

AUSTRALIAN

Wood

REVIEW

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16



1997 Woodturning Lathe Review
Buying A Mid-Range Panel Saw
Making A Collector's Cabinet
Spindle Moulder Operation
Designing Office Furniture
Huon Pine Turning Feature
Australian Toolmakers
Wood & How To Dry It
Turning True Spheres
Chip Carving
Belt Sanders

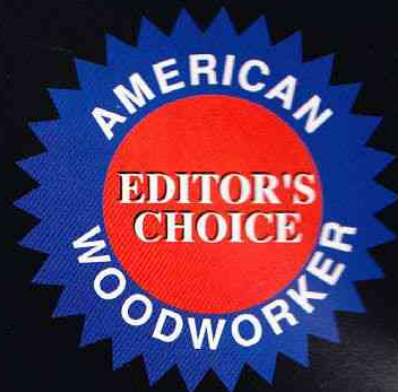
Richard Raffan (safety gear removed for photo clarity) feature p.48



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AUSTRALIAN WOOD REVIEW

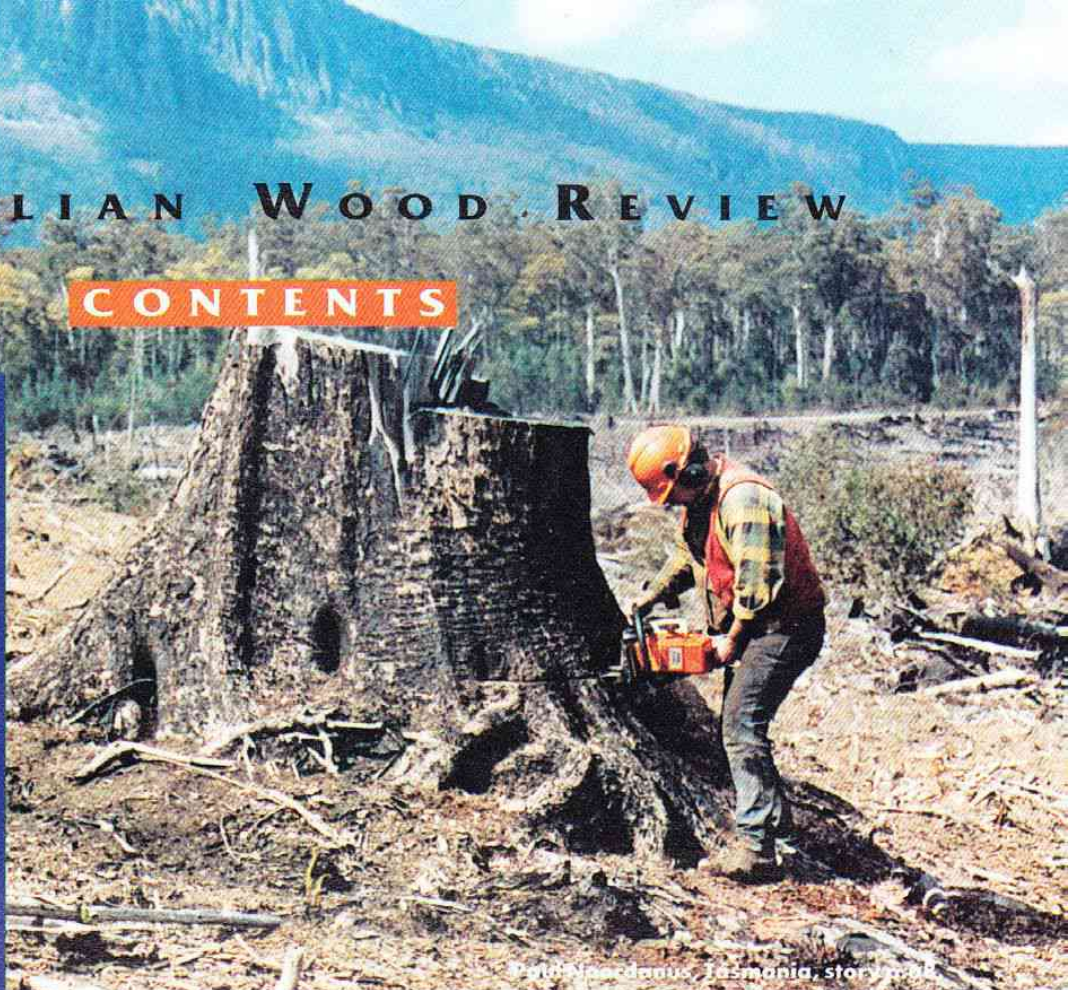
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Submissions for articles are welcome. All details including photographic materials should be sent to the publishers. Text should be double-spaced type or Macintosh format. Pictures should be transparencies, slides or quality prints. Material which is to be returned should be accompanied by a return paid envelope. Whilst every care is taken of submitted material we are not able to accept responsibility for any loss or damage to same.

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EDITORIAL

This issue's 'centrefold' feature, 'Seven Equal Pieces', is the result of an interesting challenge which we presented to seven top Australian woodturners. All were given a piece of wood of the same dimensions to interpret on the lathe. Not just any old wood in this case, but a piece of Huon pine, which was probably hundreds of years old. The challenge of turning an original piece had in all cases I'm sure, to be balanced against the knowledge that there could only be one attempt. The results are outstanding and typify a unique approach in each case.

Dinah Hall's profile of Elvin Harvey makes an important contribution to this magazine's documentation of notable Australian woodworkers. Harvey's father was a respected woodcarver, sculptor, ceramicist and teacher whose students became known as part of the LJ Harvey School. The closure of Harvey Bros. in Brisbane sadly marks the end of an era.

Design is, to my mind, about function in the raw sense of the word. Function operates on utilitarian, aesthetic, stylistic, emotional, symbolic, psychological and other levels. A design is much more likely to be successful if it operates on more than one level of function. This issue, Andrew Rogers analyses some of the issues he took into account when he designed a system of office furniture. Roger's story is the first of a series of articles which analyse the concept of 'design'.

Drawing on the work of other woodworkers and furniture makers is one way of being part of a developing design culture. Philippe Brooks's 'Collector's Cabinet' acknowledges the influence of James Krenov and was designed to house special items, while fulfilling an aesthetic function all of its own. He takes us through the making process.

A comparison of Milan's *Salone del Mobile* (perhaps the benchmark for world furniture exhibitions) with Melbourne's *Furnitex '97* reveals that its attendance figures of 77,000 people amounts to nearly half of those achieved for the Italian exhibition (159,232). Attention from the media certainly helps the promotion of any event, company or individual. This magazine would like to hereby state its interest in any and every event relating to wood. Capturing our attention is often as simple as picking up the telephone and talking to us, or better still sending in top quality images and information about your work. We always want to hear from you!

Next year we plan to feature woodcarving and sculpture and invite you to send some images of work for possible inclusion. Images should be high quality transparencies or prints and should be accompanied by some information about yourself or what you are trying to achieve in your work. Please include a photo of yourself, if available, and also a self-addressed and stamped envelope for the eventual return of your material. Please note our change of address for all correspondence is now Australian Wood Review, PO Box 4336, Loganholme D.C., 4129.

Editor, Linda Nathan.

