Issue 37 March 2018

Woodworking CRAFTS

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

Getting the best from your bandsaw

Feature
The Master Bowyer

PROJECTS
Three turned vessels
Machine base cabinet
Tip-over machine table
Plans 4 you – garden gates

TECHNIQUES
Knife making
TV cabinet reduction

FRENCH-STYLE BREAD BOARD • FIVE-BOARD BENCH • PARQUETRY TRAY

Machine Mart

NOW 66 SUPERSTORES NATIONWIDE

WHERE QUALITY COSTS LESS

Clarke TABLE SAWS

FROM ONLY £72.99 EXC.VAT £87.59 INC.VAT

LEG STAND KITS FOR CTS10D AND CTS11 ONLY £27.59 INC VAT

INCLUDES LEFT & RIGHT TABLE EXTENSION

CTS10D

MODEL	MOTOR	BLADE	EXC.VAT	INC.VAT
CTS800B	600W	200mm	£72.99	£87.59
CTS15 NEW	2000W	250mm	£119.98	£143.98
CTS11	1500W	254mm	£149.98	£179.98
CTS10D	1500W	254mm	£169.98	£203.98

Clarke 4" BELT/ 6" DISC SANDER

NEW

- Dust extraction facility
- 4" x 36" belt tilts & locks 0-90°
- 225mm x 160mm table, tilts 0-90°
- 370W, 230V motor

CS4-6E

£92.99 EXC.VAT £111.59 INC.VAT

Clarke 6" BELT/ 9" DISC SANDER

- Includes stand
- 1 HP/ 230V/ 1ph motor

CS6-9C

£239.00 EXC.VAT £286.80 INC.VAT

Clarke TABLE SAW WITH EXTENSION TABLES (250mm)

CTS14

- Ideal for cross cutting, ripping, angle and mitre cutting
- Easy release/locking mechanism for table extensions
- 0-45° tilting blade
- Cutting depth: 72mm at 90° / 65mm at 45°

£129.98 EXC.VAT £155.98 INC.VAT

SHOWN WITH OPTIONAL LEG KIT CLK5 £19.98 EXC.VAT £23.98 INC.VAT

evolution FURY5-S TABLE SAW

- 1500W motor
- 0-60° mitre gauge
- Cutting depth: Steel 3mm, Wood 85mm at 90° or 58mm at 45°

£149.98 EX.VAT £179.98 INC.VAT

3 YEAR

Clarke WOODWORKING VICES

STANLEY. Record

FROM ONLY £14.99 EX.VAT £17.99 INC.VAT

WV7

MODEL	MOUNTING	JAW (WIDTH/OPENING /DEPTH)mm	EXC.VAT	INC.VAT
Clarke CHT152	Bolted	150/152/61	£14.99	£17.99
Stanley Multi Angle	Clamped	72/60/40	£17.99	£21.59
Record TV75B	Clamped	75/50/32	£20.99	£25.19
Clarke WV7	Bolted	180/205/78	£29.98	£35.98

Clarke QUALITY CAST IRON STOVES

8kW

OVER 22 QUALITY STYLES ON DISPLAY

£219.00 EXC.VAT £262.80 INC.VAT

FLUES, COWLS & ACCESSORIES IN STOCK

BARREL II

Clarke 1" BELT/ 5" DISC SANDER

- Includes 2 tables that tilt & lock
- Quality Induction 300W motor

£69.98 EX.VAT £83.98 INC.VAT

CBS1-5

Clarke TURBO FAN GAS HEATERS

Offering low cost, efficient heating

PROPANE GAS FIRED

FROM ONLY £79.98 EX.VAT £95.98 INC.VAT

*stainless steel

MODEL	MAX OUTPUT KW	EXC. VAT	INC. VAT
Little Devil II	10	£79.98	£95.98
Little Devil SSII*	10.3	£84.99	£101.99
Devil 660 SS*	15	£99.98	£119.98
Devil 700	15	£99.98	£119.98
Devil 900	24.9	£139.98	£167.98
Devil 910 SS* NEW	17.6-24.9	£159.98	£191.98
Devil 1600	36.6	£169.98	£203.98
Devil 2100	49.8	£259.00	£310.80
Devil 4000	70-131	£398.00	£477.60

Clarke ELECTRIC HEATERS

BEST SELLER

DEVIL 6003

FROM ONLY £49.98 EX.VAT £59.98 INC.VAT

DEVIL 7003

MODEL	VOLTAGE	HEAT OUTPUT KW	EXC.VAT	INC.VAT
DEVIL 6003	230V	1.5-3	£49.98	£59.98
DEVIL 7003	230V	3	£59.98	£71.98
DEVIL 6005	400V	2.5-5	£74.99	£89.99
DEVIL 7005	400V	5	£84.99	£101.99
DEVIL 6009	400V	4.5-9	£119.00	£142.80
DEVIL 7009	400V	9	£139.98	£167.98
DEVIL 6015	400V	5-10-15	£179.00	£214.80
DEVIL 7015	400V	15	£199.98	£239.98
DEVIL 7025	400V	22	£299.00	£358.80
DEVIL 7030	400V	30	£349.00	£418.80

Clarke STAPLE/ NAIL GUNS

- All models include nail/ staple pack and tough moulded case

FROM ONLY £22.99 EX.VAT £27.59 INC.VAT

NEW

CONSN18LIC

SPARE NAILS / STAPLES IN STOCK

ELECTRIC AND CORDLESS MODELS IN STOCK

MODEL	TYPE	STAPLE/NAIL GAUGE	EXC. VAT	INC. VAT
CCT48	Cordless 4.8V Ni-MH	22/18	£29.98	£35.98
CESNG2	Electric	18/18	£39.98	£47.98
CONSN18LIC	Cordless 18V Lithium-Ion	18/18	£109.98	£131.98

NEW

Clarke MULTI FUNCTION TOOL WITH ACCESSORY KIT

- Great for sawing, cutting, sanding, polishing, chiselling & much more
- 250W motor
- Variable speed

£39.98 EXC.VAT £47.98 INC.VAT

CMFT250

Clarke TURBO AIR COMPRESSORS

airmaster

FROM ONLY £89.98 EX.VAT £107.98 INC.VAT

- Superb range ideal for DIY, hobby & semi-professional use
- * 'V' Twin Pump

8/250

MODEL	MOTOR	CFM	TANK	EXC.VAT	INC.VAT
8/250	2HP	7.5	24ltr	£89.98	£107.98
7/250	2 HP	7	24ltr	£94.99	£113.99
11/250	2.5HP	9.5	24ltr	£109.98	£131.98
8/510	2HP	7.5	50ltr	£119.98	£143.98
11/510	2.5HP	9.5	50ltr	£139.98	£167.98
16/510*	3 HP	14.5	50ltr	£209.00	£250.80
16/1010*	3 HP	14.5	100ltr	£259.98	£311.98

Clarke 4" BELT/ 8" DISC SANDER

- Includes two tables
- 550W 230V motor

£159.98 EX.VAT £191.98 INC.VAT

CS4-8

Clarke DUST EXTRACTOR/ CHIP COLLECTORS

FROM ONLY £139.98 EX.VAT £167.98 INC.VAT

METABO ALSO AVAILABLE

- Powerful 750W motor
- 56 litre bag capacity
- Flow rate of 850M3/h

MODEL	MOTOR	FLOW RATE	BAG CAP.	EXC.VAT	INC.VAT
CDE35B	750W	450 M3/h	56Ltrs	£139.98	£167.98
CDE7B	750W	850 M3/h	114Ltrs	£159.98	£191.98

Clarke POWER PLANERS

BLACK & DECKER

CEP1

- 82mm cutting width

FROM ONLY £28.99 EX.VAT £34.79 INC.VAT

MODEL	MOTOR	DEPTH OF CUT	EXC.VAT	INC.VAT
Clarke CEP1	650W	2mm	£28.99	£34.79
Einhell TE-PL850	850W	3mm	£52.99	£63.59
B&D KW750K - GB	750W#	2mm	£57.99	£69.59

Clarke BELT SANDERS

Makita

- Ideal for surface removal, sanding and finishing

ABRASIVE SANDING BELTS IN STOCK

BS1

FROM ONLY £36.99 EX.VAT £44.39 INC.VAT

*was £113.99 inc.VAT

MODEL	MOTOR	M/MIN	EXC.VAT	INC.VAT
Clarke BS1	900W	380	£36.99	£44.39
Clarke CBS2	1200W	480	£79.98	£95.98
Makita 9911*	650W	75-270	£86.99	£104.39

Clarke HARDWOOD WORKBENCH

- Includes bench dogs and guide holes for variable work positioning
- 2 Heavy Duty Vices
- Large storage drawer
- Sunken tool trough
- LxWxH 1520x620x855mm

CHB1500

£144.99 EX.VAT £173.99 INC.VAT

Clarke DISC SANDER (305MM)

- Powerful, bench mounted
- 900W
- Dust extraction port

£129.98 EX.VAT £155.98 INC.VAT

CDS300B

Clarke SHEET SANDERS

- Ergonomic design for optimum comfort

CON300

FROM ONLY £16.99 EX.VAT £20.39 INC.VAT

MODEL	SHEET SIZE	MOTOR	EXC.VAT	INC.VAT
COS200	190X90mm	150W	£16.99	£20.39
CON300	230X115mm	330W	£34.99	£41.99

Clarke CORDLESS DRILL/ DRIVERS

Clarke CONTRACTOR

FROM ONLY £39.98 EX.VAT £47.98 INC.VAT

powered by Li-Ion

CON18Li

MODEL	VOLTS	BATTS	EXC.VAT	INC.VAT
CON18Ni	18V	2 x Ni-Cd	£69.98	£83.98
CON18Li	18V	2 x Li-Ion	£89.98	£107.98

Clarke CROS3 450W RANDOM ORBITAL SANDER

£29.98 EX.VAT £35.98 INC.VAT

- Adjustable front handle improves control
- 7000-14000rpm

INC DUST BAG AND SELECTION OF 125MM DIAMETER SANDING DISCS

Clarke CPF13 ELECTRIC POWER FILE

- Variable belt speed
- Tilting head

*Black & Decker

FROM ONLY £49.98 EX.VAT £59.98 INC.VAT

MODEL	MOTOR	BELT SIZE (mm)	EXC.VAT	INC.VAT
CPF13	400W/230V	13x457	£49.98	£59.98
KA900E*	350W/230V	13x455	£59.98	£71.98

Clarke CIRCULAR SAWS

- Great range of DIY and professional saws
- Ideal for bevel cutting (0-45°)

CON185

*Includes laser guide

FROM ONLY £41.99 EX.VAT £50.39 INC.VAT

MODEL	MOTOR	MAX CUT 90/45 (mm)	EXC.VAT	INC.VAT
CCS185B	1200W	65/44	£41.99	£50.39
CCS2	1300W	60/45	£59.98	£71.98
CON185*	1600W	60/40	£62.99	£75.59

VAC KING WET & DRY VACUUM CLEANERS

- Compact, high performance wet & dry vacuum cleaners for use around the home, workshop, garage etc.

FROM ONLY £49.98 EX.VAT £59.98 INC.VAT

* SS = Stainless Steel

MODEL	MOTOR	CAPACITY DRY/WET	EXC. VAT	INC. VAT
CVAC20P	1250W	16/12ltr	£49.98	£59.98
CVAC20SS*	1400W	16/12ltr	£59.98	£71.98
CVAC20PR2	1400W	16/12ltr	£64.99	£77.99
CVAC25SS*	1400W	19/17ltr	£67.99	£81.59
CVAC30SSR*	1400W	24/21ltr	£99.98	£119.98

Clarke PORTABLE THICKNESSER

- Max thickness cap. 125mm and 250mm wide
- Planing depths adjustable from 0-2.5mm
- Powerful 1250W motor

£219.00 EX.VAT £262.80 INC.VAT

CPT250

Clarke OSCILLATING BOBBIN SANDER

- Provides exceptional finishes for deep & wide work pieces, front edges & narrow inner curves
- Dust collection port
- Inc. 6 sanding sleeves/ bobbins

£139.98 EX.VAT £167.98 INC.VAT

COBS1

Clarke OSCILLATING BELT & BOBBIN SANDER

- Can sand concave, convex, straight or multi-curved work pieces
- Dust collection port
- Inc. sleeves, drum & belt

£179.98 EX.VAT £215.98 INC.VAT

COEBS1

Clarke BOLTLESS SHELVING/BENCHES

- Simple fast assembly in minutes using only a hammer

FROM ONLY £29.98 EX.VAT £35.98 INC.VAT

SAVE 10% WHEN YOU BUY ANY MIX OF 4 FROM THIS RANGE SAVE AT LEAST £23.99 INC.VAT

150 KG (evenly distributed) Strong 9mm fibreboard shelves PER SHELF

CHOICE OF 5 COLOURS RED, BLUE, GREY, SILVER & GALVANISED STEEL

350 KG (evenly distributed) Strong 12 mm fibreboard shelves PER SHELF

MODEL	DIMS WxDxH(mm)	EXC.VAT	INC.VAT
150kg	800x300x1500	£29.98	£35.98
350kg	900x400x1800	£49.98	£59.98

Clarke WHETSTONE SHARPENER (200MM)

- Produces razor sharp cutting edges on chisels, planes, etc.
- Inc. 3 tool holding jigs, workpiece clamp & support frame, polishing paste & water trough

ONLY £119.98 EX.VAT £143.98 INC.VAT

Clarke PLANERS & THICKNESSERS

CPT800

- Ideal for DIY & Hobby use
- Dual purpose, for both finishing & sizing of timber

FROM ONLY £184.99 EX.VAT £221.99 INC.VAT

MODEL	PLANING WIDTH	MAX THICK. CAPACITY	EXC. VAT	INC. VAT
CPT600	6"	120mm	£184.99	£221.99
CPT800	8"	120mm	£209.98	£251.98
CPT1000	10"	120mm	£289.00	£346.80

26939LH

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Clarke SLIDING COMPOUND MITRE SAW

BEST SELLER

- For fast, accurate cross, bevel & mitre cutting in most hard & soft woods
- 1800W motor
- Laser guide

£139.98 EXC.VAT £167.98 INC.VAT

CMS10S2

MODEL	BLADE DIA/BORE (mm)	MAX CUT DEPTH/CROSS	EXC.VAT	INC.VAT
CMS210	210/30	60/120	£59.98	£71.98
CMS10S2	254/30	78/340	£139.98	£167.98

Clarke CONTRACTOR BOSCH JIGSAWS

BEST SELLER

CON750

FROM ONLY £15.99 EXC.VAT £19.19 INC.VAT

*DIY #Professional

MODEL	POWER (W)	DEPTH OF CUT (WOOD/STEEL)	EXC. VAT	INC VAT
Clarke CJS380*	420W	55/6mm	£15.99	£19.19
Clarke CON750#‡	750W	80/10mm	£27.99	£33.59
Bosch PST700E*	500W	70/4mm	£44.99	£53.99

‡ was £34.79 inc.VAT

Clarke BENCH BANDSAW

- Produces fast, precise mitre & longitudinal cuts • Cuts in all types of wood

£129.98 EXC.VAT £155.98 INC.VAT

CBS190B

MODEL	MOTOR	THROAT SIZE	EXC.VAT	INC.VAT
CBS190B	350W	7.5"	£129.98	£155.98

Clarke PROFESSIONAL BANDSAWS

Top Quality Bandsaws - ideal for professional workshop use. Strong steel body with solid cast iron table

- Table tilts 45° • Adjustable blade guide
- Supplied with stand, 4TPI wood cutting blade, rip fence, mitre guide, mitre gauge and push stick • Induction motors
- Includes stand

CBS300

FROM ONLY £399.00 EXC.VAT £478.80 INC.VAT

MODELS ALSO FEATURE:

MULTI-STEP DUST EXTRACTION OUTLET • FLEXIBLE LED WORKLIGHT • REMOVABLE DUST TRAY • BLADE TENSIONING CONTROL

MODEL	THROAT DEPTH	MAX CUT 90°	MAX CUT 45°	EXC. VAT	INC. VAT
CBS300	305mm/12"	165mm	115mm	£399.00	£478.80
CBS350	340mm/14"	225mm	160mm	£498.00	£597.60

Clarke MITRE SAWS

TC-SM2131

FROM ONLY £59.98 EXC.VAT £71.98 INC.VAT

Laser Guide ‡ Sliding Compound

- Quality Range of Mitre saws and blades in stock

MODEL	BLADE DIA/ BORE (mm)	MAX CUT DEPTH/CROSS	EXC. VAT	INC. VAT
Einhell TC-MS 2112	210/30	55/120mm	£59.98	£71.98
Einhell TC-SM2131#	210/30	62/310mm	£129.98	£155.98
Einhell SM2534‡	250/30	75/340mm	£159.98	£191.98

BISCUIT JOINTER

- 11000rpm Operating Speed • 860W motor • 14mm Cutting Depth • Inc. dust bag, storage case and face spanner for cutter change

NEW

TC-BJ900

£49.98 EXC.VAT £59.98 INC.VAT

Clarke MORTISING MACHINE

CBM1B

£174.99 EXC.VAT £209.99 INC.VAT

- Accurately creates deep square recesses • Table size 150 x 340mm • Max. chisel stroke 76mm • Robust cast iron base & column ensures stability & accuracy • 95mm depth of cut

CHISELS AVAILABLE FROM £8.39 INC VAT

"...fast and accurate with a good solid feel...Excellent value for money." See www.machinemart.co.uk

Clarke ROUTER TABLE

CRT-1

Router not included

BEST SELLER

- Converts your router into a stationary router table • Suitable for most routers (up to 155mm dia. Base plate)

£69.98 EX.VAT £83.98 INC.VAT

Clarke GRINDERS & STANDS

- Stands come complete with bolt mountings and feet anchor holes

6" & 8" AVAILABLE WITH LIGHT

STANDS FROM ONLY £47.98 INC.VAT

FROM ONLY £32.99 EX.VAT £39.59 INC.VAT

POLISHING KITS 4" TO 8" FROM ONLY £27.59 INC VAT

With sanding belt *8" whetstone & 6" drystone

MODEL	DUTY	WHEEL DIA.	EXC.VAT	INC.VAT
CBG6RP	DIY	150mm	£32.99	£39.59
CBG6RZ	PRO	150mm	£42.99	£51.59
CBG6RSC	HD	150mm	£54.99	£65.99
CBG6SB#	PRO	150mm	£54.99	£65.99
CBG6RWC	HD	150mm	£59.98	£71.98
CBG8W* (wet)	HD	150/200mm	£56.99	£68.39

Clarke SCROLL SAWS

FROM ONLY £82.99 EX.VAT £99.59 INC.VAT

CSS400C

BEST SELLER

- 50mm max cut thickness • Air-blower removes dust from cutting area • Table tilts 0-45°

MODEL	MOTOR	SPEED RPM	EXC. VAT	INC. VAT
CSS400B	85W	1450	£82.99	£99.59
CSS16VB	90W	550-1600	£94.99	£113.99
CSS400C	90W	550-1600	£114.99	£137.99

Clarke STATIC PHASE CONVERTERS

- Run big 3 phase woodworking machines from 1 phase supply • Variable output power to match HP of motor to be run

PC60

ROTARY PHASE CONVERTERS ALSO IN STOCK

FROM ONLY £229.00 EXC.VAT £274.80 INC.VAT

CONVERT 230V 1PH TO 400V 3PH

MODEL	MAX. MOTOR HP	FUSE	EXC.VAT	INC.VAT
PC20	2HP	10Amps	£229.00	£274.80
PC40	3.5HP	20Amps	£269.00	£322.80
PC60	5.5HP	32Amps	£319.00	£382.80

Clarke CONTRACTOR BOSCH ROUTERS

- Powerful heavy duty machines ideal for trade and DIY use

CR2 INCLUDES 15 PIECE KIT WORTH OVER £20

FROM ONLY £46.99 EX.VAT £56.39 INC.VAT

CR1C

*DIY

MODEL	MOTOR (W)	PLUNGE (mm)	EXC.VAT	INC.VAT
CR1C*	1200	0-50	£46.99	£56.39
Bosch POF1400ACE	1400	0-55	£86.99	£104.39
CR2‡	2100	0-60	£119.98	£143.98

‡ was £149.99 inc.VAT

Clarke FOLDING MITRESAW STAND

CFMSS1

- Suitable for most sizes/makes of saw • Inc. outriggers & rollers

ONLY £66.99 EX.VAT £80.39 INC.VAT

Clarke 13" MINI WOOD LATHE

£149.98 EX.VAT £179.98 INC.VAT

CWL325V

- Ideal for enthusiasts/ hobbyists with small workshops • 325mm distance between centres • 200mm max. turning capacity (dia) • 0.2HP motor

Clarke DRILL PRESSES

- Range of precision bench & floor presses for enthusiast, engineering & industrial applications

FROM ONLY £66.99 EX.VAT £80.39 INC.VAT

CDP152B

B = Bench mounted F = Floor standing

MODEL	MOTOR (W) SPEEDS	EXC. VAT	INC. VAT
CDP5EB	350 / 5	£66.99	£80.39
CDP102B	350 / 5	£79.98	£95.98
CDP152B	450 / 12	£139.98	£167.98
CDP202B	450 / 16	£185.00	£222.00
CDP10B	370 / 12	£198.99	£238.79
CDP452B NEW	550 / 16	£229.00	£274.80
CDP352F	550 / 16	£229.00	£274.80
CDP502F	1100 / 12	£499.00	£598.80

Clarke DETAIL SANDERS

- Perfect for smooth and fine finishing along with hard to reach areas or curved surfaces

CDS-1V

FROM ONLY £19.99 EX.VAT £23.99 INC.VAT

MODEL	WATTS	EXC.VAT	INC.VAT
PS105	105W	£19.98	£23.98
CDS-1V	280W	£29.98	£35.98

ALL MODELS INC. SANDING SHEETS

Clarke 12" DOVETAIL JIG

- Simple, easy to set up & use for producing a variety of joints • Cuts work pieces with a thickness of 8-32mm • Includes a 1/2" comb template guide & holes for bench mounting

CDTJ12

£57.99 EXC.VAT £69.59 INC.VAT

Machine Mart Xtra

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BRIGHTON 123 Lewes Rd, BN2 3QB	01273 915999	**HULL** 8-10 Holderness Rd. HU9 1EG	01482 223161
BRISTOL 1-3 Church Rd, Lawrence Hill. BS5 9JJ	0117 935 1060	**ILFORD** 746-748 Eastern Ave. IG2 7HU	0208 518 4286
BURTON UPON TRENT 12a Lichfield St. DE14 3QZ	01283 564 708	**IPSWICH** Unit 1 Ipswich Trade Centre, Commercial Road	01473 221253
CAMBRIDGE 181-183 Histon Road, Cambridge. CB4 3HL	01223 322675	**LEEDS** 227-229 Kirkstall Rd. LS4 2AS	0113 231 0400
CARDIFF 44-46 City Rd. CF24 3DN	029 2046 5424	**LEICESTER** 69 Melton Rd. LE4 6PN	0116 261 0688
CARLISLE 85 London Rd. CA1 2LG	01228 591666	**LINCOLN** Unit 5. The Pelham Centre. LN5 8HG	01522 543 036
CHELTENHAM 84 Fairview Road. GL52 2EH	01242 514 402	**LIVERPOOL** 80-88 London Rd. L3 5NF	0151 709 4484
CHESTER 43-45 St. James Street. CH1 3EY	01244 311258	**LONDON CATFORD** 289/291 Southend Lane SE6 3RS	0208 695 5684
COLCHESTER 4 North Station Rd. CO1 1RE	01206 762831	**LONDON** 6 Kendal Parade, Edmonton N18	020 8803 0861
COVENTRY Bishop St. CV1 1HT	024 7622 4227	**LONDON** 503-507 Lea Bridge Rd. Leyton, E10	020 8558 8284
CROYDON 423-427 Brighton Rd, Sth Croydon	020 8763 0640	**LONDON** 100 The Highway, Docklands	020 7488 2129
DARLINGTON 214 Northgate. DL1 1RB	01325 380 841	**LUTON** Unit 1, 326 Dunstable Rd, Luton LU4 8JS	01582 728 063
DEAL (KENT) 182-186 High St. CT14 6BQ	01304 373 434	**MAIDSTONE** 57 Upper Stone St. ME15 6HE	01622 769 572
DERBY Derwent St. DE1 2ED	01332 290 931	**MANCHESTER ALTRINCHAM** 71 Manchester Rd. Altrincham	0161 9412 666
DONCASTER Wheatley Hall Road	01302 245 999	**MANCHESTER CENTRAL** 209 Bury New Road M8 8DU	0161 241 1851
DUNDEE 24-26 Trades Lane. DD1 3ET	01382 225 140	**MANCHESTER OPENSHAW** Unit 5, Tower Mill, Ashton Old Rd	0161 223 8376
MANSFIELD 169 Chesterfield Rd. South	01623 622160		
MIDDLESBROUGH Mandale Triangle, Thornaby	01642 677881		
NORWICH 282a Heigham St. NR2 4LZ	01603 766402		
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Welcome

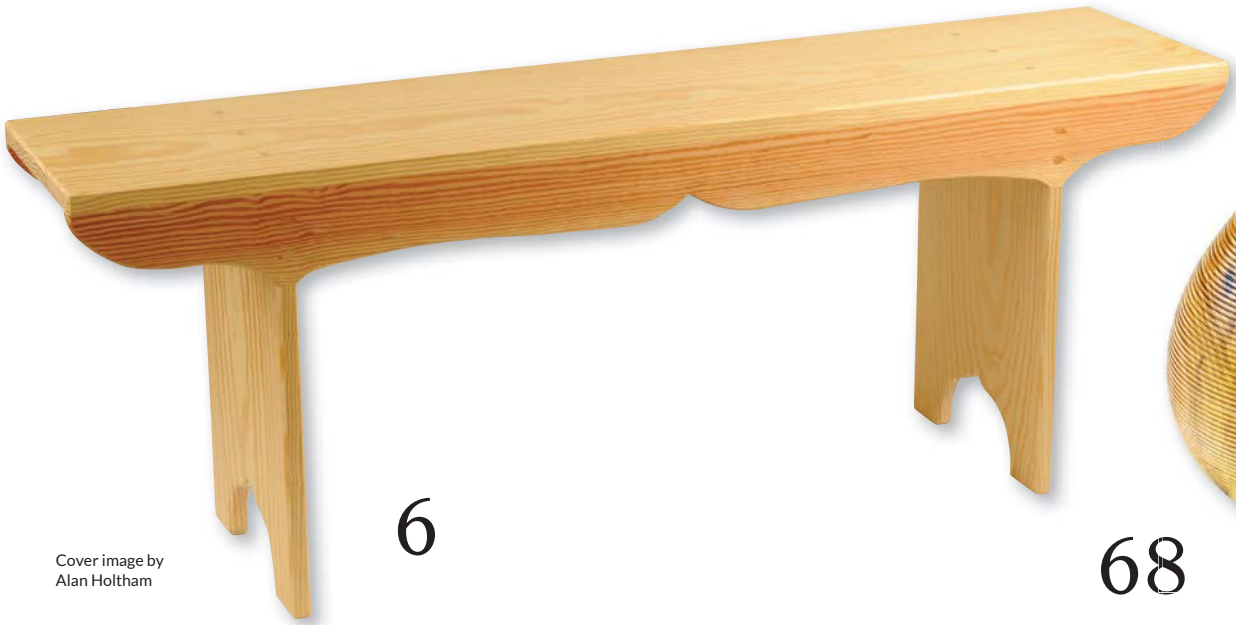
to the March issue of
Woodworking Crafts

Hello Everyone and welcome to the March issue of *Woodworking Crafts*.

About being practical

When I was just a kid, I used to help my father with various jobs around our house. He was a civil engineer by trade, a site manager in charge of some quite large undertakings in his day, building new roads, military runways and overseeing housing bomb damage restoration during World War II. In his spare time we would do things like installing shuttering for our new conservatory base and then filling it with concrete. That was my early introduction to all things practical. For some strange reason I didn't think I was particularly practical but then I didn't really have anything to judge it by. Now at my rather more advanced age and still learning how to use new materials and techniques and do various awkward making and repairing jobs, I realise that I have in fact been 'practical' pretty much all of my life. When I get home in the evening and something is stuck or broken, I get asked to mend it. My first reaction is often to reach for a dinner knife in the cutlery drawer because it is a tool, albeit a simple one, sometimes more effective than a 'jack of all tasks' penknife-cum-multi-tool. A car engine drips oil on the garage floor, where do I look first? Not at the sump where the oil is congregating. No, I look for the highest point where fluid could be leaking, then find the suspected problem. An RCD on the electricity consumer unit trips and the power shuts off, find a torch quick. What was the last thing to be switched on? The toaster? The kettle? An outside light in heavy rain? Problem solving is firstly about analysis – what actually is the problem? Next, figure out a solution. There is often more than one answer and that is where experience and knowledge come into the equation. Read this issue and any others before it and you will find plenty of examples of woodworkers who have devised solutions to problems. Like me in my youth, not thinking I was practical, you too can benefit from the skill and knowledge of our contributors and readers and prove that you can be practical too – after all it's taken me a lifetime to get there, believe me...

