gordon Russell and Willis & Gambier worked with university students on specific projects.

The Best in Show Prize, sponsored by Corporate Member Blum, went to two young designers, Connor Holland and Jan Waterston, who each won an all-expenses paid trip to Blum's state-of-the-art factory in Austria for having the best exhibits in the show – Connor for his YFM Bespoke award-winning Lilo Bench, and Jan for his Velo Chair, which gained second place in the YFM Bespoke Award.

A new competition was launched by leather specialist Andrew Muirhead & Son, with highly valuable work experience and £1,000 in cash for the winner, plus two runners-up prizes of £500 each. Managing Director Colin Wade said: "We are delighted to be launching this new competition to students, aiming to break through the traditional design boundaries of leather through the application of digital print – patent applied for. There is such a wealth of fresh young talent coming into the furnishing industry, so it will be really exciting to see the entries coming in."

The Master, David Dewing, said: "One of our key objectives is to nurture young talented people through our Young Furniture Makers group, providing them with useful, relevant support and encouragement so that they remain within the industry, and become the leaders of tomorrow.

"It is heartening to see so many talented individuals presenting their work with such enthusiasm and commitment. It is our unique network of members and supporting companies that enables us to provide these invaluable opportunities."

Young Furniture Makers Design Award winner Christa Sylvana Tjong

Connor Holland won both the Young Furniture Makers Bespoke Award and Best in Show

Jan Waterson took a well-earned rest in his winning Velo Chair

A close-up view of Jan Waterson's Velo Chair

Stephen Bagshaw of sponsor Festool addressed the audience

Paul Puskarich's Heatsink Chair secured a Bespoke Award

Recipient of the Andrew Varah award David Williams – left – with Sam Brister

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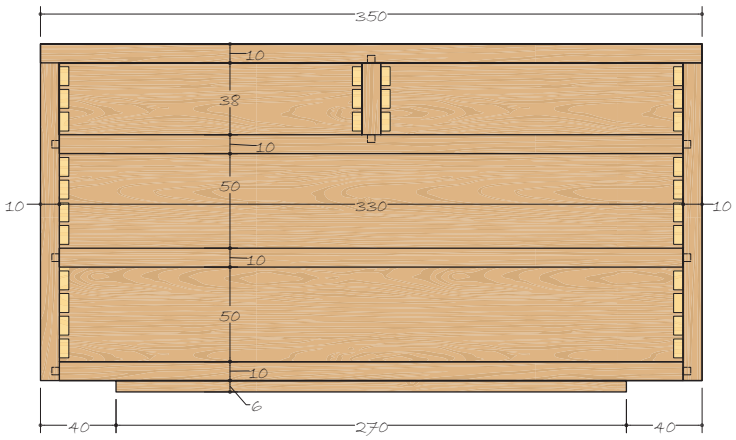
PHOTOGRAPHS BY DAVID BARRON

Slick on the drawer

David Barron tapers his technique to achieve a perfect walnut cabinet

Back in 1997 Alan Peters wrote an article for *Fine Woodworking* titled simply 'Fitting a Drawer'. It was a fascinating piece, detailing the processes involved on a beautiful small chest of drawers. This is my version of that chest made, appropriately, with wood that I bought from Alan's widow after he sadly died in 2009.

All the wood for the chest was quarter-sawn to minimise seasonal movement and it was trimmed oversize before being left for a few weeks to settle down. To achieve a piston-fit drawer the opening must be parallel from side to side, any inwards taper from front to back would make it impossible to get a good fit. Alan used to check all his openings and trim them as necessary with a shoulder plane and sanding blocks, a potentially laborious job and not one that would be easy on this small cabinet. In David Charlesworth's excellent book, *Furniture Making Techniques Volume 2,* he talks about building in a slight outward taper to the carcass which overcomes the need to adjust it after assembly. I decided to use this in the building of my carcass.



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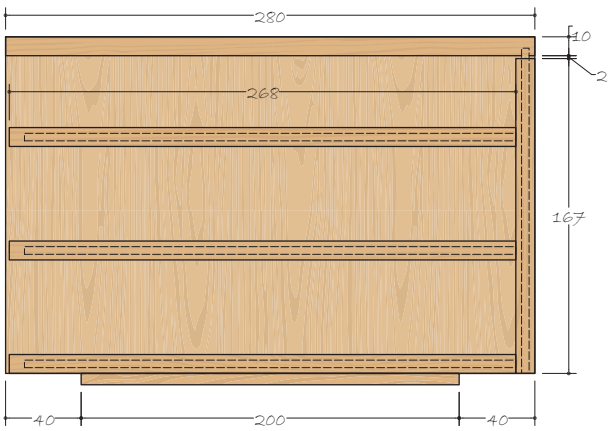

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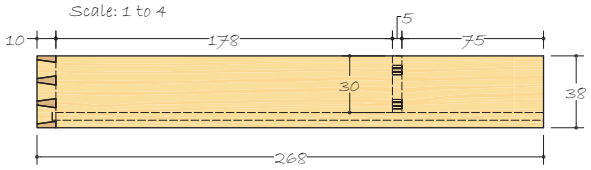

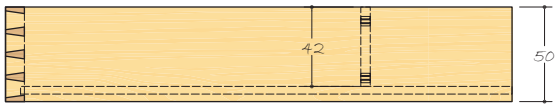

Drawers extended by 75mm beyond backs to give full access to contents but prevent drawers from falling out

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Solid timber back fits into grooves in the top and sides, shadow gap all round

Drawer backs joined to sides by through wedged tenons

Fronts of base and shelves scalloped to enable drawer opening

6mm thick glued-on base to lift cabinet bottom visually

Building the carcass

Instead of using a traditional frame for the drawers I used solid wood with the grain oriented in the same direction as the carcass so that any seasonal movement was in harmony. This also meant I could introduce an identical taper into all the horizontal parts.

With all the wood trimmed to final thickness I cut the top, shelves and base dead square and to identical size, doing the same with the sides. All the internal grooves were cut at this stage, it's important to do this before tapering the parts. I carefully marked each part with a coloured dot to indicate the front, the upward face and its position. I then took three progressively longer stop shavings, from each side of the horizontal parts, on the shooting board. This was followed by one through shaving to clean the edge. I verified the taper by setting two stops to the rear edge and checking a gap existed at the front, it came out at 0.25mm which was about right.

Although the top with its through dovetails would be wider than the two shelves and base, I kept them identical at this stage so the baselines for the dovetails and tenons could be marked identically. After the tenons were cut I trimmed them back in width to fit the grooves in the sides. This technique is also useful when making a panelled lid.

A tiny taper can also be introduced to the height of each drawer opening which helps reduce the top to bottom wobble when the drawer is close to fully open. This is done by planing the underside of each shelf, removing more from the rear. The top two openings are tapered by removing material progressively from the fronts of the sides and divider and this needs to be done before the baselines for the dovetails and tenons are marked on these parts. At this stage the dovetails for the top corners can be cut and fitted. It's very important to make sure that the bottoms of the tails and pins are cleaned out properly as the two parts must go together with no gaps at the baselines. Undercutting the waste is a good idea to prevent this happening.

The base and both shelves are scalloped allowing the drawers to be opened with a delicate fingertip, this feature is typical of many of Alan's chests. Before gluing up, the inside surfaces must be sanded smooth and I like to finish them with two seal coats of melamine lacquer or shellac followed by a hard carnauba wax blend, to promote smooth running.

Re-sawn walnut (*Juglans nigra*) boards left on their edges to settle for a few weeks

The stopped grooves being cut on the shaper with a 3.25mm bit

Progressive shavings being taken from each side on the shooting board to create a minute taper

Verifying the taper between two fixed stops

The same setting was used on the marking gauge for the shoulders of both the shelves and the dovetails

The tenons on the shelf and base cut back to the gauge line

The stub tenons were trimmed to a tight fit in the grooves

Dry fitting the carcass parts, tapers can be checked at this stage

Cleaning out the dovetails

The curved fronts to the rails were shaped with flat and curved HNT Gordon spokeshaves

Making the drawers

With the carcass glued up it's time to look at fitting the drawers. The first job is to shoot each of the sides into its corresponding opening, having carefully marked them with coloured dots. The fit needs to be smooth running but without wobble, again this is done on the shooting board. A slight tapering in the height of the opening certainly helps here. The back of the carcass can be slid into place and the sides marked and cut to final length.

The next stage is to fit the backs into the front openings, the height is done first followed by the sides of each part. With these fitted and marked up the inside of the fronts can be marked directly from the backs and these can be shot back to the lines with a slight outward taper – some folded paper under the part on the shooting board makes this taper easy. This taper will be planed out when the drawers are finally fitted.

The inside of the drawer parts are planed and sanded smooth before the joints are marked and cut. The grooves for the base are cut using the bottom edge of each part against the router table fence, which is vital for a good fit. Although the back was to be lower than the sides, a groove was cut in this too and it was temporarily kept at the same height as the other parts until the marking out for the joints was completed.

Interestingly the backs of the drawers on Alan's cabinet were inset 3in from the end of the sides so that full access could be given to the contents without the risk of the drawer falling out. I decided to do the same on my version which meant using mortise and tenon joints instead of dovetails on the rear. Both the mortises and tenons were marked out from the bottom edge using the same settings on the wheel-marking gauges, light marks were made so the bevel of the wheel didn't give an inaccurate line. The marking gauge is then reset to mark the dovetail depth allowing the sides to protrude very slightly in the finished drawer so that material is removed from here when fitting and not from the front and back which would give a sloppy fit. This same setting on the gauge is used to identify the tenon shoulders to keep things in line.

With the dovetails forming a decorative feature on the front of the cabinet, the spacing as well as the drawer depth had been worked out carefully at the design stage. This allowed for four dovetails on the top two drawers and five on the bottom two, while maintaining the same spacing on all of them. With these carefully marked and cut out, the pins were marked from the tails, referencing off that bottom edge again. My dovetail alignment board comes in very useful here – readers wishing to make one should see my YouTube video. With all the joints cut, the back can be reduced in height. I cut down the groove with a hand saw and cleaned back to the edge with a hand plane. This should now be a perfect fit, allowing the base to pass under without leaving any gap.

The wedges for the tenons were cut identically using a notched board on the bandsaw. The thin feathery ends were trimmed back until it was thick enough to just enter the cuts made in the tenon, this way the wedge would be able to do its job in these very short small tenons. Keeping the wedges all identical also meant the end result would be nice, evenly-matched wedges. After all, if the joints are on show they have to look good.

With the carcass glued up each drawer side could be shot into its opening and marked with a coloured dot

The back was fitted enabling the drawer sides to be cut to length

The sycamore (*Acer pseudoplatanus*) backs to each drawer were shot to a tight fit in the front

The walnut drawer fronts were marked from the backs and trimmed to fit with a slight outward taper on the shooting board

Bringing the inside of the drawer parts to a finish with a high angle smoother

Identical tapering wedges cut for the through tenons

The drawers being carefully trimmed to fit

Fitting the drawers

With everything glued up it was time to fit the drawers. The thin sides were supported on a drawer board and they were planed until both the dovetails and tenons were just cleaned up. At this stage the drawers will require very little more material removed but it's vital it comes off in the right places. Sanding the sides lightly with 240 and then waxing them leaves a dull surface – pushing the drawer briskly in and out of its opening will leave shiny spots which reveals where materials need to be carefully planed off.

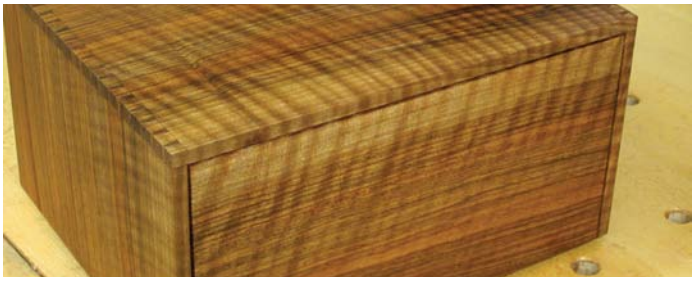
This process is repeated until a silky fit is achieved. David Charlesworth describes in his book how the rear of the drawers can be left a little tight so that as the drawer approaches full extension it tightens up in the carcass. This is a nice little feature and, of course, can only be accomplished if the opening is tapering slightly in width from front to back. With the base fitted into its groove the fit can be checked again and the whole process repeated for each drawer.

The underside of each front has a V groove cut on the router table to give a little finger recess and the outside of the chest can be cleaned up ready for a finish. I like to seal the sides of my drawers in the same way as I did the inside, with two coats of melamine lacquer or shellac followed by wax. This keeps things running very smoothly without adding any unpleasant aromas to the inside of the chest. I finished the outside with three rubbed coats of Devon Wood Oil, which soaked deep into the wood and left a nice sheen to this beautiful timber. F&C

Lightly sand and then wax the drawer sides. Pushing the drawer in and out of its slot creates shiny spots which can be trimmed until a perfect fit is achieved

The finished cabinet with its first coat of oil applied

A close-up of the tiny wedged tenons



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PHOTOGRAPHS BY OLIVER SPARKS

Oliver Sparks explains the possible applications for this specialist tool

A word on the die maker's square

I would like to share a specialised tool that I find very handy in my work as a planemaker, one that also has wider uses in cabinetry. Traditionally an engineer would use his die maker's square to check small clearance angles on industrial punch tooling, known as dies. This square differs from its cousins by featuring a tilting, lockable blade with an angle indicator on the stock. Its blade is extended to the required length, the angle set, then locked down via a knurled thumbscrew. Mine is about 80 years old, picked up on an online auction site. It has a +/- 8° range, so it will never replace the protractor, but for accuracy in a tight spot, it can't be beaten.