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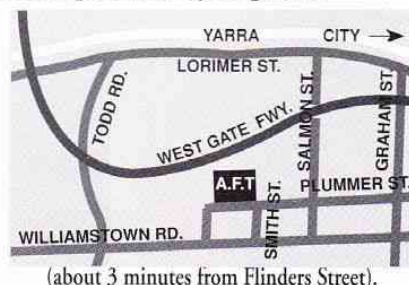
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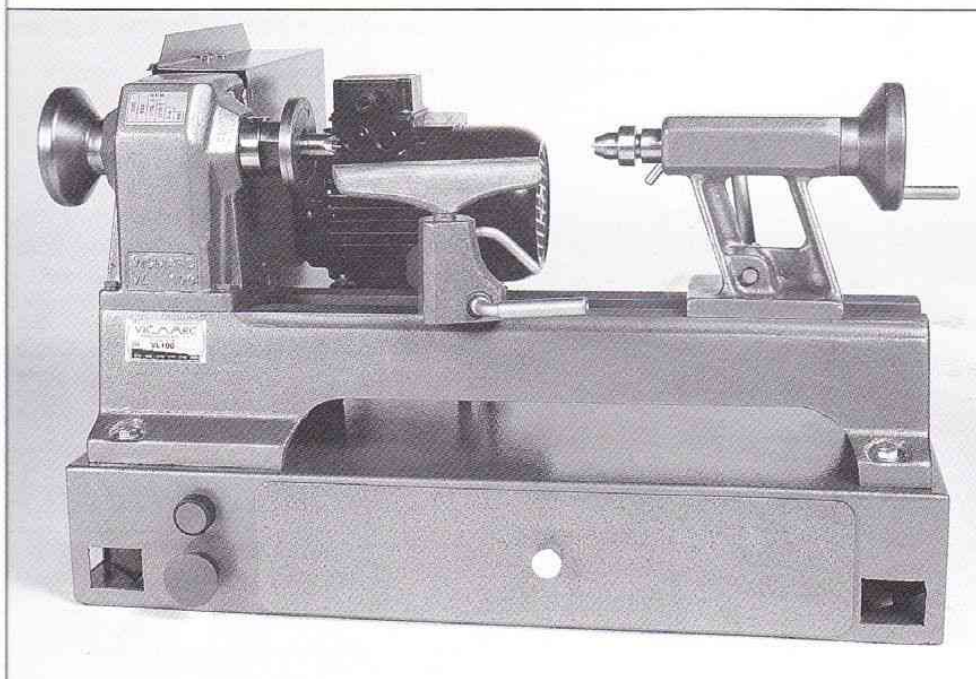


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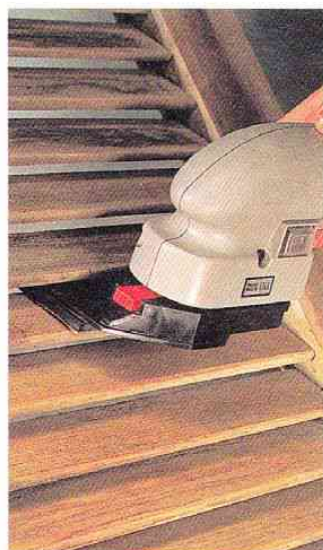
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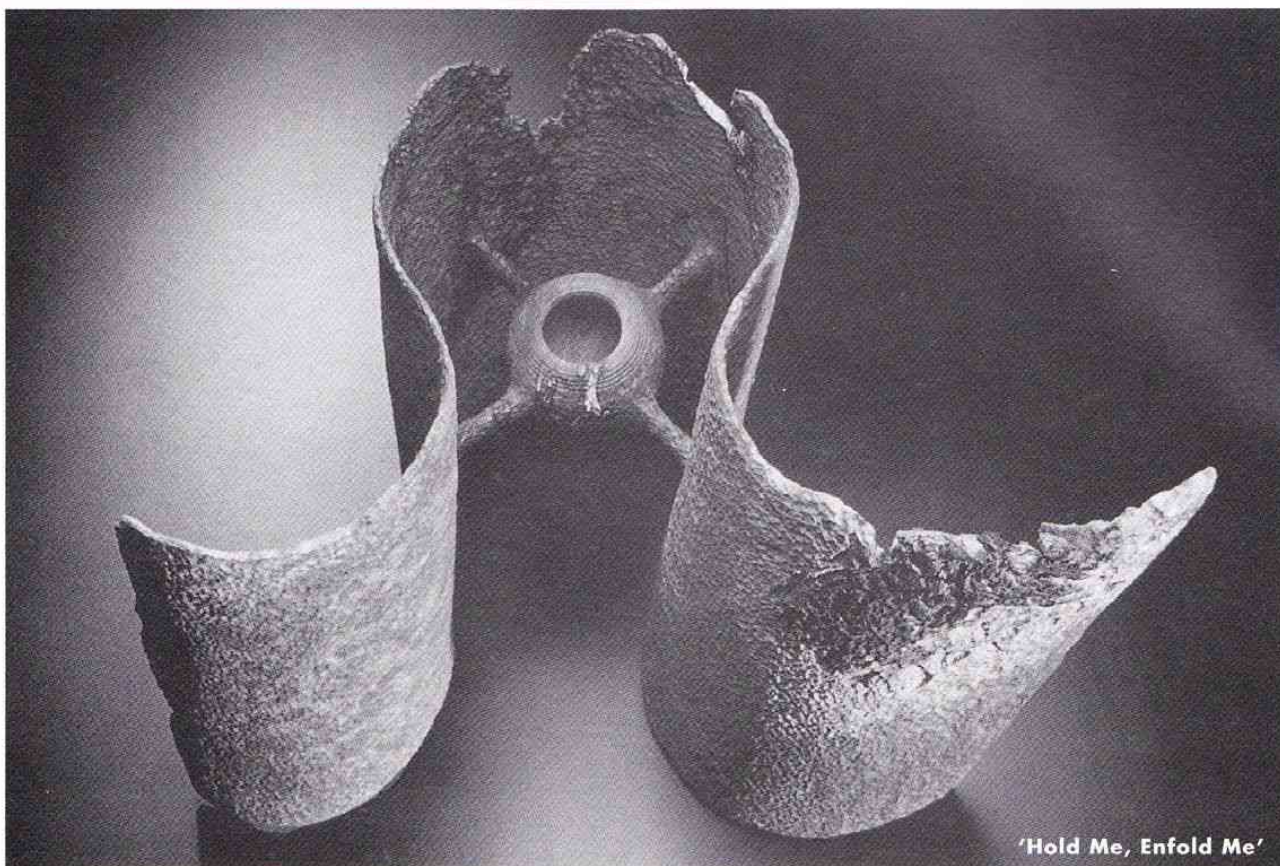
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EXHIBITIONS



'Hold Me, Enfold Me'

Foreign Exposure

Works by Terry Martin, July, 1997
School of Arts Building, Brisbane

Reviewed by Linda Nathan

If you have ever met or spoken on the telephone with Terry Martin you will probably understand how he has achieved so much in such a relatively short career, let alone lifespan. Mercurial by nature, in conversation Terry Martin is animated, and at times delivers nothing short of an onslaught of ideas, anecdotes, points of view and opinions on anything and everything. The development of his own work has leapt ahead at a similar rate.

Almost ten years ago Martin started turning wood and quickly became an artist and then writer. After the release of his book *Wood Dreaming* in 1995 and the staging of the accompanying exhibition of the same name, Martin's career seemed to take flight.

Foreign Exposure is a 'pre-exhibition' of works made for two upcoming exhibitions, the first in America in

September 1997, the second in Japan in November 1998. Once this is understood, the two distinct styles within this display begin to make sense. Amongst the works there is a polarity of the 'natural' and organic, versus a more intellectual and idiosyncratic approach.

An eight week residency in the US last year brought Martin into contact with makers and collectors of turned work. 'I realised if I was going to succeed in the US I needed to have an identifiable style. That's what the collectors look for.' The twenty-five or so pieces destined for the US exhibition will be one of the satellite events which will accompany this year's *World Turning Conference* in Delaware.

The works made for Japan have a quite different feel however. 'Japanese woodcraft is firmly rooted in functionality and tradition,' Martin comments. While other craft arts such as ceramics and jewellery, he observes, are often avant-garde and sophisticated, the Japanese, as far as wood art is concerned, look more to the impor-

tance of the medium itself. In the case of his own work, the material is an embodiment of Australian identity which is appreciated by the Japanese. In 1995 Martin held an exhibition in Nagoya entitled *Yuukari No Kuni*. The natural-edged, highly figured and even gnarled and fissured works which were featured as vessels for ikebana sold out.