Anthony Bailey, Editor
Email: anthonyb@thegmcgroup.com



Cover image by
Alan Holtham

In the March issue...

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Design INSPIRATION

Simplicity is the benchmark of good design, but that isn't to say you can't be imaginative with materials and methods. The common denominator is strength; a seat is safe no matter how hard you sit down

Doing what ply does best

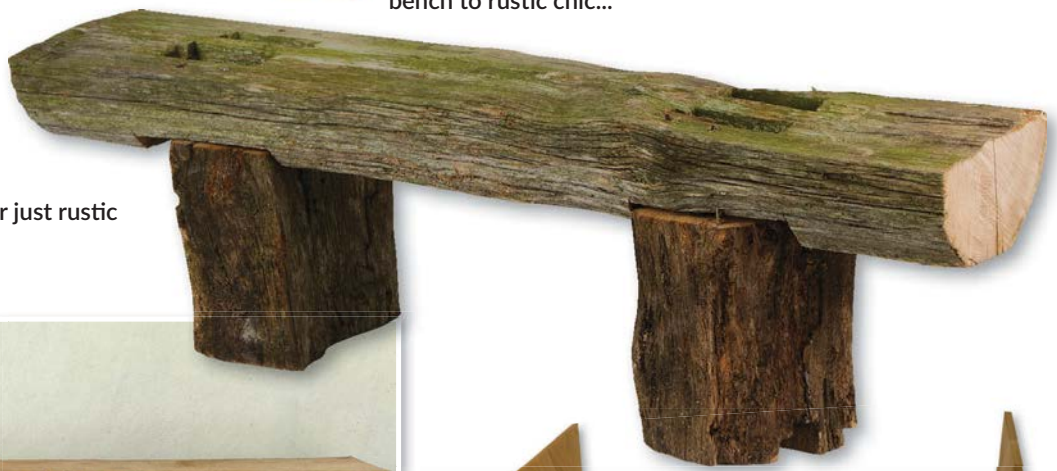
PHOTOGRAPH COURTESY OF SHUTTERSTOCK

Above: The elements are enough to turn your bench to rustic chic...

Below: Deceptively simple...

PHOTOGRAPH COURTESY OF SHUTTERSTOCK

...or just rustic



PHOTOGRAPH COURTESY OF SHUTTERSTOCK

Form follows function

Board-on-board

Five-board bench

Traditional seating in a simple, rustic style

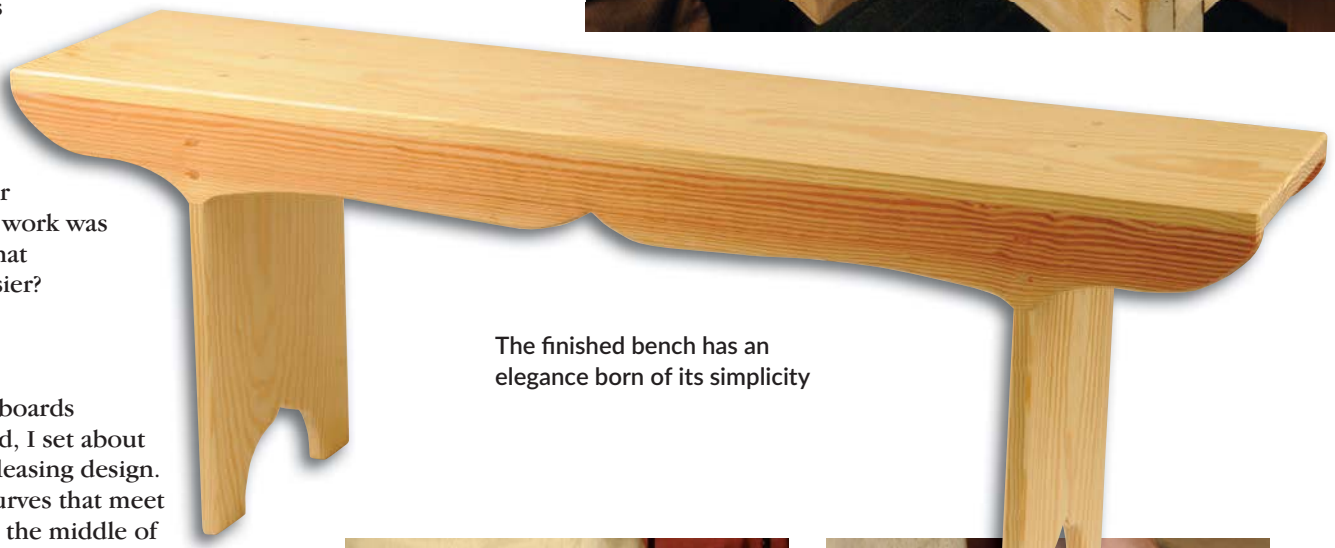
Making furniture doesn't have to be difficult or complicated and, with that in mind, we thought a traditional design inspired by the American five-board bench, with simple dowelled joints, would be perfect.

This construction method uses just glue and dowels, making it quick and simple.

There are no complicated joints, and the bench components are first just glued together and clamped, then dowelled afterwards to provide the extra strength needed. Modern glues are so effective, they make this type of build possible.

After deciding on a rough design, the first job was to go down to the timber yard.

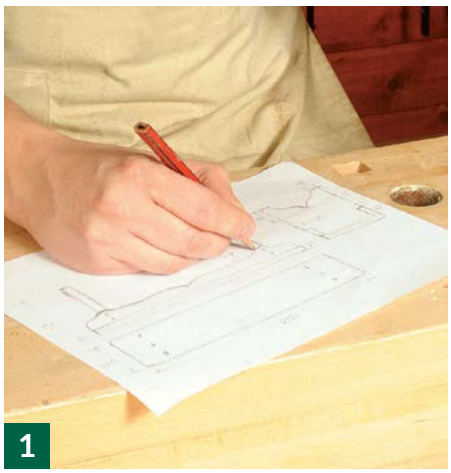
I found three 20mm-thick boards of high quality planed pine with decent grain that would do the job nicely, so it was decided that the bench would have 20mm-thick components throughout. The boards were PAR (prepared all round) so no further preparation work was needed – what could be easier?



The finished bench has an elegance born of its simplicity

Design

1 With the boards purchased, I set about drawing a pleasing design. Two ogee curves that meet at a point in the middle of the timber components were the design motif, replicated on both legs as well as the side boards, both of which are dowelled to the bench top.



1

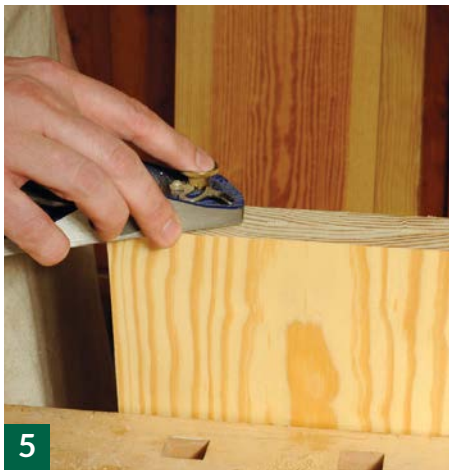
2 When marking up components, I checked for timber defects, marking around any that were found, such as knots or splits. One of the boards had a darker heartwood along the middle of it, so it was decided this board would be perfect for the sides, cut down the middle, so that the gradient of dark to light timber would become a part of the 'look' of the bench.

2

3 Square ends were marked on the boards first, then the components measured and marked out.

4 For cross-cutting boards a handsaw is quick and efficient.

5 The end grain was planed to a perfectly square and smooth finish.



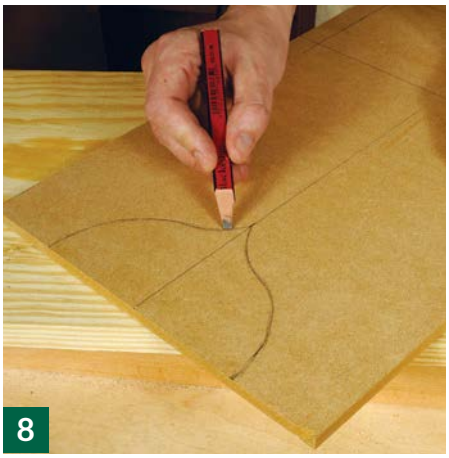
6 The ripsawing was done outside where the circular sawdust didn't matter…

7 …and square-up and smoothing of all the with-the-grain components was done with my jack plane.

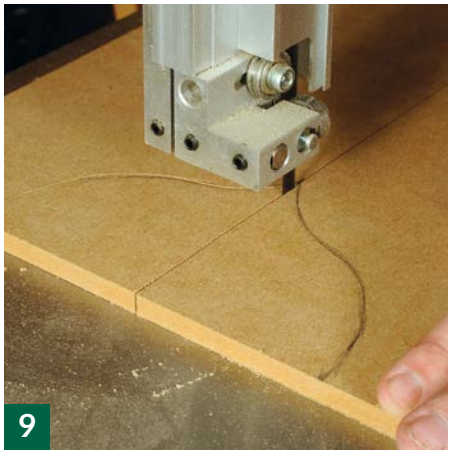
8 You can buy a set of French curves for drawing up designs like this, but it is easy to have a go freehand – 6mm MDF is ideal for making up jigs and templates.

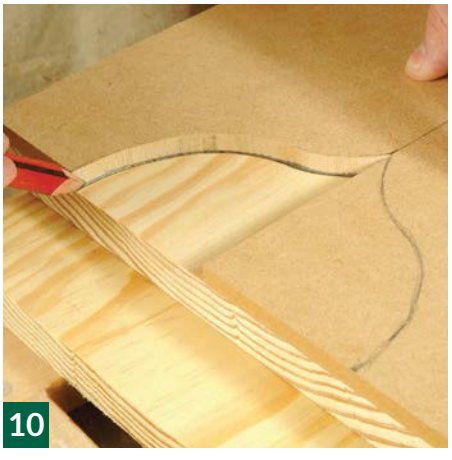
Template

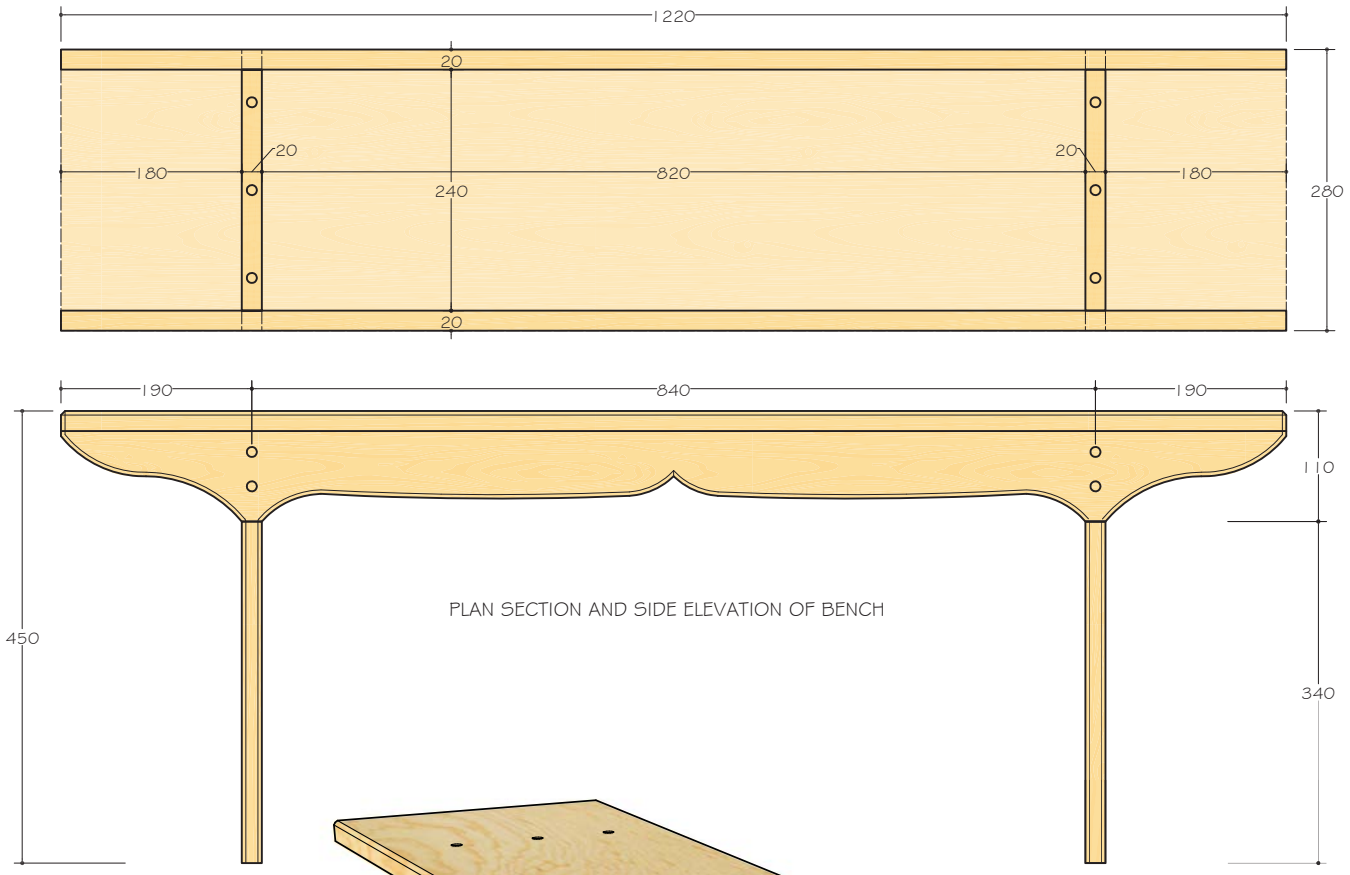
9 For accuracy, only half the drawn shape was cut out to reduce final shaping errors so the curves would be identical.



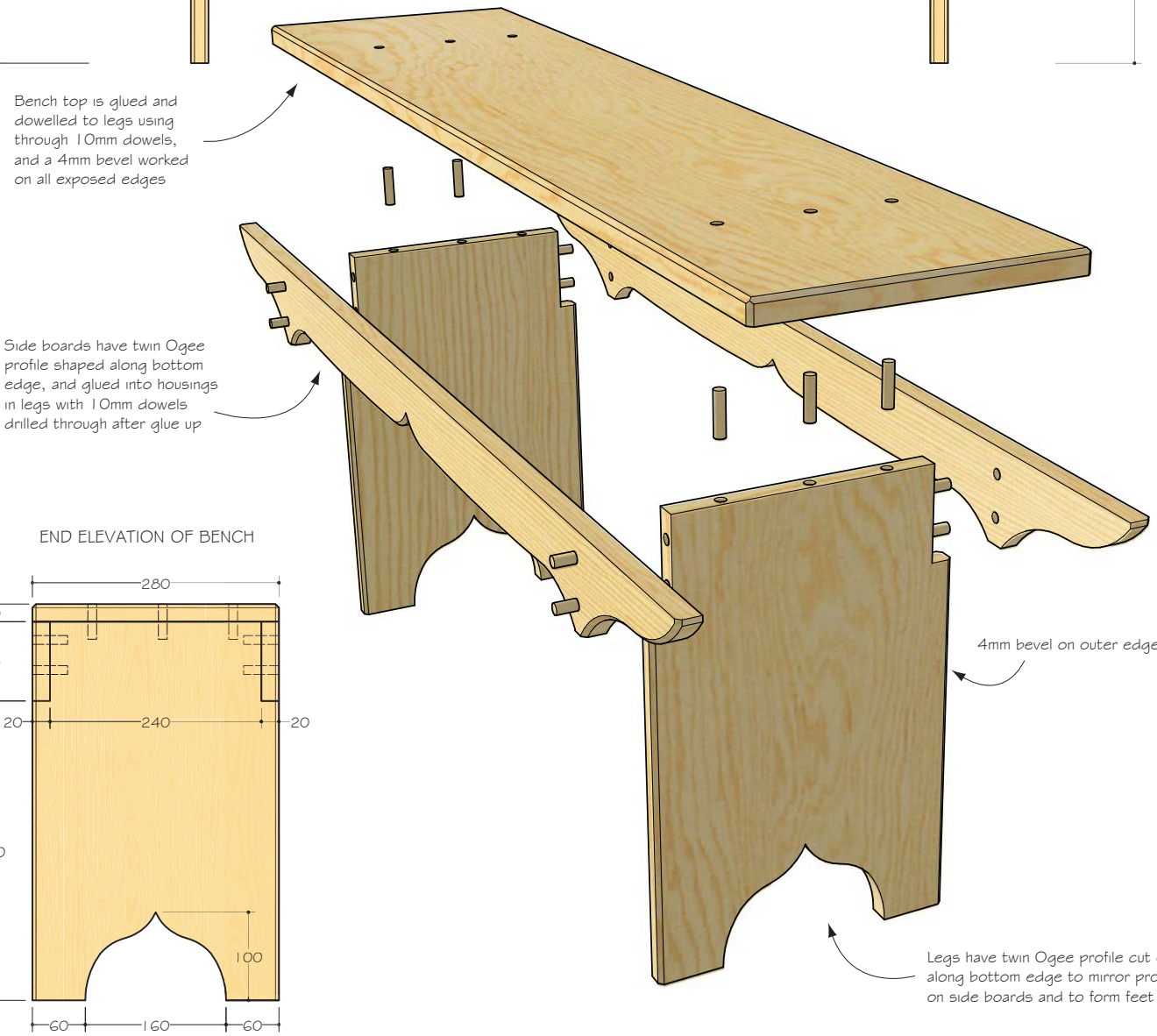
10 -11 Marking out the other half of the shape prior to bandsawing the pine. ➤







PLAN SECTION AND SIDE ELEVATION OF BENCH



END ELEVATION OF BENCH

12 There were plenty of relieving cuts made before following the drawn line, just a fraction inside it. If the bandsaw throat depth is limited and manoeuvring awkward, mark the shape on the other face to make the cut.


12

13 The bench was placed upside down on the bench top to get an idea of proportion and decide where the legs should be positioned along the bench top and sides. They need to be near the ends to avoid any tendency to over balance.


13

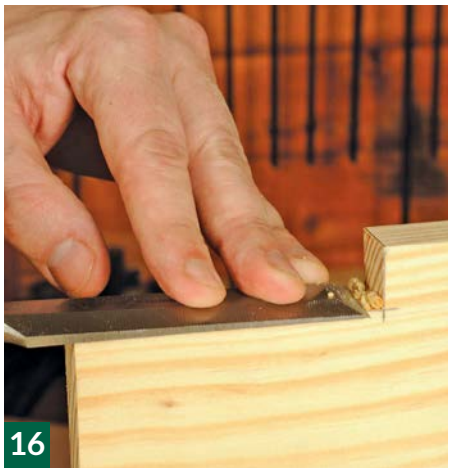
14 The sides were marked directly on to the legs as it cuts out measuring errors and allows for the timber's eccentricities.


14

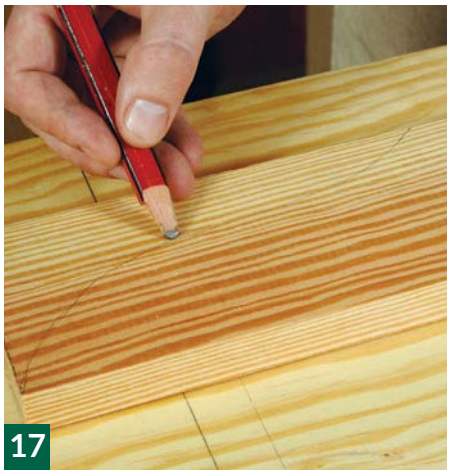
15 The housings in the legs, which the side boards fit into, were cut with a Japanese saw.


15

16 Paring the housings for a perfect fit.


16

17 The design on the bench sides was a flattened version of the bench ends. A bendy strip of ply or a flexi-curve can be used to mark out the correct shape.


17

18 -19 The same technique as with the legs. I cut out this shape on the bandsaw. You may need to have the design on both sides of the boards, to turn the board over to cut out both ends if your bandsaw table is too small. ➤


18


19

20 Once all shapes were cut out, all the component faces and edges were given a thorough sanding, easier to do as separate components.

Glue up

21 Once everything was cut out and sanded, the sides were glued and clamped to the bench underside with the legs as spacers to keep the sides in the correct position while clamping. To help glue up, a line of biscuits along the underside and board edges will add extra strength to the construction.

22 Once the glue had gone off, I removed the clamps and started cleaning up the profile of the side boards. The flats for the leg housing were a touch on the wide side after bandsawing, so I used a sharp chisel to trim these to size.

23 A flat piece of ply with 80 grit abrasive glued around it was used to smooth off both the shape of the curves and to get rid of all sawing marks left by the bandsaw, if you have a fine rasp or spokeshave, even better.

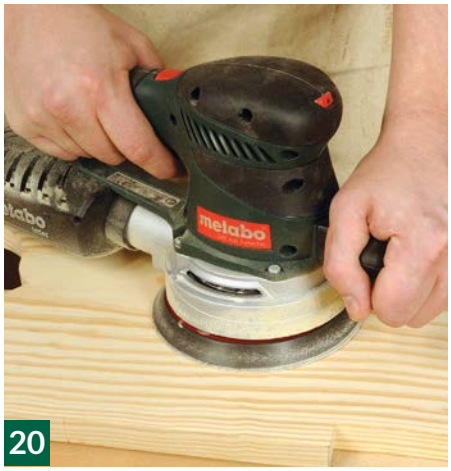
24 For the concave shapes, the same trick was used but with the abrasive glued around a dowel instead. A belt sander and any other powered device is doable, but it is too easy to round over edges with power tools – the slow way by hand is better.

25 The face edge of the side boards and top edges were then planed flat and true, checking with a square.

26 After dry-fitting to make any final adjustments to the housings, and ensuring all joint faces were fully in contact, the legs were put in place, in the correct position along the sides and square to the bench top. Then they were clamped in place, checking they didn't slip around.

Dowels

27 Once the glue had gone off, it was time to drill the dowel holes. I marked the centreline of the legs, across the sides and top of the bench, and then the dowel hole positions. I used standard 10mm dowels but you could use plain dowels sawing a glue relief kerf down the side of each dowel. ➤



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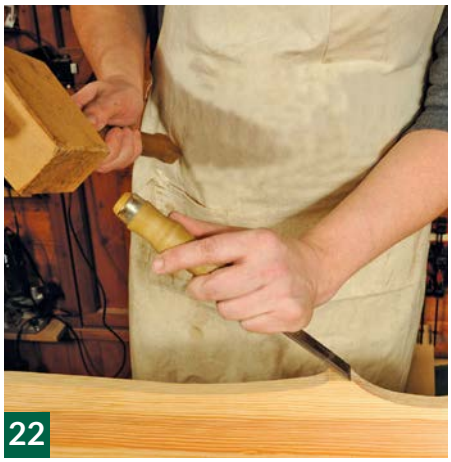
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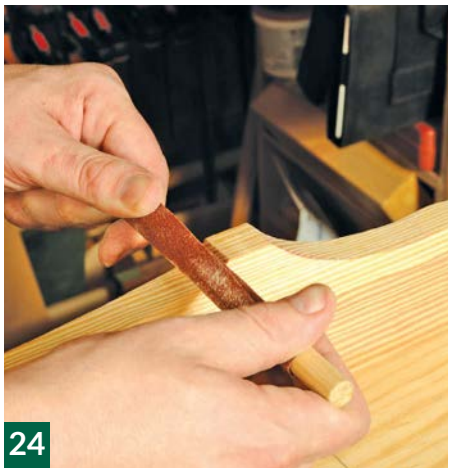
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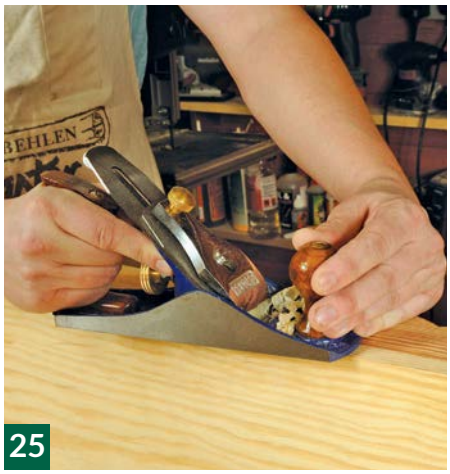
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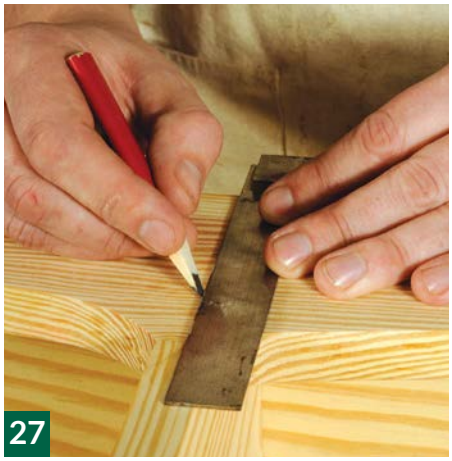
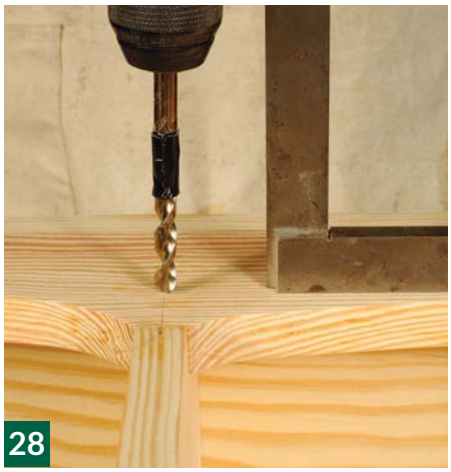
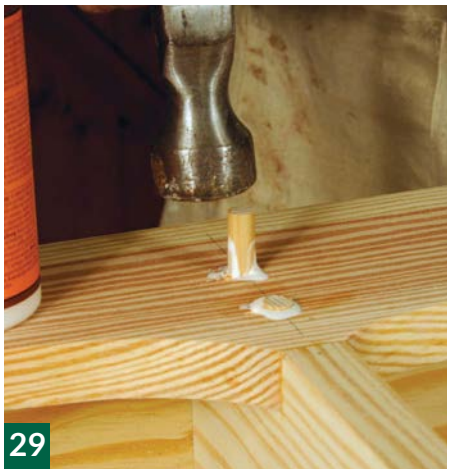

27

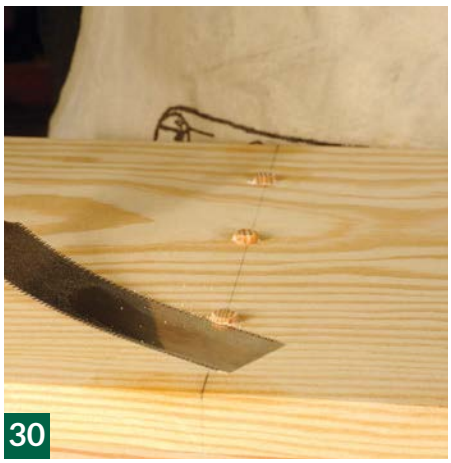
28 The dowel sinking depth was marked on the brad point bit with tape at 40mm and the drill lined up with an engineer's square before drilling the holes. Care was needed, only using a very sharp drill bit, to try to avoid breakout on the surface of the timber.


28

29 Glue was applied to the holes and dowels, which were tapped home with a hammer.


29

30 Once the glue had dried on the dowel ends I cut off the dowel tops with a Japanese flush-cut saw.


30

31 A 4mm, 45° bevel was machined on all the outside edges with a small router and a bearing-guided bevel cutter. Great care had to be taken when doing the edges of the legs, working on edge running around from the bench sides. A board was clamped in place to give more support to the router base.


31

Finishing

32 There were a few small shakes and other minor defects in the timber, so a colour-matched filler was used prior to sanding and finishing. However it needed to be kept to the repair areas only or it could have spoilt the look of the pine if it got in the grain.


32

33 The bench was sanded down to 240 grit ready to apply three coats of water-based acrylic satin varnish, denibbing between coats. Acrylic varnish goes on easily, dries quickly and produces a lovely lustre, which is perfect for showing off pine to its best. It is also very easy to clean up the brush afterwards.


33

34 For such a simple and easy-to-make design, it gives a really pleasing, strong and practical result, ideal in the kitchen or wherever you need some extra seating. ■


34

A woodworking glossary

The letter L

Brushing lacquers

LACQUER A spirit or organic varnish such as shellac or a number of synthetic organic coatings that form a gradually hardening film on the surface of wood as the carrying solvent evaporates.

LAMINATE Adhering one workpiece to another, such as a veneer to another surface or constructing solid sections by gluing together thin strips of wood, often in a curved form. Building up of thin layers to create thicker sections such as for plywood or building construction beams – referred to as 'glulam'.