Uses

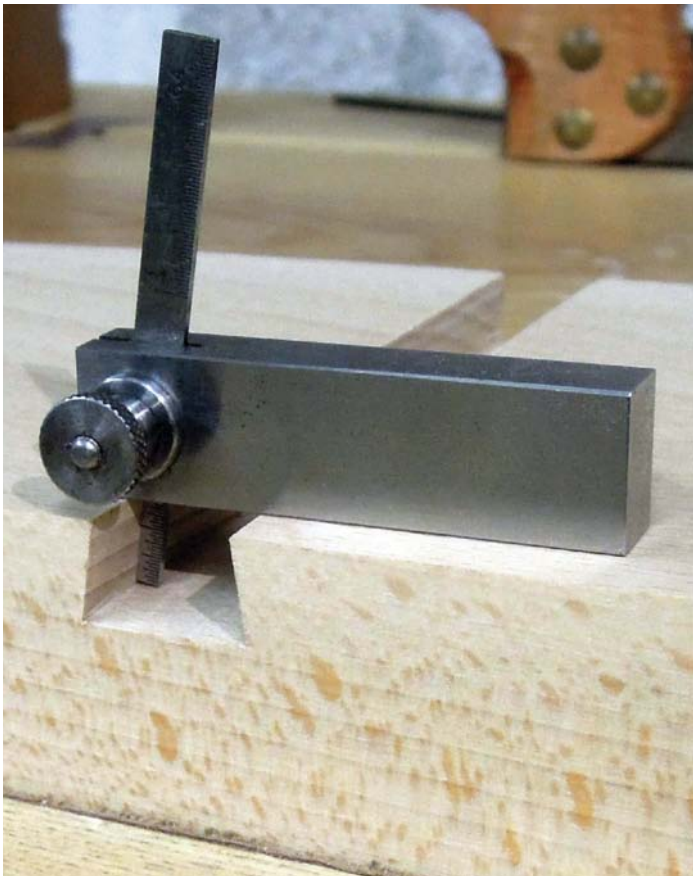
Obvious uses that spring to mind are dovetail related, such as the dovetails I use to join my plane bodies together with. A layer of blue layout dye is applied to the metal surface, so that when I start scribing, a bright line shows through. A useful method to know next time your furniture hardware needs altering! Opposite you can see me laying out dovetails onto steel. Later these will form the sides of a block plane, similar in size to my Arc model, shown in the background. Once the dovetails are sawn and filed into shape, I can change the angle back to 90° and check in between for squareness. For tight spaces the thinner, notched end can be used. While this example may be in metal, you can see how easily this method could be applied to your own woodworking pursuits.

The other day I found myself checking the 3° 'draft angle' on a lever cap pattern. A pattern is the near replica of a shape you would like to cast in metal. Special sand is packed tight around the pattern, which is then removed, leaving behind a shaped cavity into which molten bronze is poured, forming the finished metal part. Tapered sides allow it to be easily extracted without damaging the delicate sand mould.

It could be argued that many of these tasks can be carried out with a sliding bevel and protractor, and indeed they can, but I often find the die maker's square a more agile tool for smaller scale work. Also, being able to fully retract the blade can be a huge advantage, it enables you to enter places a sliding bevel can't, such as checking the depth, or angle on a sliding dovetail. All in all, a most useful addition to the workshop. F&C

Laying out dovetails onto steel

Checking the draft angle on a lever cap pattern



Checking the angle on a sliding dovetail

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Our correspondent...

PHOTOGRAPHS BY JOHN LLOYD

Dream machines...

... or nightmare scenario? Thoroughly modern man John Lloyd asks if the relentless rise of CNC is good for our sanity

It could be argued, I think, that this is the perfect time to be a woodworker. There are some wonderful hand tools available to us now, with blades of consistent quality using exotic alloys of steel, made by companies who care about precision and delighting their customers rather than just maximising their profit margins with poorly made, mass-produced, plastic-handled rubbish. A vast array of machines can take the drudgery out of preparing, cutting and shaping timber with the ultimate in woodworking sophistication being the all-singing, all-dancing 'computer numerical control – CNC – machining centre'. Now we don't even have to pick up a plane any more.

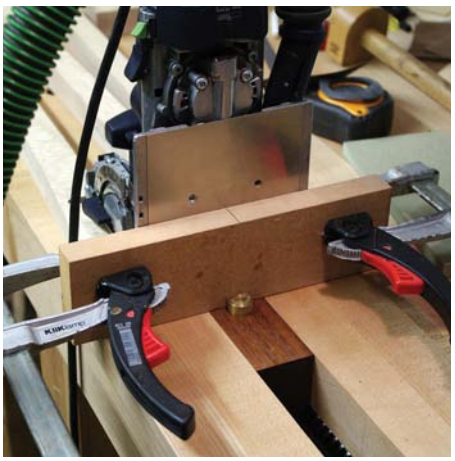
This is, perhaps, taking things to extremes. But the way woodworking has been developing over the past 15 or 20 years, and the method of working, was something to which I found myself giving serious thought recently as I designed and made some little tables. Before I get too carried away, I should make it clear that I am not advocating a return to the rigours of the pit-saw, or even the principled moral stance of the Arts and Crafts Movement. Indeed, I am very happy to embrace all sorts of new bits of kit, modern materials, glues and jointing innovations.

Over the years, *F&C* has acquired readers from all four points on the compass and since going digital in 2013, that trend has increased. You can find us anywhere in the world with a link to the web. As the content of the magazine is a true reflection of our readership, we've decided to introduce a new style of article that will take us on a workshop tour of the globe.

Our reporter this month is renowned furniture maker, restorer, tutor and regular contributor to *F&C*, John Lloyd. In the spirit of a true Renaisance man, John considers the merits of good old fashioned hand tool skills and values in place of machines. Could it simply be a case of history repeating itself as we move closer each year to the next industrial revolution? If so there is a time and a place for everything and you know what's around the corner...

Web: www.johnlloydfinefurniture.co.uk

Components made from ply with thin veneer and lipping give no margin for error



Jigs and machines are needed for those super-accurate joints

Dominos are a good option when you're trying to be a CNC machine

But perhaps prompted in part by the use of computer-aided design and the presence of CNC machinery, I have noticed a relentless march towards wanting to work to ever finer tolerances. And with ever finer tolerances, the movement of timber, as it takes on or loses moisture, starts to become unacceptable. So, in an effort to maintain absolute dimensional control we use an increasing amount of man-made sheet material which we cut very accurately, on a machine, and cover with a very thin layer of wood, in a press, to make components that must be joined together with absolute precision using jigs and machines because the materials we are using won't tolerate any adjustments. CNC machines will do this sort of precision shaping and jointing all day, that's what they're designed to do. If we want to emulate their level of accuracy, however, we have to try to be human CNC machines and with this I see the joy of making things from wood disappearing to the accompaniment of wails from despairing woodworkers and the incessant scream of routers.

Precision woodwork

OK, I might be getting a little hysterical, but I do find that some of the current methods of working wood that have been creeping up on us for a number of years are in danger of taking away the pleasure that comes with mastering a craft by replacing it with a quest for absolute precision that's only attainable by people afflicted with advanced levels of OCD, who like making jigs and own a very efficient set of ear-defenders. There's nothing wrong with this and there is certainly a sense of achievement when successfully working in this way, but it's definitely not what I signed up for!

Let's consider for a moment the concept of 'precision' in woodwork. The process of cabinet making is known for working to very fine tolerances; why else would we all agonise about sharpening systems, exotic blade materials and fettling planes, and why would David Charlesworth use 'the fag-paper' as a unit of measurement? Surely it's to allow us to work to those fine tolerances. Well, yes and no!

I've noticed an increase in students continually checking widths and thicknesses down to two decimal places with digital callipers, which might be a useful reference when practising planing technique, but in general it might be missing the point. Does a piece of furniture need to be made with its overall dimensions measured in thousandths of an inch? Of course not! Generally a tolerance of as much as plus or minus 10 or even 20mm, might be quite acceptable. Do the legs of a table or chair need to be absolutely dimensionally consistent? Probably not. Does a joint between two components, maybe a stile and a rail, need to be crisp and precise? Absolutely. And the same applies to cutting dovetails or fitting doors and drawers. This is where those finely tuned tools which can take gossamer thin shavings, come into play. They're used for making those precise joints and for fitting and fettling the component parts of any construction, but this is only possible if there's a bit of solid wood to fettle. Of course, the flaw in this argument is that wood has the rather inconvenient habit of moving. Get your tolerances too tight and everything seizes up, another good reason for using lots of MDF and veneer in place of that rather irritating wood, and we're veering back towards the quest to be a human CNC machine again.

Balanced approach

Having discussed this subject with several professional makers, the consensus seems to be that it's the hand-cut joints, the fitting and the adjusting that are some of the most enjoyable elements of woodwork. If this is the case, why would we want to sideline this fundamental part of the process? So what's the answer? Well, as with most things in life 'balance'. Use dimensionally stable material and veneer where it is really useful to do so, but with thoughtful design combine it with solid wood as this might make the process a bit more about utilising woodworking skills and a bit less about making clever MDF jigs. In this way we might find that working with wood is more fun and at the same time maintain a slightly firmer grasp on our sanity. F&C

Fitting drawers can be one of the joys of woodwork (as long as they're made from wood)

Mastering hand tools can be very rewarding and surprisingly quick

Compound-Angle Joinery

In an extract taken from *Designing and Building Chairs*, Will Neptune explains the geometry behind the joinery for classic chair construction

PHOTOGRAPH BY LANCE PATTERSON

For me, chairs are easily the most satisfying projects to build, but students often are puzzled by the compound-angle joinery between the legs and seat rails. I learned how to draft, lay out, and cut these joints when I was a furniture making student years ago, and now I teach it at North Bennet Street School. Once you answer two critical questions – "Where do the layout lines come from?" and "How do I get the layout lines on the wood?" – you'll see that cutting these joints isn't all that hard. What's more, once you understand how to cut compound-angle joinery, cutting joinery with a single angle becomes simple.

Recently, I built a set of Chippendale chairs. Most Chippendale chairs – and a lot of other styles of chairs – have rear legs that cant inward as they go toward the floor but front legs that are perpendicular to the floor line. Although this design lends a refined sense of upward motion to a chair, it also introduces a fussy situation when it comes to joining the rail to the back leg. To allow for the cant of the legs and the trapezoidal shape of the seat, most of the time you'll have to cut compound-angle tenons between the legs and seat rails. It is tempting to angle the mortises, in either the plan or elevation, to simplify the tenon problem. In the first case, the mortise would angle in the plan view at the seatframe trapezoidal angle. In the second case, the mortise could be cut square to the back rail in front elevation to correct for the cant angle. Both of these moves force you to shorten the back rail tenon, which would weaken this critical joint. Both historically and for chair making today, I think compound-angle tenons represent the best possible technical solution to this problem. Once you have a system for laying out these joints, cutting them is not that difficult.

Draw simple elevation and plan views

No matter what style chair you're building, there are two angles to consider: the cant of the leg, seen in a front elevation, and the seat-frame trapezoidal angle, seen in a plan view. Start by doing a partial drafting job, just enough to get the information you need for layout.

First draw the leg from a front view and show the mortise. The mortise in the rear leg should be as far to the outside of the leg as possible without sacrificing the thickness of the mortise walls. The mortises can be cut square and slightly short in length, then chiseled to the correct angle at the top and bottom, making the mortise a parallelogram. Cutting a mortise in the shape of a parallelogram not only helps you register the rail, because it makes the rail's top and bottom edges parallel to the floor line, but it also makes the through-tenon look better from the back of the chair.

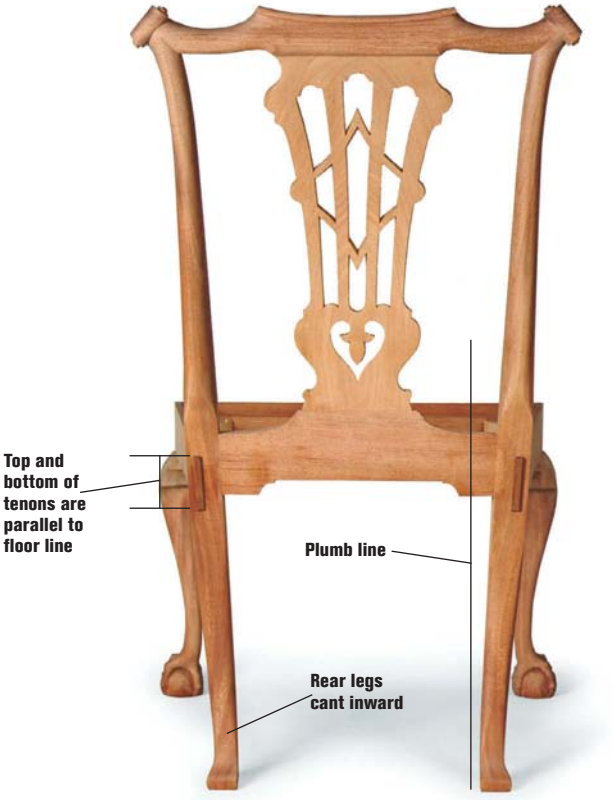
Transferring information from the elevation, draw the sections of the leg at the bottom of the rail. Then you can draw the side rail and its angle. Notice that the side rail must be thick enough to allow wood for the top outside corner as well as the bottom inside corner, as seen in the elevation drawing on p. 43. I also like to have extra rail thickness to allow for a shoulder at the bottom inside corner. First draw the line representing the outside face of the rail blank and its angle. Here I'm assuming that the outside face of the rail lands flush to the top of the leg, but you could leave a shoulder if your design calls for it. Then draw a parallel line showing the bottom inside face of the rail, choosing a rail thickness that will allow for an inside shoulder of 1/16in to 1/8in. As a last check, draw a detail of the top section of the leg in plan view. I draw this as if the leg mortise runs all the way up to the top

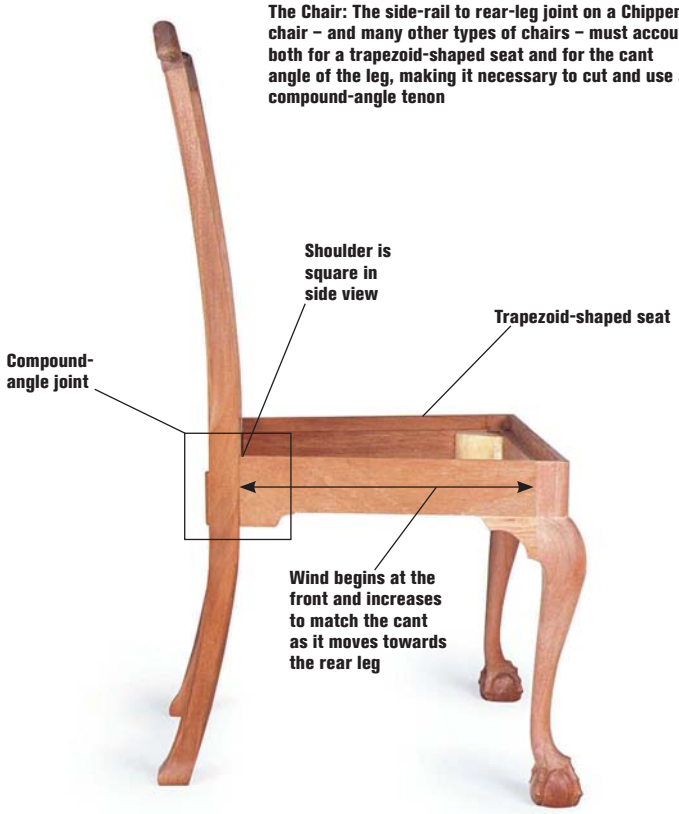
PHOTOGRAPHS BY MICHAEL PEKOVICH, UNLESS STATED OTHERWISE

edge of the side rail. Extend the line that represents the outside face of the rail back through the leg to be sure that the tenon lies within the thickness of your rail. This construction has the side rail forming a simple angle, which leaves wood sticking out from the canted leg on the outside. These surfaces will be reconciled by fairing a wind into the outside face of the rail once the joinery has been cut. The front end of the rail is left alone for the leg joints, so the rail starts plumb at the front and develops a wind that becomes the cant angle of the rear leg.