The natural-edged, more functional and simpler forms (platters, bowls, wall-mounted pieces) from *Foreign Exposure* will be made up in number to around 100 pieces for the exhibition in Japan which Martin has received funding from Arts Queensland for.

The more challenging works represented in *Foreign Exposure* are the 'impossible' turnings, the forms which certainly challenge the technique of lathe-turning. A die-grinding jig and a selection of power carving tools have attained more and more importance in Martin's small workshop. In fact most of the works are primarily hand and power carved. Not only are sections cut out and away, but surfaces are now chis-

elled, bandsawn, carved, grooved, ribbed and sometimes scorched.

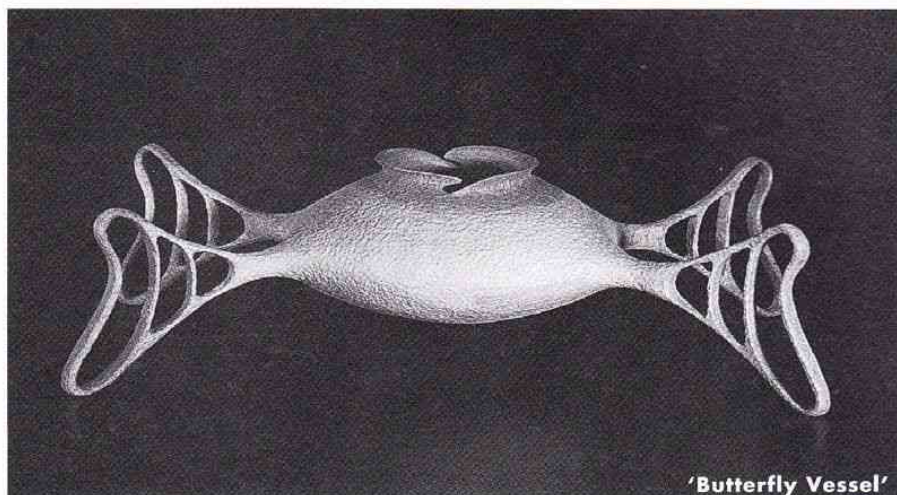
Smooth surfaces are polished to an extreme lustre with a technique learnt from French woodturner Jean-François Escoulen. Three buffing wheels are mounted successively in a chuck on the lathe. After sanding to 600 grit the first wheel is used to apply rouge. The piece is oiled with *Penetrol* and then buffed on the second wheel with 'white stick'. A third buffing adds carnauba wax to a resulting surface which is hard and brilliant.

The newest trend in Martin's works is anthropomorphism. With human (and non-human) appendages these pieces now have attitude. The blank faces of *Oh#1*, *Oh#2* and *Oh#3* are quirky and sardonic. Stumpy, chisel-toed feet give several pieces a well grounded though peripatetic feel. Stylistically though, the smooth, tensed legs and buttocks of *Sweet Androgyne* stand a long way away from the natural edged burl platters on the other side of the room.

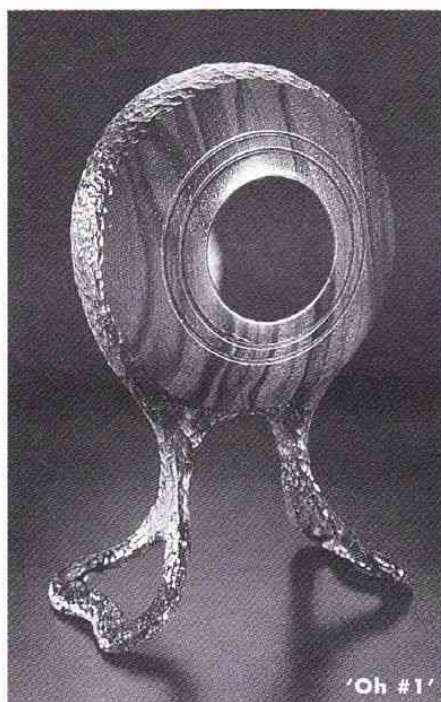
The perfectly entitled *Hold Me, Enfold Me* describes an almost unseen smaller suspended entity within a delicious draping of finely figured timber. Dark red coolibah heartwood has been sculpted outwards to its creamy coloured waney bark edging. The off-centred and angled turning of the vessel within the initially large blank was technically difficult, but the piece will, Martin hopes, find favour with its intended American audience in September.

Martin's early output was geared towards production items for the gift and souvenir market. Now his direction has changed: 'I could survive in Australia if I was content to produce production pieces—purse mirrors, paperweights, bowls. Now I'd rather sell fewer more complicated, one-off pieces which I work on for longer periods'.

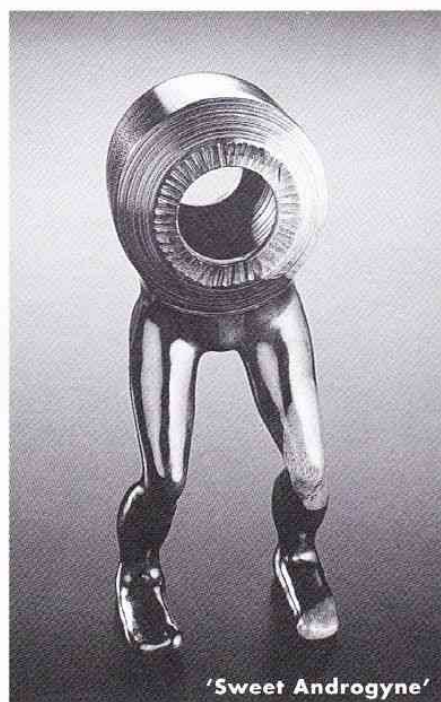
'In America I am an artist, in Japan I am a craftsman, in Australia I am a woodturner', Martin observes. The duality of this exhibition is a reflection of the artistic perceptions of different cultures, and the way that those perceptions can be successfully responded to. 



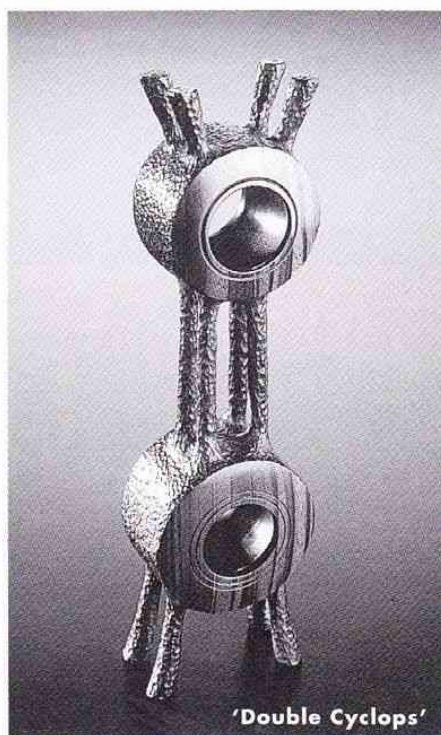
'Butterfly Vessel'



'Oh #1'



'Sweet Androgyne'



'Double Cyclops'



'Twisted Cyclops'

EXHIBITIONS

36th Salone Internazionale Del Mobile, Milan

The *Salone International del Mobile* is widely acknowledged as *the* world furniture exhibition. Last April visitors numbered 159,232 including a 6% increase of foreign attendees, notably from Eastern Europe and Asia.

The *Salone* covers furniture, kitchens, offices and furnishing accessories. The exhibits are divided into 'classic', 'modern' and 'design' groupings. These categories are, by the organising committee's own admission, becoming increasingly blurred. Numerous other satellite exhibitions, meetings, conferences and awards ceremonies in the region turn this event into a furniture and design feast.

As far as trends are concerned a lift in creative spirit was observed, perhaps moving away from the early 90s where a certain sobering up effect took place in response to the excessive 80s. The new holy grail of ergonomics is spawning ever-new justifications for the liberation of familiar forms, especially where all the permutations of seating are concerned. While the forms of furniture are increasingly fluid, its adaptability is on the rise. Furniture is on the move: it opens, shuts, rolls, transforms, knocks down and flat packs. Like the media of today, furniture is becoming interactive and multi-purpose, not to mention more efficient in terms of space and materials used.