LAP JOINT This joint adds strength to a frame corner. The lap is better than a reinforced butt joint, but weaker than mortise and tenon joinery. It can be at a corner, or in the middle of one piece, called a tee-lap, or in the middle of two pieces overlapping, called a cross-lap.

LATEWOOD The smaller portion of a tree's annual growth ring that grows through the summer and early autumn.

LATH Thin strips of wood nailed closely together on studwork in older properties, often made from riven (split) oak, to which plaster would adhere to create internal room walls.

LATHE This is designed specifically for engineering or for woodturning. A woodturning lathe holds wood between revolving centres and special tools used to shape the wood. Available in various holding capacities to suit large or small workpieces.

LENGTH STOP A block of wood fixed in place to serve as a reference point when a number of pieces need to be crosscut to the same length on the compound mitre saw or tablesaw.

LEVEL An essential tool for installation work to indicate horizontal, vertical or angled surfaces. The traditional type has sight windows with a bubble in a phial with limit lines. There is also a water level using a water-filled hose to measure level across a room and, more recently, many kinds of laser level, often with multiple functions including digital calculations of height and volume.

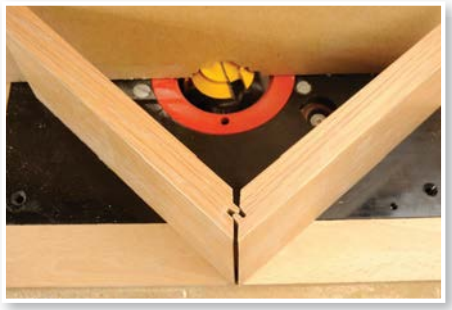
PHOTOGRAPH BY CHRIS GRACE

A length stop to cut small pieces

LIGNUM VITAE A tropical wood sometimes called ironwood. It is very hard and has self-lubricating properties, so traditionally it has found use for bearings for propeller shafts, as well as bowls and mallet heads. Now given a degree of protection under CITES rules in Appendix II which limits its export and use.

LINKBELT An adjustable V-belt attached to pulleys in stationary machinery where links can be added or removed to adjust fit or tension.

LINSEED OIL A fatty oil extracted by hydraulic pressure from the dried, ripened seeds of the flax plant. It is pale amber in colour, practically without taste and has a mild odour. When boiled or extracted by application of heat and pressure, it is darker and has a bitter taste and a stronger odour. Its polymer-forming properties allow combinations with other oils, binders and pigments.



Routed lock mitre joint

LIPPING A glued-on or overhanging border of wood, often used to finish an edge where the core material needs to be hidden, as in the case of ply or MDF.

LOCK MITRE JOINT An improvement on the standard mitre joint that doesn't require a third piece of wood such as a dowel, biscuit or spline. Still offering a tight corner, the lock mitre provides greater gluing surface, strength and easier alignment.

LOCKING HALF-BLIND REBATE JOINT This is a strong joint often used in drawer construction and small boxes. It adds strength and easy alignment for squaring the box.

LONG GRAIN Wood cells that grow roughly parallel to the trunk. When long grain sections are glued face to face it forms the strongest bond possible with wood.

LUMBER (US) The product of the sawmill and planing mill not further manufactured other than by sawing, passing lengthwise through a standard planing machine, crosscutting to length and matching. The equivalent term in the UK is timber.

Lignum vitae vessel by Mark Baker

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French style bread board

Michael T Collins tackles yet another 'bread and butter' project

On a recent trip to England I was taken to a very Parisian-style café. Hanging on the wall were several exquisite large bread boards of varying shapes. You've probably seen them – 45cm in diameter with a narrow handle. They fascinated me, how could something so wide and thin not be warped?

As luck would have it, my sister has a couple tucked on a high shelf in her kitchen. It wasn't until I had the chance to take them down and give them a good assessment that the warp-free secret was revealed.

On returning to my wood shop in the US, I set about making some. They are very easy to make, great as gifts and in this article you will get to practise your sawing, hand planing and dovetailing – yes dovetailing – skills on that all important warp-free technique.

Preparing the timber

1 Select the boards that are quarter sawn – you may have to go through many boards at your local DIY store to find those that will work. If you cannot find true quarter-sawn boards then select boards that are cut across the centre of the log. The reason is the need to use stable timber that is less liable to warp.

2 To rip the boards in half, designate a face side and mark 15mm with the

Tools required

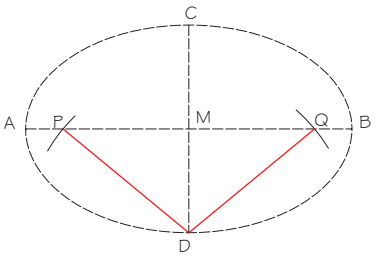
- No. 5 jack plane
- Curved spokeshave
- Crosscut and rip saws
- Coping or bow saw
- 16mm paring chisel
- Router plane (optional)
- Marking gauge
- Bevel gauge

Cutting list

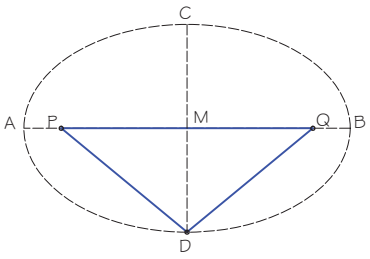
- Board, approx 45cm in diameter x 15mm thick
- Board, 60cm long for the centre piece and handle

The species is not important, but whatever wood you choose make sure that it is food safe. In this article I am going to use construction lumber – it is plentiful and easy to work.

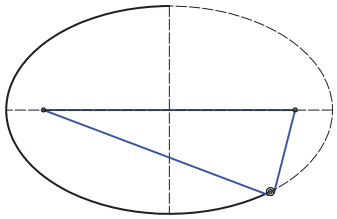
PENCIL METHOD OF DRAWING AN ELLIPSE, WITH MAJOR AXIS AB AND MINOR AXIS CD KNOWN



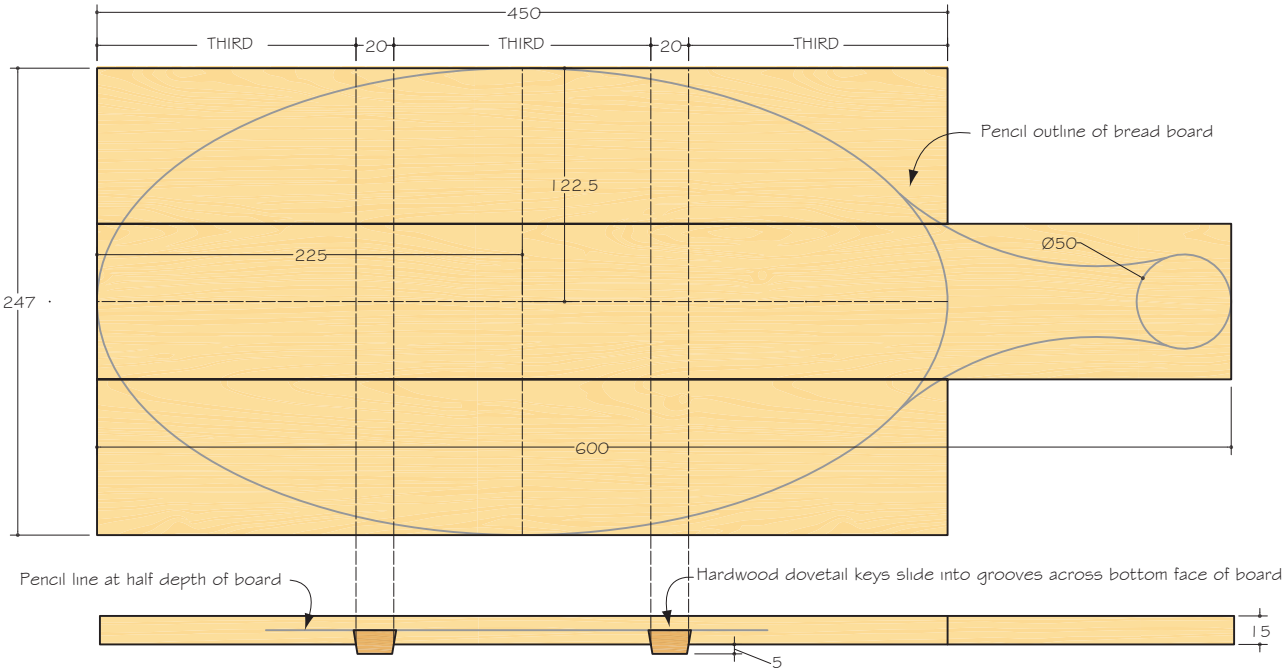
Arcs at P and Q, with radius AM are drawn to bisect line AB



Place pencil at D and fix ends of string to points P and Q and around pencil

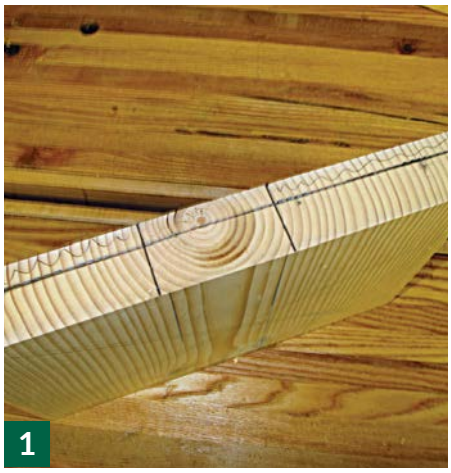


Keeping string under tension draw ellipse one side and reverse to draw other side



marking gauge on both edge faces and an end. To aid visibility, you can run a pencil down the gauge lines.

3 Now, rip the board into two pieces by placing it in the vice at 45°. Saw the two lines you can see, turn the wood over and again saw at 45°. Now saw away the triangle of wood at the bottom of the kerf. Repeat this process until the board is cut in two. If you find that the saw binds in the kerf, rub the side of the saw with beeswax – you can also put a small wedge in the kerf.



Jointing the boards

4 For a perfect glue joint, take adjacent boards, place the sawn faces together and clamp them in the vice. (See issue 2 page 51 – *Making a table top* – for detailed instruction) Planing two boards in this manner serves two purposes: a) it provides a stable surface on which to plane; b) any angle introduced into the planed surface will be compensated for in the other piece. Check with a try square at regular intervals along the length. It is also important to check for flatness along the boards' length. ➤

Rubbed glue joint

5 Run a bead of glue down the length of the planed surface and spread with a crooked finger. This puts more glue in the centre of the edge and lessens the chance of squeeze-out. Place the next board in position by rubbing back and forth until some resistance is felt. Even up the edges and set aside end on to dry. There is no need for clamps in a joint such as this as you have long grain to long grain that will produce quite a strong joint. Repeat this process until you have the diameter of board you are looking for. Don't forget that the centre board is the one that is longer to accommodate the handle.

Creating the board shape

First remove any glue – a card scraper is very effective at doing this. Make sure you wear eye protection. Then with a jack plane remove the saw cuts.

The vast majority of French bread boards are circular, but I wanted to maximise the wood that I had and so opted for an elliptical shape. Draw an ellipse so that the shape reaches the width and length of the boards, without the handle area.

Preventing the board from warping

6 On the back of the bread board we are going to create two sliding dovetails. These will have matching hardwood keys oriented perpendicular to the board growth rings to resist warping. Mark one pair of parallel lines 20mm apart and perpendicular to the boards. Then mark a second set. I have found that the distance between the two sets of lines should divide the board into thirds but not including the handle in this division.

7 With the marking gauge, measure down, from the face, about half the thickness of the board and mark this on the edge of the board. This is the base of the dovetail. Using a bevel gauge set at 1:6 (approx. 9.5°) draw guidelines splaying out from the two lines on the face.

8 Deeply score the lines and then, with a chisel or marking knife, remove a V-notch on the waste side the length of dovetail – do this on each line. This will give you a place for the saw to run.

Creating an ellipse

The easiest method is to draw the major and minor axes, then with a compass set to half the major axis, place the point on the end of one of the minor axis and scribe a line that cuts the major axis – the resulting intersects are the 'foci' of the ellipse. Drive two nails into the board at these points. Now take a length of string, that when tied around the nails, just touches the end of one of the minor axis. Place a pencil in the string and while keeping the string taut, scribe the ellipse.

The handle can be drawn freehand or with a compass connecting the ellipse with a 50mm diameter circle at the end of the handle.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9 With a crosscut saw resting in the V-notch and angled to match the profile you drew on the edge, saw down to the base line. Take your time and frequently check the exit end of the dovetail to make sure everything is aligned. If it helps, you can make a 1:6 angled block clamped in place to support and guide the saw.

10 Once the dovetail sides are cut it is time to remove the waste. Working from both sides of the board, start by paring away the top layers,


9

gradually working down to the base with the blade bevel upwards. Unless you have a really long chisel, you will not be able to reach the area in the centre instead working the wood with the bevel down.

11 Alternatively you can use a router plane to remove the waste, lowering the cutter bit by bit, finally flattening the base of the slot.

Making the dovetail keys

12 The keys are nothing more than strips of wood that are made to fit in the dovetail slots. Measure the slots' base and mark the dimensions on the long grain edge of a piece of hardwood – in this case I am using maple. Note the growth ring direction.

13 Use the bevel gauge to set the tablesaw angle to that of the dovetail slot angle, making sure that the bevel is resting against the face of the blade and not the projecting teeth.

14 Do a couple of test cuts in scrap wood and then rip saw the dovetail keys to shape.

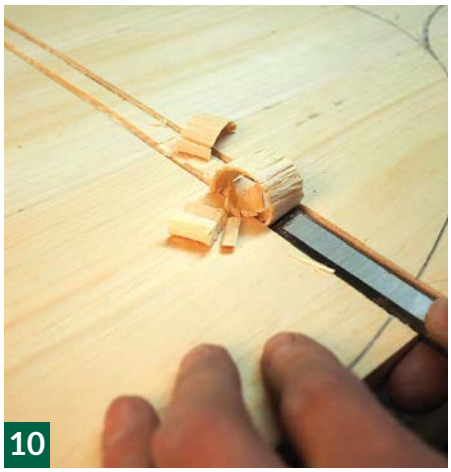
15 Leave the keys about 5mm deeper than the dovetail slot – this will add additional strength to the bread board. If more than 5mm protrudes, run the keys through the tablesaw with slope of the key resting on the tablesaw. The blade will then be parallel to the base of the key. Slide the keys into place – a little beeswax will help the key fit.

Cutting the board to shape

16 Use a bow or bandsaw to cut the board to actual shape.

17 Finish the edge with a spokeshave, remembering to work with the grain and round over the edges. Drill a 15mm hole in the handle and clean up all the edges. The bread board can be sanded and finished with any food-grade finish – my finish of choice is mineral oil. Let the oil soak in and wipe off any excess et voila! An authentic French-style bread board. ■

Voulez-vous du pain ?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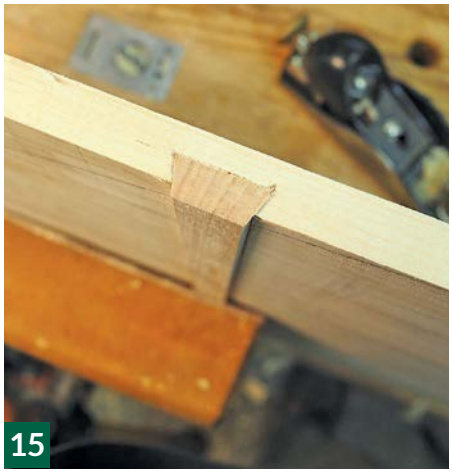
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The versatile bandsaw

PHOTOGRAPHS BY GMC/ANTHONY BAILEY UNLESS OTHERWISE STATED

In past issues we have shown you how to set up a bandsaw, but what can it really do for you?

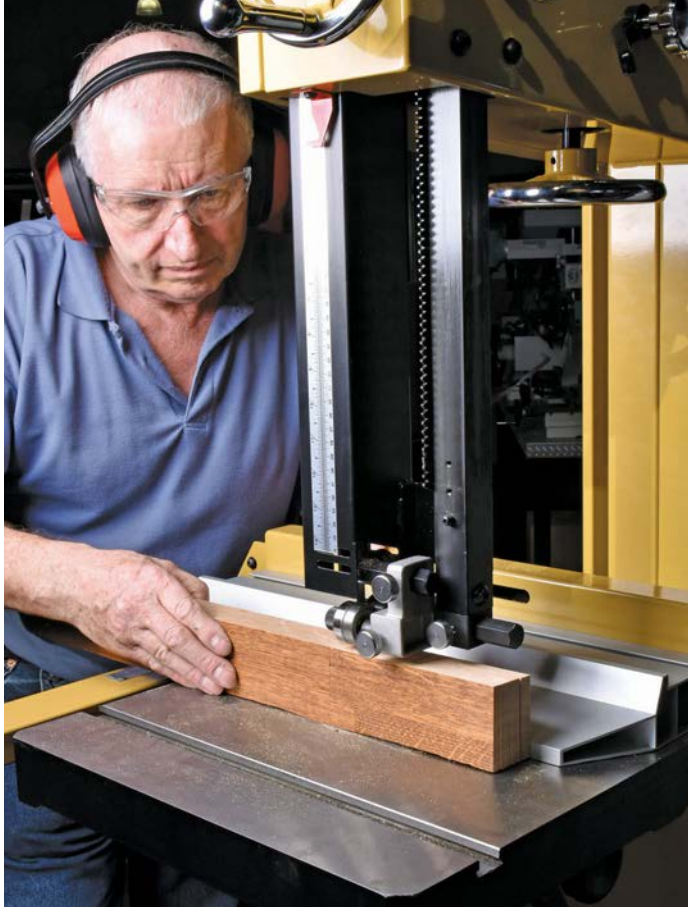
A bandsaw is the singularly most versatile tool after the router and, like a router, it can shape wood as well as cut joints, plus it can cut boards or veneers. It can tackle some other less usual tasks as well, making it the best workshop all-rounder. To get the best out of a bandsaw it needs to be well set up and fitted with the right blade and of decent quality. It also has the advantage of a small workshop footprint. Here are some typical uses.

Board cutting

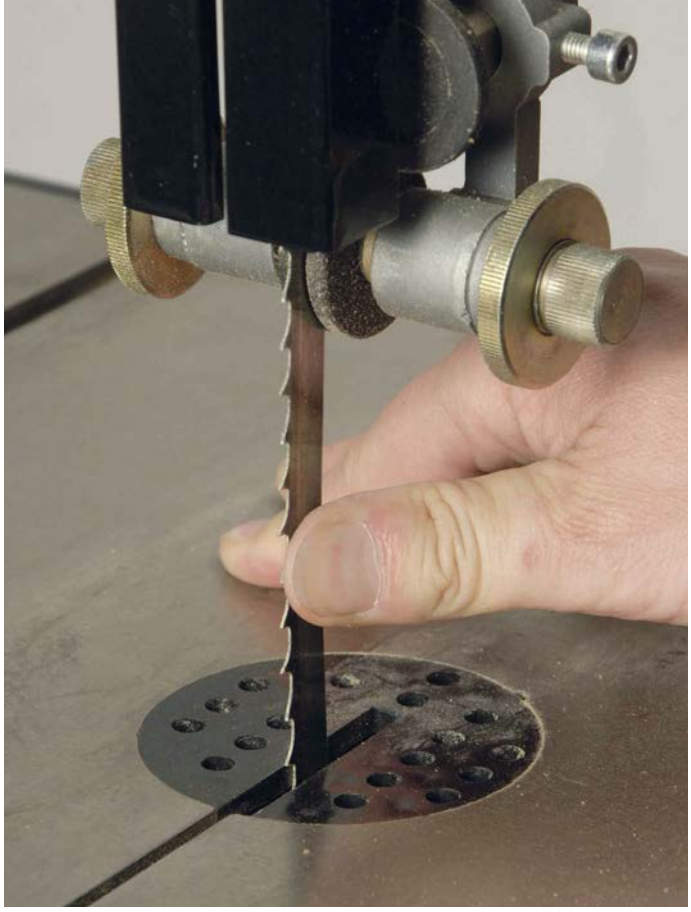
There is no doubt that a tablesaw will cut boards well, but most of us don't have a tablesaw so is it realistic to expect a bandsaw to do as good a job? A bandsaw has several advantages on its side, if all things are equal. Fitted with the correct type of blade it will cut quite quickly and deeply – deeper than the average tablesaw blade which can only manage a third of its diameter running above the table and with no risk of kickback. However, to do this the blade needs to be a skip tooth type, not continuous teeth, which only work on very thin material.

In addition, the fence may need adjusting so the timber runs along it without any tendency to pull to one side or the other, known as a 'lead'.

Deep cutting requires a high fence. You can fit a wooden sub fence if necessary



It is possible to adjust a fence enough to eliminate 'lead' and then do a test cut



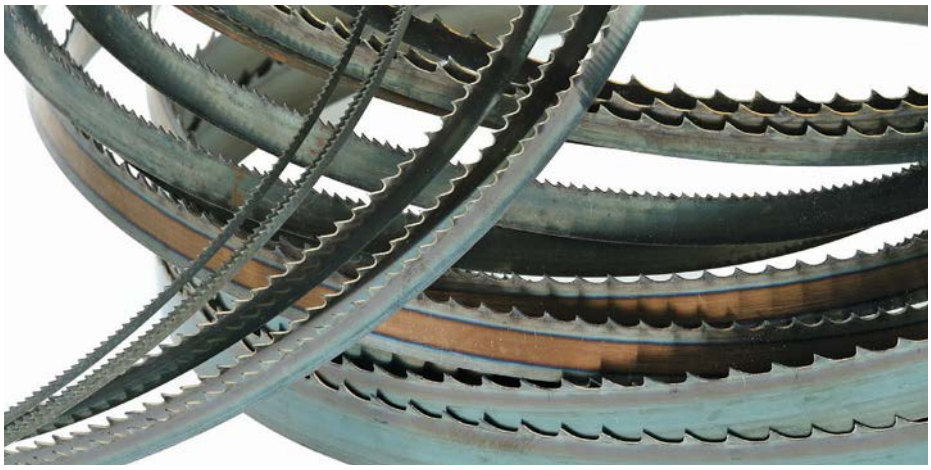
Plucking a tensioned blade should give a semi-musical note, not a dull sound

A good quality blade should not do this, but it also can depend on where the blade sits on the bandwheels, preferably centred on the 'crown' of each wheel. Adjusting the angle of the fence slightly and making test cuts to confirm this can overcome this problem.

The feed rate is important. Forcing the cut, which is generally indicated by the motor slowing or additional noise from the thrust guides behind the blade, can indicate too much effort being applied and this can result in a distorted cut, especially in deep stock. Tensioning the blade correctly will also help achieve a straight cut and, while there may be a tension indicator, I don't trust them as a rather crude method. Instead, I always tighten a blade until I can get a sort of semi-musical note when plucking the back edge of the blade. I've never managed to snap a blade yet. The cut finish is what it is – a finer skip tooth blade will give a better finish but it will never match a premium price 'planer finish' tablesaw blade.

A bandsaw blade will 'go off' i.e. go blunt quick quickly, usually when it is least convenient – mid-project or part-way through board cutting. Keeping a stock of blades and toolkit handy is vital so you can do changeovers quickly. Buying several blades at a time online will save shipping costs if you cannot buy locally.

There is sometimes merit in using a point fence, which is exactly what it says – a narrow edge-on oriented wooden fence with a rounded nose level with the blade. It overcomes any 'lead' issues and is particularly useful for splitting boards down the middle of their thickness if there is a concern the wood might misbehave as tension in the timber is released. ➤



PHOTOGRAPHBY ALAN HOLTHAM

Keep several types of blade handy so you are never stuck for the right one

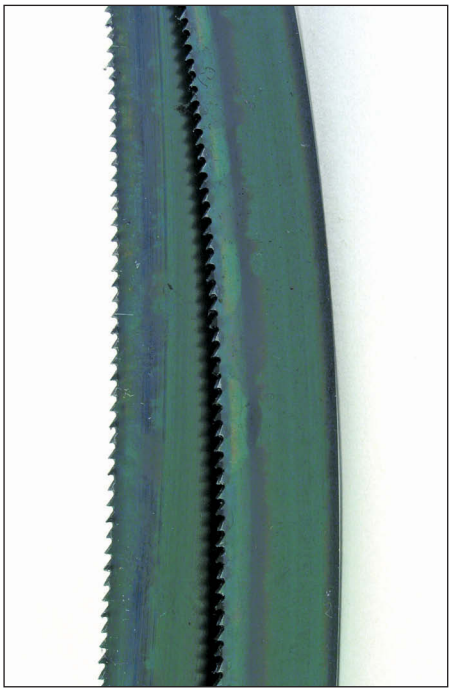
A point fence eliminates the 'lead' problem with a blade, a sharp one will still bow in thicker wood

Blade selection

Blades come in different tooth types – standard for thin board, skip tooth for all general tasks and 'extra set' teeth, intended for green wood conversion, with coarse teeth so the blade can move easily through wet, sticky wood dust without jamming. Additionally blades come in different widths and a range of teeth per inch, or 'TPI' (not metric). Then there are a number of other blade variants, including some with TCT tips. This can all get very confusing so do get advice from the supplier.

I stock just three types in my workshop – 6mm wide 10 TPI skip for thin stock and scroll cutting, 10mm wide 6 TPI skip general purpose and 16mm wide 3 TPI 'extra set' type for green wood. Mostly the 10mm 6 TPI skip gets used but as soon as I need to cut logs to square them and cut them into boards or cut to length for firewood the I use the 'extra set' blades. The narrow scroll blades are kept for the rare occasion when a general purpose blade really won't do some tight radius cuts.

Wet log cutting with a firm grip. The machine casing will fill up with wet sawdust easily



Left: Fine tooth blade. Right: skip tooth

Sequential rip cutting

Any repetitive cutting operations could be described as sequential, but things such as deep cutting boards, making sawn veneers or small section components for model making are all possible examples. Deep cutting needs a high fence for stability and the first cut off a board supplied as sawn, not planed, will need to be slightly wider to account for the state of the board surface as supplied. Working from a planed face is more reliable. Cutting veneers is more critical because the resultant surfaces need to be as smooth as possible, which means opting for more teeth per inch. In addition, the finer the kerf the less waste and the more slices you can expect to create – important if it is an expensive tropical hardwood.

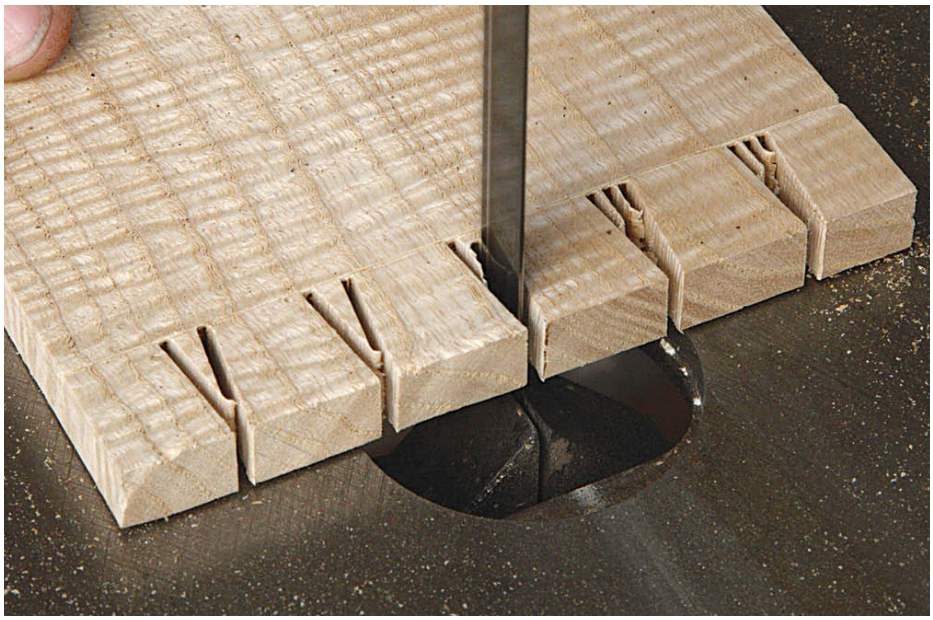
Laminating curved legs and other shaped components is perfectly possible but the same caveats apply regarding sharpness, number of teeth and clean cuts, so when the timber is reassembled with glue added you can get neat discreet joins between the strips of wood.

It should be noted that the narrower the strips, the more flexible they will be, but wastage from the extra saw cuts increases too.