To show this, draw a dotted angled line from the bottom outside corner of the rail out toward the rail's front end. This transfers the information from the elevation onto the plan view. The plan view is simplified but contains all of the crucial points seen in the elevation. These two drawings provide the information necessary for laying out the joint.

Careful Tenon Layout is Key

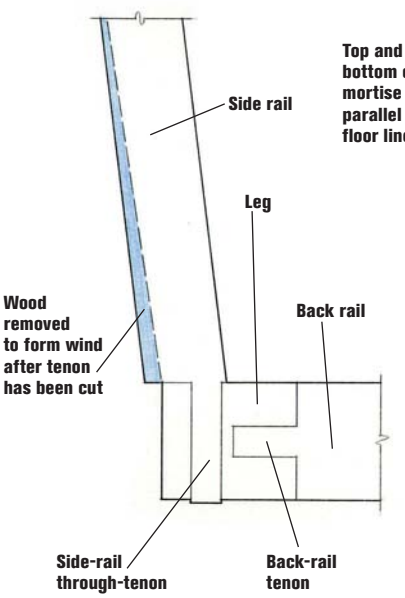




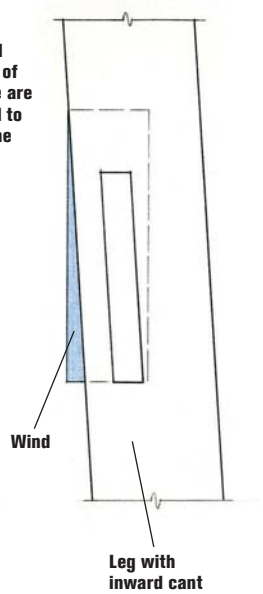
The Chair: The side-rail to rear-leg joint on a Chippendale chair – and many other types of chairs – must account both for a trapezoid-shaped seat and for the cant angle of the leg, making it necessary to cut and use a compound-angle tenon

PHOTOGRAPHS BY LANCE PATTERSON

Plan-View Section

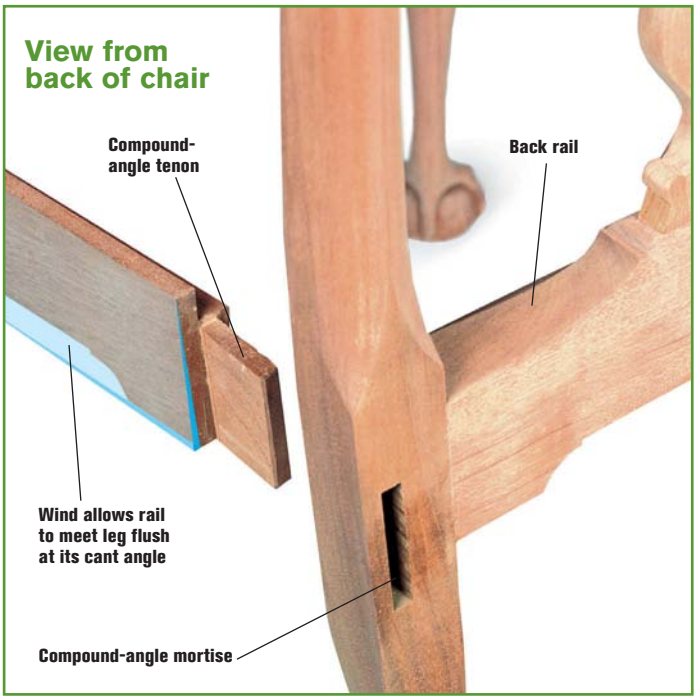


Rear-View Section



The Drawing: I teach students to lay out this joint with only two partial drawings – a plan view at the bottoms edge of the side rail and a front elevation view. This article will show you that simple drawings are all you need to know to cut this joint

View from back of chair



The Joint: Although the joinery looks intimidating, the drawings make it easier to transfer the layout lines to the rail. Once the layout lines are in place, it's simply a matter of cutting the joint – by handsaw, bandsaw, or other means

Country Chippendale in any style: Made of curly maple, Mary Conlan's Chippendale chair of simple form is built using the same leg-to-rail joinery as a more flashy, high-style chair

Federal period – in the high style: Made by Steve Brown, this heart-back Hepplewhite design has curved seat rails and more complex shaped legs, but the leg-to-rail joinery is the same as the Chippendale chair

Chippendale – one joint, many chairs: No matter what chair you're building, if your back legs are canted and your seat is trapezoidal, you'll need to use compound-angle tenons to join them, as was done with this Chippendale chair by Rich Heflin

PHOTOGRAPHS BY LANCE PATTERSON

Follow the drawings to lay out the joint

To make the layout easier, I pretend the mortise is extended up to the rail's top edge. Once the tongue of the tenon has been cut using the method of your choice, it will be easy to shoulder down the tenon to match the real mortise – see p. 46. Extend the lines of the mortise opening up to where the edge of the rail will land. From the bottom inside corner of the mortise, square up a line to the top edge of the rail. Where these three lines cross the top rail edge will become the source of the layout information. The important thing to realize is that the information seen here is true only at one location along the rail: the plane of the shoulders – see the plan view on p. 43.

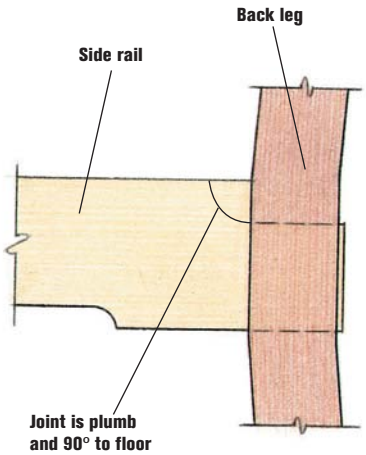
On the inside face of the rail, square a line across that shows the correct shoulder location, measured in from the end. Here I've left extra length for later cleanup. Then, using a bevel gauge set to the seat angle, run the shoulder lines across the top and bottom edges of the rail. These should then connect with another square line, up from the outside face of the rail, describing the lane of the shoulders. Your drawing should now show the location of the tenon at this plane – see the drawing on p. 45. Working from the elevation drawing, set a marking gauge to x and mark this distance across the top and bottom shoulder lines, measuring from the inside face of the rail. From the mark on the top edge, use a pair of dividers set to the distance y to make another mark along the shoulder. The new mark on the top edge and the first mark on the bottom edge locate the inside cheek of the tenon. From these marks, transfer the size of the mortise to locate the outside tenon cheek.

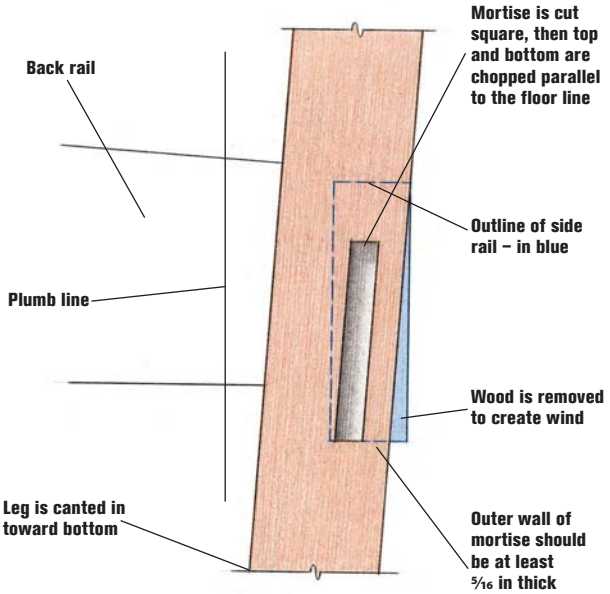
This may sound confusing, but all you're doing is converting the cant angle to a rise/run problem. The rail width is the run, and y is the rise. The reason for the initial marking gauge line is that it's more difficult to measure from a corner using dividers. The goal here is not just to get a tenon that fits – the rail should also land on the post at the correct location and project at the trapezoidal angle.

Once the base of the tenon has been located, the plan view – see p. 43 – shows the next move. The tenon is simply square to the shoulder. Clamp the bevel gauge to the rail and square all four tenon marks out to the end of the rail. Once you've connected these lines across the end grain and knifemarked the shoulders, layout is complete, for now. Once the tenon cheeks and the side shoulder have been planed, the top shoulder can be marked out and cut. After fitting the tenon, mark the wood to be faired directly from the leg.

Lay out and cut the mortise

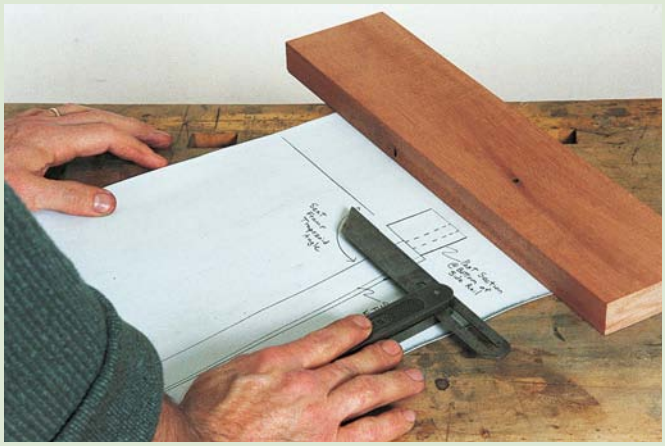
Set the mortise to the outside of the leg as far as possible, taking care to see that the outer mortise wall is at least 5⁄16in thick for strength. Lay out and cut the square mortise parallel to the side of the leg. Then chop the top and bottom of the mortise parallel to the floor line, making the mortise a parallelogram. The rail joins squarely to a flat section of the leg; cut a wind to keep it flush.



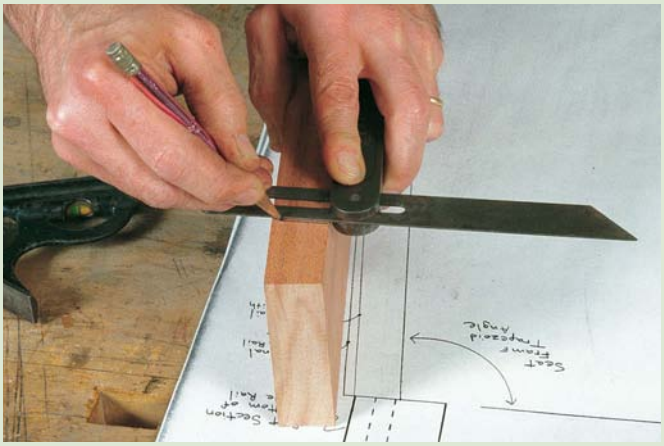


Consider length and seat angle when laying out tenon shoulders

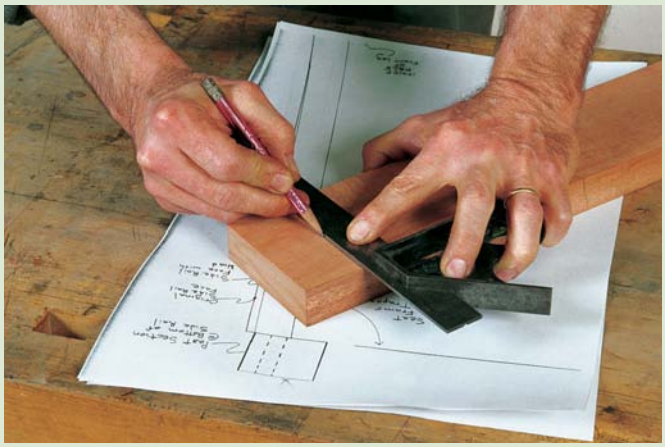
While the joints at the front of the chair are simple angles, compound-angle joints are required where the side seat rail joins the back leg. Use simple full-size drawings to determine the angle of the top and bottom tenon shoulders at the back of the seat rail. Then transfer measurements from the drawings to the rails.