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- 2 The Chateau d'Ax stand.
- 3 Al planet Kappa kitchen design, Cidue.
- 4 Ala and Box kitchen units, Ciatti a Tavola.
- 5 IV Segmento office system, Castelli.
- 6 Piuma chairs, Origlia.
- 7 Be-bop folding chair, Matias
- 8 The Vico Magistretti exhibition.



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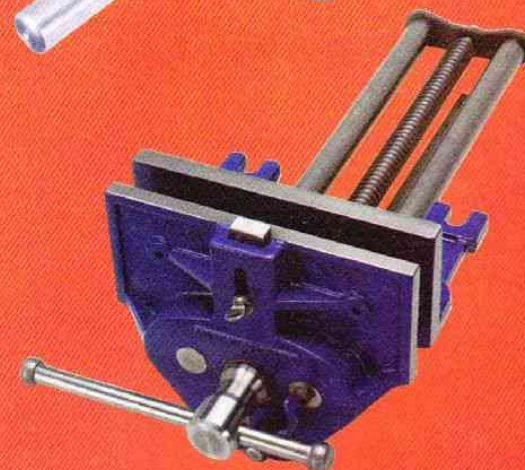
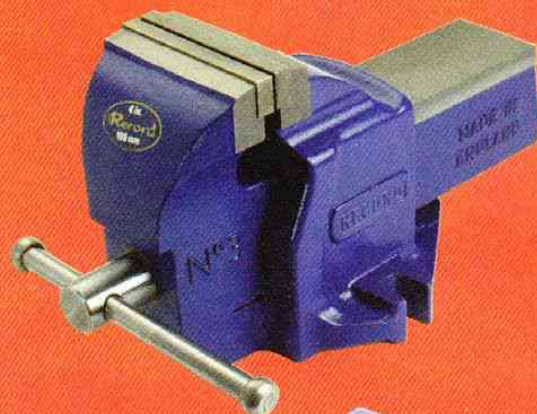
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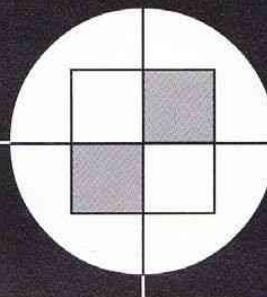
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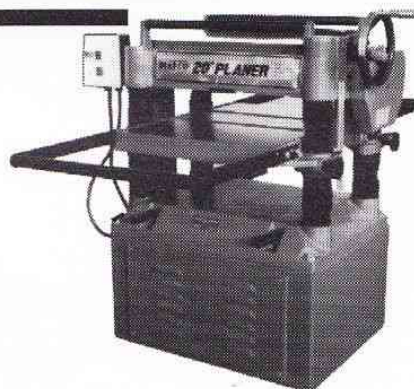
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EXHIBITIONS

Furnitex '97

Melbourne Exhibition Centre, July.
Reviewed by Dinah Hall

Jeff's Shed, also known as the Melbourne Exhibition Centre, played host to the 8 year-old *Australian Furnishing Industry New Product Parade*, now known as *Furnitex '97* in July, with some highly productive outcomes. The 240 stands attracted a record 77,000 visitors spending an estimated \$12 million which represents a 20% increase on last year's domestic sales. Around \$1 million in export orders were received which will translate to 12 container loads of furniture bound for Brunei, Japan, Singapore, Malaysia, China and the Philippines.

Rex Carr of Wentworth furniture, a member of the Furnishing Industry Association of Australia (FIAA) executive at both the state and national levels saw *Furnitex '97* within a world context: 'Comments from Japanese and UK buyers suggested that much of the furniture on display would sit well at Cologne or Milan. They also said that Australian furniture has that handcrafted look, while the furniture coming out of the high volume markets such as Italy are increasingly giving the appearance of being mass produced. There is no doubt that Australia is producing quality furniture which is world class and competitive—the need now is to work on volume sales.' Achieving volume sales is possible, according to Victorian FIAA Chief Executive Officer, Graeme Cock, by 'marketing Australian furniture globally, and then in turn by factories running two or three shifts'.

While Rex Carr believes there was a 'strong effort to show genuinely new product', Bruce Moonie, of POST designers and furniture makers, and the visual arts department of Melbourne University, says a lot was not new enough. 'While it was good to see more contemporary design on display there is still a strong element of re-



Furnitex '97, organised by the FIAA to showcase new Australian furnishing product, received accolades from most of the 240 standholders who achieved a 20% increase in sales over last year's figures. 77,000 people attended.

straint and conservatism and a general fear of trying anything new, yet this is the international furniture show of Australia.' He did however praise *Furnitex* for providing an 'ideal forum for designers and manufacturers.'

Rebecca Veitch, also of POST, was more forthright when asked about her perceptions of the show: 'Australian furniture design is in a rut, continually looking backwards and not pushing innovation, rather simply regurgitating our colonial past.' But it seems that things are changing as POST designs have been manufactured for retail by both Eagle Remac and Dream Haven Furniture.

As part of its promotion of Natural Feature Grade timber, Victoria's Timber Promotion Council (TPC), held a NFG timber stand to explain the timber to visitors (13 manufacturers showcased work of NFG) while also stepping in to link designers with manufacturers, as a means of attracting both local and international interest in Australian product. The stand was staffed by sawmillers and designers, providing an ideal way for producer to meet manufacturer and potential customers. TPC's Tony Pepper has now been

invited to explain Natural Feature Grade timber at the Tokyo Trade Fair in November.

And while the immediate future looks rosy there may be some details that need ironing out before next year's *Furnitex*. While the conditions of entering the exhibition clearly state that 50% of the labour content of any product shown at *Furnitex* must be Australian there were possible breaches of this 'Australian Made' criteria—some exhibitors may have been exhibiting technically imported product.

The Victorian Government's support for the industry comes in the form of a \$200,000 sponsorship to help establish a Furniture Industry Display Showroom which will also house the FIAA office. An Industry Training Committee has also been established to identify training needs and development of skills. While other states are also supporting the industry the Victorian Government is taking particular pride at the moment in the fact that Victoria has, over the last six months, become the major manufacturer and exporter of furniture in Australia. 

By Philippe Brooks

A COLLECTORS CABINET



The Collector's Cabinet—the carcass and base are made of jarrah, veneer features are musk burl, drawers are made of flame sheoak.

I have made this cabinet a few times and always find its construction enjoyable. It doesn't require enormous amounts of material and there are no 'boring' stages in the whole process. There is also a fair amount of hand work to take pleasure in. The inspiration for the original cabinet came from three sources. Firstly I wanted to make a display space for the utensils which my wife uses in the practice of *Sado*, the Japanese tea ceremony. These are very beautiful, and in keeping with a cabinet whose lines are somewhat delicate. Secondly I, like many other woodworkers, have always admired the simple lines of James Krenov's work and his attitude to our craft. The 'cabinet on a stand' is not entirely unique to Krenov, but it is a look I have always enjoyed. The last factor which prompted the making of the original cabinet was the fact that I had some very nice pieces of curly blackwood veneer. The width of these actually determined the width of the cabinet.

In fact the original cabinet was never used for the purpose for which it was intended—it's hard to refuse a sale when your income depends upon it! Resulting commissions for the cabinet have come about through 'word of mouth' sightings from other clients.

The carcass of the cabinet shown here is made from some light salmon coloured jarrah. The veneer features are musk burl and the drawers are made from flame sheoak. The design lends itself to interesting contrasts of timber colour and grain.

The Base

During this first stage I machine all the timber required for the base and carcass, making sure there is a good colour match throughout. I then earmark all the pieces for the places I will use them within the cabinet, aiming to get a piece with arched grain for the front apron for example.