Sawn veneers are possible if you have a high fence and a raker tooth (set left, unset, set right pattern) – note blade marks

Thin ash strips glued up in a jig to create one of three curved legs for a plant stand

PHOTOGRAPHBY ALAN HOLTHAM



PHOTOGRAPH BY JOHN BULLAR

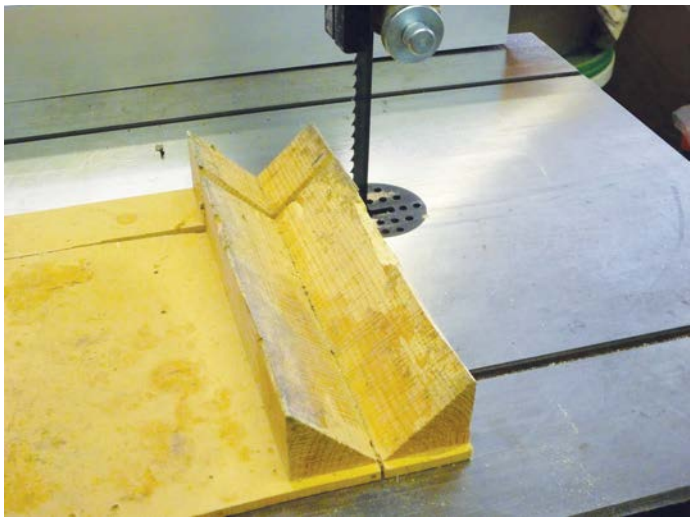
Freehand dovetails. A narrow chisel will be used to clear the waste cleanly

Cutting tenons with length stop behind, something a bandsaw does really well

Joint cutting

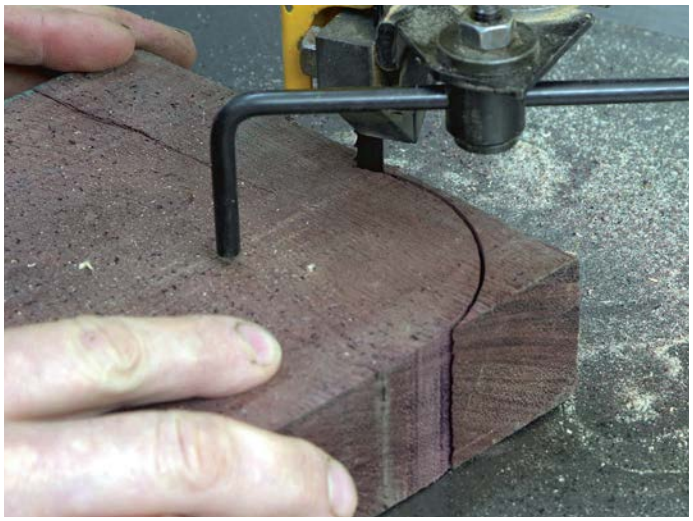
The bandsaw can generally do at least part of a joint – the tenon in a mortise and tenon or the tails of a through dovetail joint, a corner lap or the sides of a crossover lap joint, ditto a bridle for a bridle joint and so on. So it isn't the whole answer but is a very quick way of doing part of the job and particularly a whole batch in succession.

A mitre protractor, either supplied or homemade, and a length stop clamped to the straight fence behind the blade will take care of most situations although a bit more thought is needed if you want to jig-cut dovetails rather than working by eye alone. If you are a jig-building fiend it is possible to cut dovetail pins. As you can only do one series of slopes by tilting the table, the other angle will need a jig.



PHOTOGRAPH BY PHILIP GREENWOOD

A crude but effective V-trough for holding cylinders and dowels for safe cutting



A proprietary circle cutting jig in use. You can make your own version that sits on the table

Cutting circles and rounds

Cutting round sections is done on a V-shaped trough jig. This is necessary because the downward blade movement can pull the section downwards away from the operator very suddenly. It isn't necessarily a safety hazard but it is quite common for the blade to jam and possibly get slightly bucked, disentangling it from the wood after the emergency stop is smacked. Cutting green wood logs with a wide kerf blade is less practical using a V-jig but also less likely to roll over due to the uneven log shape – it just needs care. The bandsaw casing will, however, clog quickly with wet, sticky sawdust.

Cutting circles is another matter. If you don't have a router or want a different method for cutting a circle, you need a jig. Some bandsaws can accept an arm with point for this operation but otherwise you need a bit of ingenuity. It is better to make it adjustable so you can get the exact size you want or be able to reuse it in the future. ➤

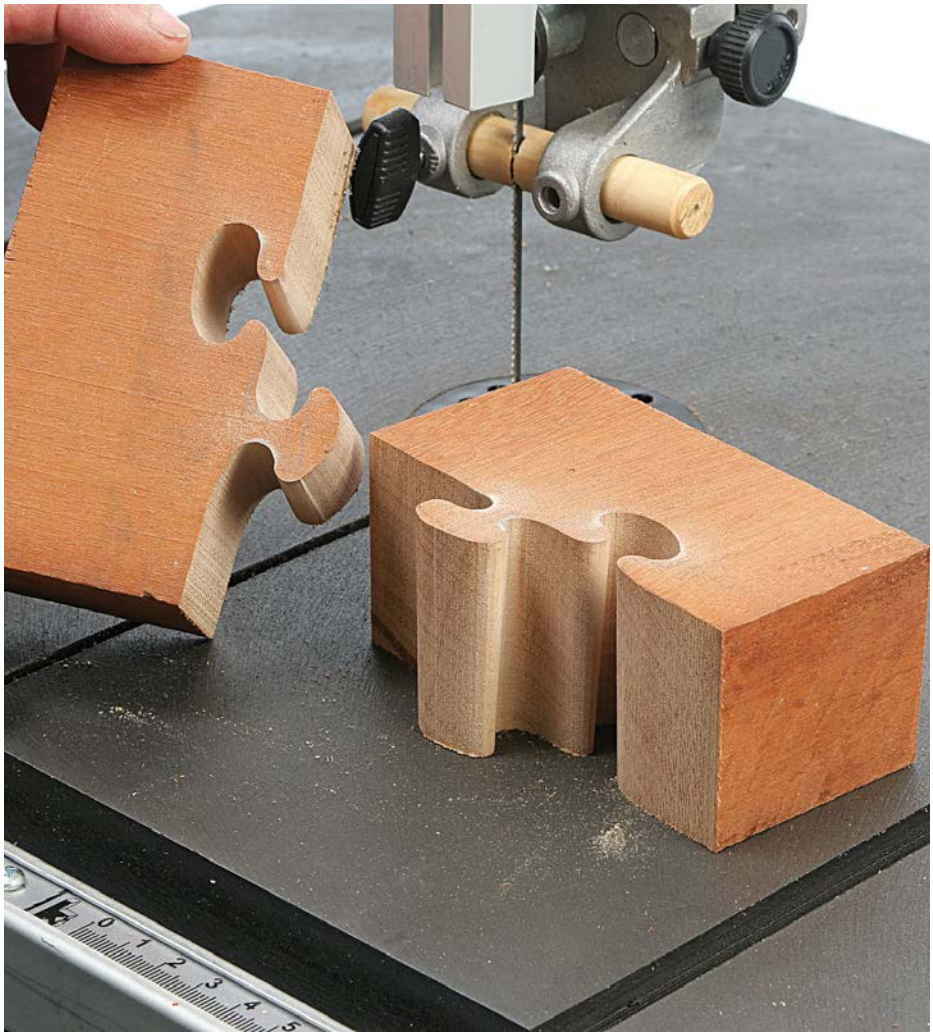
Cutting tight curves

In practice it isn't worth trying to fit an ultra-narrow blade as it probably won't stay in place on the bandwheels and trying to adjust the guides so they sit correctly around the blade is an impossible task. A 6mm blade is doable and will substitute quite well for a scrollsaw and the workpiece won't jump at all, unlike a scrollsaw with its vibrating action.

However, you will need a sub bed on the bandsaw table made with ply or MDF so there is zero clearance around it so pieces get trapped. This is useful for other jobs as well where small pieces are involved. You cannot do internal cuts, although on some work you may be able to cheat by cutting through into an internal area, then withdrawing the blade once the waste is cut out and gluing a veneer slip in the kerf.

For most curved work a 10mm x 6TPI skip blade will cope well, but you must make escape cuts beforehand as it can be difficult to withdraw the work backwards with the ever-present risk the blade might get pulled off the bandwheels, which will only make you jump as the casing will stop the blade and blunt the teeth in the process.

As you can see, the bandsaw can do most things within its capacity – it just needs to be set up correctly. ■



PHOTOGRAPHY BY ALAN HOLTHAM

A very narrow blade can do very tight scroll cuts but it needs to be carefully set up

A sub bed gives a smooth surface that won't trap waste. A strip glued along the front edge obviates the need for clamping

Relief cuts before cutting curves are essential to avoid trapping the blade

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

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Simon Rodway

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

John Samworth describes himself as a slightly eccentric, enthusiastic, amateur. He is chairman of the Cornwall Woodcarving Association. For carving subjects his particular interests are the interaction of human figures and bonsai trees and has recently carved his family motif plaque.

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Joining the army at 16, Alex became a Yeoman of the Guard, completing 25 years on the active list. He was presented with the Royal Victorian Medal by Her Majesty the Queen, for his duties with the Yeomen of the Guard. Joining the Defence Courier Service after leaving the army, in the intervening time, he refurbished a cottage in Cornwall and completed a woodworking course.

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Walter is a woodturner who has specialised in making pens and pencils for more than 20 years. Based on the beautiful Northumberland coast in the UK, Walter sells his bespoke pens and pencils through local craft centres and via his website.
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Gary has had a life-long interest in woodlands and the countryside. He trained in countryside management and subsequently ran a company working with the local County Councils and Unitary Authority and their Countryside and Rights of Way Teams, as well as a wide range of conservation organisations.

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

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Sturdy workshop machine base

Walter Hall decides to make a stand and end all wobbly woodworking

Although I have managed to cut mortises perfectly well for many years with mortising attachments for pillar drills and drill stands, I have always wanted to own a dedicated machine so, after much research and deliberation, I decided upon a Record Power BM16 bench mortiser. Of course I then needed to find somewhere to put it and, not wanting to take up valuable bench space or constrain the length of workpieces I could use, the most sensible solution seemed to be a mobile base that could be located wherever was most convenient for the job in hand.

While ordinary kitchen cabinet-style construction is robust enough for benches that will be fixed to a wall or one another, I did not think this would be sufficient to withstand the stresses of fairly heavy mortising, so I decided on a solid softwood frame with mortise and tenon joints and clad with plywood. Thus my new mortiser's first job would be in the making of its own base. This design would be suitable for many benchtop machines or, with modification, it would make a robust mobile kitchen unit.

1 The frame was to be made from treated softwood left over from previous projects. This all needed to be cut to length on the tablesaw so I began by checking that the mitre guide was set square to the blade. Minor inaccuracies at this stage can lead to all sorts of difficulties later, so a little care in setting up pays dividends.

2 Another check I like to make once all the pieces are cut to size is that they are all identical in length. It is easy enough to stack them together and adjust any that are too long or replace any that are too short. Here the cross members are stacked together for checking.

3 The tenons were to be cut on the bandsaw using the fence and stops to ensure 16 identical joints. To do this

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the first joint was marked out carefully and accurately using a mortise gauge and then the lines were highlighted and the waste marked with a sharp pencil.

4 With the first joint marked up, the bandsaw fence was set to the depth of the waste for the face or cheek cut and carefully cut up to the marked line of the shoulder. A stop block was then set on the fence to the depth of the cut.

5 This enabled the remaining cheek cuts to be made without the need for any further measuring or marking. Cheek cuts were then made on all of the joints before moving on to make the shoulder cuts

6 For the shoulder cuts, the marked joint was once again used to align stop blocks on the fence and in the mitre gauge T-track for the depth and length of cut. Note how the fence stop block is set up to end just short of the blade so that the waste does not become trapped between fence and blade.

7 A similar two-stage process was followed to cut the other two faces of each tenon. It is worth noting that to cut joints on the bandsaw in this way you do need to make sure that your machine is set up and tensioned properly if you are to obtain joints that are square and accurate.

8 Here we have a full set of identical joints and all made with only one lot of marking out. Stops, jigs and other similar fittings on your machines can save a great deal of time so it is always worth thinking about how you can set up your machines for repeat cuts.

9 Before moving on to the mortises the chisel needs to be set to the correct depth. This is achieved by first fastening the chisel into the machine with a coin placed between the face of the chisel body and the casting.

10 With the coin still in place, the drill bit is held in place with a scrap of wood and tightened into the chuck. Don't try to do this without the scrap of wood – the cutter and chisel body are very sharp and you will cut yourself, as I know from my own earlier experiences with mortise chisels. ➤


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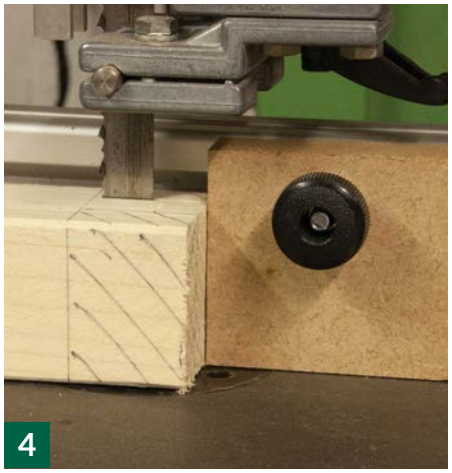
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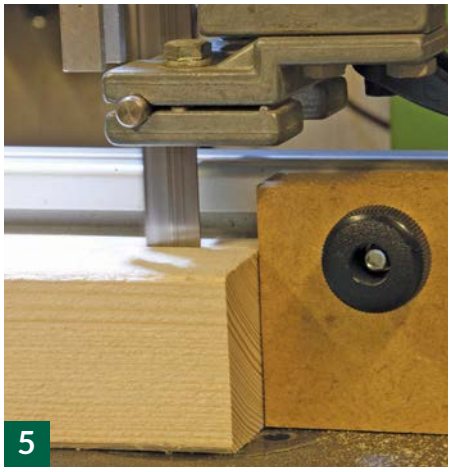
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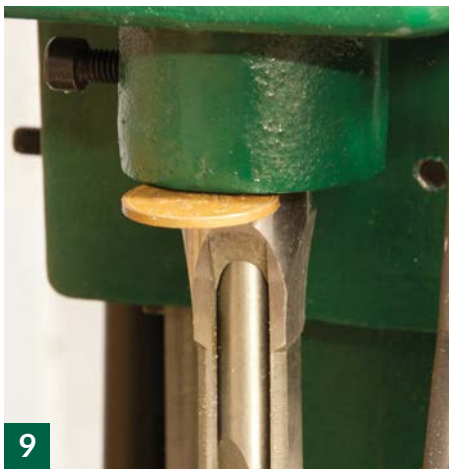
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11 With the cutter in place, the cap-head screw holding the chisel body can be loosened off, the coin removed and then re-tightened with the chisel face flush to the casting. The clearance between chisel body and cutter should then be just right. The next job is to mark out the mortises.


11

12 As with the tenons, careful setting of depth and length stops on the machine means that you only need to do this once for each type of joint. Here the depth stop is being set.

12

13 While using stops means that accurate marking out of every joint is not required, it is worth marking the approximate position of each cut to avoid mistakes when machining the mortises.


13

14 With all the joints prepared and after a test assembly to ensure a good fit of all the parts, two of the sides are glued up and clamped. Glue all faces and shoulders of each tenon, check carefully for square on assembly and if necessary use a diagonal clamp to pull the work into shape.


14

15 Once the glued-up side assemblies are fully set they are joined together with the remaining cross members. Check carefully to ensure that everything is square.


15

16 The side and back panels were all cut from 12mm plywood. The thickness is not too important structurally, but material that is too thin will cause annoying drumming noises when the machine is in use so I would not recommend anything thinner.


16

17 The panels were glued and pinned to the frame and in order to make the cabinet mobile, castors were fitted in line with the bottom of the legs so that when tilted backwards the whole unit can be moved around easily. In the photograph one wheel is being used to mark the position of the hole for the castor mounting.


17

18 A base was cut from MDF and glued and screwed to the lower cross members. I used 18mm MDF but any sheet material strong enough to withstand the weight of whatever you propose to store in your cabinet would do. I keep a heavy toolbox in there to add weight to the unit when in use.


18

19 Hardwood drawer runners were fitted to the cross members to withstand the wear and tear of regular opening and closing. You could use proprietary drawer runner hardware but you would need to adjust the design of the drawer to suit.

20 The drawer was to be a simple design in MDF with glued and screwed joints. Slots for the base were cut in the sides, front and back using a slot cutter in the router table. You could use a straight cutter in a hand-held router or even a good old fashioned combination plane.

21 The one shown in the photograph was made from the same 12mm plywood as the sides, but was later replaced with 18mm MDF as this made fitting a door of the same material easier. The drawer front was screwed and glued while the door was fitted using flush hinges.

22 The finished drawer is an ideal place to store all the chisels and other bits and pieces that you will regularly use with the machine.

23 A visit to my friend and fellow contributor Neil Lawton resulted in the acquisition of an offcut of oak kitchen worktop which formed a robust solution. Cut to size and with the edges chamfered using a block plane the top was glued and screwed to the side members from below.

24 A protective finish of oil was applied to the worktop before installing the machine in position. I used tung oil simply because that was what I had to hand, but any good quality finishing oil would do.

25 With the mortiser carefully positioned the locations for the fixing bolts were marked with a pencil and 8mm holes drilled through the worktop on the drill press.

8mm bolts and locking nuts were used to secure the mortiser to the worktop. Flat 'penny' washers were used under the worktop to spread the load and avoid crushing the timber.

26 A coat of Brunswick Green semi-gloss paint finished the job. As you can see from the photograph I subsequently fitted a pair of levelling feet to the front of the cabinet to compensate for the uneven floor. ■


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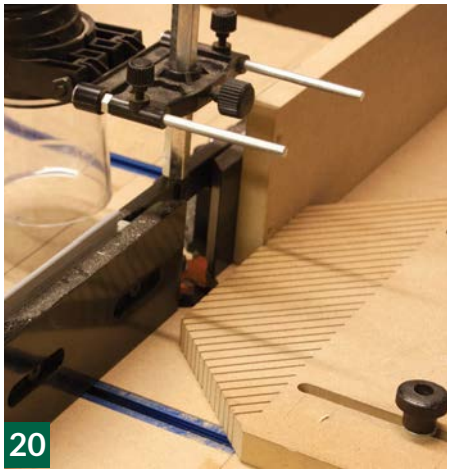
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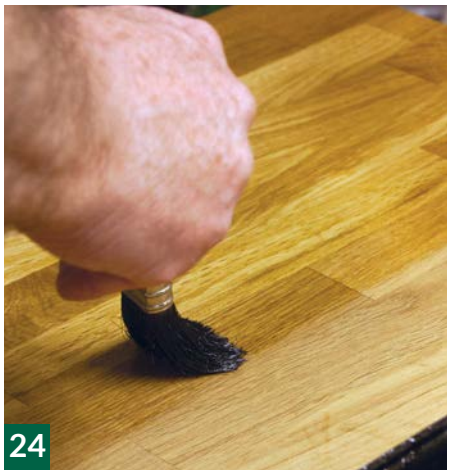
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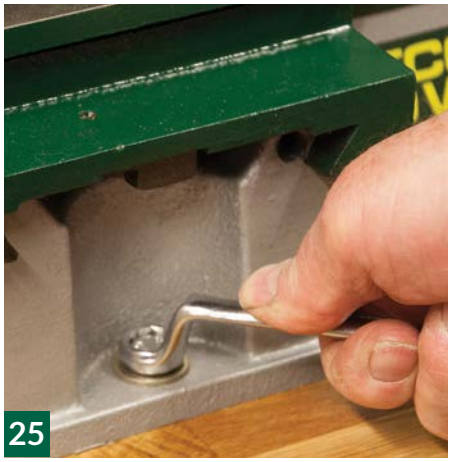
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My new favourite tool

PHOTOGRAPHS BY JOHN SAMWORTH

The knives are out, because **John Samworth** decides to make his own...

There is, to me, something special about a knife. A good knife sits comfortably in your hand; it is well balanced and has a keen edge. This is true for all knife users, from chefs to gardeners, not just me. We will all have our favourite knife. Mine is one I made myself from an old saw blade and a piece of firewood. Making a new tool from scrap materials adds extra character to the knife, making it unique and personal. Friends have suggested that, rather than using an unknown piece of metal, I should purchase fresh tool steel, at a few pounds for half a metre it is priced reasonably. However, they completely miss the point, not only is my knife something I created but it is something I saved by breathing new life into old objects. Why would I make my own knife? Because the blade I want is not readily available – I want a handle that fits my hand and it is fun.

1 Here is an old jigsaw blade. Rather than discard the blade I shall turn it into a new tool by combining it with a small offcut of walnut rescued from a firewood bag from a local timber merchant. I chose walnut simply on appearance – any wood that is sound, free from splits and knots will work.

2 I carefully checked the dimensions of the steel. It needed a blade strong enough not to bend under the pressure of my thumb and not so thick as to offer too much resistance to the wood when working. This jigsaw blade was ideal, at 1.4mm thick it is the same thickness as commercially purchased knife blades from recognised manufacturers. Typically, 1.4mm to 2mm thicknesses are suitable for most small whittling blades. At 8mm wide from the back to the tooth tip, it is a suitable width. At 90mm long, it is ideal to use, with 50mm buried into the handle to form a strong joint and 40mm to form the blade. I checked the steel for cracks. If any cracks were found the blade would be discarded.

3 I drilled an 8mm hole into one end of the handle – this is where the blade is fixed. The handle was aligned to drill along its axis – any error here will cause the blade to emerge crooked from the handle, spoiling the feel of the knife. I clamped the handle to a square block and checked both axes with a set-square to ensure an accurately drilled hole. ➤

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4 Now to check the steel for hardness by running a file over it. If the file cuts the steel it is soft enough to work. If it bounces off the steel it would be too hard to work and will require some heat treatment.

5 Annealing is a process by which I shall use heat to soften steel in order to work it. I heat the steel in a naked flame, slowly at first, until it is red hot, as hot as possible. Annealing steel in a DIY fashion can be tricky due to heat loss around the flame. If this is a problem for you, try heating the steel in a fire bed or barbecue to reduce the heat loss, still using a blowtorch for the flame. The exact temperature at this colour varies according to the steel type, but this is at about 720°C and upwards. (Only the part, which was red hot, will become soft.) I test the steel with a magnet. Above the critical temperature, steel will lose its magnetic properties. Then the red-hot steel is buried in dry sand to cool slowly. Dry sand is a good insulator; it will not burn and is readily available. Wet sand will cool the steel too quickly and the production of steam may cause sand to spit up into my face. If you do not have access to a blowtorch then a gas cooker ring turned up high will suffice. Once cool after 10 to 15 minutes, the steel is ready to work, but only the part which was red hot will be soft. This is the blade end. I shall not work the other end – it shall remain in its original state. In this picture, the blade end is turning a cherry red. This indicates that I have nearly reached the appropriate temperature. The sand container is in front of the flame, just out of the picture. This is to enable me to immerse quickly the blade into the sand without reaching through the flame.


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Safety note

Items I shall be using should include a container of dry sand and a container of water. Both are excellent for extinguishing fire while the water doubles as a coolant should you accidently suffer a minor burn. Incidents that are more serious may require medical attention. Do not hold the steel directly in your hand while heating, but use long-handled pliers or tongs. Leather gardening gloves may feel clumsy to wear, but they offer good heat protection against accidents.

Ed note - NHS advice for a minor burn is to hold under cold or lukewarm running water for 20 minutes.

6 The steel is cleaned with wire wool and a suitable blade design marked out. This is a design suitable for a detail-whittling knife. Any design is possible – choose the size of blade to suit you. Curved and spoon blades will require some additional forging and are not covered in this article.

7 A file is used to shape the blade. A metal grinder may also be used, however grinders create a lot of heat, noise and sparks. The steel is quite soft and easily cold-worked. I started by removing the teeth, then shaped the back, tapering to a fine point.

8 Next, I began the blade shaping. The blade was clamped to the top of a block of wood for support and the edge filed at a 10° angle, followed by grinding on a 150 grit diamond stone. There was no need at this stage to sharpen the blade until after the next two heat treatments.

Selection tip

Remember, if you use a saw blade this should not be soft. If it is, then it probably is not a suitable tool steel and it should be discarded. If you choose to use purchased ground-flat stock, this is often supplied annealed and is soft enough to use straight away. Look out for 'O' grade steel. The 'O' signifies annealed. You can therefore skip the next step, annealing.

9 I now put the steel blade to one side and return to the wood. I am using a simple chisel-style oval shape but you can draw your own design. I used a knife to whittle the rough shape followed by sanding, running through the grits 40, 60, 80, 120 and 240. To fix the blade in the handle, I planned to pack the 8mm drill hole with 8mm dowel. However, on checking my workshop, I had run out.

Heat treatment

To harden the steel, I heat the it up slowly to red-hot 720°C and hotter, as before, then immediately quench the steel in water. This will convert the steel into a very hard and very brittle state. When the red-hot steel enters the water, it sheds some dust. This is carbon from the steel's structure and is nothing to worry about. I do not use the steel in this state because it is too brittle. Twisting, knocking or bending the steel will cause the blade to shatter, sending very sharp pieces of shrapnel flying across the workshop.

The final heat treatment is to temper the hardness of the steel for use. To do this I slowly warm the steel to a very accurate temperature. The actual temperature to use depends on the final use for the tools. This is entering into a trade-off between very hard steel, which is still brittle but useful in specialist tools on lathes or scribes, verses rough and tough steel which can take knocks for use in springs or hammers.

I want the steel for a knife, tempering to something similar to that of a drill or plane will suffice. I clean the steel again so I can clearly see what temperature the steel reached as it changes colour.

As I heat the steel, oxide layers form on the surface. When the steel is clean and bright, the colours are clearly visible. As the temperature in the steel increases the colours darken. The process can be performed with a naked flame and quick quenching. This produces the clear colour patterns, but it is more difficult to control and can produce uneven results. I placed the blade in my kitchen oven and baked it at 240°C for 30 minutes.

The results of naked-flame treatment on the nail and the oven treatment on the blade. Notice how the nail has the full range of colours, indicating the wide range of heat exposure and uneven tempering. Where the steel has turned grey the steel was too hot and heat treatment must start again with hardening. Because the steel sheds some carbon on hardening, it can only be hardened a few times before ruining the steel.

Oxide Colour	Temp	Properties	Use
Pale yellow	210 °C	Still brittle, very hard	Lathe tools, scribes
Pale straw	230 °C		Drills
Dark straw	250 °C		Taps, Dies
Yellow brown	265 °C		Planes
Brown red	270 °C		Scissors
Light purple	275 °C		Press tools
Purple	280 °C		Chisels
Deep purple / grey	290 °C		Axes, hammers
Full blue	295 °C		Screwdrivers
Dark blue	300 °C	Toughest, least brittle	Springs

In the spirit of making the knife from salvaged materials, the pencil in the picture was 8mm diameter. Clamping a guide board to the bed of the scrollsaw, I cut the pencil down the centre. If you do not have access to a scrollsaw, a hand fretsaw will work. It was trimmed overlength for assembly by about 60mm long.

10

10 My scrollsaw blade is narrower than the knife blade. The pencil packing was too tight to fit into the handle – I needed to sand a small amount away by removing wood from the flat surface but keeping the round surface intact to fit the profile of the 8mm hole. I kept checking until I achieved a tight fit. Note the packing dowel protruding from the hole. This affords grip to allow me to remove and insert the packing dowel and keep checking for fit.

11

11 I inserted glue into the hole, using the blade to spread the glue deep to the bottom and around the inside surface then covering all surfaces of the dowel in glue and the blade and assemble. Ideally, the snug fit will require a light tap from a hammer, using a knocking block to avoid damaging the blade. The waste glue was removed while still wet and the knife set aside to dry in accordance with the glue manufacturer's instructions. I used a specialised metal/wood glue, but epoxy resins or PU adhesive work well. PU glue will foam and need cleaning away once dry. Waste wood and any excess glue was cleaned away, before the sharpening process could begin.

12

12 Once that was done I gave the handle a coat of teak oil for protection and stamped my name into the handle. I am a strong believer in reflecting over the process as well as the result. Is this my new favourite knife? Not in this case, as it was made with a friend in mind, whose hands are larger than mine and he is experiencing some stiffness in his grip. Perhaps this blade will be comfortable for him to hold over the next few years and become his favourite tool instead. ■

Parquetry tray

Parquetry is a decorative surface treatment made up of thin slices of wood veneer. Create a retro geometric pattern in just a few straightforward steps. By **Amber Bailey**

You will need

- A wooden tray
- Three different colours of veneer
- Wood stain and soft/natural fibre brush
- Protractor and pencil
- Metal ruler
- A scalpel and 10A scalpel blade
- Cutting mat
- Sellotape or veneer tape
- Veneer hammer
- Contact adhesive
- Sandpaper and sanding block
- Matt varnish and brush

Resources

Tray: www.homedecoart.com
Veneers: www.originalmarquetry.co.uk

All other materials can be found in your local DIY store

Tips

1. When using a scalpel blade always cut at an angle away from yourself to avoid any nasty accidents.
2. Contact adhesive gives off incredibly strong fumes so always work in a well-ventilated area.
3. Be careful to avoid streaks and drips. The tray may need sanding down prior to the application of wood stain.