Full size drawings help you to avoid errors. Working from a full-size plan view, set the bevel gauge to the angle between the back rail and side rail on the seat frame



Locating the top and bottom shoulders. Register the bevel gauge against the line for the inside shoulder, then mark the bevels at the top and bottom of the rail. Check that your angles match those in the drawing

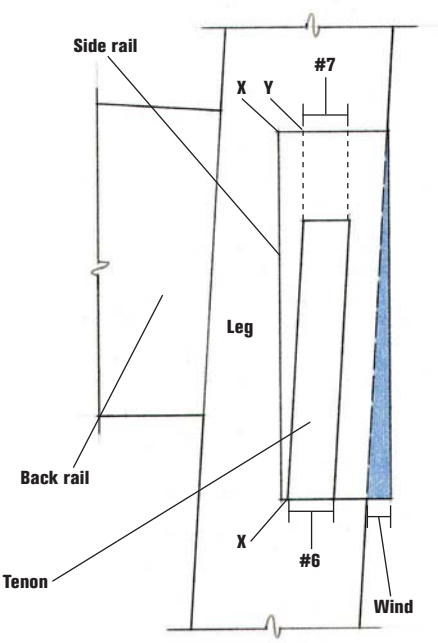


Marking the first face. Set the side rail into place over the drawing – make sure there's enough stock for the full tenon. Make a tick mark on the bottom inside corner of the side rail, and pencil in the shoulder line on the inside face

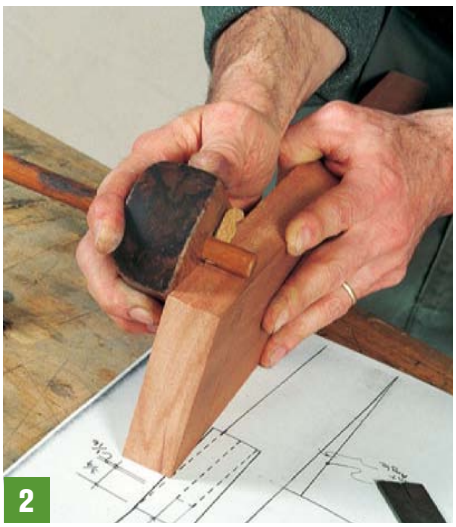
Knife marks are more exact. Once the tenon shoulder has been correctly marked, knife-mark the lines on all sides of the rail. The knife marks provide a specific line to pare or shoulder-plane to

Carefully lay out the angled tenon on the stock

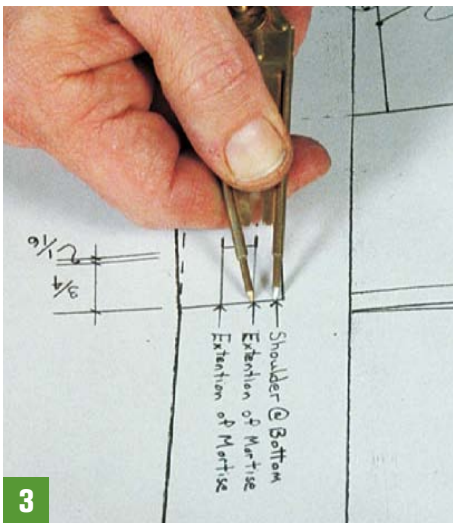
Laying out and cutting angled tenons is a methodical process, but it's not a difficult one. Work from simple but accurate drawings and mark out each measurement from a single reference line on both the top and bottom of the tenon.



1 Use a simple elevation drawing, as seen from the front of the chair, and set dividers to x – the distance from the bottom inside corner of the rail to the inside corner of the tenon.



2 Set a marking gauge to the distance x between the inside face of the rail and point x and scribe a line across the top and bottom shoulders from the inside face of the rail.



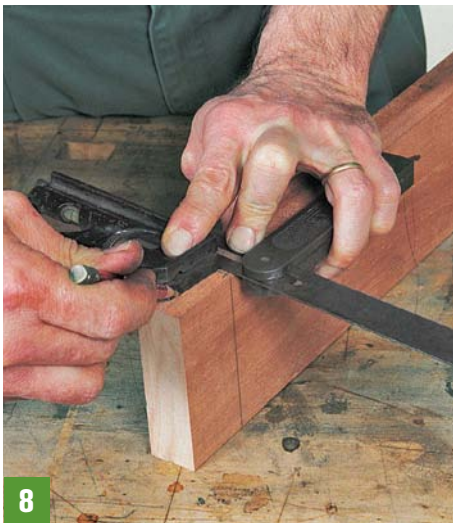
3 Set the dividers to the distance between x and y.

4 Use the divider setting from step 3 to locate point y on the top edge of the rail, measuring from point x.

5 Set the dividers to match the mortise width on the rear leg of the chair itself.

6 From a point x on the bottom of the rail, transfer the width of the mortise.

7 With the dividers still set to the mortise width, measure from point y to mark the tenon width at the top of the rail.



8 Tenon cheeks are marked perpendicular to the shoulder line by registering a square against the bevel gauge – which is still set to the trapezoidal seat angle.

9 After the top and bottom of the tenon have been marked, use a straightedge to connect the points and complete the layout.

10 After knife-marking the shoulder lines, cut the tenon and shoulders with a backsaw, then trim to fit.

Make practice cuts in scrap before cutting the real joint

One very direct way of cutting a compound-angle joint is with a handsaw. First the cheeks would be sawn in the ordinary way. The only tricky part is remembering that the shoulder cuts are at different depths on each edge. Begin sawing with the shallow edge facing you, and avoid cutting into the tenon.

A bandsaw is good for cutting the cheeks, too. Setting the table for the cant angle – remember to keep track of lefts and rights – you can follow the cheek lines on the top edge and the blade will follow the cant angle on the rail's end. The tablesaw can probably get you closer and thus avoid a lot of cleanup with hand tools, but the explanation is a story all by itself.

Whatever method you use, lay out with pencil first and confirm that you have things correct. Often, the cant and seat angles are close enough that it's easy to grab the wrong bevel gauge during layout. The shoulder won't look bad, but the front legs will be way off. It's also possible to get the lefts and rights mixed up and lay out the correct angle in the wrong direction. These mistakes make for a long day, so when in doubt, mill a practice rail and check both your layout and cutting method. Once the joinery for the back end of the chair has been cut, the simple angles on the front ends of the rails will seem easy. *F&C*

Take it slow. The author uses a shoulder plane to trim the cheeks, checking the tenon frequently against the mortise until he has a tight fit. He then trims to the layout lines with a shoulder plane

Marking out the wind

Once the tenon has been cut and fitted, dry-fit the joint tightly and mark out the section of the rail that needs to be planed away. Notice that there is no material removed at the front of the rail.

Establish layout lines. Connect the bottom line of the wind with the bottom front corner of the rail. Planing to this line gives you an even wind and lets the rail meet flush at both the front and back legs

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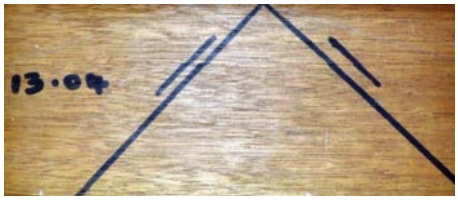
Neat Hinge II

Geoffrey Laycock tests the new version of the Neat Hinge

There are many stages when making decorative boxes that induce dread into any of us – usually with increased stress as work progresses thus investing ever more valuable time. For many it can be the final fitting of hinges as these become a focal point in the finished piece so everyone looks at them. Anything that can make this process easier, less stressful and results in an attractive finish is worth investigating so when I spotted that Ian Hawthorne, boxmaker extraordinaire, had redesigned his Neat Hinge and produced an accompanying drilling jig – yes, another dread moment – I had to investigate.

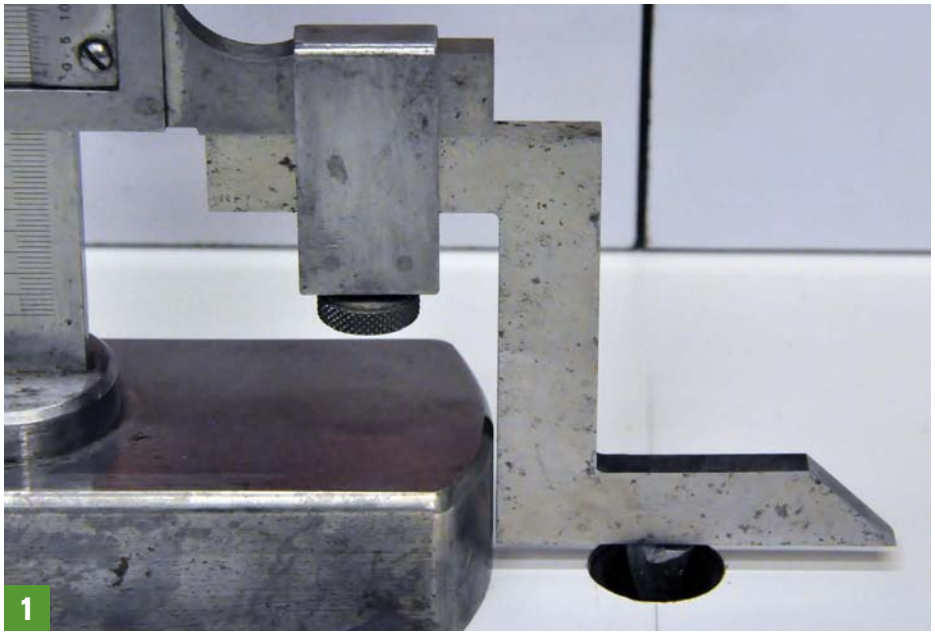
Having agreed with our Editor, I would review these new hinges and knowing I had a couple of simple boxes to finish, off I went to the workshop. Then I remembered I had made those boxes from some thinner stock so the hinges would not quite suit. I couldn't wait until making more boxes as I am in the process of moving house and workshop, but I had some sapele (*Entandrophragma cylindricum*) plank handy so brought that down to 13mm thick and cut pieces to represent a typical end wall of a box and set to work. I wouldn't normally mark box pieces with felt-tip pen but as these were separate pieces I needed to keep them correctly matched and orientated. Using a triangle marking system has featured in *F&C* a number of times and it can be adapted to many uses; there is an additional marking across the division into two sections as I made several pieces, the first used for checking settings. The marking 13.04 is the thickness, achieved using a drum sander for consistency, close enough I think!



Using the triangle marking system

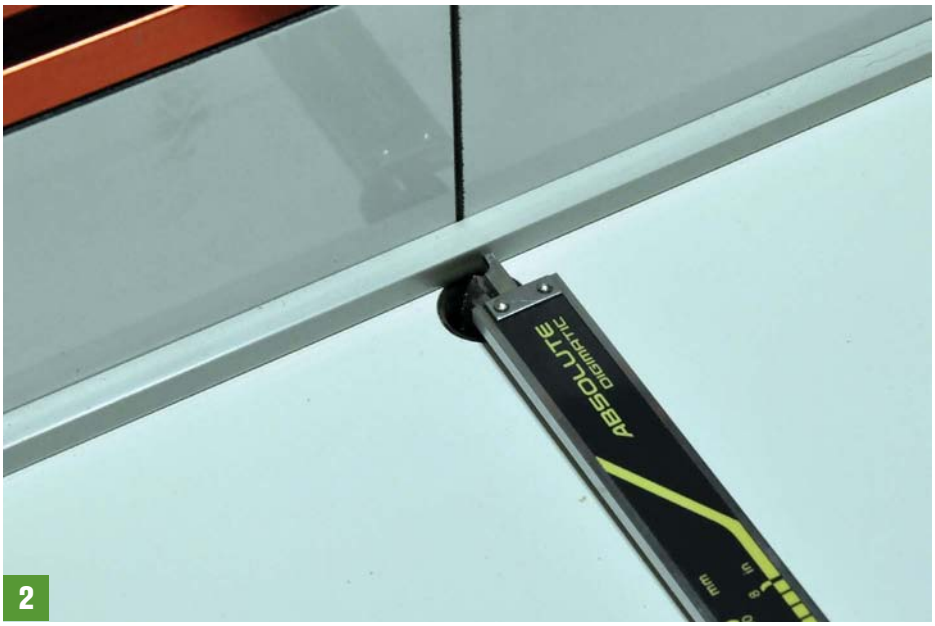
Fitting the hinge

1 How easy is the Neat Hinge II to fit? Clear instructions are downloadable and relatively simple. There are a few tricks to success but we don't want to turn this review into a masterclass on hinge fitting. One key to that success is practise first before putting your precious box to the router table! Here you can see the 8mm down-cut spiral bit in my router table. No cast iron shows as I have a false table consisting of a single sheet of laminate held in place by rare earth magnets. This provides a super smooth surface covering all the junctions of table/insert plate/insert rings so 'sticking' of the box is less likely. I'm using an engineer's height gauge to set the cutter height – ignore the scale on the gauge – I used a Vernier calliper to set it to 3.35mm. I was aiming for the 0.3mm gap between box top and bottom as described in the instructions but ended up with 0.4mm so my height setting was slightly out. Using test pieces to check depth of cut is an essential step.



Down-cut spiral bits

Down-cut spiral bits provide the cleanest surface edge when routing like this as they cut with a shearing action into the wood. A straight-cut bit can be used but only using incremental depth of cut. The disadvantage of a down-cut bit is that waste chips are pushed towards the bottom of the cut so good extraction is essential. It is likely you will still need to withdraw the box before reaching the stop, clean and then finish off. Remember basic safety here: router off, bit stopped and use a small brush only.



2

2 Here you can see the setting distance from the fence. This is the thickness of timber minus 8mm divided by 2 but my measuring method is from the outer side of the cutter so is actually that result plus 8. It is simpler than it sounds. I used a Vernier calliper again and it was spot on first time but always have scrap timber prepared to exactly the same thickness as the box to do test cuts. You may notice I am measuring to a small square section against the fence. This is a plastic piece to avoid having a tall box side running against the tall fence – all increased friction and possible variation in cutter position if the fence accuracy varies at all. Note: this works perfectly with a box bottom or top as it is stable on the table, with a single piece as I'm demonstrating, however, it is not so should be avoided and the tall fence used, especially when doing a left to right feed.

3

3 The next setting is the length you will rout the box side to accommodate the length of the hinge. Using appropriate stops I was able to find a hardwood offcut to make a gauge of 31mm. Eagle-eyed readers may spot my gauge is across the grain and this is not how you make one as it can vary in size with moisture variation. It just came to hand, took little to adjust the size using a sanding board and won't be used again. I set both left and right stops which can then be flipped out of the way for doing the cuts in both directions for the appropriate top and bottom sections.

With just a little practice very impressive results will be achieved. I strongly recommend using the drilling jig, which greatly simplifies that stage. The drilling jig is priced around £16.


4

4 This photograph shows the perfectly routed piece with the hinge temporarily fitted. After the time spent setting up, the actual routing took seconds. A slow steady feed is necessary and great care must be taken when cutting the right-hand bottom and left-hand top recesses as these are fed from the left so the cutter is likely to 'grab' the workpiece. You cannot see any extraction in my photographs but using downcutters might cause a problem with chip clerance and extraction of them. Maybe a future article may show this and a few other router table extraction tips.