The next step is to taper the four legs from the bottom of the apron (40mm) to the floor (25mm) on the two inside surfaces only. I would make a simple

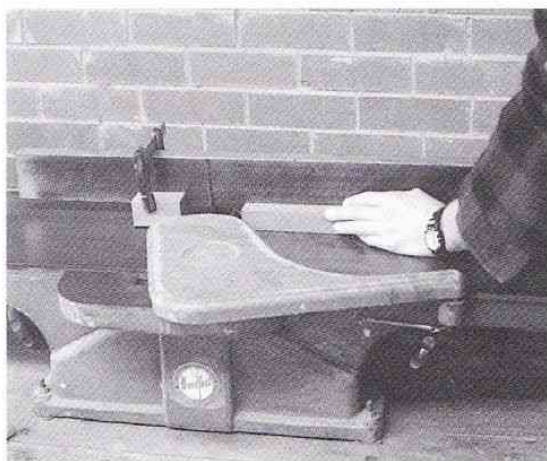


jig for use on the tablesaw if I were doing batches of tapered legs, however for four legs only (eight tapers) it is a simple matter to quickly mark them out and bandsaw them to a line. A couple of passes on the buzzer cleans everything up.

Next, I put the 'socks' on the base of the legs; these are in fact veneer and, as the photo shows, two opposing faces are clamped in one operation. To cut the recess for the veneer I firstly scribe a line 80mm from the bottom all the way around the leg. This not only determines the top of the recess, but also prevents the buzzer chipping out any of the timber. I set the buzzer to take a cut that is slightly more than the thickness of the veneer. Similarly, a stop block is attached to the buzzer fence which stops the cut just short of the scribed line (see photo). Chisel out the shoulders so they are

clean and square and then, with the use of some backing blocks, glue on some oversize pieces of veneer (tackle opposing faces only). Make sure they butt up cleanly against the shoulder. You may have to be a little inventive with your clamping here as the clamps tend to slide down the taper. Once dry, chisel off the excess veneer and complete the other two sides.

The apron is mortised and tenoned, nothing difficult here as the tenons are only 20mm long. With these cut I then dry assemble the sides and back of the base in order to mark out the position and angle of the lower rails. These are then dowelled with two 6mm dowels for each joint. Before gluing up I run a groove around the inside edge of the apron so as to later accommodate the table clips that hold the top. All the components are then sanded to one grit short of finish sand-



A shoulder for the veneer 'sock' on the cabinet leg is buzzed with the aid of a stop block.

ing and then glued up. In this case I use a UF (urea formaldehyde) glue. Once dry the base can be cleaned up and a 12mm radius routed onto the front and two sides. Sand to your final grit, in this case 180 grit as the cabinet was to receive a lacquer finish. On the rare occasions that I use an oil finish I sand to around 320 grit or higher.

The Cabinet

This is relatively straightforward. The boards are glued up with biscuits and UF glue. If the endgrain were to be visible (as in a tabletop) I would use timber splines running all the way through in order to give strength to the most vulnerable part. Once glued up the panels are cut to size and a rebate routed in for the back.

Decorative edge profiles are routed, as are the grooves for the interior shelving. Slots are cut for the biscuits that will hold the top, bottom and sides together. The cabinet components are then finish sanded and the areas that will receive glue are masked off and then sprayed. Once the lacquering is completed the pieces are glued up. When the carcass is dry, slide the interior shelves into grooves. The almost complete carcass is then attached to the base.

Doors

Select the timber that you previously machined and cut all parts to size. Once the top rails have been shaped the frames can be glued up. I use biscuits once more, two biscuits for each joint. These are very lightweight

doors so biscuits provide ample strength. A rebate is cut into the reverse of the doors and a cock beading is machined—this will later be used to hold the veneered panels in place.

To veneer the panels first cut the substrate, in this case 6mm MDF. Both the MDF and the veneer are cut slightly oversize. Mark each veneer leaf to ensure an exact book-match in the finished doors.

Both veneer and substrate are then coated with a 50/50 mix of PVA and water. The back and front of both panels are then clamped up between melamine boards. I use a clamp every 150mm or so with a few sheets of newspaper between the panels to cushion the pressure a little and leave the panels to dry for at least 24 hours. I have glued up to five panels at once this way and am yet to have a failure.

Once dry, the panels are sanded and cut to size, and then given a preliminary coat of lacquer before being secured in the door frames.

Hanging The Doors

The doors should be sized to fit snugly in the carcass recess. I then scribe the hinge position on the door frame. A 6mm bit in my trimmer is used to clear most of the waste—the rest is pared to the line with a sharp chisel. The depth of the hinge rebate is generally about one third the thickness of the hinge (one third in the door, one third in the carcass and one third gap between the two).

After all four hinges have been fitted in their door rebates it is time to remove them, marking both hinge, leaf and rebate—mixing them up would cause misalignment, not to mention grief!. Offer up the doors to their respective stiles and with a sharp knife mark off the hinge rebates. Remove the doors and repeat the routing and chiselling process. Once this is done hang the doors with only one screw in each leaf (this leaves a little room for correction if necessary). At this stage the hung doors should fit neatly and a

clearance line may be scribed around them so they clear the top, bottom and each other equally. I generally leave a gap of about 1.5mm.

With the doors now hung and fitting perfectly, they are once again removed to finish sand the frames ready for lacquer. I always find it better to fit my doors initially with steel screws, and use brass screws only for the final fit. You only have to break one brass screw to appreciate this method.

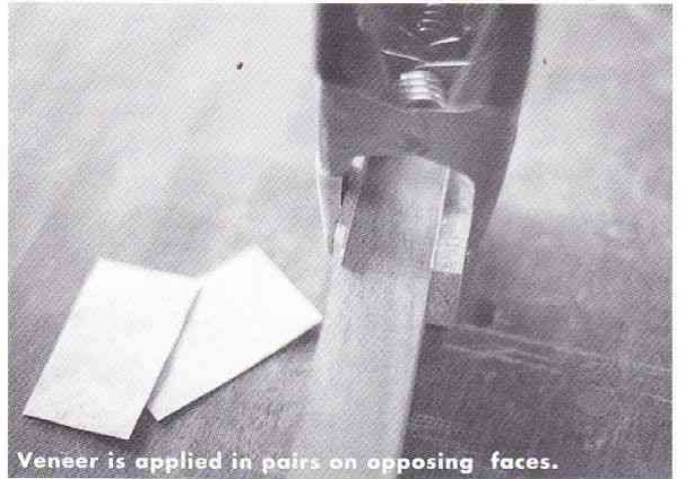
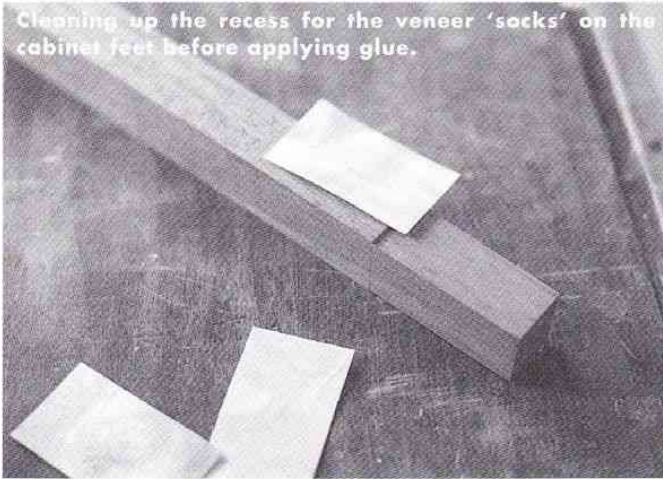
Drawers

The final stage is the making of the hand-dovetailed drawers. I will not go into the details of drawer making here, however you may care to refer to John McLennan's story in AWR#13 which addresses this topic. I generally use a contrasting timber for the sides, in this case sheoak which not only lightens up the interior of the drawer but also serves to highlight the dovetails. In my workshop we lacquer drawers all over prior to waxing the drawer cavity to ensure the drawers slide very smoothly.