1 To ensure the body of the tray matches the wood veneers in the parquetry, a wood stain may need to be applied. A water-based wood stain is ideal as there is flexibility in colour mixing and the option of diluting or strengthening the solution after its initial application. Water-based stains need to be sealed but this can be done at the end of the project. It is always a good idea to do a test of your wood stain prior to application, either on a spare piece of wood or discreetly on the back of the tray. When you are happy with the colour, apply the wood stain using a soft, natural fibre brush in long strokes across the length of the tray (**image 1**). In comparison to synthetic brushes, natural fibre will hold and release the stain in a more controlled manner and is less likely to show evidence of brush strokes.

2 The parquetry in this design is a cube optical illusion. To create these faux three-dimensional cubes, three different colours of veneer are used, as well as having them run in different grain directions. Each segment is made of a diamond that has inside angles of 60° and 120°. The easiest way to produce a lot of these is to divide all the veneers into strips at 30mm in width then mark out a 60° angle from the bottom left-hand corner of each, join the two to create a diagonal line. From both ends of this line mark 35mm upwards, join the two to create another diagonal line that will complete your diamond. Continue going up the strip marking 35mm at each end and joining them up. Cut the veneers using a scalpel blade and ruler (**image 2**). The use of a ruler will guarantee that all the pieces slot together in a tight fit. Keep the grain direction following along the strips, as this will be easiest to cut.

3 When you have enough pieces of each veneer cut, you can start to piece the design together. For a cube, the top veneer needs to be positioned so that the diamond is horizontal, the sides then join underneath with the grain directions meeting in the middle and following outwards (**image 3**). Sticking to this formation and colour scheme, repeat and build up the design until it is big enough to make up the tray surface.

4 Hold the veneers together either with pieces of veneer tape on the back of the veneers or temporarily stick Sellotape across the top and remove after the parquetry is glued down. Use either of these techniques if veneers begin to break and need to be held in place.

5 Measure and mark out on to the parquetry the surface area of the tray and cut out using a scalpel and ruler. The parquetry should fit tight and is now ready to be attached (**image 4**).

6 Apply a thin layer of contact adhesive to the tray surface and the back of the parquetry; leave until both feel tacky. Press the parquetry down on to the tray making sure it is positioned correctly as there will not be the opportunity to alter it afterwards.

7 To eliminate any air bubbles or excess glue between the two surfaces, rub over the parquetry using a veneer hammer or squeegee, working from the centre outwards (**image 5**). Leave the tray to set for 10 minutes to guarantee the glue has dried before smoothing down the veneers.

8 Now the parquetry is in position, the veneers will all be uneven heights, which need to be taken down to a standard level – you are aiming for the surface to be smooth to the touch. Sand down the veneers, moving across the length of the tray (**image 6**); keep to one direction otherwise the veneers will become scratched. Begin with a coarse paper and move down to a fine grade. Be wary of the sawdust of the different veneers penetrating the grain of one other (particularly darker sawdust damaging light coloured veneers). If sanding is causing problems then gently scrape the veneers with a scalpel to clean them. Give the parquetry a light wipe down to remove any dirt before applying a finish.

9 It is important to seal your wood stain to avoid any discolouration as well as to protect the parquetry from potential spillages. Although a variety of finishes can be applied to the completed tray, matt interior varnish is a cheap and simple solution. Apply the varnish in a thin, even coat with strokes that spread across the entire body of the tray (**image 7**). Always follow the same direction and don't overload your brush, in case of drips or streaks. Start with the bottom of the tray and end with the parquetry, allowing enough time to dry in accordance with the instructions provided with the varnish. ■


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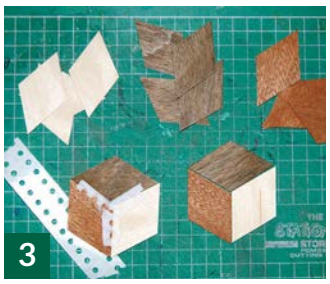
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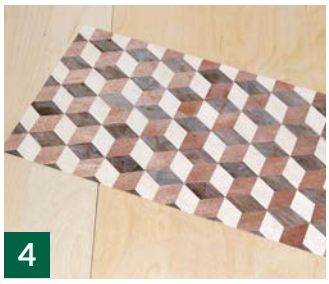
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NEWS & EVENTS

All the latest events and news from the world of woodworking

Ancient fossilised tree trunks

A gut-wrenching tale

I've been reading the October 2017 issue of *Science Magazine*. Well, that was a few months ago, but the article that caught my eye delves back 374 million years to the very first plants that can be actually called trees.

Researchers have found fossil evidence, in a desert area of Xinjiang Province, of plants from the extinct cladoxylopsids group. These trees may have been up to 12m tall. Modern trees grow by adding living xylem layers to their outer layers. These are seen as the growth rings with which we are all familiar. Thus width is easily added to support greater height. Not so with cladoxylopsids.

Fossil imprint of *Eospermatopteris erianus*

Unusually detailed 3D fossils were discovered by Chinese paleologist Xu Hong-He in 2012. Researchers such as plant paleologist Christopher Berry from Cardiff University have helped analyse the fossils. Chris has said: 'It's crazy that the oldest trees also had the most complex growth strategy...'

So how did these cladoxylopsids get so tall and tree-like? They weren't like the modern trees with their single shaft and expanding xylem layers forming woody rings – the cladoxylopsids had multiple columns of xylem, each with reinforcing rings and meshed 'a bit like a chain link fence'.

Internally, between the xylem 'skeleton' they had a soft tissue pith-like substance while the whole 'trunk' had a hollow centre. Lateral growth of this structure would have been OK for the outer xylem columns, but would have been disastrous internally, leading to total collapse.

What seems to have happened is, as the trees grew in width, so the xylem skeleton and softer tissues were torn apart (hence my 'gut-wrenching' headline) and the tree would have had to have been constantly repairing itself. The bases of the trees became large – a bit like an overgrown elephant's foot – as the structure collapsed on itself, forming a splayed support.

There were no leaves as such, just dentritic twiggy growths atop the plants – perhaps aiding photosynthesis. These trees dominated Earth's earliest forests in the Devonian period. They had a major role in adding oxygen to the atmosphere, bringing about changing climate and paving the way for ever more complex evolved life forms. They became extinct before the Carboniferous period – perhaps shaded out by the remote ancestors of our modern trees.

While the cladoxylopsids have been known of in fossil form from all over the world since before the 1930s, it needed fossils preserved down to cellular level to reveal the unique growth method of our earliest trees.

PassivPod - Ahead of The Curve

Innovative, high end, environmentally friendly accommodation

Equity Crowdfunding Campaign throughout February 2018 PassivPod is a unique building that is designed to be high wellbeing and low carbon for Leisure, Living and Learning. It's the design of Koru Architects, a multi-award winning architecture practice which specialises in low energy, sustainable, design and construction. PassivPod began its journey as a finalist in the Sunday Times & British Homes Awards Eco Haus competition. It has since expanded from residential and leisure to other sectors where there is high demand for innovative, green and healthy buildings including education and business sectors. PassivPod is currently available in four sizes from the 15m² garden office, to the 270m² four bedroom, residential/ leisure building. Its unique selling points include its off-grid design, and energy and water independence through solar power and rainwater harvesting.

It has been designed as a Biophilic environment, made from Cradle to Cradle materials, supporting the circular economy and the planet, designed to Passivhaus principles.

Equity crowdfunding

During February 2018 we will be providing readers with a unique equity crowdfunding opportunity, allowing anyone to invest in PassivPod and enable the construction of the first ever PassivPod. To invest, please visit the crowdfunding page at **passivpod.co.uk/crowdfunding** for more information and to get involved.

koru architects

EVENTS

The Midlands Woodworking & Powertool Show, Notts. 22-24 March 2018, Newark Showground. www.nelton.co.uk/midlands-woodworking-power-tool-show.html

Yandles Woodworking Show, 13-14 April 2018, Martock, Somerset. www.yandles.co.uk

Weald of Kent Handmade Fair, 29 April – 1 May 2018, Penshurst Place, Tonbridge, Kent. A fun family day out with lots of crafts stalls, music, food and drink, held in the striking landscape of Penshurst Place. RHS and English Heritage cardholders get free entry. **www.thecraftshows.co.uk/kent/spring**

Web links for you

Facebook

woodworkforwomen

In case any blokes hadn't noticed, women are perfectly capable of making anything in wood – and then some. So here's a series of posts showing some from Down Under getting busy in the workshop.

Instagram

woodchuckchick

Maria-Fernanda Nunez DosSantos claims to be an apprentice cabinetmaker and coffee lover. Judging by her very stylish Instagram posts, the Woodchuckchick, based in Uruguay, South America, is obviously more than just an apprentice, both in cabinetmaking and enjoying coffee – especially as she trained at Waters & Acland in the Lake District.

Vimeo

Process | Edward Wohl Woodworking

An oh-so-lovely sequence showing a designer/maker in his idyllic workshop talking about working with wood. Well, you can dream...

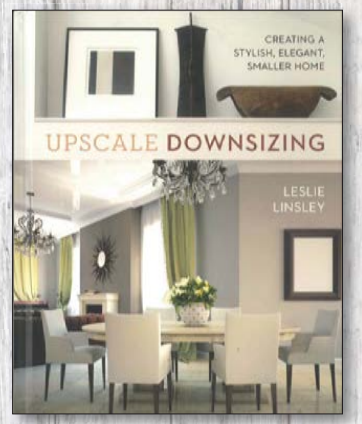
BOOK REVIEWS

After the Editor managed to work his way through some delicious bourbon recipes and then tried upscale downsizing, his head was in a bit of a spin...

Upscale Downsizing – Creating a Stylish, Elegant, Smaller Home

By Leslie Linsley

Very much American in tenor, this book aims to show you that simply having to downsize your property doesn't have to mean the end of style, possessions or beautiful things. In fact, it almost goes into overload with ways to fill your new home with lovely and practical things. Often it can be the merging of two homes that poses a problem, which is covered here. What the book shows is that smaller spaces are easier to populate with much-loved and favourite objects than larger, more spacious rooms. It includes chapters such as *Love It or Lose It*, *Kitchens & Bathrooms Redesigned*, *Bedrooms You'll Never Want to Leave* and *Moving To a New Space*. It even has handy hints such as how to maintain the family silver in untarnished condition and how to create an illusion of space, along with key ideas – repurposing the family home, redesigning an urban apartment or renovating an older property. Plenty of good suggestions and advice for anyone considering a momentous move.

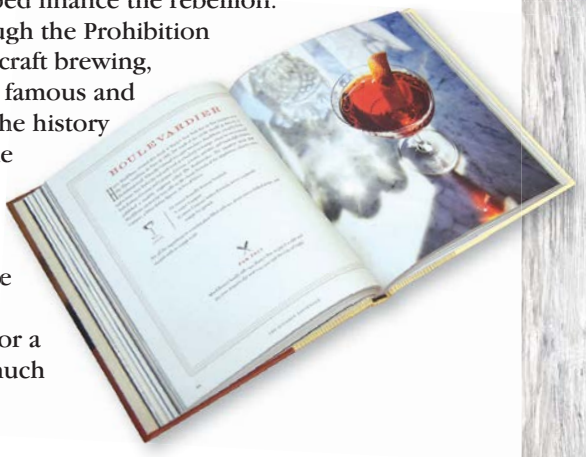


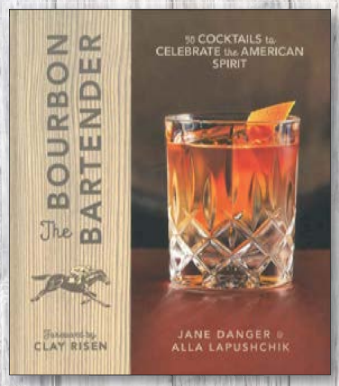
ISBN: 978-1-4549-2197-4
PRICE: £19.99
Published by Sterling

The Bourbon Bartender – 50 Cocktails to Celebrate the American spirit

By Jane Danger & Alla Lapushchik

This book is clearly a labour of love for a drink that it quintessentially American. One cannot imagine the joint authors getting from the first to the last chapter without sampling most, if not all, the tipples wondrously displayed throughout the book. This is as much a history book as it is a book of recipes. It follows the development of what we call bourbon whiskey from the early settlers in America creating cider that was safer than water to drink, through to the Revolutionary War and the creation of Bourbon county – named as in the House of Bourbon after King Louis XVI of France who helped finance the rebellion. From there the journey continues through the Prohibition Era, a study of the 'whiskey giants' and craft brewing, all with many descriptions of colourful, famous and infamous characters who have shaped the history of this much-admired and very drinkable spirit. It covers bartenders' tools and techniques, creating the cocktail, the best bourbon bars, festivals and events. So, do you fancy a Manhattan? Or maybe a Whiskey Sour, Minnesota Breakfast, Millionaire, Boilermaker, Roman Twist or a Shark Eye? Well, they are all here and much more besides...





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The making of a longbow
a study of a Master Bowyer

The early history of England has been written with 'oak gall and arrow'. In a much more peaceful way Marc Grady, Master Bowyer is still keeping the traditional skill of longbow making alive

For over ten thousand years, from pre-historic man through to today's Olympic archers, bows and arrows have played a part in both military and recreational aspects of societies around the world. At its height during the medieval period, the English War bow was the most fearsome and devastating weapon in Europe. When the firearm found its ascendance in the 16th century as an easier option to train militia, archery largely became a sport and pastime of the gentry and landed classes. The late Georgian and Victorian periods saw a huge uptake in the interest of target archery as a social exercise and activity and many of today's archery clubs and societies were founded at this time. Accordingly, the skills and industry of the bowyer have waxed and waned over a long history of 'shooting in the bow'.

Whilst the English 'war bow' is still made and shot by devotees of bows requiring the strength to draw in excess of 80lbs (bows recovered from the Mary Rose were found to be drawing 85 to 180lbs!) the meat of today's longbow makers work is focused on the 'target bow' whose draw weight will be anywhere between as little 20lbs and up to 80lbs.

Exacting Standards

Based in Herefordshire, Marc Grady, a member of a select group of highly skilled Master Bowyers belonging to the Craft Guild of Traditional Bowyers and Fletchers, is busy making modern variants of the Victorian target bow. The Guild like any overseeing body worth the name, requires its newly accomplished members to prove to the Guild that they have met the truly exacting standards required to make longbows, arrows and strings by presenting 'Master Pieces' at the end of a three-year apprenticeship. The Craft Guild offers the only official qualification in longbow making and associated crafts in the UK, possibly even, the world. The Worshipful Companies of Bowyers and Fletchers respectively, who are no longer active craft guilds, nevertheless give their support and oversight to the Craft Guild's activities. Anyone contemplating taking up target archery should take care to not only have proper instruction but also to purchase

A beautiful matched set of bow and arrows

Some of Marc's leather embossing

their equipment from a Craft Guild member so they can be sure it is made to the requisite standard and with good reason.

Target Bows

Although each element of a longbow target archer's shooting has its own complexities and nuances, it is the longbow which draws most attention. The guidance for the rules of what constitutes an English Longbow is laid down by the Guild in conjunction with the British Longbow Society. The longbow should be matched to the archer's 'draw length' (developing peak power at the furthest point at which they can pull the string back) but also aligned to the required 'draw weight' or how much pull they can muster. Ladies and gentlemen's bows will differ in this regard as will the construction for the purpose for which the archer intends to use them; indoors, outdoors, long distance, 'field' or 'clout' shooting etc. Competitions can require shooting up to 144 arrows in a day and so the bow must be sweet to draw, have no perceptible hand shock and yet deliver an arrow shooting in excess of 150ft per second. A decent quality longbow with regular use can give ten years or so of useful life, but it comes under incredible strain. Unlike any other construction we may make from wood, the compression of the fibres on the inside of the bow and expansion of fibre on the outside, as the string is drawn, places the materials under extraordinary stress. Furthermore, as the limbs come forward upon release of the string, but are then snapped still by the taught string, this sends enormous shock waves through the woods; so the way the timber is chosen, the bow constructed and shaped is critical if it is to stay the course. Marc creates what are termed 'Victorian style target bows', made for fast, flat-trajectory shooting of tournament arrows and wherever possible using traditional methods. The bows are bespoke to the customer requirements and made from the finest hardwoods, beautifully finished and 'dressed' referring to the decorative fittings and finishings which make each one unique. Marc also offers bow kits, arrows, leatherwork, archery components and a repair service. ➤

Marc's signature arrow pass – abalone shell surrounded by buffalo horn

A bespoke bow with the word 'Gramercy' – Thank you resting against a target

MAKING A LONGBOW

Creating a longbow is an eleven-stage process. The selected pieces of timber are planed and assembled together with glue between them, to form the basic blank or stave. Next, the stave is marked out to give the familiar taper shape running from 1 inch above and 3 inches below the middle towards each end. This is then bandsawn then planed to the marked lines. After that the rough shaped blank is spokeshaved to give the subtle finished curvature and proportion (the depth of each limb is no less than 5/8 of the width) that produce a longbow. However the most critical part of the process is known as 'tillering'. The tiller of a bow is the evenness by which it bends. It must form an even curve when drawn, if not it may not work as intended and might possibly snap at a weak point. A wall mounted pulley and block system is used to test the bow and decide where to remove more wood with the spokeshave, there is an art to this, based on experience.

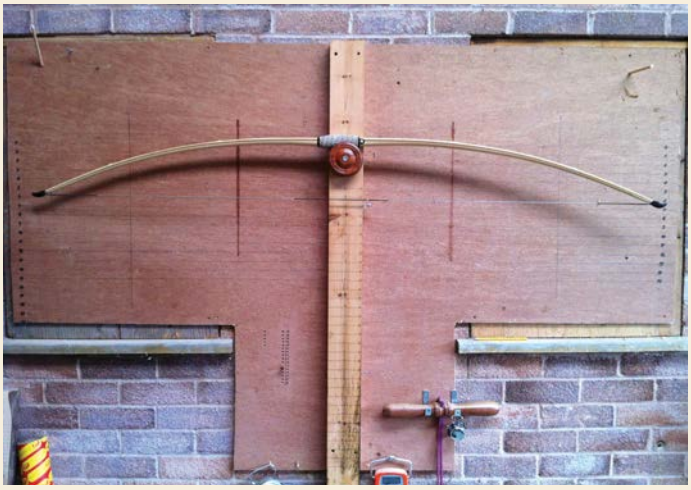
One small and attractive detail that is usually added to the longbow is an inlaid piece of abalone or mother of pearl placed just above the wrapped grip. This is called the 'arrow pass' and is there to prevent the arrows striking and wearing the bow woods. The next job is to fashion the two horn nock blanks which have recesses in them to fit on the tips of the stave. They are bonded in place with two-part epoxy resin and then shaped in-situ. They have a basic consistency in style, with a slot made with a round file for the string to sit in. The nocks are polished on a buffing wheel and after that a finish can be applied to the stave. The remaining job is adding the textured decorative grip in the centre of the stave. In total it takes about five to six weeks to make a longbow and about a week to make the arrows in a batch of a dozen.

Shaping the bow handle

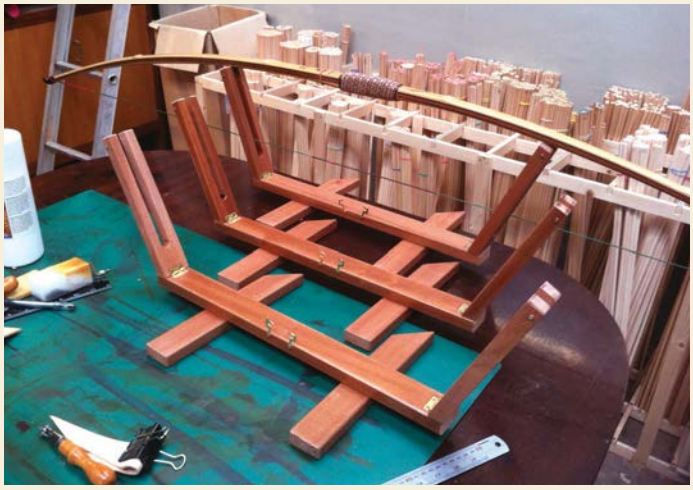
A 'stitching pony' used for holding leather while hand stitching

Cresting the arrow shaft

A laminated stave being glued up



The tiller



Folding bow stands in sapele

PARTS OF A LONGBOW

Stave

This is the beginning of the longbow's construction and is the basic lump of wood or woods upon which the bow is marked out and from which the bow is shaped. This can either be of a single piece of wood such as yew or ash, leading to the construction of a 'self bow' or a combination of woods in a lamination, taking advantage of old fashioned Cascamite or modern synthetic glues for build strength. A misconception is that a longbow is always formed from one long section of timber which is not always the case. Where suitable pieces of woods are found to be too short they can be skilfully joined to make up the stave with tightly worked W or Z shaped fishtail joints. Before the development of suitable adhesives, it was essential that all military longbows were made from yew (*Taxus Baccata*). This is because the soft white sapwood, naturally bonded to the dark heartwood, is excellent in expansion and preventing the fibres running along the back of the bow from breaking. Not all wood is suitable to be called a 'bow wood' and intense debate continues about the engineering properties that make some woods better than others, at not only withstanding the stresses involved but which are also capable of returning efficiently all the energy placed in them when the bow is bent. Examples of woods that have stood the test of time in bow making are degame or lemonwood, greenheart, purpleheart, hickory, maple, and more recently ipe and bamboo (although this is a grass!) All woods used in modern longbow making are ethically sourced in accordance with CITES and EU Timber Regulations. A typical example of a starter bow would have a maple 'back', a lemonwood 'belly' and a tapered purpleheart core.

Three bespoke target long bows

The nock shaped from Asian water buffalo horn

Bespoke detailing for a client

Detail of Marc's signature 'arrow pass'

Limbs

The top limb and the bottom limb are the names given to the bending parts of the bow with the handle somewhere close to the middle. The bow is not symmetrical and depending upon use is not necessarily designed 'to come full compass' or perfectly semi-circular as there needs to be a stiff mid-section to anchor the base of each limb and to generate the power. The limbs are marked out along with the handle and then cut from the stave. After shaping, these limbs are taught to bend through a process called 'tillering'; carefully bending the bow inch by inch and removing wood from stiff areas to create the perfect set of curves, see below.

Nocks

The word nock is derived from a Dutch word identifying the end of a pole or mast to which something is affixed in a notch. The ends of the bow (and one end of the arrow – see above) are called the nocks and are the two pieces of horn that fit on either end of the longbow limbs to hold the string and protect the bow wood from wear. Longbow makers like Marc hand carve these from Asian water buffalo, cow or stag horn.

String

A longbow doesn't work without a string. In medieval times the best strings were considered to be made by 'Stringers' on the near continent and hence a traditional string is made using a 'Flemish inlay' technique. A modern variant of this uses the same method but with twisted strands of Dacron B50 or a polypropylene type material like 'fastflight'. It is made up according to the length of the bow, the speed required of the bow and the bow's poundage, which refers to the draw weight. The length is important because around midway along its length it is wrapped or 'served' for durability and comfort and where there is a tiny marker for consistently locating for the arrow on the string.

Arrows

While a bow is the 'projector' the arrow is the 'projectile', it is the arrow that does the flying and the scoring. A bow is nothing without arrows and a modern target bow requires very ➤

different arrows to those once used in warfare. Each arrow (sold by the dozen) must be 'matched' to not just the archer's draw length but also the bow itself. Too weak an arrow shot by a right-handed archer is likely to miss the target to the right or even to break upon being 'loosed' (never 'fired' – this comes from the use of the musket and has never been associated with archery other than by the layman). Too stiff an arrow shot by a right-handed archer will miss the target going to the left by a long way. (vice versa for a left-handed archer!) Therefore, the spine has to be just right. Similarly, critical, the arrows must all weigh the same as a heavier arrow will fall sooner than a lighter one and consistent aiming is required to deliver the highest scores.

Point/ Pile

Gone from regular archery in this country are the splayed arrowheads that are impossible to remove from human or animal flesh or diamond shaped tips to penetrate chainmail or armour. Instead a simple brass bullet shaped point is all that is required to penetrate 4 inches of the standard straw or foam competition target from a hundred yards. These will be from 30 grains to 125 grains in weight (15.4 grains to a gram). Notwithstanding the focus upon competition archery it is important to remember that these are still extremely dangerous weapons capable of inflicting serious or lethal injury.

A finely matched set of 'barred' fletchings made from turkey feathers

Shaft

Marc makes perfectly matched bespoke arrows as well as standard club arrows. The shafts aren't standard dowel, they are made from Port Orford Cedar shipped from Oregon and known for its lightness, strength and elasticity. Other shaft woods are Scots or Norwegian Pine and Sitka Spruce; each has its own characteristics and adherents. Arrow shafts for target archery are generally $^{9}/_{32}$, $^{5}/_{16}$ or $^{11}/_{32}$ of an inch in diameter. A Victorian skill that it still well regarded and undertaken by Marc is to 'foot' the arrows by inserting a wedge of exotic hardwood into the front of the shafts thereby strengthening the arrow at the point of impact. Arrows can be tapered at either or both ends to alter the balance point and flight characteristics of the arrow. A well-matched set of arrows will have no greater than 8 grains' difference between the heaviest and the lightest. The arrows shafts are usually decorated with a series of rings or 'cresting' to identify them from another archer's and given several coats of durable varnish to seal them from either giving or taking up moisture.

Nock

An arrow has its own nock which is made of a protective material to prevent the end of the shaft splitting when locating onto the string. Inserting a sliver or wedge of horn has been done over the centuries and is still undertaken by Marc but more commonly today it is a coloured piece of plastic which is used. In common with the fletchings there are various colours to choose from and the arrows can be made up in a specific colour scheme to suit the user.

Fletchings

Once undertaken by a 'fletcher' the affixing of feathers to stabilise the movement and flexing of the arrow in flight is known as fletching. These fletches or fletchings were traditionally of goose feathers taken from the primaries of the bird. Marc does still cut and fletch using goose feathers but nowadays it is more common to fletch with pre-cut and dyed turkey feathers. These are profiled in shape to assist the arrow flight whilst reducing or increasing drag. ■

Victorian style round quiver with arrows

Portrait of a Master Bowyer

"I learnt everything I know from my father who was himself, a master bowyer" says Marc. "He along with other craftsmen had to relearn ancient skills that were all but lost and use them to create modern recreational bows, which was an interest in Georgian and Victorian times, but the techniques have been updated to use modern day materials. My father was a founder member of the Craft Guild and while I learnt alongside him, I still had to go through a lengthy apprenticeship before I could be considered a master of my craft".

Marc continues "because of people like him and because of the work that I do, we are seeing a huge resurgence in the use of the longbow. While it may have been considered a minority sport thirty or forty years ago to shoot a wooden bow, there are a good number of archers shooting long bows today. There are 47,000 archers registered with the governing body within the country and a good quarter of those will be shooting wooden bows. Nearly everyone that comes to me to have a bow made is generally a member of the British Longbow Society.

If you have an interest in archery visit:
Marc Grady at:
www.longbowemporium.co.uk
The Craft Guild of Traditional Bowyers and Fletchers:
www.bowyersandfletchersguild.org
The British Longbow Society
www.askarts.co.uk/page2.html

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Trees for life
Hornbeam

The European hornbeam is often confused with the common beech tree. Perhaps you have been looking at one and never realised?

Hornbeam (*Carpinus betulus*), of the *Betulaceae* family, is a deciduous broadleaf tree native to southern England, but is widely planted elsewhere.

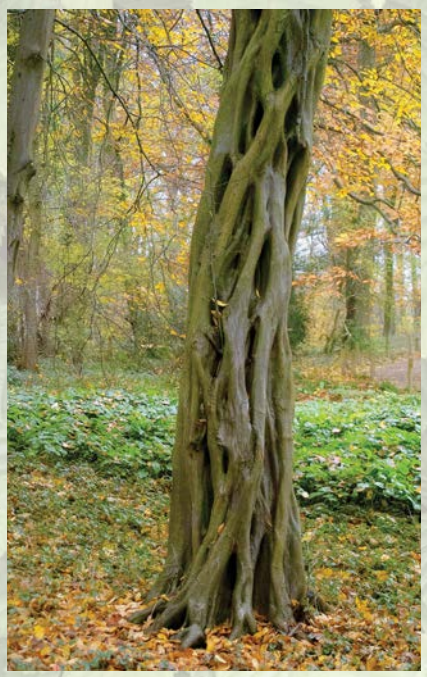
Overview: often confused with common beech, the hornbeam's bark is pale grey with vertical markings, sometimes on a short, twisted trunk, which develops ridges with age. The twigs are brown-grey and slightly hairy and the leaf buds are similar to beech only shorter, and slightly curved at the tips. Mature trees can reach a height of 30m and live for more than 300 years. The leaves have a similar shape to beech leaves – oval, toothed and with pointed tips. Hornbeam leaves, however, are smaller and more deeply furrowed than beech leaves with a pleated appearance. They become golden yellow to orange before falling in autumn. Hornbeam is monoecious, meaning male and female catkins are found on the same tree. After pollination by wind, female catkins develop into papery, green, winged fruits known as samaras. The seed is a small nut about 3-6mm long held in a leafy bract with three lobes – could be confused with beech (*Fagus sylvatica*) but the doubly serrated leaf edges tells them apart. The hornbeam can be identified in winter by distinctive papery seeds hanging in tiered clusters through autumn. Leaf buds are pressed closely to the twig. It is naturally found in oak woodland and is often coppiced or pollarded. Only two species occur in Europe, the greatest number of the 30 or 40 species can be found in east Asia.