5 You now reach a further stress point: drilling holes for the hinge screws. It is always recommended these are slightly off-set to pull the hinge into the recess, the question is how much, and they must be vertical or screw heads finish askew. A drill press is usually advised but I was trying Ian's new drilling jig so decided to do it by hand using my lightweight cordless drill/driver. The stainless steel jig comes with appropriate size twist drill and is simply slotted into the recess. Seconds later four guide holes existed, vertical and in the best position.

6 The end result was a beautifully fitted hinge, tight in its recesses. I would normally polish the screw heads before fitting but I did at least line up the slots. When open, the hinge comes to rest on an internal, and very ingenious, stop at 92°. I can visualise how this was probably engineered and is likely to ensure a high level of consistency of opening angle between hinges. The finish is superb and the other advantage over the original Neat Hinge is that no further machining for an external stop is necessary.

Conclusion

Overall this combination of hinge and drilling guide must be the easiest way to fit wonderfully attractive hinges to small and medium size boxes. Beautifully finished, they are excellent value and complemented by the matching Neat lock available in brass and stainless steel and also relatively easy to fit. There are larger Neat Hinges available with three screw fixings but these do still require a further step to accommodate the external stop. F&C

Choosing a screwdriver

After all the care taken so far, fitting screws can be a real problem if the correct screwdriver is not used, especially with brassware. The usual advice is that the screwdriver blade should be as wide as the screw head, should be the same thickness as the slot width and be ground parallel. However, the chance of you finding a screwdriver that satisfies these criteria, especially for the size of screws used, is next to nil. In the bottom of this photo there's a nice new screwdriver of screw head width. It is too thin so twists in the slot; it is tapered so is more likely to 'climb out' of the slot. Above it is what I use. Starting with screwdrivers bits means you can regrind as many as it takes to get the right fit. Starting off hollow ground means the blade is close to parallel where it enters the slot. This was screw head width to start with and the same thickness as the slots. You may just be able to see the last modification, which is to take off the corners at 45°. Why you may ask? Well, if a full width blade is used with countersunk screws, as the head moves into the countersink the corners of the blade will catch in the sides of the countersink. If the hinge is brass this is quite soft so you may be OK, if it's stainless steel you will have a problem. The alternative is to select or grind a blade to the width of the bottom of the slot BUT doing that means you exert greater force on the slot wall with higher risk of the blade tearing the slot edge and 'climbing out'. Make sure you use a longish screwdriver as this is easier to judge and hold vertical than a short one! I have a screwdriver bit holder for this.

Further information

Hawthorne Crafts:
www.hawthornecrafts.com

Neat Hinge II from:
www.jewelleryboxhardware.com

Neat Hinge II: brass £29.00 per pair, stainless steel £40.00 per pair. Screws are included, P&P extra

PHOTOGRAPHS BY OLIVER SPARKS

Derek Jones puts a new spin on black shellac

Sounds of the 70s

Back in *F&C* 234 Danny Maddocks shared some of the techniques that he uses at Robinson House Studio to achieve an ebonised finish. It obviously struck a chord with regular reader Ray Smith because a couple days after that issue went on sale I received an email from him asking me to pass a message on to Danny: had he ever tried melting down old 78s to make black shellac?

A couple of things struck me right away. Firstly, was he being serious? And secondly, would Danny even know what a 78 was? Just to put this in context I should explain. I'm of the 'baby boomer' generation, so strictly speaking wasn't around when 78s were all the rage. I do, however, have knowledge of their existence thanks to an old Dansette record player I shared with my sister while growing up. I'm guessing Ray and I either have a few things in common or he's a few years older than I am and can lay claim to first-hand experience. Danny, in case you haven't worked it out yet, is from the digital age so we could almost have given him any list of random numbers, say, 45, or even 33⅓, to choose from and he would have been none the wiser.

Hard core

Since their invention at the turn of the 20th century 78rpm records have nearly always contained an element of shellac. Apart from a brief spell after WWII, when vinyl was used, shellac was always widely available. It was seen as a good replacement for the wax cylinders that were used to capture and replay sound recordings up until that time. Shellac was phased out along with the 78 format for the majority of recordings by the late 1950s and replaced by the long playing record – LP – and the 45s made entirely now from vinyl. For decades people have held onto their 78s, presumably for the same reason I'm holding onto my old vinyl. Only now, however, it looks as if the 78 might turn out a better investment, after you remove sentiment from the equation, of course.

What goes around

It's widely accepted that shellac can be dissolved in its original solvent more than once, although conservators are discovering cases that buck the trend. Don't worry, though, as these incidents are few and far between and unlikely to cause problems for anyone other than a professional conservator.

To reconstitute the shellac from the 78 I used standard methylated spirits – meths – and surprisingly, it worked. I was half expecting to have to use a more potent version of industrial methylated spirits (IMS). After breaking small pieces from the disk with a pair of pliers to emulate the shellac flakes that I'm used to using they went straight into a jar at the same ratio I use for basic French polishing: 250ml solvent to roughly 40g shellac.

The reaction was almost instant and after a little agitation the mixture was ready to use after a couple of hours. The following day it resembled the consistency of regular shellac albeit a dilute solution with a lot of sediment.

You can break small flakes of shellac from the edge of the disk easily with a pair of pliers

When the shellac has dissolved what's left at the bottom of the jar is a slurry of various earth pigments

In the mix

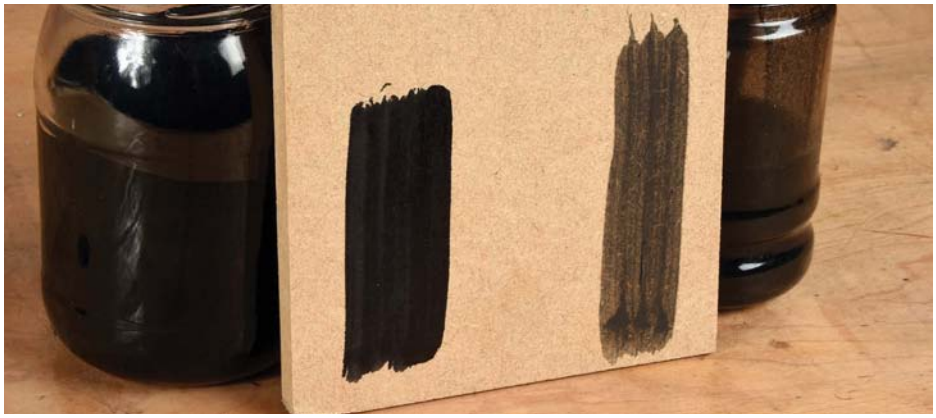
Short of a full laboratory test report, there's no easy way to determine exactly what's in the mixture but it appears to be a combination of shellac with black dye and earth pigments; in short nothing that would deter you from a regular brush application. A Wikipedia search hinted that the later 78s had a greater shellac content than earlier ones, but I wouldn't rely on that as an exhaustive bit of research. I used the information to look for a recording artist from the 1950s and what would have been the dying days of 78s. In an attempt to refine the process but remaining true to the DIY/frugal origins of this idea I passed a small quantity through some domestic coffee filter paper to rid the mixture of its large granules. It was a painfully slow process and would no doubt have been quicker if I had used a commercial product designed for the purpose. The result was still a bit too gritty to be applied using the traditional French polish method. It's probably of little consequence anyway as I'm not that keen on French polishing with dyed black shellac.

Filter the mixture further for a more refined solution

Hit or miss

Compared to the Mylands black shellac polish that I already had on the shelf it wasn't anywhere near as dense and had more of a purple black verging towards brown. That might have something to do with the purple dye in the meths of course. I don't consider either to be a disadvantage merely an option to veer towards a cold black – blue – or a slightly warmer and in my opinion more realistic reddish black. I enjoy looking for what might be considered rogue colours in timber. Freshly milled walnut (*Juglans nigra*), for example, sometimes throws up a purple hue under oil before it has had a chance to oxidise. And elm (*Ulmus procera*)? Well, let's just say it has all the colours of the rainbow under one roof. With a sample board of genuine African blackwood (*Dalbergia melanoxylon*) with which to make a comparison I set about trying to replicate it using poplar (*Liriodendron tulipifera*) as a substrate and the two black polishes.

The 78 blend – left – is a much warmer black than the ready-made version from Mylands – right



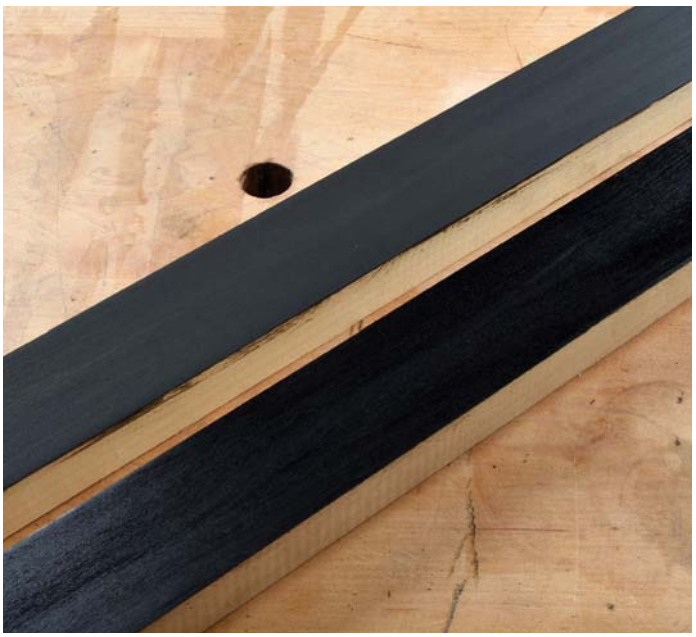
The shop-bought polish – left – will almost mask any trace of the substrate

The process

Directly after staining I brushed a couple of coats of each of the black polishes onto the poplar. The 78 blend was very chalky and a dead flat matte compared to the Mylands polish. The 78 blend allowed more of the poplar grain characteristics to show through while the Mylands had almost masked any trace of wood beneath the surface. At this point you might want to decide how perfect you need your black to be. Continue with more coats of either polish and you will eventually obliterate any trace of timber. The 78 blend will do this slowly, with greater control while the Mylands will get there a lot quicker. It's a relatively quick process to bring the finish up to a full gloss shine with a polishing rubber and makes me wish poplar was a little prettier to start with. If your intention is to emulate Blackwood or even Macassar ebony then a 78 blend under a golden shellac like Liberon's De-waxed Blonde is very convincing on poplar. I'd guess this would be even more so on something like pear. If you want that classic Steinway black that you can almost dive into then a shop-bought polish like the one from Mylands won't disappoint.

After two coats of water-based black stain the natural grain colour still shows through

Mylands is just one of many ready-made brands of black polish



The 78 blend – top – is quite chalky compared to the Mylands polish, which is already starting to take on a shine

Finishing with a polishing rubber resulted in both samples having a full gloss with plenty of depth

Perfect harmony

Ebonising has to be carried out in stages if you are to avoid the appearance of just a layer of black paint. Applying a black stain first will always get better results and will be less likely to reveal the natural colour of the wood beneath after any wear and tear has taken its toll. If you ask me, the most pleasing aspect of harvesting shellac from an old 78 record is not the recycling of materials for any ethical or moral standpoint although this should be reason enough to give it a go. Instead, if you're looking for an extra depth to your next project then how about combining the emotive power of music and the artists that make it with artists of a different kind. Retaining the original label and artwork and incorporating it into the design would seal the bond and make for a very tailored piece. *F&C*

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First impressions last

Blindfolded and with only his wits to rely on Richard Arnold remembers the day he first shook hands with a Thomas Norris masterpiece

A rare pre war Norris panel plane minus the adjuster that made them famous

As many of you will already know, I have a passion for older woodworking tools and still use them on a regular basis in my everyday activities as a joiner and cabinetmaker. I think my first love will always be wooden bodied planes, but this is a story of a different form of plane and one in particular that has been a good companion of mine for over 30 years.

The 'Rolls Royce' of planes

Towards the end of my apprenticeship as joiner I started to take an interest in all forms of woodworking and proceeded to read up on anything I could lay my hands on related to the subject. I started coming across descriptions of a certain make of plane that seemed to have an almost mythical status among the woodworking fraternity. The planes were called 'Norris' and I soon began to hanker after owning what was often described as the 'Rolls Royce' of planes.

One day, I happened to mention at work I was looking for a Norris plane and one of the old boys said he had one at home, but never used it as he could never get on with it and found it difficult to sharpen. He said he would be happy to sell it to me, but didn't know what to charge for it. He then suggested I pop to the local ironmongers to find out what a new Stanley smoother cost and set that as the price. This was about £25 at the time, so I paid up and the deal was struck. The plane was a pre-war, number 50 coffin smoother and although I used it for a few years, I never really gelled with the tool and ended up swapping it for another plane later on down the line. I noticed a very similar plane on the web for sale the other day with a price tag of £750… perhaps I should have hung on to it after all!

Norris panel plane

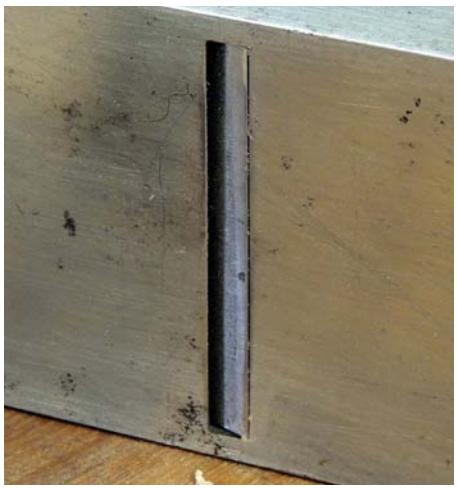
As is the way with all tool enthusiasts, I soon started to dream of my next Norris. This time I set my heart on a panel plane and when my parents asked me if there was anything special I would like for my 21st birthday, I suggested they could help with the cost of a Norris panel plane. At the time, the now famous tool auctioneer David Stanley had a shop in Derby and as this was reasonably near, my mother drove me up to see if they had a suitable panel plane in stock. How I

Richard Arnold at the bench with his trusted Norris plane

The 'Saracen's head' screw on the lever cap

wish I could travel back in time and once again visit that marvellous emporium of delights. It was a veritable Aladdin's cave of treasures for a young tool enthusiast such as myself. Although I cannot remember his name, the shop was manned by a wonderful old gentleman, who would I feel have been quite at home in a Dickens novel. If memory serves me right, he was a retired joiner of the old school. When I enquired as to whether he had any Norris panel planes for sale, he rather bluntly asked me "What do you want it for boy? Are you a collector, or do you actually want to use it boy?". I straightaway assured him that I was intending to use it and immediately sensed a softening of his approach to me.