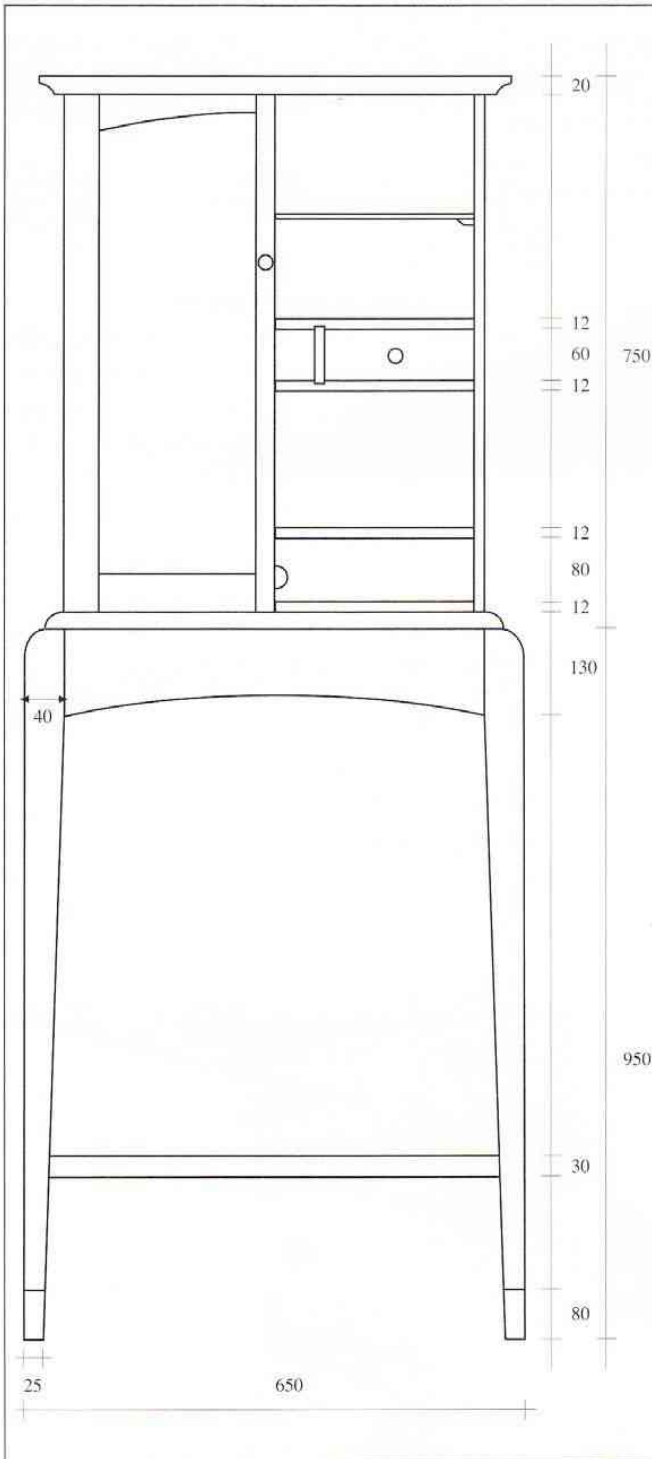
Hand dovetailing is not something that you should be wary of. In this project the drawers are small and few so it is an ideal time to close the door, turn off the radio and quietly cut a few tails and pins. All that remains to be done is to pin on the back, which on this particular cabinet was jarrah veneer. Holes must be drilled for the shelf pins and bushes to complete the installation of the 5mm glass. The latter is readily available from glaziers who should be able to neatly bevel the front edge for you.

I turned some simple knobs for the front, the design of which echoes the finger pulls in the drawers. I also installed the brass ball catches to the doors. This is a cabinet which you can make for a special purpose. The small doors which stand almost at eye level are a perfect vehicle for that rare piece of veneer you've been hoarding. It is not a labour intensive piece, yet the range of woodworking skills involved should afford you some hours of pleasure. 

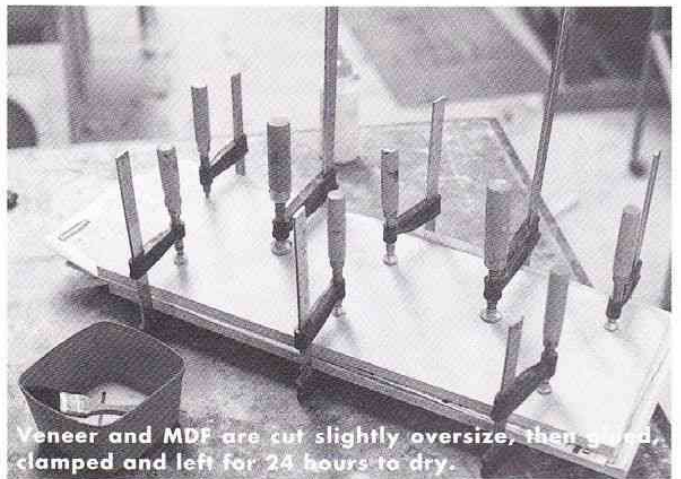
Cleaning up the recess for the veneer 'socks' on the cabinet feet before applying glue.



Veneer is applied in pairs on opposing faces.



Preparing to veneer the door panels.



Veneer and MDF are cut slightly oversize, then glued, clamped and left for 24 hours to dry.



Hanging the doors on the near-completed carcass and base.

BUYING A MID-RANGE PANEL SAW

Every workshop needs a tablesaw. In its most basic form this machine will have a sawblade projecting through a slot in a table. A fence to the right of the blade will allow timber to be ripped to width. With the addition of a sliding mechanism to the left of the table the machine can crosscut material to length and may now be called a panel saw. Full sized panel saws can handle sheets of MDF or particleboard up to 3 x 1.2 metres and cost anywhere from \$8000 up to \$30,000—and over \$50,000 if you are looking for computer numerical control.

We don't all need, however, to cut large sheets, and we don't all have the floor space or the budget for the larger machines. In order to cut both solid timber and some sheet materials a more compact saw may be needed. To accomplish work of a professional standard you need a saw with an effective sliding table and a tilting arbor. I recently investigated the mid-range saws on the market and found that I would need to pay at least \$4,000 for such a machine. Machines in the price bracket below this are more suited to light duty usage. Your purchase decision will therefore be based on what you are making and the materials you are using.

Testing The Metal

Traditionally cast iron has been the hallmark of quality machinery. Today however, many manufacturers opt for aluminium alloy components and fabricated construction. Whilst some alloys are definitely hard-wearing, I still believe that cast iron work surfaces are superior. Consider that over a period of say, ten years, volumes

of timber, rough and smooth, will be pushed over the saw table. Cast iron should wear much better than any aluminium, and the sheer mass of cast iron combined with a heavy steel cabinet will also absorb vibration better, making for a smoother running machine.

Machine cabinets vary—some are made of light sheet metal bolted together, whilst others are made of thick welded steel and are extremely heavy. The weight of a machine is a good point of comparison between makes; one machine on the market for example, which is rated as a top brand, weighs a massive 840kg. Sufficient weight promotes safer cutting—no one wants a machine tipping forward while cutting a particularly long and heavy board.