European hornbeam in a field

PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS

Fascinating fact

The name 'hornbeam' comes from the hardness of its timber. 'Horn' means 'hard' and 'beam' was the name for a tree in old English.



An unusual, knarled trunk

PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS

Close-pressed leaf bud

Hornbeam catkins

PHOTOGRAPHS COURTESY OF SHUTTERSTOCK UNLESS OTHERWISE STATED

Typical uses

The timber is a pale creamy white with a flecked grain, especially on the quartersawn, with little colour difference between sapwood and heartwood. It is extremely hard and strong and thus mainly used for furniture and flooring. Turnery, including drumsticks and billiard or pool cues, musical instrument parts including organ pipes, mallets, pegs, pulleys, tools such as hand planes and tool handles are all made from hornbeam.

Other uses

Traditional uses for the wood included ox yokes – the wooden beam fitted across the shoulders of an ox to enable it to pull a cart – butchers' chopping blocks and cogs for windmills and watermills. Hornbeam burns well and makes good firewood and charcoal. It was also coppiced and pollarded for poles.

Medicinal use

The leaves have been used to staunch bleeding and heal wounds. Also in powder form or as distilled water from the leaves to use as an eye lotion.

Working characteristics

Hornbeam is a hard, heavy wood it has high crushing and bending strength, medium stiffness and very good steam-bending properties. It has excellent shear strength and resistance to splitting. Hardwearing, it has a moderate blunting effect on edge tools and pre-boring may be necessary if nailing. It planes and cuts satisfactorily, has good gluing, staining and turning qualities and can be polished to a high finish.

Turned and carved hornbeam chess pieces

A German-made plane with a hornbeam sole

Hornbeam logs for burning

Newly fitted cogs in a restored windmill

PHOTOGRAPH BY GMC/ANTHONY BAILEY

Hornbeam keeps its leaves all year round

Below: A stag beetle on a hornbeam trunk

Wildlife

Like beech, a hornbeam hedge will keep its leaves all year round, providing shelter, roosting, nesting and foraging opportunities for birds and small mammals. Hornbeam is the food plant for caterpillars of a number of moth species, including the nut tree tussock. Finches and tits and small mammals eat the seeds in autumn.

Traditional uses

A tonic made from hornbeam was said to relieve tiredness and exhaustion, and its leaves were used to stop bleeding and heal wounds.

Newly felled hornbeam trunks

Durability

Hornbeam is susceptible to fungal diseases, in particular phytophthora. Grey squirrels can cause bark-stripping damage. It can be vulnerable to the forest longhorn beetle when in log form and the sapwood is susceptible to the common furniture beetle. However, the wood does absorb preservatives easily.

To find out more the Surrey Tree Wardens website has an informative page about this very useful tree: www.surreytreewardens.org.uk/hornbeam.html

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Tricks *of the* trade...

A round-cased tape rule with a sliding end stop isn't accurate

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You don't always need to use a measuring device such as a steel rule – you can use objects of a known size instead

It's very easy to reach for a tape rule or a rigid rule but they aren't always easy to use in certain circumstances and therefore not reliable, especially for small measurements. However, you can choose an object the size of which is already known. A prime example would be the shanks of HSS drill bits. Whether you want metric or imperial, choose a bit of the relevant size and place it between objects to obtain exact spacing. This works very well when setting the depth stop on a router. The object you choose doesn't even have to be a standard size. If you want to make repeat cuts to length on a compound mitre saw or set the fence spacing on a biscuit jointer, all you need is a block of the relevant size which you can use time and again for rapid set-up, no ruler involved. Make sure you mark up and store any such setting block for future use so you know what it is for and which tool to use with it. ■

Drill bit shanks in good condition give exact sizing

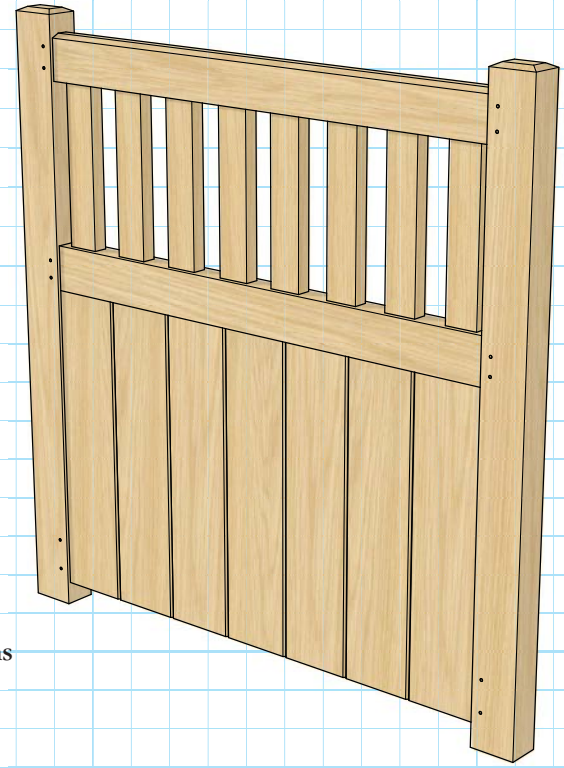
Checking the thickness of a hinge to inset it into a stile

Spacer blocks for biscuit slotting board edges

PLANS 4 YOU

Garden gates

Simon Rodway takes us through the garden gate



With this issue, I have gone down the 'buy one, get two free' route; the smallest of the three gates shows not only how it is made, but also how the other two gates can be made as well, since the details of construction are the same throughout, with a few important variations. Additionally, the overall sizes of each type are a guide which you may want to change, since one of the principle reasons for making your own gate must be so that you can fit it to an individual opening.

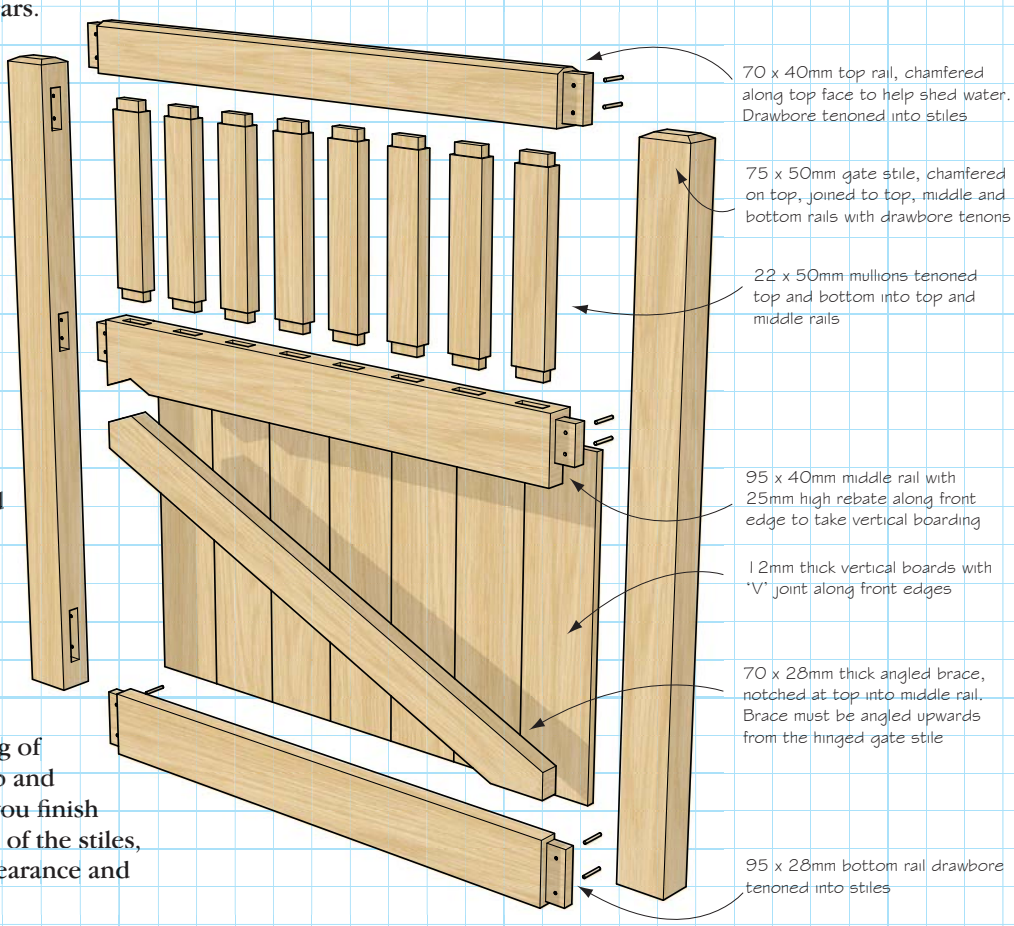
The construction is a fairly simple frame with all the rails joined to the stiles using drawbored mortice and tenon joints, where the holes in the tenon and the mortice are slightly offset to pull the joint tight when the dowel is knocked into place. This joint lasts forever if constructed properly, and is perfect for outdoor applications as glue is unnecessary. The dowels are inserted from the front of the gate, as a feature and to emphasise the quality of the joints. The frame has an additional angled brace (two in the taller gate) which sits behind the bottom panels in the lower gates, where it is notched into the middle rail. The wider gate has a pair of braces, and can be hung from either stile, which also lends the design to installing as a pair. The tall gate and the single narrower gate must be hung from the side from which the brace points upwards, as this brace is designed to prevent the gate sagging downwards over the years.

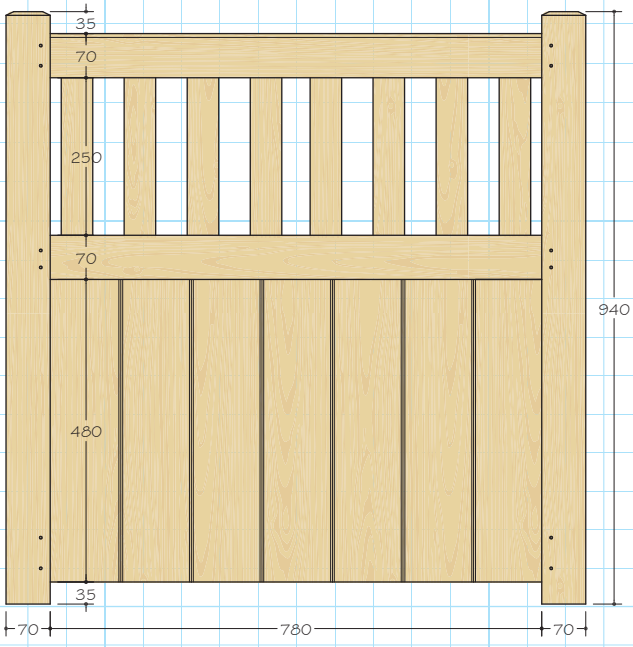
Cutting list

Top rail	1	@	840 X 70 X 40
Middle rail	1	@	840 X 95 X 40
Bottom rail	1	@	840 X 70 X 28
Stiles	2	@	940 X 70 X 50
Mullions	8	@	280 X 50 X 22
Angled brace	1	@	860 X 70 X 28
Vertical boards	7	@	480 X 112 X 12

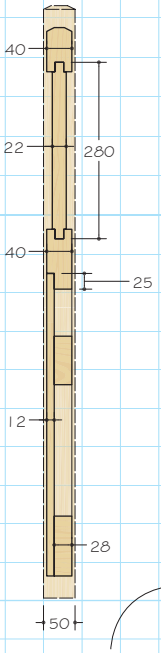
The middle rail in the two lower gates, and the top rail in the tall gate have rebates along the front bottom edge to take the vertical boards. I have suggested simple square edge boards with a v groove worked along the joints, but you can use tongue and groove boarding if you prefer, which may be less likely to open up gaps. The boards on the taller gate should be thicker to allow for the greater spans and potential to deform.

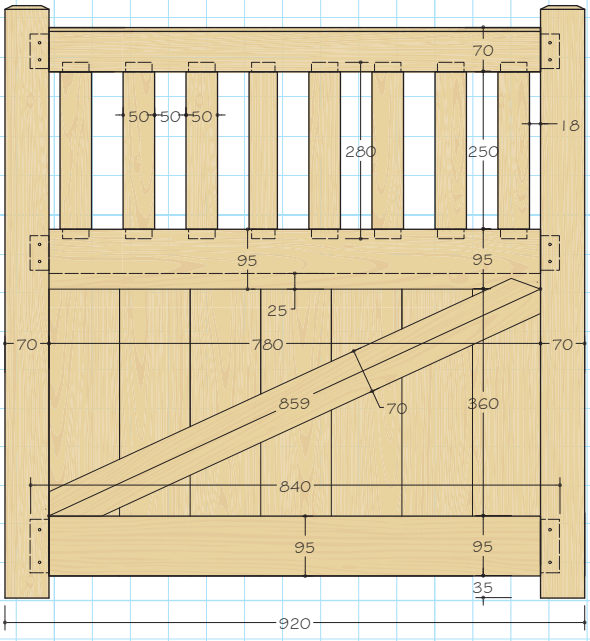
A couple of general rules when making gates are to protect end grain as much as possible, and avoid larger flat surfaces where water can collect. Thus the tops of the stiles are shown either chamfered or rounded over, both of which will help to shed water. This is also one reason why the top rail in the single gate is shown chamfered. Other variations are the widths and spacing of the mullions, which are tenoned top and bottom into the rails, and whether you finish the boarding flush with the bottoms of the stiles, all of which can subtly alter the appearance and create a more individual result. ■





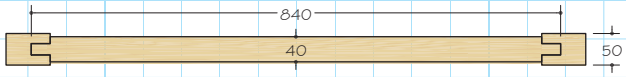
FRONT ELEVATION





Hinge stile

REAR ELEVATION

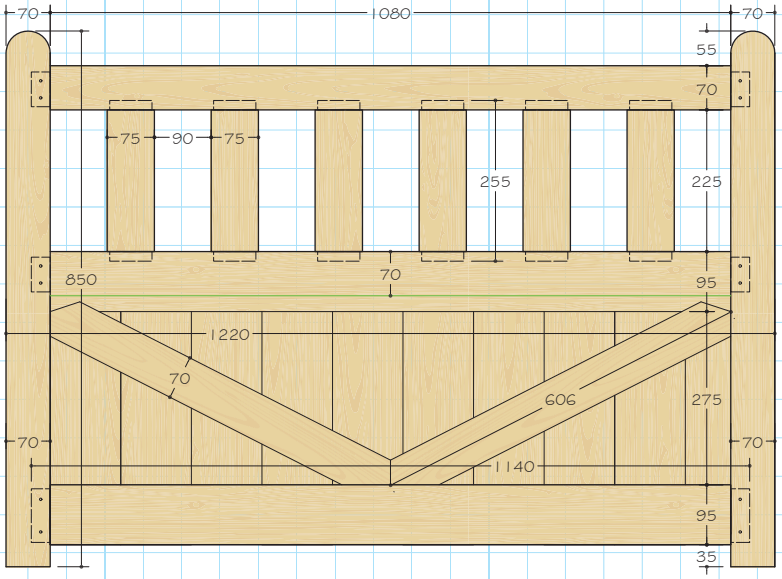


SECTION THROUGH TOP RAIL

SECTION THROUGH TOP MULLIONS

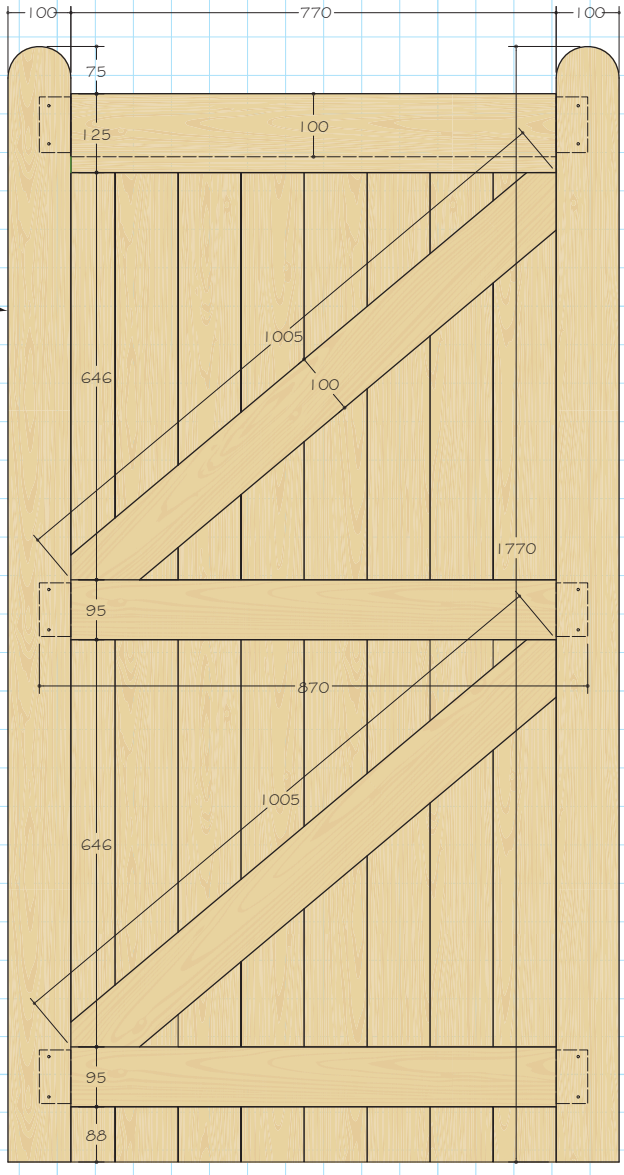
SECTION THROUGH BOTTOM PANEL

SECTION THROUGH BOTTOM RAIL



REAR ELEVATION OF WIDER GATE, OR HALF OF DOUBLE GATES

Gates must be hinged on the side the angled braces point upwards from, to help prevent the gate sagging over time. The wider gate with a double brace can be hinged on either side.



Hinge stile

REAR ELEVATION OF TALL GATE

PHOTOGRAPHS BY GARY MARSHALL UNLESS OTHERWISE STATED

Woodland ways

Character trees

Gary Marshall may not be knarled and twisted – but he loves trees that are

This one is probably more often noticed – an old chestnut in the National Trust's Sheffield Park car park

Trees en-masse add character and dimension to landscapes and woodlands. Clumps of trees were favoured by the great landscape gardener Capability Brown. A lone tree can stand out as a living landmark in a relatively featureless field, fen, bare hill or even in a wooded scene. But such trees, to have this effect do not, in themselves, have to be full of unique character.

They are often specimen trees, typical of their species or formatively pruned and shaped to give a desired appearance from a distance. Or they can just be prominent. To appreciate the kind of character tree I'm writing about here, you have to get up close or get to know them well. It's a bit like bumping into an old eccentric friend or tracing the laughter lines on your great-grandparents' faces.

Vintage and veteran

Just as with people, but over longer life spans, the older the tree the more character it's likely to have. The burrs, odd broken or bare branch, the twists, turns, holes and wrinkles all point to a long and varied existence. Take, for instance, two wonderfully named Italian trees: Castagna del Salavrone – the chestnut of the Green Lizard, and Castagno dei Cento Cavalli – the

A relatively young oak already with heaps of character

Dead tree branch, fingers pointing skyward

A specimen living landmark – *Sequoiadendron giganteum* protruding above the tree line

Hundred Horse chestnut (*Castanea sativa* not *Aesculus hippocastanacea*), both well over 1000 years old.

I've included some old veterans I know here: the Buxted yew (*Taxus baccata*) that almost appears to be eating its own limbs.

Characters of all ages, shapes and sizes

Trees don't have to be old to have character – although some retain or even gain character when dead. Trees can develop character even when quite young through their own unique set of circumstances. Others have achieved character by being frequently set upon by man as part of a hedgerow, woodbank or coppicing regime.

Take a look at some of these examples of characters I've come across recently. There are trees pulling faces, others that beckon or direct, massive beeches that cling on to banks – almost seeming to defy gravity, others so loaded with mistletoe they're liable to topple into the pond.

Pollarded trees thrive among bluebells in the spring, while maples, having been split at some time in their lives, grow on in healthy defiance.

Hollies grow out of solid rock, an ash that's had its trunk split, hollowed and now rejoined. Trees that out-lean the Tower of Pisa. Twists, turns, shapely curves and ghostly forms in woods, on moonlit nights. A Latvian orange-coloured tree. They all have tales to tell – you may not know just how they came to be as they are, but it can be fun imagining. Go out and mix with your local characters. ■

Trees with a man-assisted history

One of my favourite old local characters is this ancient oak (*Quercus robur*), near the Bluebell Railway in Sussex, which I suspect many people drive past without a second glance

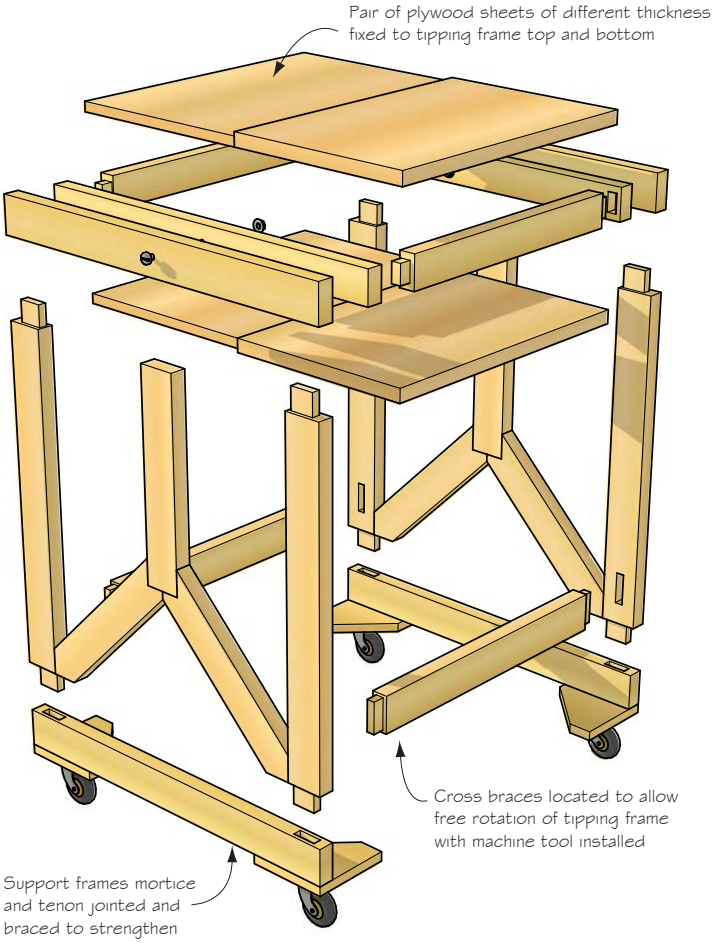
PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS

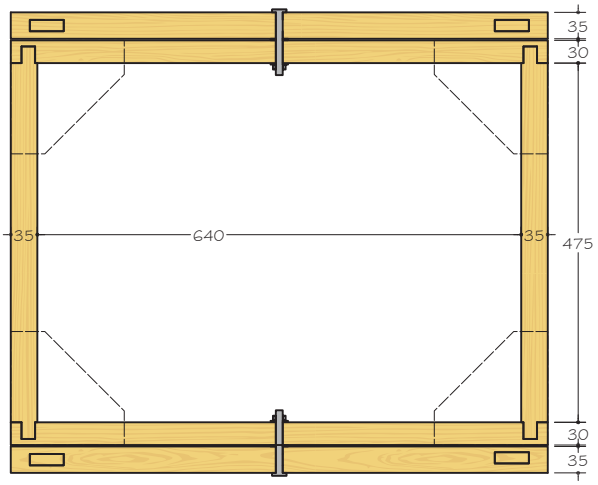
Castagno dei Cento Cavalli (Hundred Horse chestnut)

The ancient Buxted yew

Tipping machine table No.2

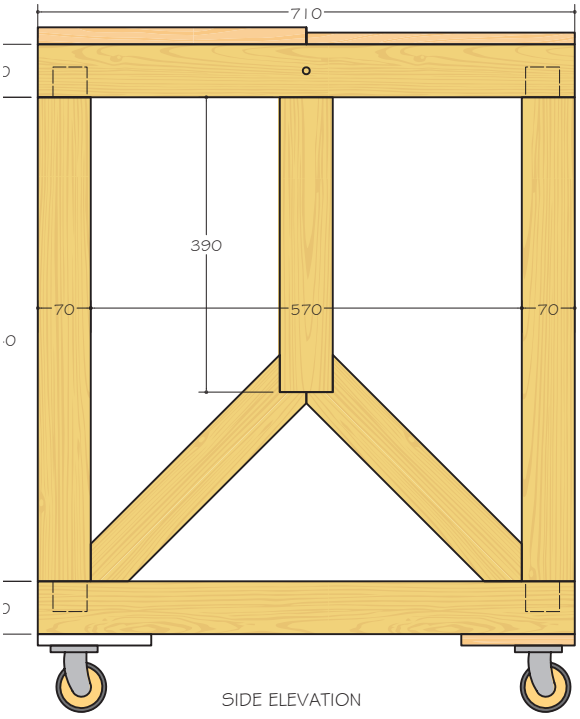
After the success of his first tipping over machine table featured in Issue 16, **Alex Burnett** manages to turn the tables on us yet again...



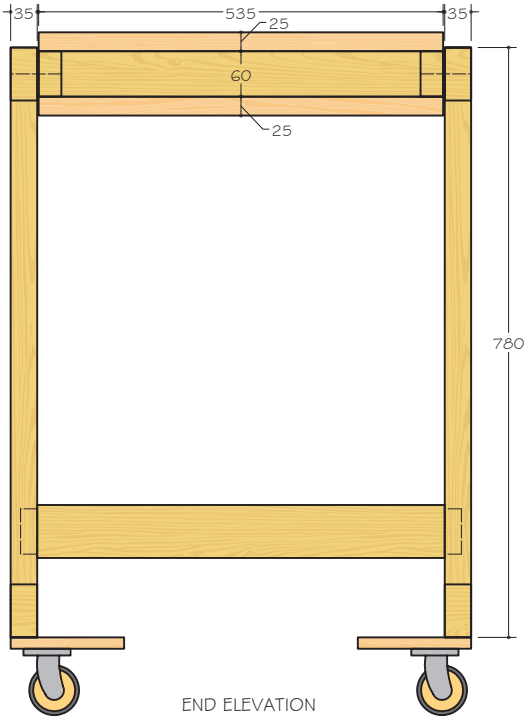


SECTION THROUGH TOP FRAME

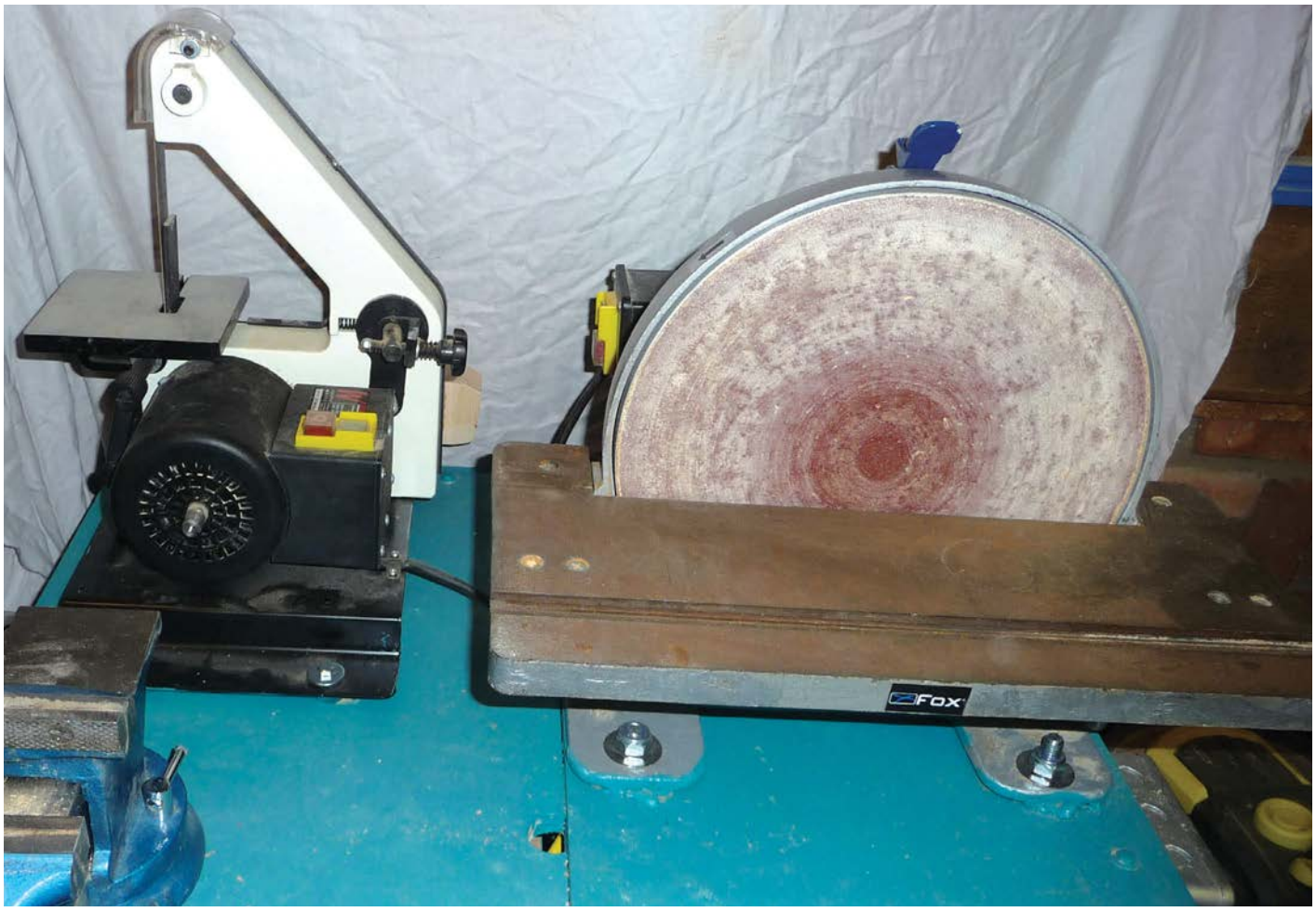
Overall dimensions for guidance only and will vary to suit user and machinery



SIDE ELEVATION



END ELEVATION



PHOTOGRAPHS BY ALEX BURNETT

The machines are mounted so they each have clearance

The first version which I made to take on one side, my thickness planer and on the other my drum sander I decided to make another a bit smaller to take, primarily a 300mm disk sander and an oscillating spindle sander. I had a number of improvements I wanted to make to the new table.