The gentleman then went on to inform me



A hundred years on and still a precision instrument

Note the lack of an adjuster

that he had about five examples to choose from, but then went on to say that if I was serious about purchasing one of them to actually use, I should try them out. Under normal circumstances, in most tool shops this could have proved difficult, but this was no ordinary tool shop. In the middle of the shop floor stood a traditional joiner's bench and my new-found friend proceeded to place the selection of planes on the bench for my perusal.

He then placed a length of timber in the vice, but before I had the chance to try out any of the planes he said this: "Now you might think I'm strange boy, but what I want to do is blindfold you before you make your selection." Much to my mother's amusement, this is exactly what he did.

I shall be eternally grateful to that old craftsman for his wise words for as I tried out each plane in turn, it soon became apparent that one plane in particular had a completely different feel to the others. It immediately felt comfortable in my hands and had a balance and action that the other planes simply lacked. Before I even took the blindfold off, I knew that this was the plane for me

The history

At this point I should mention that Norris planes are well known for the type of adjuster that Thomas Norris first patented in 1913. Most of the bench planes made after this date have this feature and, if truth be known, I had set my heart on buying a panel plane with an adjuster. Of all the planes I tried out the only one that did not have an adjuster was the one I had selected during my 'blind test'. Although I was initially disappointed by this, I decided to stick with my instinct and purchase the plane. To this day I have never regretted that decision and the plane sits in front of me now as I type these words. A constant companion in my woodworking adventures for the last 31 years.

I would now like to discuss the panel plane in question and where it fits into the history of the famous plane maker, Thomas Norris. The origins of the firm known as Norris of London are still a bit of a mystery. The 1922 price list states that the firm was founded in 1860, but the earliest records of actual manufacture date from 1872. It is surprising that, although there have been many articles written about Norris planes, there is still not much information on how to accurately date the earlier examples of his bench planes. In theory this particular plane could have been made anywhere between 1872 and 1913, but my own feeling is that a more accurate estimate would be around 1900. The plane is 394mm long and is made of a dovetailed construction as opposed to a casting. The dovetails are virtually invisible and this is possibly why Norris marked the front edge of their planes with the word 'steel' to differentiate them from cheaper cast models. The infill is made of a beautifully figured rosewood and appears to have a French polish type of finish to its surface. The thick and parallel 62mm iron and back iron – bedded at 47.5° – are marked with the maker Ward and Payne. Most of the earliest planes by Norris seem to have irons fitted by this famous Sheffield manufacturer. The late Ken Hawley once told me that he considered Ward and Payne to be possibly the best edge tool manufacturer to have ever worked in Sheffield, so it would appear that Mr Norris had good taste!

Norris's finest tool

With some infill planes there is a way to tell if the iron is original to the plane. The bed of the plane, the iron and cap iron, and in this case the bronze lever cap are marked with a batch number. This is often a single number, but sometimes it is a combination of number and letter. On this particular plane the mark is 6P. I originally thought this may stand for panel, but I have since seen a Norris smoother marked with a 'p' so I have had to discount this theory. The bronze lever cap is the early form with what has been called a 'Saracen's head' screw. I find this a far more aesthetically pleasing design than the 'clumpy' later pattern seen on the adjustable planes.

In today's market all Norris bench planes are fetching good prices, but it is interesting to note that it is always the adjustable examples that fetch the most money, but in my own opinion the planes made before 1913 were probably Thomas Norris's finest work, and as a consequence still a viable option for someone looking for a quality infill to use at the bench. F&C

PHOTOGRAPHS BY MARK HARRELL

The saw doctor will see you now

Mark Harrell examines the quality and value of hammer-setting and jointing – the foundation of proper saw sharpening

Up to now, we have deemed Grandpa's saw worth saving and we've cleaned and dressed the old boy into a fresh uniform by completely stripping the saw down, maintaining it and putting it back together. We have also repaired our battle-scarred handle, then then carefully reassembled and retensioned the plate/back assembly arrow-straight. It is now time to hone every tooth into a unified formation of razor-sharp bayonets to sever wood fibre with cold, precise efficiency.

But let's keep this in mind above all: anyone can push a saw file through a gullet and make two sharp tooth edges. Not everyone can sharpen to joint. It follows then that really, sharpening is completely secondary to proper joint and set. One must achieve proper sharpening to joint, so every tooth in that toothline is of the same height, ready to do battle. And because they have all been set properly in the crucible of a hammer and anvil, every tooth is poised, uniform and ready schuss through any errant wood fibre standing in the way, because now they operate as a unified team with no sloppy variance under your direction. Welcome to the world of cold, hard steel. Sheffield Steel, to be exact. So let's start by setting our teeth.

Hammer-set or plier-set?

We set our teeth – that is, bending the upper half of the tooth outward slightly during the sharpening process – so that the crisply-filed leading edges of each tooth will 'knife' – for crosscuts or 'chisel' – for rips – their way through wood fibre while allowing the sawplate to slip through the kerf with just enough clearance. No set or too little set invite friction within the cut and friction generates heat. With heat, metal expands and your troops will abruptly bog down in the fight. Too much set promotes a disorganised, jerky, zig-zag approach to cutting a straight kerf. Sloppy fighting at best and inaccurate cuts at worst. So the primary goal is set your teeth uniformly, with just enough set to clear the plate comfortably in the kerf and no more.

There are a multitude of plier sets available today online, through vintage tool shops and some made new these days, all of which involve squeezing a 'hammer' onto tooth against a bevelled anvil. With proper adjustment, the upper half of the tooth is bent slightly outward, thus achieving set. But imagine squeezing a plier set with the 20lbs of pressure each palm/finger/wrist-gripping act entails. One tires with repeated squeezing and then 20lbs of grip becomes 15 or even 10. Perhaps 25, when you realise you haven't been squeezing consistently. Consider the symphony of muscle, tendon and bone involved with this act – we are all, after all, articulated beings and therefore imperfect.

What exactly is it we're squeezing into set anyway? Spring steel, of course. And as Winston Churchill once observed: 'British are not made of sugar-candy'. Does Sheffield spring steel resist bending to your will like a raw recruit unused to parade ground discipline? Of course it does. Spring steel wants to bounce back, say 'no!,' stay in its comfort zone and protest.

Time to unleash the Sergeant Major of saw setting devices: the hammer-set. You will find no newly-made hammer sets these days – they're all vintage. Search out old US manufactured names, such as the Seymour Smith hammer-set, pictured here, or the Disston Star, both of which were manufactured in the mid-1870s, and which still serve useful, constant function in our saw shop today. Also seek out something of more recent manufacture, such as an Aikens set or the Foley No.281 trip-hammer set.

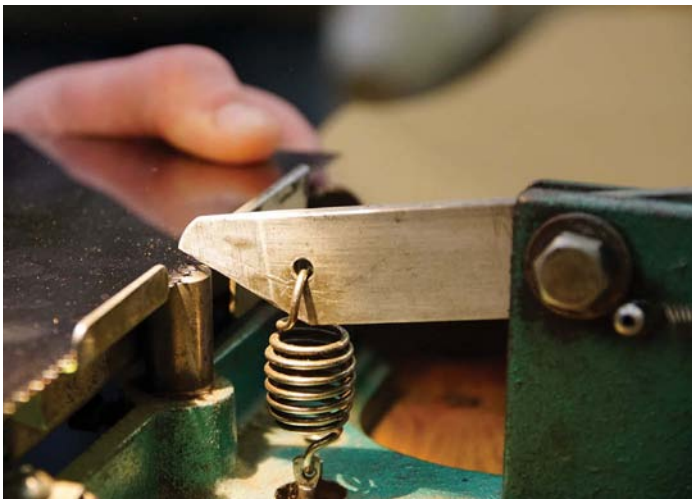
What they all share in common is the striking action of a hammer onto an anvil, whether delivered by spring energy activated by a treadle, or simply whacked with a light dead blow mallet. When subjecting sawteeth to a hammer-blow, you are literally rearranging molecules. Rather than bending, pleading with spring steel to conform, you actually smack it into formation with a hammer-set and the tooth abruptly pops into formation with military precision. This is the sort of dynamic leadership raw troops require to present their bayonets in deadly unison to the mission at hand. Anything less just won't hit the bullseye.

Hammer sets are simple, but as with a plier set, one must focus on seeing the teeth correctly. We take the time at the Bad Axe shop to dot every other tooth with a Sharpie pen, flip the plate around, then dot the adjacent teeth on the opposite side. This will take around 10 minutes, but pays huge dividends in speed and accuracy while setting and sharpening.

For now you'll need to dig the foxhole, check your work and prepare to march your troops to the barber to shear their unruly locks through the jointing process. *F&C*

Stanley 42X plier set


Seymour Smith hammer-sets


Foley trip-hammer set


Using a Sharpie to dot every other tooth

Next month: Mark will look at clock sharpening

Rosewood chiffonier side cabinet – part 3

As we move on to the panels of our restoration project, we revisit the birth of cabinetmaking and discover how things were done in the golden age of furniture

PHOTOGRAPHS BY DEREK JONES/GMC PUBLICATIONS

Plain fabric, pleated fabric, brass grille over fabric, good old bog-standard veneer: the door panels on Regency chiffoniers come in myriad forms and are all the more interesting for it. Given the delicate nature of the fine silks often used to create them, however, it's not surprising that few original examples exist. Panels that have survived are often faded beyond recognition or so fragile that only an expert should tackle any remedial work.

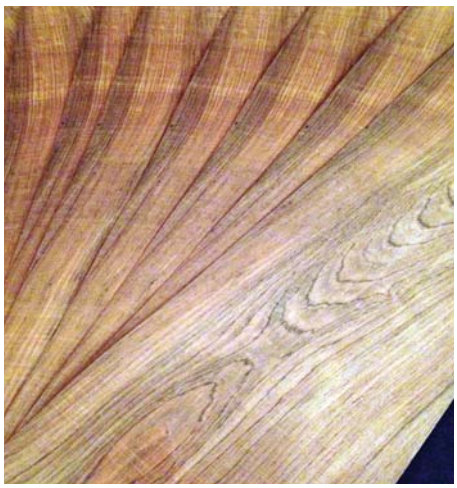
The evidence would suggest the panels on our cabinet were originally faced in fabric – there are signs of upholstery pins along all four edges of the panels. And at least one aftermarket refurbishment had rendered the panels unsuitable for similar treatment as the edges were riddled with pinholes. The last covering, perhaps a DIY solution, was a paper-backed fabric stuck to the panels with a dilute hide glue. Any trace of the original colour has long since faded unless, of course, the panels began their life as beige...

As I mentioned in the first part of this restoration project, it was the rosewood veneer that first attracted my attention to the cabinet in the auction room, so I decided to hunt down something similar with which to replace them. Ebay is a great resource for such searches and after a few attempts I found something suitable: Rio Rosewood (*Dalbergia nigra*).

It's worth mentioning at this point that the concept of veneering represents something of a milestone in the development of furniture making. It heralded the arrival of the cabinetmaker in the 18th century. Before that furniture making was largely an extension of basic joinery carried out by carvers, joiners, turners or upholsterers. Distinct from marquetry, this new skill gave way to the 'golden age of furniture' and a self-indulgent orgy of artistic expression that would last more than 200 years until the Victorians came along and put a stop to all that.

The top edges of our panels were riddled with pin holes

The old fabric was easily removed with warm water



Some Rio Rosewood from a bundle of 1960s stock

Making good

The original soft wood panels on our chiffonier had shrunk quite a lot across their width and were bordering on poking through the front of their frames. After removing the existing fabric with some warm water and a scraper I planted on a couple of new sections either side. It meant ripping off sufficient material to rid the edge of any tacks before edge jointing them with a plane. The top edges were left alone.

The panel edges were trimmed to allow for jointing

The order of things

We're learning a lot about the habits of our 19th-century cabinetmaker in this restoration project. For example, the inside edges of the door frames were veneered before the doors were assembled, with the rails running into the stiles as can be seen in this photo. The last stage was to veneer the face of the frames and mitre the veneer at the corners.

Saw cut veneers before assembly of the door frames

Special brew

When it comes to hide glue it seems there are many variations on how to mix, use and look after the stuff. Rather than pick holes in other people's practices, perhaps the best thing to say is that it is a very forgiving material. It's almost impossible to mix up a batch that won't stick, which is a good thing. How long the bond will last and how it will behave over time are quite different matters. Admittedly these factors won't necessarily concern every user in every situation but for one group of professionals, conservators, these details are of the utmost importance. In order to do the best work possible I think we'd be foolish not to follow their example.

Yannick Chastang is one such conservator. He has been researching the subject of hide glues for more than a decade and is one of the world's leading experts on the subject. His frustration at not being able to purchase hide glue of a good-enough quality has led him to blend his own and it was a blend of his hide glue, specifically designed for hammer veneering, that I used for this project. The finely ground beads are a combination of two types of hide glue. One made from bone; the other from what is described as connective tissue. When dry, the blend has the right balance of stiffness – from the bone – and flexibility – from the connective tissue – required for veneer work. In use it has a short open time with a firm grab. Adjusting the ratio of these two ingredients creates a hide glue more suitable for general purpose joinery with a longer open time that may require the use of clamps to hold mating pieces in place. The blend is made up entirely from bovine hide, a source proven to be the best for making hide glue. Lab tests have revealed that some off-the-shelf hide glues do not contain any bovine hide whatsoever. In the world of conservation, provenance and reliability are everything.

Alcohol features a lot in traditional cabinetmaking and using a strong beer as 50% of the total fluid ingredient will have two main benefits – three if you include the aroma! Alcohol is a wetting agent, meaning it will break down the surface tension of water enabling the glue to flow more easily into the pores and fibres of the wood. The sugar content of your beer will increase the shelf life of your glue once mixed. The bond between veneer and groundwork will be greatly improved by scoring the surface with an old saw blade.