The Motor

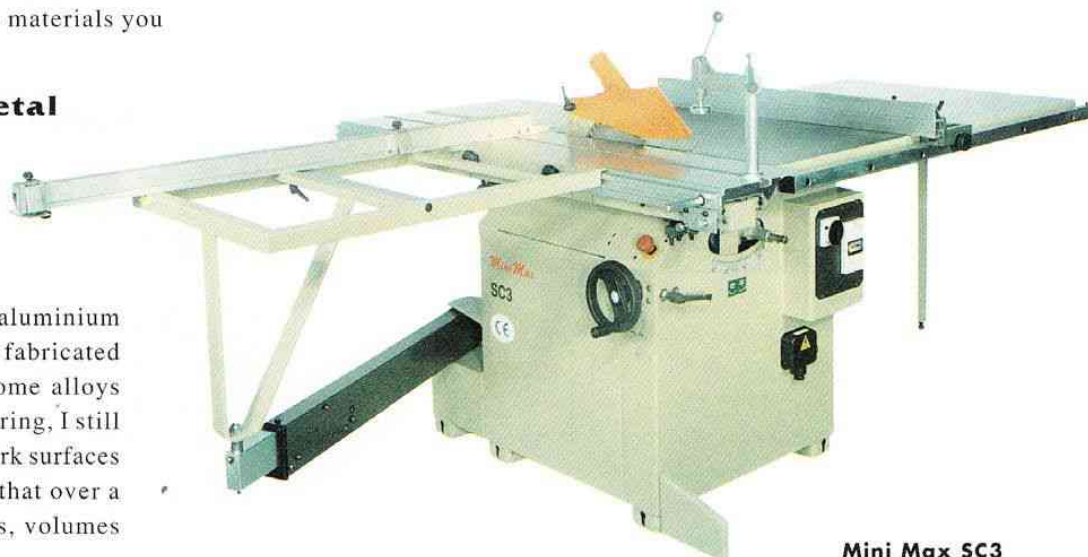
The motor is the 'guts' of the machine and if you are cutting Australian hardwoods regularly (that is, 50mm or more thick), you will need at least 3hp output, preferably more. I say *output* here, because ratings vary from machine to machine, and it is the output which equates to available power. If you have three phase power you can get a 5hp motor, however often,

in this mid-range machine size, 3hp will be the maximum available. Machines with 2hp motors will also serve you well, provided you understand there will be limitations in cutting capacity, which will mainly be in regard to ripping rather than cross-cutting hard materials. For example, particleboard, MDF, pine and hardwood up to 30mm should pose no problem for a 2 to 2.5hp machine. An overload cut-out switch is also something to look for.

The Saw Table

Even if cast iron is your preference hard wearing alloy is still worth considering. You won't be able to judge how hard wearing this alloy is in a showroom, although if you're checking out a trade-in or demo machine signs of wear will be evident.

Most machines have a table which allows a ripping width of up to around 600mm, but in practice you will need a capacity which approaches 900mm. Optional side extension tables are usually available. These will increase ripping capacity, but naturally options always cost extra. Outfeed support tables are also available. The ripping fences on



Mini Max SC3

Altendorf C45 Compact



Durden TSS 300



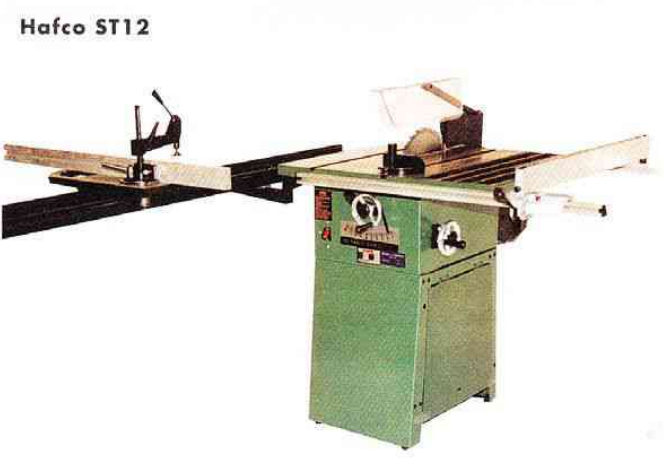
Elektra Beckum PK300



Felder K7 Compact



Hafco ST12



SCM SI150



Scheppach TS4010



Woodman TS220



	Altendorf C45 Compact	Durden TSS 300	Elektra Beckum PKR250	Felder K7 Compact	Hafco ST12
Origin	Germany	Taiwan	Germany	Austria	Taiwan
Motor	5hp	3hp	4hp (input)	3 or 5hp	2hp
Weight	840kg	260kg	150kg	380kg	140kg
Table	Cast iron	Cast iron	Aluminium alloy	Cast iron	Cast iron
Sliding Table	Bearings run on machined guides, large capacity, tilting arm	Rides on two ball bearings and v-roller guided by precision ground steel bar	Four rollers on ball bearings on aluminium channel	Bearings on guides	Four bearings running on twin bars
Sliding Table Stroke	1600mm	1525mm	850mm	850mm, 1240mm opt.	1250mm
Sawblade Diameter	300mm	305mm	250mm	250-315mm	300mm
Sawguard	Fixed to riving knife	Fixed to riving knife	Fixed to riving knife, has dust extractor outlet	Mounts to riving knife	Mounts to riving knife
Ripping Capacity	700mm, opt. side table available	965mm	350mm, 1060mm with r/h ext. side table	360mm, 800mm with opt. side table	750mm
Rip Fence	Aluminium alloy, cam lock	Aluminium	Aluminium alloy, cam lock, micro adjustment	Aluminium alloy	Aluminium
Scribing	Optional	No	Standard with separate motor	Optional	No
Price (without tax)	\$15,400	\$5,674	\$4,050, r/h extension side table extra \$500	\$6,200	\$1,095

most machines are aluminium mounted to a steel or cast iron locking attachment. A quick action lock is preferable and micro-adjustment is better. The fence needs to be sturdy and square to the table surface and it is an advantage if you can slide it both fore and aft of the sawblade. Look for easy adjustment and setting.

Sawblades

The size of blade the machine is fitted with determines your maximum depth of cut. A 300mm diameter blade is preferable because normally it offers 95-105mm depth of cut at 90° and 65-75mm at 45°. A 250mm diameter blade will, however, often be adequate offering as it will around 80mm at 90° and 55mm at 45°.

A scribing or scoring saw is a smaller blade which spins in front of the main blade in the opposite direction. As the name suggests it scores the under-

side of the material before the material contacts the main blade. Set up correctly the scriber will completely eliminate tear-out on the underside of a cut, which is critical for melamine and veneer work. You can almost get around the need for a scriber though if you have very high quality sawblades. Extra support under the cut or the use of a knife to scribe the cut first will also help, but this is slow work.

The Sliding Table

A sliding table makes your saw much more versatile. The critical factor in evaluating this feature is the mechanism by which it slides. Some machines use ball bearings on round steel shafts, whilst others have bushes or bearings running on steel guides. Basically the rule here is the more you pay, the better the mechanism.

It is important to remember that saws

in this mid-range category have not been designed to carry full-size particle board sheets (2.4 x 1.2 metres) or massive timber sections. The sliding table mechanisms mostly seem to have a capacity of around 850mm to 900mm in stroke (that is, the crosscutting width of material that can be handled in front of the saw). The length of material which can be cut without additional support from say, a roller stand, is dependant on the weight of the material—normally this is around 1000-1500mm. Look carefully at the size of the table, how it runs and what sort of adjustment it has. The cross-cut fence on most machines is extruded aluminium and should come with a length stop.

The better saws have the sliding table moving immediately to the left of the sawblade. These offer more support for the workpiece and will thus lead you to a better cut.

Mini-Max SC3	Scheppach TS4010	SCM SI 150	Tecnica S300 Super	Woodman TS220
Italy	Germany	Italy	Italy	Taiwan
3 or 5hp	3hp	3 or 5.5hp	3hp	3 or 5 hp
285kg	113kg	480kg	280kg	260kg
Cast iron	Aluminium	Cast iron	Cast iron	Cast iron
With extra support from tilting arm	Aluminium, runs on two bars	Large capacity, extra support from tilting arm	Precision guides with extra support from tilting arm	Large capacity, v-mount ball bearings on ground steel rod with extra support from tilting arm
1200mm	800mm, opt. 1400mm	1500mm	1300mm, opt 2500mm	1525mm
300mm	250-315mm	300mm	300mm	305mm
Mounts to riving knife	Mounts on arm above saw	Mounts to riving knife	Mounts to riving knife	Overhead
900mm standard, 1170mm op. ext.	1100mm with extension table	1000mm	1135mm	965mm
Alumimium and cast iron	Aluminium	Aluminium, cast iron.	Aluminium cam lock	Aluminium alloy
Standard	Optional	Standard	Standard	Optional
\$5,810	\$5,000	\$8460	\$4995	\$4500

When choosing a saw in this range consider the materials used, the quality of construction, the weight, motor output, cutting capacities and the provision of features such as scribing blades, self-locking and micro-adjustment. Most of the machines in this range currently available on the market are listed in the table above along with their points of comparison. Prices quoted do not include tax and were current at time of writing; as always, check with your supplier first.