It is of a slightly lighter build than the Mk. 1. The balance between each side is very good with lighter equipment than the earlier version. The balance can be altered by the positioning of the primary tools and any others that I decided to squeeze in.

The basic concept is the same, two open ended frames with a swinging table mounted centrally between them. The top table frame was made from 75 x 50mm softwood and joined with mortises at the corners. The two main tools to be mounted are bolted to a 25mm thick piece of plywood, as with the first table I provided extra support in the form of two inverted 'Y' shapes in the side frames with the central leg providing the additional support for the pivot bolts.

As there is quite a bit of space remaining on each side of the table tops I decided to utilise this space for mounting further static machines, taking care not to interfere with the turning arcs of the primary machines, the oscillating spindle sander is high enough not be a problem.

On the other side with the 300mm disk sander I have mounted a 25mm belt sander and a work vice, taking care both allow unobstructed table rotating.

I have fitted a double-ended Creusen grindstone to the other side with the oscillating spindle sander, determined by the positioning of a woodturning sharpening jig. ➤

The table being tipped over

Room for two machines and a vice

The power leads hung down beneath the first table, I have now solved this problem, fitting an eight multi-socket on the underside of the plywood, all the machine leads being cut and fitted in the safest possible way to plug into the sockets. The feed to the sockets is via a short lead passing through the end of the rotating table. It has one of my favourite male three pin plugs fitted, so that one of my extension leads can provide power or connection into a slave master switching system that turns on a vacuum when a tool is switched on.

The grindstone is mounted over the electrical junction on a sheet of ply creating a complete hollow box section. Once the power input cable is disconnected the table can rotate freely.

The tools are used singly to utilise the vacuum facility so there isn't an overload issue.

It occurred to me that it would be possible to use the same slave/master setup if there was a method of connecting an unmounted external tool. I fitted a metal cased double socket to both ends of the rotating table, a yellow lead is fed to a three pin plug which goes into the multi-way socket.

When an external power tool is plugged into one of the metal sockets and switched on it behaves as if it was mounted on the table activating the vacuum cleaner which in turn supplies power to the tool.

One slightly annoying feature of static machines is the different dust outlet sizes, it made sense to be able to plug the same hose into all outlets. I have drilled and carved outlet extensions out of wood so the vacuum hose will fit all of them.

It is possible to purchase workshop vacuum cleaners with a slave socket built in, with this you plug the main tool into the slave socket on the vacuum cleaner and the vacuum into the 220 volt supply, switching the tool on draws power from the vacuum cleaner and switches the vacuum on to collect the dust. With the built in system there is often a delay to the vacuum switch off to clear any dust remaining in the system.

A compact arrangement

To determine the positioning of the cross braces make a scale drawing of the table with tools fitted and in position then draw a circle from the top of the highest tool using the carriage bolt as the centre to mark the table leg uprights.

It is worth considering constructing a couple of long drawers to slide from both sides in below the cross braces, thin ply can be fastened below the cross braces to keep dust out. This would provide considerable useful extra storage space. ■

In a future article I will cover fitting a Slave/ Master unit.

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KITTED OUT

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IRWIN Tools one-handed bar clamps

Irwin Tools' range of Quick-Grip One-Handed Bar Clamps (OHBC) and accessories with superior clamping performance, provide an all-in-one tool for woodworking projects.

The heavy-duty and medium-duty OHBC can sustain 272kg (600lbs) and 136kg (300lbs) of clamping force. The range includes a Quick-Change push button for easy conversion into a spreader, and the swivel jaws are removable to allow users the flexibility to modify the jaw position based on what each job requires. So, whether it's holding joints, a temporary hold-down, putting frames together, or installation, there is an OHBC suitable for each project.

New accessories

- Edge clamp – to easily hold trim and edging on materials. Wide pads double the width of the OHBC pads for distribution of clamping force over a wider surface area.
- Corner clamp – for easy clamping of 90° angles.
- Clamp coupler – which increases bar length by joining two smaller clamps to make a larger clamp for tackling large projects.
- Hold-down jig – which turns OHBC into a table clamp for firmly holding items in the middle of a workbench.
- Deck tool – for lining up, spacing and holding boards in place for easy, accurate deck building.
- Clamp stand – to allow level clamping applications for projects such as frames, caseworks and drawers.

The heavy-duty clamps are available in six sizes from 150mm-1250mm
RRP prices start from £31.90

Medium-duty clamps are available in five sizes, 150mm-900mm
RRP prices start from £29.70

www.irwin.co.uk

£1310.98

JET 16-32 drum sander

The newly designed Jet 16-32 drum sander has many innovative features that will suit many furniture or musical instrument-makers looking for a precise finishing sander. It has several innovative features to help make finishing sanding accurate and effortless. The conveyor table now features a simple dial to adjust the parallelism, including a stop to return the table to dead level.

The motor drive system now pulls the work through the machine rather than pushing, creating a smoother flow and reducing the chances of marking. It is fitted with Jet's patented Sandsmart system, which monitors sanding load and automatically controls the feed speed to prevent burning caused by aggressive sanding.

There is improved access to the abrasive securing clips and the hood is redesigned to improve dust extraction. The whole frame has been remodelled to increase rigidity and accuracy.

The sander is supplied with a floor stand which has a wide footprint for stability and is pre-drilled for castors. An extension table set almost doubles the working surface area for extra support. It has a single 100mm dust extraction outlet. Please note – efficient dust extraction is vital with these machines.

Jet 16-32 drum sander £1310.98. Please check latest prices as they are liable to change. **www.brimarc.com**

Record Power Sabre-350 Bandsaw

Record power has introduced a new bandsaw, the Sabre-350. It comments: 'It is more effective, accurate and easier to use than any other machine in its class. Featuring an 1100w output, 1.5hp motor, coupled with the heavy-duty cast-iron band wheels, the Sabre-350 packs a real punch and can handle cuts to its full capacity with ease. The two speeds, which are slightly faster than comparable machines, make it ideal for cutting non-ferrous metals as well as wood. The cam-action fence adjustment, spring-loaded guides, cam-action blade tension release and double-sided fence mount make this a machine that is so easy to setup. The Sabre-350 stands on a sturdy cabinet base, giving plenty of storage beneath the machine. The resaw bar, which is easily attached to the fence, is included as standard. This is ideal when sizing long pieces of timber as the timber can be pivoted to compensate for grain variations, helping to achieve straighter cuts than would be otherwise possible.'

Specifications

Maximum depth of cut: 285mm
Throat depth: 345mm
Table size: 546 x 400mm
Blade length: 111in or 2.5m
Blade width capacity: ¼-¾in
Blade speed: 440 and 1000m/minute

Contact Record Power
www.recordpower.co.uk

Cordless, brushless LXT router/trimmer

Makita's new 18V cordless router/trimmer has a low-energy, high-performance brushless motor that runs from 10,000rpm up to 30,000rpm with variable speed by control dial, and features a constant speed control. There are two available collet sizes (⅜in and ¼in), while alternative bases offer a 0-40mm plunge capacity with the trimmer base, and 0-35mm with the plunge base. Three different model options are available, with varying extras incorporated, including tilt base, offset base, straight guide and trimmer guide. A spindle lock and dust extraction nozzle is standard with all three versions.
From £200

www.makitauk.com

TOOL STORAGE

Toolbank is one of Europe's leading specialist distributors of hand and power tools, in association with many of the leading independent DIY retailers and the world's leading manufacturers, and it is offering a range of tool totes for use in the workshop, home and on site.

FatMax open tote bag

The FatMax tote is constructed from extra tough 600 x 600 dernier fabric. It offers maximum tool protection thanks to its rigid and waterproof plastic bottom. Reinforced stress points and industrial leather provide extra strength and carry comfort. A heavy-duty steel handle with rubber grip makes lifting more secure and comfortable. The open structure makes for quick and easy tool access as it keeps everything in place;
Dimensions: 480 x 250 x 330mm
Price £47.99
www.toolbank.com/0/p/STA193951

Roughneck open tote

This Roughneck open tote bag is lightweight and hardwearing. It is ideal for the storage of multiple tools and designed to withstand heavy use every day. The bag has multiple pockets for extra storage, and a built-in saw sleeve and level holder. It has a tubular steel handle and an adjustable shoulder strap. Its reinforced base provides extra protection and reflective taping provides added visibility.
Dimensions: 510mm long.
Price £47.94
www.toolbank.com/0/p/RNKTOTEB20

Dewalt Pro open tote

Dewalt 1-79-208 Pro open tote bag is resistant against all weathers with a multi-layer strength consisting of steel bar, p-board, PVC backing – water-resistant 600/1200 denier and injected base. This makes this bag the perfect accessory for working inside and outside by professional or domestic users.
It has a waterproof base and also features a level holder, tool loops, inner divider and charger/battery storage. Guaranteed to be tough.
Dimensions: 500 x 300 x 360mm
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www.toolbank.com/0/p/DEW179208

Bahco open tool bag

The Bahco 3100TB tool bag has an open top for easy access and use. It has a comfortable padded carry strap and handle. There are 10 internal and 11 external pockets for holding various tools as well as a tape measure clip and straps to hold your spirit level. It also has a waterproof base to help protect your tools.
Dimensions: 400 x 230 x 300mm.
Price £42.41
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Smokers Bow chair restoration

There's no smoke without a fire as Tom Mullins found out

Restoration projects are often due to general wear-and-tear but occasionally damage will be the result of something more serious such as fire or water damage. In the more fortunate of these instances, the damage may not extend further than the surface finish, ultimately making the furniture retrievable.

One of the very first restoration projects I partook in, as a student was the refinishing of a set of Victorian Smokers Bow chairs c.1840. The chairs were the survivors of a serious fire and had then been subjected to water in the efforts of the fire fighters to control the blaze. Unlike the wonders of modern finishes, traditional French polish will react badly under these conditions but thankfully its natural make up means that the shellac can be removed and reapplied with out further damage to the furniture.

EQUIPMENT USED

Tools

- Mutton cloth
- Sponge
- Soft brush
- Wooden spatulas
- Wire wool
- Polishing mop
- White cotton polishing pad/ mouse

Materials

- Soda crystals
- Paint stripper
- Oxalic acid
- Distilled water
- Acetic acid
- Special pale shellac
- Isopropyl alcohol
- Van Dyck crystals
- Dark wax

The Smokers Bow chair showed extensive fire and water surface damage

PHOTOGRAPHS COURTESY OF AMBER BAILEY

Washing

To gain a clear understanding of the extent of the surface damage it is advisable to begin by washing the furniture, leaving it free of any excess dirt or blemishes. Dissolve soda crystals in water and apply to the surface with mutton cloth. The water will feel soapy but it actually has a slightly abrasive quality to it, if necessary, use a scouring sponge to dislodge any particularly stubborn grime. Always go with the grain direction to avoid catching any lifting wood fibres.

Simply washing the chair clears a lot of the dirt from the surface

The soda crystals when diluted in water will easily pick up a lot of dirt.

Removing the existing finish

Handled with the correct safety equipment and working in only a small surface area at a time, brush paint stripper onto the chair and leave for a few minutes to react. The stripper will become discoloured as the existing finish starts to break down. When ready, scrape away with a wooden spatula.

The surface may require the process to be repeated more than once, and if at any point the paint stripper begins to dry out, simply reapply.

Remove the remaining finish with wire wool until back to the bare wood.

Neutralise with water before leaving to dry.

Tom Mullins applying paint stripper to the chair legs

Bleaching

Bleaching is a useful tool for regaining consistency in colour, it will take the wood back to a pale tone that can then be darkened to a desired effect.

Oxalic acid bleaching is worked to a formula of 2 spatulas to 100ml of distilled water. The water needs to be heated to 45°C in a glass container; a higher temperature will raise the grain. Stir in the oxalic acid until completely dissolved.

To avoid running streaks, work from the bottom of the chair upwards, applying the oxalic acid with mutton cloth. A second bleaching may be necessary to create an even colour.

Neutralise with acetic acid on mutton cloth, diluted at 10:1 with distilled water before leaving to dry. ➤

Once the stripper begins to react, the finish will become soft enough to scrape back.

It is important to keep an eye on the temperature of the oxalic acid to avoid it rising above 45˚C

The chair entirely bleached down ready for an even coat of colour.

Colouring up

Van Dyck is a natural wood stain; the colour produced will vary depending on the strength of Van Dyck crystals used. To 300ml of distilled water heated at 45°C, between eight and twenty spatulas of crystals may be required.

Van Dyck should be applied with mutton cloth, held in the shape of a polishing pad. Tucking in any fabric edges will avoid colour streaks. If you find the Van Dyck is too dark, wash off with water. The timber may need sealing if more than one coat is required to build up depth.

Leave to dry when fully satisfied with the surface colour.

Applying a New Finish

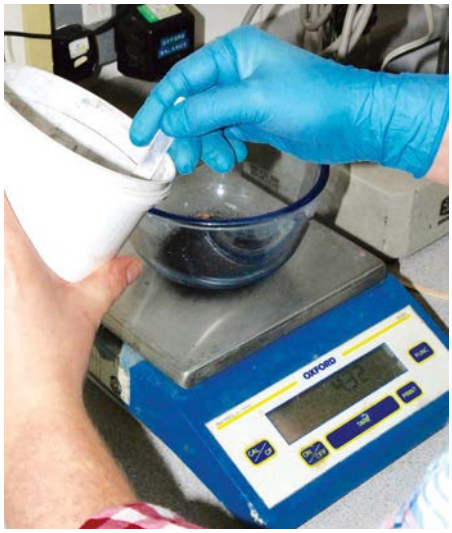
Initially seal the timber with a 50:50 ratio of special pale shellac to isopropyl alcohol. Working for the bottom upwards, apply with a traditional white-cotton polishing pad and switch to a mop for any intricate and unreachable areas. Avoid streaks by not over charging your polishing pad.

Leave for at least an hour to dry before increasing the strength of the special pale to 75:25. Continue the process of bodying up until happy with the depth and colour.

The surface may need de-nibbing with fine wire wool to eliminate lifting fibres and produce a silky smooth finish. A bare minimum of twenty-four hours needs to be left between applying shellac and the de-nibbing. After this period the polish will become touch dry but can take up to a month to entirely harden.

Brush or wipe away any dust from the de-nibbing process.

Apply a coat of 'dark' or appropriately coloured wax with mutton cloth and leave to dry before buffing off with a fresh piece of cloth to give the new finish a satin like aesthetic. ■



As this project involved more than one chair, the Van Dyck crystals were measured out to ensure the mixture could be recreated precisely for a consistent colour throughout all of the chairs

Van Dyck will vary in colour depending on the strength of its consistency

Box header

Paint stripper and oxalic acid are both extremely corrosive, work in a well-ventilated area and heavy-duty gloves must be used at all times. Should paint stripper come into contact with skin, neutralise immediately with water. Seek medical attention if necessary.

Smokers Bow or Captain chairs were popular during the Victorian period, frequently found in smoking rooms and public houses. Commonly consisting of seven or eight spindles around the semi-circular back and a shallow carved seat. The chair is sometimes referred to as a 'Bow-Back Windsor.'

Van Dyck is a natural wood stain, produced through the process of boiling walnut husks to create crystals. The crystals can then be hydrated with water to create varying shades of brown.

Van Dyck is extracted from walnut husks

Suppliers

Equipment and materials can be found at your local DIY shop and through www.mylands.com

When applying the shellac, work around in a methodical manner to avoid drips or streaks

The chairs finally restored back to their original and consistent colour and finish

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Precisa 6.0VR-P1	Inc 2m STC + TWE + TLE + pre-scorer (as illustrated)	4.0 / 6.5 + 1.0	110 mm x 1400 mm	£3,450.00	£4,140.00
Forsa 8.0-P3	Inc Pro STC + TWE + TLE + rear support table + clamp + scorer	NA / 6.5 + 1.0	107 mm x 2600 mm	£5,420.00	£6,504.00
Forsa 9.0-P3	Inc Pro STC + TWE + TLE + rear support table + clamp + scorer (as illustrated)	NA / 6.5 + 1.0	107 mm x 3200 mm	£5,575.00	£6,690.00

STC = Sliding Table Carriage. TWE = Table Width Extension. TLE = Table Length Extension.

Three turned vessels

Mark Baker presents three turned vessel designs for you to make

ACACIA FORM WITH GROOVED DETAIL

This end grain/spindle grain oriented project is ideal for using up branchwood, pre-dimensioned blanks or offcuts. You could just drill a hole in the centre for a weedpot/bud vase or, because it has a grooved decoration on part of it, produce a full hollow form by creating two parts with the join being disguised by one of the grooves. The shape means that, when in two parts, you can hollow it out with a spindle gouge and a standard round-nosed scraper tip or dedicated hollowing tool if you choose.

V-grooves are simple to create with the corner of a skew chisel, parting tool or a dedicated point tool. V-grooves are a simple enhancement and devilishly effective, but be sure to get the depth and width correct or the one that is different stands out.

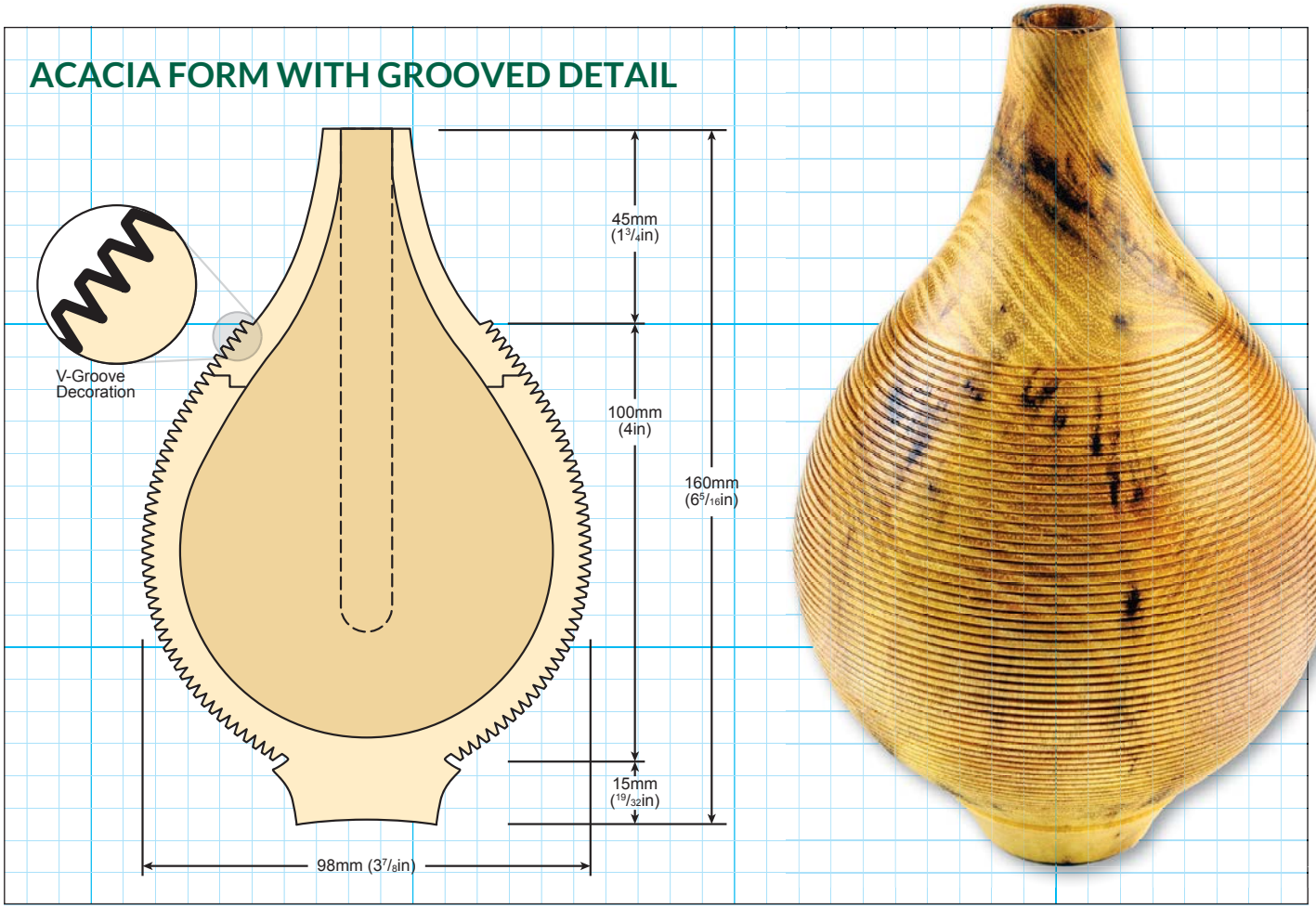
WALNUT CALABASH-STYLE VESSEL

This form is a classic and, although the shape may be taller, more squat, wider and suchlike, it remains very similar in all cases. The shape is a derivative of a pear/teardrop-shaped squash gourd, the dried outer shell of which was one of the earliest types of storage items. The vessel can be made with or without a lid and from end grain or faceplate-grain oriented timber. This one has faceplate-grain orientation and is made from walnut (*Juglans regia*). Hollowing it out – especially with a wide opening – can be done using two gouges, one with about a 45° angle and the other about 75°-80°. In this case, that did not quite work, so a standard 45° bowl gouge was used in conjunction with a swivel-tip scraper that had a small offset, to allow me to reach the widest inner section.

FIGURED MAPLE ORIENTAL-STYLE BOX

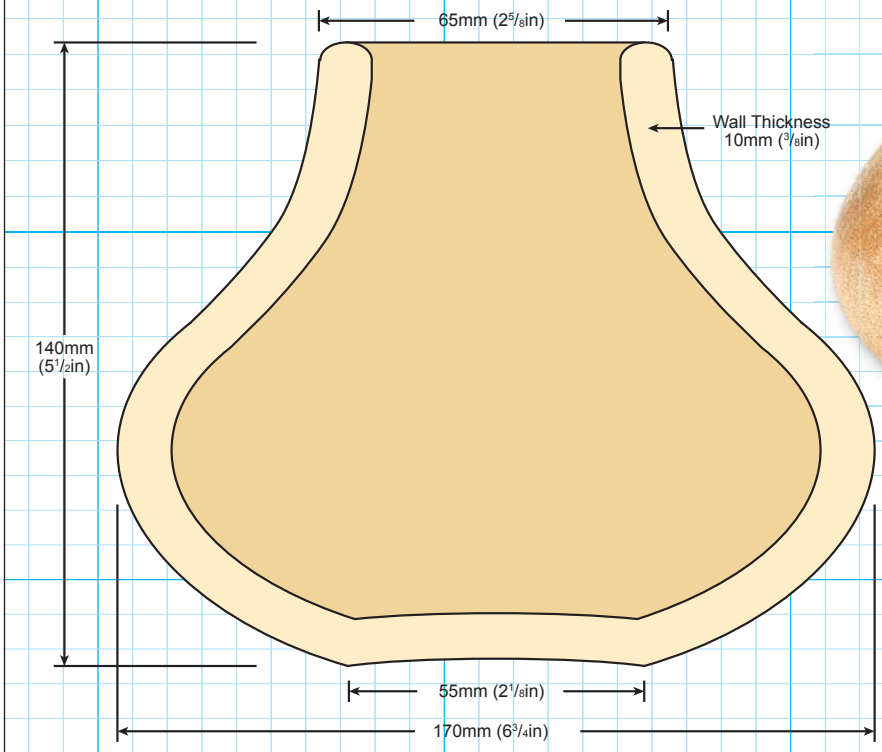
This end grain/spindle-turned box from figured maple (*Acer campestre*) is based on some Oriental-style lidded vessels – dating back many centuries and in some cases millennia – I have seen in museums. I love the upstand on the neck and the hat-type lid. The lid nestles without being tight so you do not have to hold the main body when lifting off the lid. The slight quirk near the base creates a tactile and slight visual separation, which, in my mind, causes the piece to sit better and look better than just a follow-on bodyline curve. This is where experimentation comes in to find out what you like.

The finish is matt oil, but of course, applying a gloss finish would create a different visual effect. Matt oil produces a soft and tactile finish rather than a hard glaze. ■

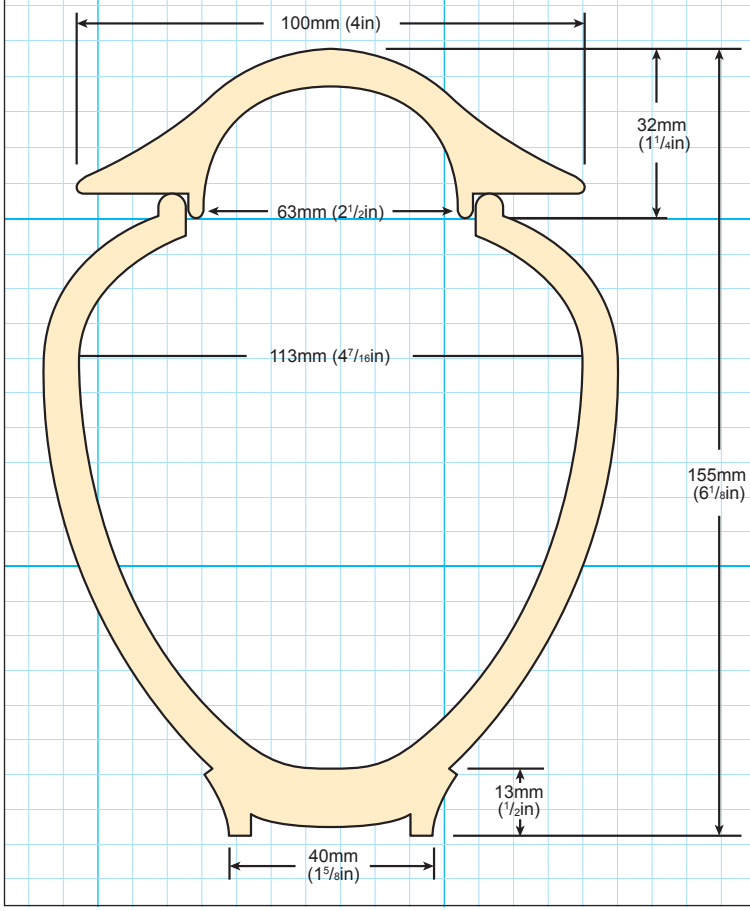


PHOTOGRAPHS BY GMC/ANTHONY BAILEY

WALNUT CALABASH-STYLE VESSEL



FIGURED ORIENTAL-STYLE MAPLE BOX



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PHOTOGRAPHS BY GARETH IRWIN

Gareth Irwin
Green woodworker

Green woodworking isn't an obvious career choice but that is exactly what our latest recruit, Gareth Irwin, decided to do

Gareth in his workshop

As with many craftspeople, forging a career as a professional woodworker is unpredictable and quite often unplanned. Childhood for me was spent mostly exploring the Welsh countryside, fishing or whittling sticks with my trusty Swiss army knife. Upon leaving school with little in the way of qualifications I began a succession of unskilled local jobs leading to self employment, working in various parts of the building trade. Sometimes I might be fitting softwood kitchen shelves or painting windows, other days I might be lime mortaring old stone walls or digging in drainage pipes.