La Colle from Yannick Chastang and strong beer from the off licence

Score the surface of the groundwork to help with adhesion

Dampen the veneer with a light spritz of water

Treat both sides the same to equal out any cupping

Use a warm iron to remove excess water from both sides

Veneer preparation

Preparing for hand veneering is a bit like preparing for a home birth; you'll need copious amounts of hot water on standby and a good supply of clean towels.

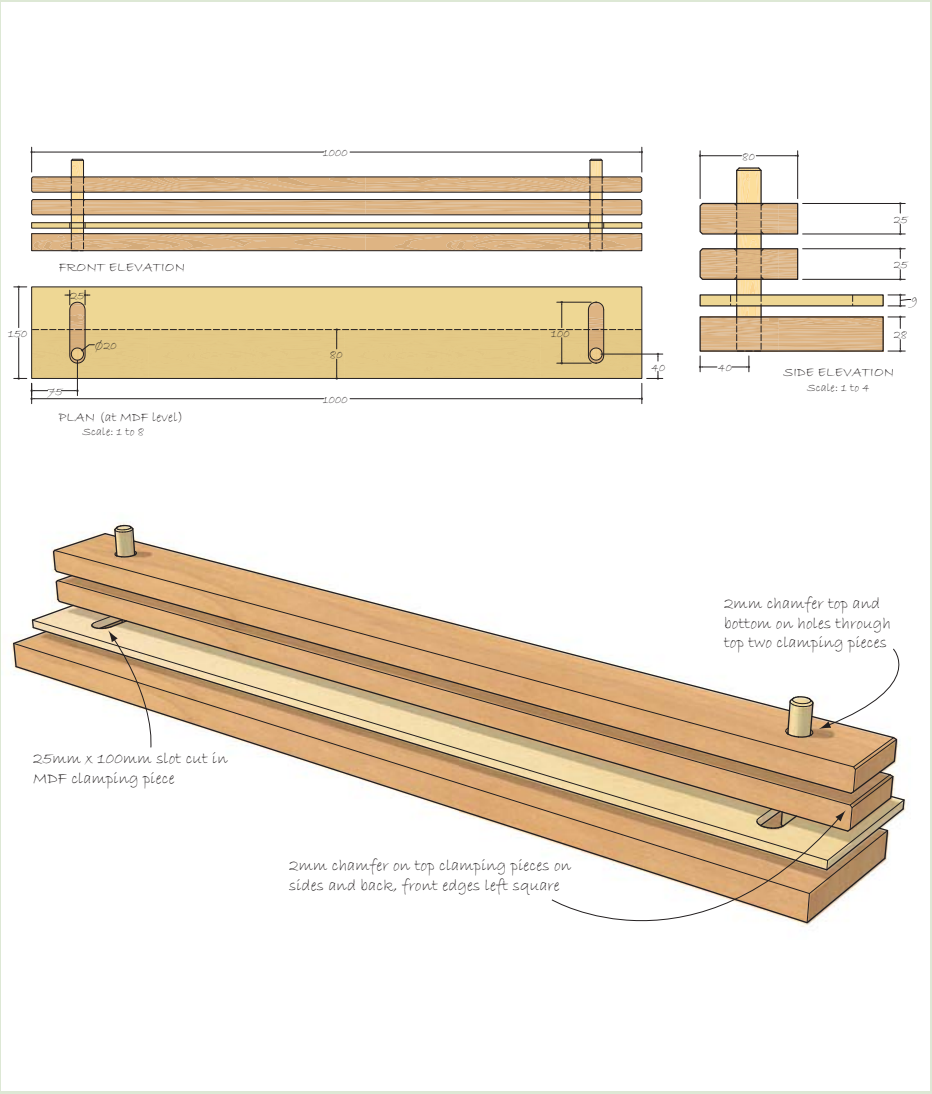
Hammer veneering with hide glue works with a combination of heat and moisture: too much or too little of either will hamper your progress or halt it completely. I always begin by warming and softening my veneers before use. The backing veneer for these panels is Brazilian mahogany (*Plathymenia reticulata*). It's thin and very pliable so doesn't need a lot of heat or moisture to get ready for laying. I give the oversize leaves a spritz of water on both sides and then gently apply a hot iron over both faces until the veneer lays perfectly flat on its own and is near enough dry. I then place the leaves between a couple of damp boards of scrap MDF or similar until I need them. It's better for the leaves to be warm rather than wet because too much moisture could result in gappy joints or even splits when it dries. Thicker burrs and veneers, like the Rio Rosewood used on this project, are sometimes best left overnight to soften.

Veneer trimming board

This veneer trimming board is quick and easy to make. Use it to trim veneer to size with a veneer saw or as a shooting board. The sacrificial layer of MDF will need replacing when it becomes worn on both sides and the clamping bars might need levelling off now and then but for fast and accurate veneer preparation on the cheap it's unbeatable.

Trimming veneer oversize with a veneer saw on the 'shop made jig

The jig doubles up as a shooting board for veneer as well



Get stuck in

At this point you want to make sure you have everything you need to hand before you get started. That's a bowl of hot water, veneer hammer, warm iron and clean cloths. On a cold day it won't hurt to warm the groundwork with the iron or even a hair drier. Moving quickly, apply sufficient hide glue to the area for the first leaf of veneer. Place the veneer onto the glue and hammer it down gently. Too hard and across the grain will create splits at the edge. It's not a disaster but better if you can avoid it. Now, and this is the part that most confuses people, apply a second coat of glue to the top of the veneer. Its function is not to assist with adhesion but to reheat the first layer of glue and to lubricate the surface while hammering down the veneer for the final time.

You'll be using a great deal of force this time to expel the excess glue from beneath the veneer. Work from the middle out in diagonal lines and not at 90° to the grain. On cold days or on large panels you can lightly pass the warm iron over the glue, barely making contact with the veneer to soften everything up. Whatever you do, though, don't stop moving! If you do the iron will stick to the veneer with pretty disastrous consequences. And let's just say, you'll only make the mistake once.

The veneer stays put not only because the glue is sticky but also you have created a vacuum between the veneer and the groundwork similar to that of a typical rub joint. When you're happy that the veneer is stuck down use the hot water and clean cloth to wipe over the surface and remove the excess glue. If there are some bubbles, don't labour over them now. They may take care of themselves as the glue dries or you can iron them down the next day.

Apply glue to enough of the groundwork for the first leaf

Take care when hammering a dry surface

Apply a second coat of glue to the top face of the veneer after it's been laid

Use more force with the veneer hammer to expel the excess glue from under the veneer

A good butt joint

Unlike veneering with a hot or cold press or a vacuum bag, when it comes to hammer veneering there is no point in shooting perfect edge joints on your veneer prior to sticking it down. The heat and moisture involved will distort the leaves and ruin your straight edges. Instead cut them roughly to size and lay them slightly over the top of any layout lines, 10mm should be adequate. To butt the second piece of veneer up against the first, apply glue to the groundwork stopping just shy of the joint area. Position the second leaf so that it overlaps the first one by that comfortable margin and press it down gently with the hammer. Now use a straight edge and knife to cut through the two leaves of veneer at the same time in a series of light strokes. You should be able to peel back the top piece of veneer and remove the offcut from the bottom piece with a palette knife or old chisel. Check the joint while it's dry to make sure you have removed all the waste and that it is a good fit then apply glue to the rest of the groundwork and the top of the veneer. Use the hammer this time to expel the excess glue via the joint. Clean the surface again with the hot cloth and leave to dry. With thin panels like these I was able to work on both faces in a single session, making sure there was plenty of newspaper beneath the first face and a base board. It's not always convenient but the slower the panels dry the better. This will help to minimise any warping or shrinking back of the veneer. If this does happen it's likely to be as a result of having too much moisture left in the veneers before gluing them down, too thin a mix of glue or too wet a cloth for cleaning.

Cut the two veneer edges at the same time

Peel away the waste from beneath the top leaf

Check the joint before applying any more glue

Apply glue to the rest of the groundwork…

… and the top of the veneer

Expel the excess glue via the joint line

Finishing up

Leaving panels like these sandwiched between boards with a couple of sheets of paper to stop them from sticking will help to keep them flat. You already have the boards left over from damp-pressing your veneers in the first place, so why not put them to good use. It will take longer for them to dry but could make all the difference. To get the panels ready for polishing a cabinet scraper is the best means of cleaning the surface. The heat generated by mechanical sanding at this point can reconstitute excess glue on the surface and quickly clog your abrasive. Any fine sanding can be done later.

Wiping the surface over with meths will show up any residue glue

Why hammer veneer anyway?

I've tried all sorts of veneering methods in the past and the one that best suits the small workshop is without a doubt hammer veneering. The initial outlay is minimal compared to that of a vacuum pump or press. There are no clamps or cauls to contend with and curved surfaces can often be tackled without the need of a former. With the exception of a glue pot perhaps, you should find you already have most of the tools and when the job is done the equipment itself takes up a lot less space than a press. It does however require a little practice to become proficient. I wouldn't say it was skilled work, more of a knack, like French polishing or plastering, but when mastered you can work at quite a pace. The gentleman who showed me the ropes would regularly veneer three complete chests of drawers with quartered tops, book-matched drawer fronts and featherbanding in a day then knock off at 3 o'clock to go and play golf. People always comment about the smell of hide glue but it's important to remember that it's a natural product. Treat it like something you would consume – i.e, buy good-quality ingredients and use them while they're fresh – and I think you'll soon overcome that issue. F&C

Contact: marquetrycentre.com for quality hide glue and other marquetry supplies

Next month

We'll look at the locks and hinges and make any other small repairs before polishing.

Square deal

Anne Briggs Bohnett emphasises the importance of using truly square stock and offers a few tips on using a shooting board to achieve perfectly tight joints

As a fairly young woodworker in terms of training and experience, a crucial part of my journey learning this craft has been the practice of eliminating as many variables as possible. This way, when things don't turn out the way I expect or want, I can narrow down where I went wrong, adjust my techniques or approach accordingly and have greater success with my next attempt.

Many of my biggest problems early on resulted from using pre-dimensioned stock that wasn't actually square. My dovetails wouldn't mate properly, my assembled carcasses were never quite square, my mitres were never perfect. I would fiddle with the joints and check and double-check my joinery, but could never quite pinpoint where I was going wrong. That was until two years ago when, following the advice of a fellow handtool woodworker, I built my first shooting board. That simple afternoon-long project revolutionised my handtool woodworking. After sawing to my line, I was able to clean up my square and mitred cuts with the shooting board. I could use it as a planing stop for thin stock, shoot small long-grain stock square, and adjust the dimensions of my stock by length by a few thousands of an inch – a single shaving – at a time.

More experienced woodworkers have been preaching about the importance of using a shooting board in handtool workshops for some time now, so I won't be so bold as to presume I have anything new or earth-shattering to say on the subject. I will, however, echo their wise words about the importance of using square stock and encourage you to make or buy your own shooting board as it has great potential to aid your efficiency and accuracy as a handtool woodworker. And the more you use it, the more you'll wonder how you ever got along without one. Shooting boards perform three basic functions: shooting long grain, squaring end grain and truing mitres. Aaron Moore of Walke Moore Tools wrote a fantastic piece on his long-grain shooting board in *F&C* – issue 222 – and I urge you to check it out. Paul Sellers also has a wonderful video series about his take on a shooting-board design which squares end grain and trues mitres all in one jig. For my part, using two scrap pieces of plywood, some 1x1in stock and a few power tools I was able to construct a simple shooting board in under 20 minutes. It may not be as pretty, or work quite as slick as some of the fancy designs out there, but it does the job just as well.

My Paul Sellers' shooting board

Many tools, same job

Modern tool-makers have gone above and beyond to tweak old designs as well as create new planes to make the job of shooting edges more comfortable, more precise and more efficient. There are also some fancy shooting boards on the market to accompany them. If your budget can run to a Vogt shooting board and a Lie-Nielsen or Veritas shooting plane to accompany it, by all means, go ahead, you won't be disappointed. Quality modern shooting planes boast of thick blades that don't chatter and hold an edge for a great length of time and a mouth that can be easily closed to produce whispy thin shavings. Vintage planes can be restored and well tuned with a touch of skill and understanding about how they are 'supposed to work', but they are awkward to use on their sides in conjunction with a shooting board. High-end manufactured shooting boards boast of tracks that planes can ride within, minimising error and effort. They are also adjustable, so if the board goes out of true, the shooting board can be tuned instead of thrown away. They are made of materials that minimise wear and a one-time purchase will offer a lifetime of use.

Most designs for shop-made shooting boards, on the other hand, produce a disposable product. When the board goes out of true or wears out, it must be re-made, which means less time for building furniture. The truth of the matter is, though, that a well-tuned vintage plane and shop-made shooting board will give you square ends and true mitres just like those of their fancier cousins.

I own the Veritas mitre plane, which was created to be multi-functioning and excellent at shooting mitres, and I have used it extensively. The removable handle on the side makes it comfortable to use with a shooting board. The side handle on the Veritas can be removed and it can also be used as a smoothing plane. I like this versatility and I can vouch that it does both jobs well. I would have liked, however, to have seen the plane developed with square, rather than rounded, sides like the now-out-of-production Lie-Nielsen mitre plane so that I could have added a track to my shooting board.

With workshop time at a premium and orders adding up, efficiency has become increasingly important to me. I would rather have two planes, one set up to smooth and the other to shoot, than have to reconfigure a single plane several times during a single project. It was for this reason that I recently purchased the Veritas shooting plane.

In a similar vein to the Veritas mitre plane with the removable side handle, several companies now offer 'hot dog' attachments to make using regular bench planes on their

Modern planes

side more comfortable. Once again, however, you will not regret having a single plane set up for shooting rather than having a 'Jack of all trades' approach to your plane arsenal.

'Bevel-up', also called 'low-angle' planes, provide an optimal angle of attack for end grain. Vintage low-angle planes do exist – the most popular being the Stanley No. 60½, but they are increasingly hard to come by. A Lie-Nielsen 60½ or Veritas low-angle Jack work well when set up with the 'hot dog' attachment, but the blade for a shooting plane must be ground and honed perfectly square, whereas a true Jack plane would have a cambered blade. So two blades rather than two planes would also be an option, but you would always be opening and closing the mouth to perform the two tasks.

At the end of the day, though, the answer to the question of the best plane to use with your shooting board is always going to be easy: your sharpest one. New or old plane, shop made or fabricated shooting board, the best advice I can give is to keep the pair in a convenient-to-use location and to choose a dedicated plane with a square-ground, freshly honed blade and a nice tight mouth.

The 20-minute shooting board

Use a scrap of ¼in and another ¾in cabinet-grade plywood and a scrap of 1x1in square stock – see Fig 1 – to build your own 20-minute shooting board. Dimensions are arbitrary and based wholly on your needs or the scraps to hand. If you want your board to double as a long-grain board for longer stock, use larger pieces. The ¼in plywood will be glued to the ¾in plywood to create a shelf that will offset the mouth of the plane that would otherwise prevent the plane from cutting the whole width of your stock.

Once the glue between the two pieces of plywood has dried, the planing stop can be fixed at a perfect 90° angle to the edge of the ¼in ply – see Fig 2. Accuracy is key here, or your shooting board will be worthless. Leave about 4mm of your square stock jutting out into the plane track. Add a bench stop to the bottom of the shooting board and you are ready to create perfectly square, beautifully polished 90° edges on all your stock. Chamfer the back edge of the excess material you left in the plane track to reduce blowout, then use your plane to remove the excess stock as if you were shooting an imaginary board. When the plane stops cutting, your new shooting board is ready for use – see Fig 3.

Fig 1

Wax the path your plane will follow to decrease resistance in use. Experiment with hand positions on the plane that allow you to push your plane most comfortably along the edge guide of the shooting board with enough force to push it through the cut but not so much that your plane goes flying across the room! Also take care, especially if you are using a traditional bevel-down handplane, that your hand position doesn't disturb the lateral settings of your plane.

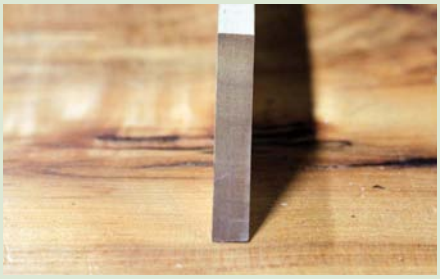
Fig 2

Fig 3

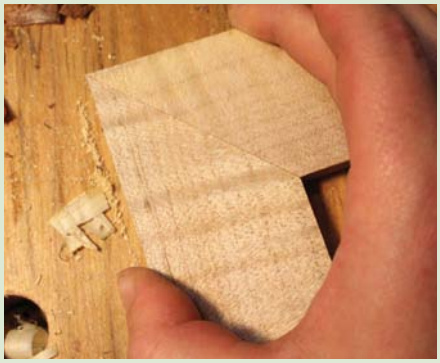
Perfect mitre trick

Once you have your shooting board and plane set up and tuned well, it should cut clean perfect square and mitred edges. The end grain shavings should come off the plane in curls, just like the gossamer shavings of a smoothing plane. The end grain surfaces should have a clean, polished appearance. Properly shot mitres don't even need clamps to create a perfect joint. Simply spread a dab of glue on the two surface areas, rub the glue surfaces together to force out all the air from the joint, align the edges and wait for the glue to dry. Result? Perfect mitres every time. F&C

Start with a mitred cut



Polished end grain



Perfect mitre

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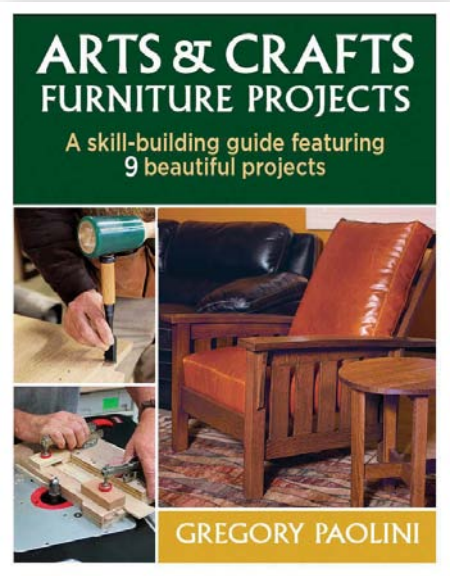

Arts & Crafts Furniture Projects

By Gregory Paolini

The Arts and Crafts style is one of the most popular and enduring in woodworking. Featuring nine beautiful projects of varying difficulty, Arts & Crafts Furniture Projects will appeal to the beginner woodworker, as well as to the advanced and seasoned woodworker. The book will build readers' skills while outfitting their home with a suite of wonderful furniture. After an opening chapter that introduces key construction methods and gives an overview of the Arts & Crafts movement and revival, the book moves into the projects section.

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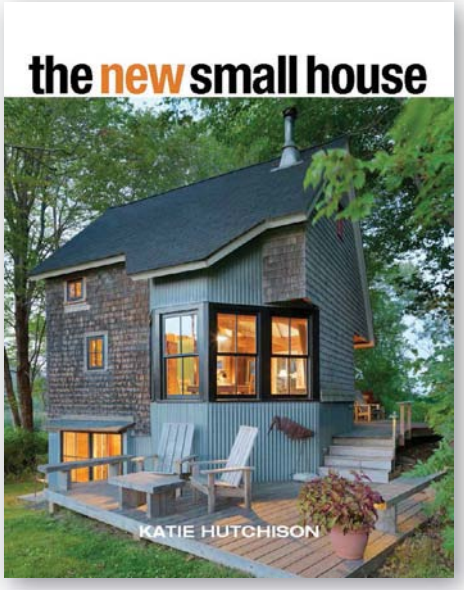

The New Small House

By Katie Hutchinson

This book re-presents fundamental small-house design strategies – complete with whole-house case studies for homeowners eager to simplify smartly. The opening chapter presents 10 clearly defined strategies for creating a great small house – including borrowed view and daylight, multipurpose spaces, pockets for privacy and using quality materials where it counts – setting the stage for 25 small houses profiled in the second part of the book.

The houses are organised by the nature of their location – beach, rural, village, urban – and include new construction and renovations/additions.

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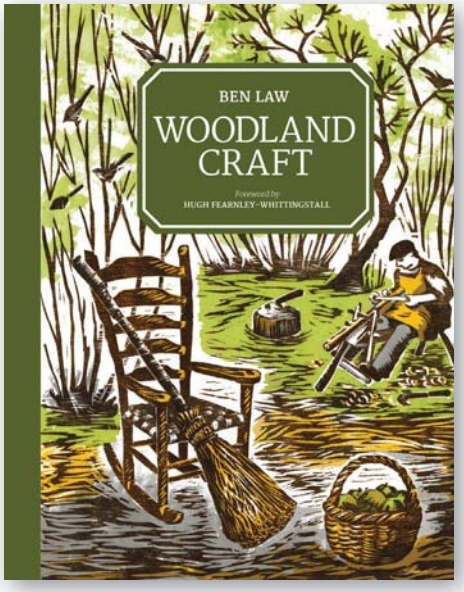

Woodland Craft

By Ben Law

Accompany woodsman Ben Law as he celebrates the amazing diversity of craft products made from materials sourced directly from the woods. Including brooms, rakes, pegs, spoons, chairs, baskets, fencing, yurts and even a caravan, the items are hewn from freshly cut green wood, shaped by hand and infused with a simple, rustic beauty. Detailed instructions and advice are given for each craft, along with essential knowledge about tools and devices. With fascinating information on the history, language and traditions of the crafts, coppice management and tree species, this book teaches about all aspects of the low-impact woodland way of life.

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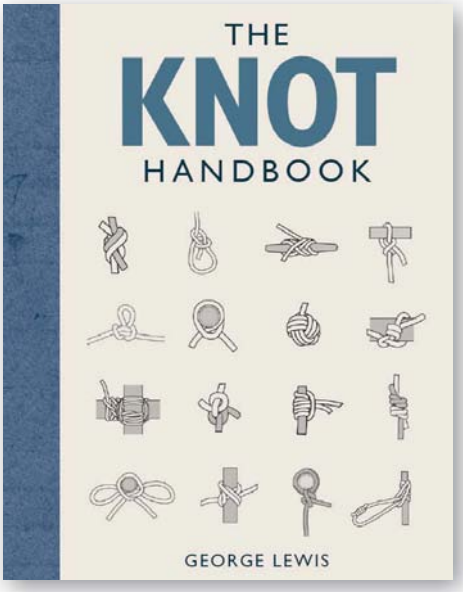
For the last issue of *Furniture & Cabinetmaking* of the year, we have four book offers for you to enjoy.

We have *Woodland Craft* by Ben Law, *The New Small House* by Katie Hutchinson, *The Knot Handbook* by George Lewis and *Arts & Crafts Furniture Projects* by Gregory Paolini.

All offers are available until 25th February, 2016. Visit www.thegmcgroup.com or call 01273 488005 and quote our offer codes to take advantage of these brilliant prices.



The Knot Handbook

By George Lewis

This book shows you how to tie 50 knots. Some have been chosen for their fame, some for their beauty and some because they are knots everyone should know how to tie. On every great theme, there are always possible variations, and, as the text makes clear, from time to time people come up with new effective methods of tying. Many of the knots featured are strongly associated with sailing, but even the saltiest of them have extensive applications on land. Adhesive tape and Velcro have their uses, but they have not rendered knots redundant; no technological advance ever will.

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Website of the month

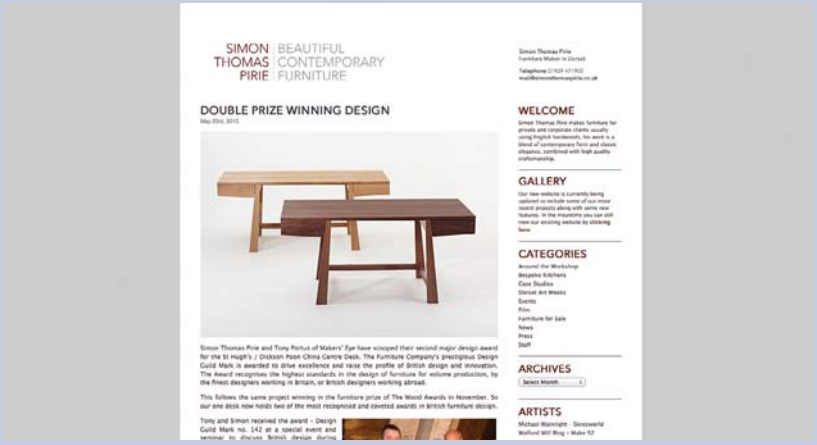
Simon Thomas Pirie

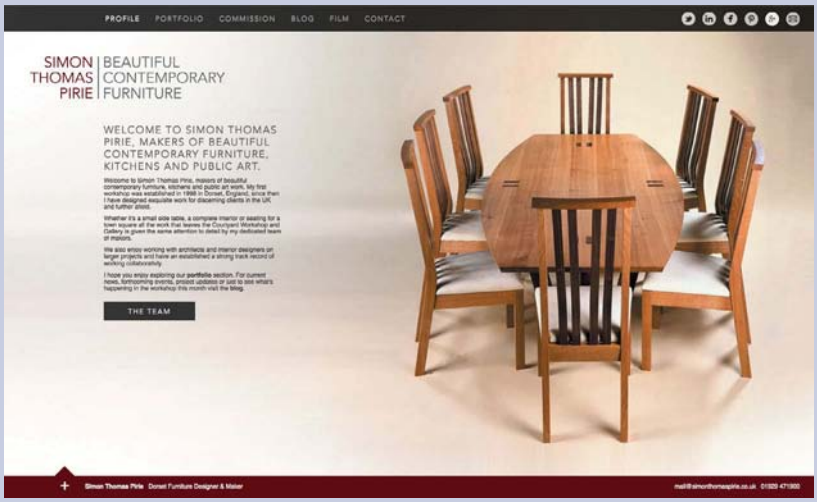
Grabbing our attention on the Net this month is Simon Thomas Pirie: Beautiful Contemporary Furniture. Primarily a promotional website for his work and company, Simon also includes a blog, which – unlike most – doesn't reveal his working methods and projects, but covers myriad topics, including shows, competitions, awards and inspirations.

The website overall looks very professional – mirroring Simon's work. Each blog post contains multiple photographs, all great quality and showing off the work perfectly. There are also videos posted, updates on various projects and interviews with Simon on his work. As well as his blog, there is a profile on the company, a portfolio, commission section, film and contact page.

Details

Web: www.simonthomaspirie.co.uk





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We pull up the Lincoln Chair, made by Bembe & Kimbel and used as a figurative seat of power by photographer Mathew Brady…

This chair is one of 262 to have been commissioned for the US House of Representatives in 1857, after a design by Thomas Ustick Walters. But this particular chair, although since reupholstered, was used when Abraham Lincoln and his son, Tad, were photographed by Mathew Brady ahead of the race for the 16th presidency in 1860. The image went on to become one of the most poignant and iconic of the era.

The chair was part of a much larger order that included desks and the items were crafted by Bembe & Kimbel of New York, Doe Hazelton & Co. of Boston and Hammitt Desk Mfg. Co of Philadelphia among others.

Seat of power

Lincoln, of course, went on to win the presidency and later gave the chair to Brady who used it in images of four other US presidents. Indeed, its list of 'sitters' reads like a who's who of American history makers. Other sitters include myriad senators and civil servants, Civil War soldiers from both sides and of all ranks, Justices, Native Americans and citizens, both prominent and anonymous.

When used in Brady's group portraits, the most important figure in the group is shown seated in this chair. Interestingly, no women are seen gracing its seat in the photos. This was in part down to the very practical reason that it wasn't wide enough for the fashionable hoop skirts of the day.

This stately chair demonstrates bold proportions, dynamic patriotic carving and a commanding presence. The chair retains its original surface, which has darkened and has an alligatored appearance that contributes to its appeal and rarity. It is not only an important survivor from a significant official US commission, but also the physical support for portrait photographs of the most prominent people in 19th-century US history. There is perhaps no other single object that links so many significant historical figures. The Lincoln Chair far outreached its estimate, eventually selling for $449,000. F&C

ABOVE: The Lincoln Chair, made by Bembe & Kimbel LEFT: Abraham Lincoln with his son Tad in Mathew Brady's iconic image

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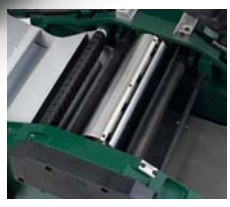

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