One day chance led me to the Penpont Estate near Brecon, and the opportunity to live in an isolated house on the heavily wooded, north-facing side of the Usk Valley. Living 'the good life' in the old woodsman's cottage, with no road to it and an outside toilet, felt a little at odds with the work I was doing. I thought there must be a way to make a living that didn't involve getting in the car every day – something that wasn't farming but something that could somehow connect with the unique situation I and my new family found ourselves in.

I came across the book *Green Woodworking* by Mike Abbott and it was a revelation – here was all the information I needed to make things, and perhaps a living, from what was growing around me. I built a shave horse and pole lathe with the few old hand tools I had and, with the aid of an old camper van awning in the garden, I had a workshop. The estate was happy for me to use the trees as part of the woodland management soI got my chainsaw certificates, coppiced and thinned away, learning by trial and error which were useful pieces of wood to shape and turn.

Career, not hobby

From the outset my plan was to make this a career and not just a hobby, so countless hours were spent getting things right through repetition, failure and perseverance. Sycamore spatulas and spoons, turned hawthorn babies' rattles, ash-framed stools with woven wych elm bast tops (bast being the

Elm and oak mule chest

Workshop utilising only traditional hand tools

fibrous under-layer of bark), trying my hand at as many things as I could with different types of timber and of varying quality, I was building knowledge through experience. I felt like I was rediscovering lost skills and the seemingly magical art of releasing useful objects from trees using hand tools. This progressed to an army awning in the woods, working among heady bluebells and wild garlic, summer rain and wasp nests, winter gales and paraffin lamp frosty evenings. I was selling various things and taught myself to pole lathe turn bowls, including forging my own tools. By now my work was good and varied enough to start doing demonstrations and shows. This got me more publicity and sales and contacts started to form.

Books have always been my main source of knowledge in woodwork. This led to my interest in traditional Welsh furniture, with its simple forms, minimal decoration and satisfying proportions. I found that much of this furniture was made by hand using the same skills I had learnt, the only difference being that these country craftsmen had workshops in buildings, allowing greater control of the timber's moisture content. I fixed up and started to use the old dairy building on the estate as my workshop, and although I still have the army awning, this is where my work is now done. My tools breathed a sigh of relief at not getting rusty and started to multiply. Although I continued to make small green wood items such as spoons, spatulas and bowls, my work has moved towards larger commissioned pieces such as stick chairs and some cabinetry.

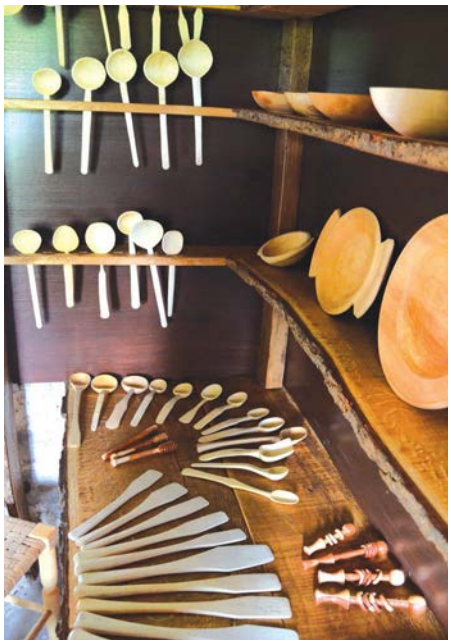
The workshop now resembles what a country carpenter's workshop would have looked like up until the early 20th century. Workbench, hand planes and square mortise and tenons in seasoned sawn timber alongside cleft green wood logs, trimming with an axe, working with a drawknife at the shaving horse and steam bending. Where things become most interesting for me are how these forms of carpentry overlap. I might cleave boards if the grain is straight, rather than long rip-sawing, or use a drawknife to remove the majority of waste from a stopped chamfer before finally planing, if it's needed.

With virtually all my work I will strive for a not necessarily flat, but smooth tooled finish without sanding. A sharp-edged blade leaves the most beautiful and natural finish and I don't think I have ever had a customer ask to not see the tool marks.

Word of mouth

Most of my commissions come through word-of-mouth and I am fortunate to be working with traditional hand tools, making pieces for customers who appreciate their value. Seeing something you have made being used and cherished by someone else brings great job satisfaction. Over the past few years I have also built up experience in training others in working wood and the use of hand tools. This is a very separate skill, beyond the actual hand work, and brings a different satisfaction. Teaching others also highlights one's own abilities. I've noticed my combination of skills and knowledge are that of the country carpenter found in virtually every village at one time and I can make a living at that.

Pole lathe turned nest of sycamore bowls



Treen made from green wood

Thank you Gareth for a fascinating insight to the way you live and work. We look forward to seeing future projects and techniques from your workshop. ■

Things you will need:

- Wood for base
- Round mirror
- String
- Vinegar mix
- Twigs or driftwood
- CA adhesive and PVA
- Varnish

RESOURCES

Varnish – Earthborn Clear Interior Woodstain: www.earthbornpaints.co.uk
PVA glue – Ocaldo Friendly Glue: www.theworks.co.uk
Wax polish – Nutshell Floor & Furniture Wax: www.nutshellpaints.co.uk

PHOTOGRAPHS BY EMMA NOREN

Sunburst mirror

Steve Lovell recreates an iconic retro mirror using recycled and sustainable materials

1 Cut out your round base. Here I used a piece of oak *(Quercus robur)* I had left over but you could use pretty much anything – an offcut or a thick ply would do. Measure out by pinning the string to the board and tying a pencil to the other end of the string to draw out a circle. Now cut out the circle.

2 You are now ready to colour the board either by painting or staining it. I soaked steel wool in vinegar overnight and then applied the vinegar to the wood. This has the effect of turning the tannins in the oak black.

3 Fix the mirror to the centre of the base with cyanoacrylate (CA) adhesive – I used an old shaving mirror.

4 Before you begin gluing the twigs or driftwood to the base, sand them to remove any bark or loose wood. Begin attaching to the base by applying PVA glue to both the base and the twigs or driftwood.

5 Finish by applying varnish over the top of the twigs or driftwood to seal. ■

Ask the experts

ANTHONY BAILEY
Editor,
Woodworking Crafts magazine

MARK BAKER
Group Editor,
GMC woodworking magazines

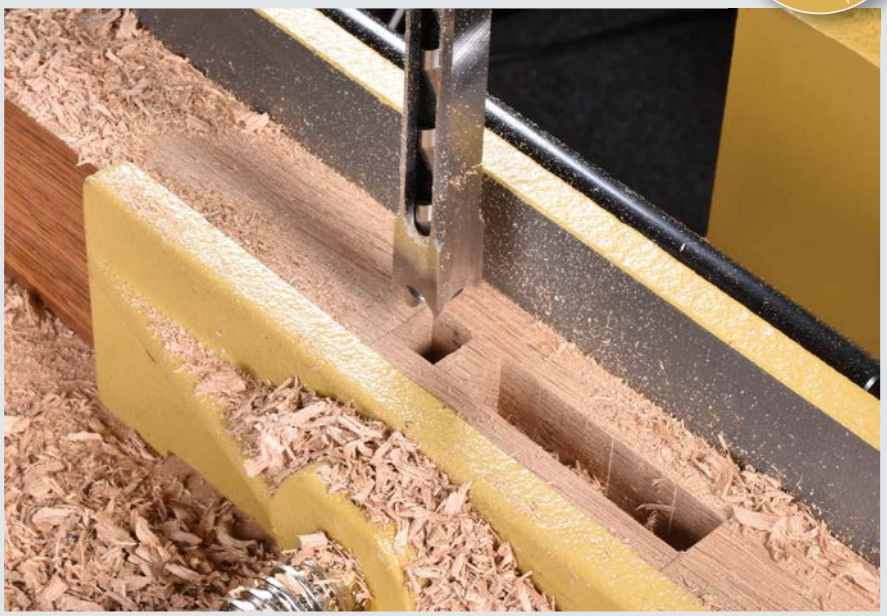
Another selection of awkward questions for our experts to answer

SQUARING UP

I'm considering whether I should invest in a compact chisel mortiser as I have used other methods and they all involve either skill (chisel by hand) or compromise (routing and round corners). Is it worth buying a new machine so I can get nice, neat, square-cornered mortises? I should add that I like early English oak furniture and Arts & Crafts styles with 'honest' visible joints, so I want to get the result looking as neat as possible.

STAR QUESTION

Robert McCluskey



You don't need a chisel mortiser to create nice square mortises – but it helps...

Anthony replies: This seems to be a frequent concern for anyone making solid wood furniture – jointing, especially mortise and tenons. 'Honest' construction suggests hand work alone, but as you have found out it involves skill and effort. The starting point may be ensuring you have good quality chisels with decent steel that will hold an edge and cut cleanly, because you are going to need those anyway. Routing out mortises is noisy and produces messy chippings and some degree of burning if you aren't careful, but using a device such as the Trend corner punch, designed to square out the shape of a routed mortise as a guide to chiselling by hand, does work well. Ditto if you are using a drill press and auger. If you already possess a drill press then buying a chisel mortiser is a sort of overlapping capability as chisel mortise bits already contain an auger – it is the square hollow chisel around it that completes the setup. Compact chisel mortisers can work well but they are limited in capacity and bit size and the vice needs to apply enough pressure to resist the tendency of the workpiece to get pulled upwards as the bit is retracted.

The choice really is yours, but if you choose a new machine over your existing methods do buy premium quality bits because, as with hand chisels, poor quality can be a let down. In this case, slow cutting, burning and blunting are common issues with cheap mortise bits.

GILDING THE LILY

I have a picture passed down to me through the family. It is quite a nice rendition of lilies on a pond rather in the style of Claude Monet but done by a great uncle. It is quite clean looking but the rather ornate gilded frame has got a bit battered from storage. It is so nice I would like to pass it on to my daughter because she has seen it and fallen in love with it. Is it something only a professional can tackle or can I have a go at repairing and regilding it?

Brian Inglis

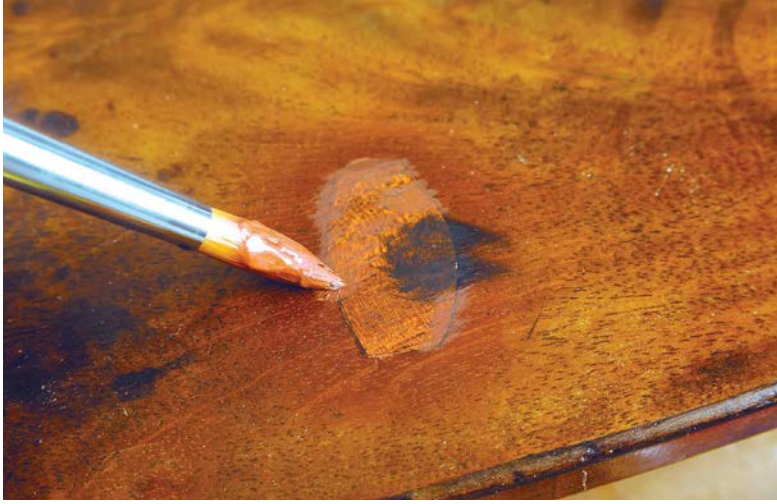
Anthony replies: It is perfectly possible to repair an ornate picture frame so long as you are prepared to do some careful rebuilding of the frame and any carved detail. Because the surface of the wood is covered with gesso, paint and gilding it is relatively easy to disguise your work and even 'age' it so it matches the surrounding area. If you want to have a go I can send you the article by Amber Bailey in *WWC*31, Frame Repairs, which covers this topic quite well.

It is perfectly possibly to repair gilded picture frames if done skilfully

SEEING ISN'T BELIEVING

A friend asked me to re-French polish a table top that had some damage in the actual wood. I filled and coloured it but against the light the repair area is clearly visible. I'm in a bit of a quandary as I'll have to own up that I haven't got rid of the problem but apparently made it worse. Can you suggest an answer.

Neil Peters



Any kind of obscuration on a top surface can be very visible unless done discreetly

Anthony replies: Hmm. Without seeing what you have done I can only give a speculative answer. You may be quite competent at French polishing but the words 'damage' and 'table top' together spell trouble. The problem is that, unlike vertical surfaces where repairs can be reasonably discreet, top surfaces of furniture are highly visible as the incidence of light rays hitting the surface of wood grain and then reflected towards the eyes of the viewer become interrupted by the non-reflective area of whatever woodfiller you have used. It is worse with light-coloured finishes and woods than darker ones where repairs are a little less visible. It depends how much damage and what shape it is as well, and how it was caused. Deep scratches that run across the grain are worse than ones that run with the grain and dark circular burns are blatantly obvious as examples.

The one bit of good news is that you can strip off the new French polish and start again if you need to. It may be best to go back to bare wood, put one coat of sanding sealer over the surface so you can see what needs to be coloured out and try to work with wood dyes which obliterate slightly less than paint, which is completely opaque. Then start the French polishing procedure all over again and see if the repairs are less obvious. However, the best thing is to be honest and tell your friend the difficulty you have had trying to disguise the damage. At least they can then understand the nature of the problem.

TIMBER

I've been reading your timber series with great interest but it does strike me that mostly it is homegrown or indigenous trees rather than tropical or exotic hardwoods. Is that a deliberate policy by the Editor or can we expect to see some more variety in future issues?

Noel Roberson

Anthony replies: This is, as so often, a simple question with a more complex answer. First, we have some superb tree species in temperate zones, particularly homegrown timber such as the hornbeam, which we look at in this issue, or the service tree in Issue 32, neither of which most people seem to be aware of, so really, education starts at home. Second, pretty much without exception, every tree species is part of a larger family, sometimes running into hundreds of varieties, and we have to choose one that readers can relate to and, better still, buy as a usable timber even if it is from specialist suppliers. Third, there are still a decent number of hardwoods imported into the UK in large quantities, such as American ash and red and white oak, meranti, utile, teak etc. However, there is a big but – you only have to read the news to know that tropical rainforests are being stripped bare and many trees of lesser value simply burnt. Imported timber is subject to FSC 'chain of custody' rules which should, in theory, denote the entire journey of the timber from felling to final delivery to the timber merchant or manufacturer. Sadly it is difficult to police this 100%. Many species of trees, plants, animals etc are subject to CITES regulations which govern what can and can't be traded commercially, to try to prevent species extinction. Properly managed forestry and harvesting at governmental and international level can help but we can do our little bit as a magazine by avoiding species that are at risk.

Native timbers such as yew, which is in fact a softwood, can be very decorative

Yes, we will look at non-native species but they play a lesser part than might have been the case 20 or 30 years ago.

STAR QUESTION PRIZE

The Tool Marketing Company, or TOMACO, as it is known, which sells a variety of tool brands, including COLT, Sharp Edge and Narex Tools, is pleased to be sponsoring the Ask the Experts section in collaboration with GMC Publications. Each issue's Star Question prize-winner will receive a Narex six-piece chisel set worth £79.95 and all other published questions will receive a 20mm half-round fine cut Narex rasp worth £20.95. For more information see www.tomaco.co.uk

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N.B. If you do need help or advice you can email me: anthonyb@thegmcgroup.com or visit: www.woodworkersinstitute.com where there are lots of useful articles, either way the service is free!

PHOTOGRAPHS BY LOUISE BIGGS

Elm TV cabinet conversion

Let's face it, television these days has gone rather flat and we just don't need big cabinets any more...

Tool list

- Screwdriver
- Chisels – various sizes
- Mallet
- Jigsaw
- Drill and drill bits
- 'G' and sash cramps
- Jack plane
- Dovetail saw
- Flush cut saw
- Pillar drill
- Plug cutter
- Disc sander
- Pliers
- Pin hammer
- Personal Protection Equipment – safety eyewear and dustmask

The cabinet before alterations

An elm TV cabinet which had served the customers well had, like many, become unsuitable for modern, large televisions. As they did not want to replace it they asked if the height of the cabinet could be reduced so the top of the cabinet sat directly on top of the fixed shelf. Most of the carved decoration on the front stiles would be lost.

To make the cabinet a bit lighter, the internal pull-out shelf was removed and the drop-down door was unscrewed from the board and runners that enabled it to recede into the bottom of the cabinet.

Stages of alteration

1 The top was fixed by screws through the top into the rails with elm plugs filling the holes. The plugs

1

were shaped on the end and stood slightly proud of the top. They had to be removed and would be remade at the end of the project. With a small chisel the plugs were split in the middle to break them up and then levered out carefully so as not to damage the surrounding top.

2 The sides were cut just above the side rail in line with the shelf. A piece of card was taped in place to protect the polished surface from the base plate of the jigsaw. The cuts were made in from each end in order to support the side of the cabinet. Before turning the cabinet over to cut the second side, the first side was held over the cut line using wood blocks and cramps.


2

3 With the two sides cut it became evident that the panels were glued into the rails. The original idea was to lower the side rails so the top edges were in line with the top of the shelf while reducing the size of the lower panel. A re-think became necessary as removing the side rails would cause extensive damage to the sections which had to remain as well as removing the joints which secured the shelf.


3

4 The front rail at the top had a plug in the stile. Unsure of whether it was a pegged tenon or whether there was a screw underneath, the first plug was cut out in the same way as those on the top. On finding no screws the pegs were drilled out to release the tenon. The back top rail was fitted with a dovetail into the back stiles which was then secured further with a screw. Both rails would be used in the re-thought reconstruction.


4

5 Planing in from the back and front prevented breakout on the stiles as the sides were planed flush with the top edge of the rails. The height was checked on the four corners to ensure that the remaining carcass was level.


5

6 The original front rail was to be re-fitted above the shelf. On marking the position of the tenons it became clear they would be too close to the front of the stile, leaving a weak point due to the carved decoration. As the rail was now less structural and more decorative, the tenon was reduced in thickness using a dovetail saw to cut it down, trimming up with a chisel once the waste was removed. This gave more clearance at the front of the stiles.


6

7 A sash cramp with protective blocks was clamped across the top of the sides to support the stiles while the new mortises were cut. Having re-marked the thinner tenons, a dovetail saw was used to cut down either side of the mortise. The waste was cleared out using a narrow chisel and the sides trimmed with a wider chisel. ➤


7

8 The two ends of the rail were test-fitted to gain a tight fit. The length of the rail was pulled tight to the shelf by drilling through the shelf in three positions central to the thickness of the rail. They were then countersunk on the underside of the shelf and pilot holes were drilled.


8

9 The original back rail was turned 90° as the width of the rail was now the right height along the back edge. The existing tails had quite a shallow angle on them, so they were re-cut to a slightly steeper angle using a saw and chisel. The joints were then marked on the stiles before being cut through at an angle and the waste removed with a chisel.


9

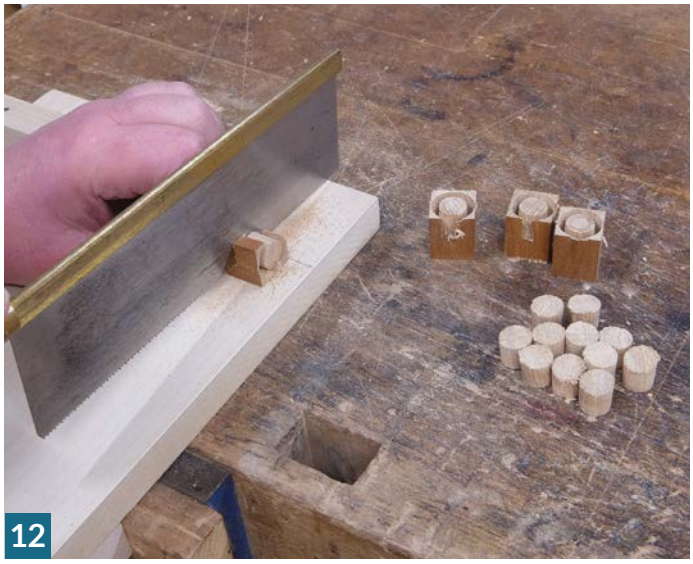
10 Once the joints on both ends of the back rail had been cut, both the front and back rails were glued into place using sash cramps to pull them up tight. The screws were then fitted through the shelf into the rails.


10

11 Working upside down, the carcass was placed on to the top. The overhang was measured on the four sides and, when in the correct position, the carcass was clamped to the top using 'G' clamps and protective blocks.


11

12 The new plugs for the top were made from part of the discarded cabinet. They had to be end grain plugs so the elm rail was cut into suitable blocks before being drilled with a plug cutter. Before drilling, the blocks were held tightly in a machine vice bolted in position on the pillar drill table. With the plug cut it was released from the block by cutting away the waste.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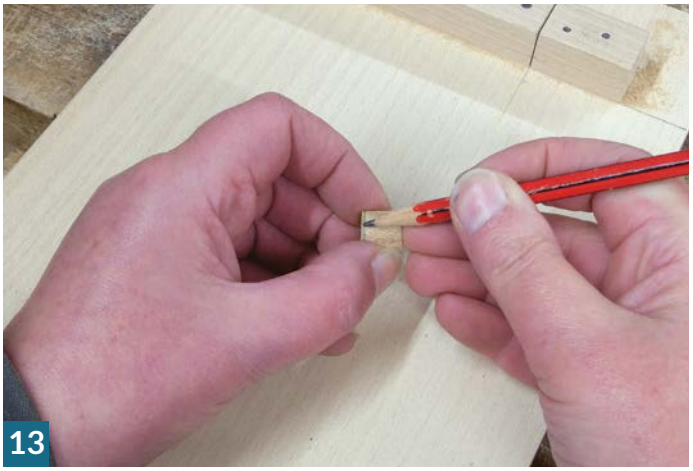
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14


15


16

13 The top of the existing plugs were angled off on three sides, leaving a shallow point. The new plugs were marked around the circumference about 1.5mm down from the top – this would be the gauge line to sand down to when shaping the top of the plugs.

14 In order to get the three angled faces even, each plug was marked at three points around its circumference and, holding the plugs firmly in a pair of pliers with each line facing upwards, the top surface was offered up to a disc sander to shape off the angles down to the line. It is important to wear face and eye protection if shaping the plugs this way – choose an alternative method if you feel happier.


17

15 As each countersunk hole in the top was a different depth, each plug was measured and cut in turn to the right length, making an allowance for the protrusion of the plug. A small flush cut saw was used with a bench hook.

16 Working around the four sides of the top the plugs were glued into position. The plugs and any other evident alterations were then stained and polished out to match, before the whole cabinet was given a coat of wax.

17 Finally, the extending runners which operated the drop-down door were cleaned up and lightly lubricated before the door was reinstated. The pull-out shelf was also fitted back to its runners and, with one last check to make sure everything ran smoothly, the cabinet was completed. ■

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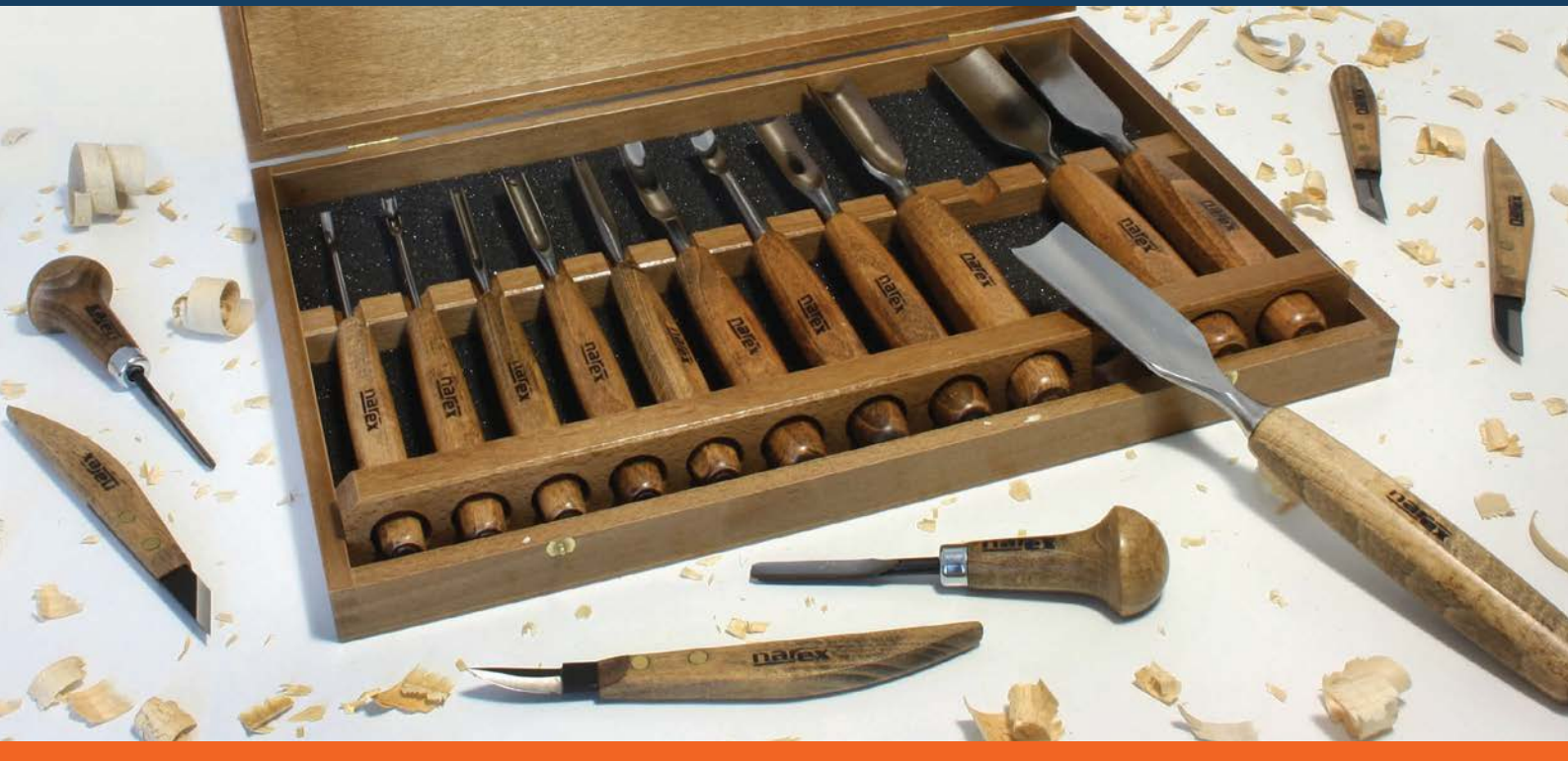

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Focus on… The pencil

In the digital age it is easy to forget something we are still very attached to – the humble pencil

PHOTOGRAPHS COURTESY OF SHUTTERSTOCK

Prehistoric man mined ochre and used fire-carbon for cave painting, the Romans used a stylus on a wax tablet, the quill pen dipped in oak gall ink wrote important legal documents and we now use rollerball pens and Sharpies to express ourselves. But the essential, ubiquitous and annoying pencil has been with us now for several centuries and going strong. It comes in graphite and colours, it can write information or create images, it can be sharpened, the tip can break, it can sometimes be erased and sometimes not. It can fit in your pocket or behind your ear, it can be chewed, it can be borrowed, it starts long and ends up short, it can be lost, it can be found, but it still remains – a pencil.

Graphite

Graphite, which is the core of a standard pencil, was discovered in Borrowdale, Cumbria, in 1564. It was erroneously called plumbago, the Latin for lead ore, as it was at that time believed to be a form of black lead as opposed to carbon, hence the term 'pencil lead' still used today. Local people found that small pieces were handy for marking sheep, but as this was the only large deposit found and it had a military use for lining cannonball moulds, the graphite mine was then guarded by the Crown, which would flood the mine to deter thieves when it was not in use. A law was passed in 1752 to protect it from theft, with punishments such as whipping, hard labour and transportation. Hardly surprising as graphite had a value of £1300 per ton, equivalent to approximately £170,000 today. During the Napoleonic Wars, to beat a trade embargo, army officer Nicolas-Jacques Conté developed a mixture of clay and graphite powder that has resulted in the harder and softer grades of pencil lead we are familiar with today.

Casing

Graphite was found to be brittle and it left marks on the hands, so early attempts at casing used sheepskin or string wound around it. The addition of a wooden casing was developed by an Italian couple in the 1560s. Their design was a hollowed-out juniper stick with graphite inside to create a flat carpenter's pencil. The oldest example of a carpenter's pencil is dated from the 17th century and was found in the roof of a German house built during this period. In time, the manufacturing process evolved to use a wooden casing, sawn into two halves then carved out for the graphite stick. The two halves would then be glued together. This technique proved so successful that it has changed little in the past four centuries.

There is uncertainty about the identity of the first manufacturer of mass-produced pencils, although it is known that he was from Nuremberg, Germany. The name 'pencil' was first used towards the end of the 16th century and derives from the Latin word *penicillus,* meaning 'little tail', used to describe a fine artist's brush or a lead stylus.

Pencils today

The humble pencil is still being produced by the billion in various locations around the world and looks very much like it is here to stay. If you want to learn more there are plenty of websites but one in particular, a manufacturer in the US, shows the steps of the production process: **www.generalpencil.com/how-a-pencil-is-made.html**

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