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Altendorf

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Elektra Beckum

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Hare & Forbes Pty Ltd
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Mini-Max

Fletchers Machine Tools
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SCM

Allwood Machinery Co
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Scheppach

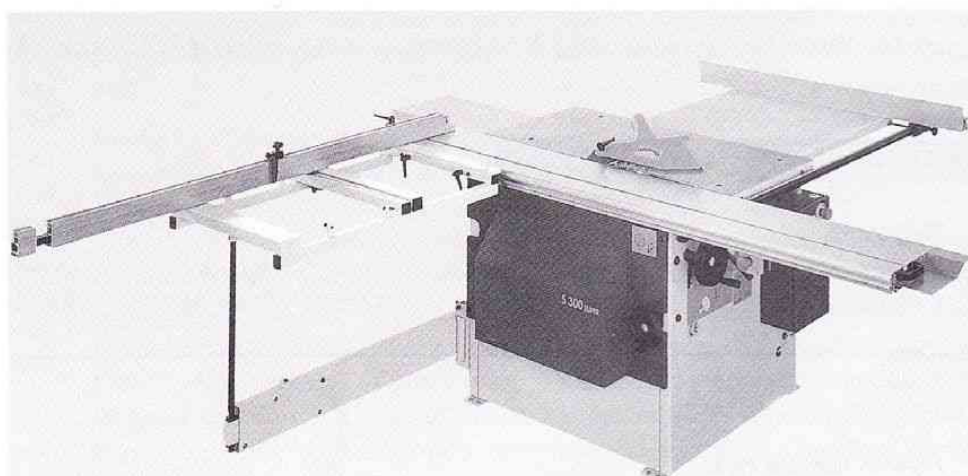
WMS (03) 9416 9022

Tecnica

Gregory Machinery Pty Ltd
tel (07) 3844 4433 fax (07) 3846 1104

Woodman

Woodman Group Vic (03) 9555 5199, NSW
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ANCIENT TIMBERS

Buried treasure in the form of old wood excites the imagination of archaeologists and woodworkers alike. Not all old wood is brittle or petrified, nor is it as black as ebony. These mysterious woods, relics of a distant past, occasionally become available for very selective usage.

Ancient pine (*Araucarioid*) from a Victorian brown coal mine.

Most woodworkers are constantly searching for distinctive materials. The discovery of ancient wood is something that woodworkers, scientists and archaeologists get particularly excited about. Large, structural oak beams buried on the shores of the River Thames, even older oak logs from the peat bogs of Europe and Japan, ancient red gum trees uncovered from gravels of the Murray River and ancient kauri stumps in the swamps of New Zealand are just some examples. With each discovery come questions about the nature of these woods, how they have survived, how old they are, and what can be used for.

Wood around 2,000-3,000 years old from sarcophagi in Egypt has been examined by an Australian university to identify and date it. Under the desiccating conditions where these coffins were found the wood from local cypress and prickly acacias has survived with little change. Yet our renowned red gum, used in house stumps and fence posts, lasts for barely 30-50 years before it succumbs to rot at ground level. With the top 150mm of soil so biologically active with micro-organisms how can fallen logs survive for thousands of years?

In Britain, Ireland, mainland Europe and Japan acidic peat bogs have preserved buried items for thousands of

years. Bodies of ancient people as well as boles of oaks have been found in an excellent state of 'pickled' preservation. The dark, watery mass rich in humic acids and plant extracts, has changed the buried oak (*Quercus sp*) from its normal pale brown to dark shades of brown and even black. This useable wood, known as 'bog oak' is unfortunately rarely commercially available and is highly sought after by wood collectors.

Similarly, fallen ancient red gums (*Eucalyptus camaldensis*) have been recently uncovered and harvested for their still workable wood. Buried in gravels of old river courses, the wood, like bog oak, is dark brown to black in colour. Ancient red gum is available at a similar price to that of ebony. But then, how do you price a rare product dated at 5,000-10,000 years old?

Dredging of Botany Bay a few years ago uncovered a few dark logs of *Angophora sp.*, a genus closely related to *Eucalyptus* and once common in the area. When brought to the surface it was found that the logs, preserved underwater in anaerobic conditions presumably for thousands of years, were in good condition. A few of these logs have made their way into the hands of lucky woodworkers.

In the watery pits of Victoria's brown

coal mines machinery operators often come across blackened logs. I and other members of the *International Wood Collectors Society* have spent some time collecting, studying and attempting to identify these ancient timbers. Three samples have been identified from microscopic examination of wood cells. They are native softwoods belonging to the *Araucariaceae* family, perhaps *Agathis* genus (related to the kauri pines of Australia and New Zealand) or *Araucaria* genus (such as bunya, hoop or Norfolk Island pines).

One such log, on display at a University campus in Gippsland and labelled as Huon pine, was also confirmed as being an *Araucarioid* and not Huon pine at all. Who knows, perhaps these prehistoric logs belong to a species that no longer exists? Perhaps some are from the newly discovered Wollemi pine (*Wollemia nobilis*) found surviving after thousands of years of threatening bushfires in a deep gorge in a national park near Sydney.

Unfortunately the wood found in brown coal is sodden, badly fractured, degraded and unusable without major pre-treatment. No wonder—after lying buried for around ten million years, under millions of tons of hydraulic pressure, the softwood logs have changed dramatically—though not so much as the world above them. These timbers

Rare Tasmanian Timber and Veneers

Blackwood - figured, birds eye, fancy, plain

Myrtle - crown cut, plain

Celery Top Pine - crown cut, plain

Sassafras - blackheart and plain

Leatherwood - redheart

Huon Pine - birds eye and plain

Musk/Eucalypt /Myrtle Burl - when available

from



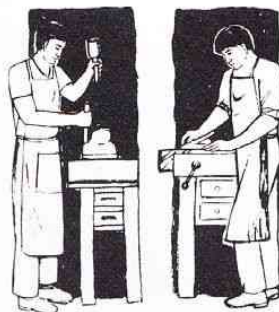
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existed well before the earliest of human kind. Dried wood samples are so unstable that some spontaneously crack and even disintegrate from internal stresses.

Ancient native softwoods have also been discovered in New Zealand. In swamps on the tip of the North Island near Awanui, buried forests of New Zealand kauri (*Agathis australis*) stumps have been found. The logs and stumps are still being uncovered and removed from swampland by a company called 'Ancient Kauri Wood Products'. Well preserved, the wood shows slight darkening to a rich mid-brown hue. Dating by a university verifies an age of around 30,000-50,000 years.

Kauri logs are found, like those in Australia, with well preserved cones, leaves, bark and the renowned kauri gum or resin. Ancient kauri timber is milled in quantity to produce some of the oldest workable wood commercially available. Pin hole borer damage (from a species of borer now extinct) is still evident in the susceptible sapwood. Giant living kauris are now protected in some New Zealand national parks. Amazingly, high quality furniture and other wood products are still being made from the massive fallen boles of trees whose lives predate the pyramids and recorded human history.

How does this preservation process occur and how does it affect the properties of wood? Burial in acidic peat bogs and swamps is a proven preserver of timber. Fallen trees with high levels of tannins, resins or oils have a higher chance of enduring until they are buried by natural forces. If the wood is high in tannins (as is oak or many eucalypts such as red gum) soluble metal ions (like iron) can diffuse into the wood to form dark complexes, called iron tannates.

We can see this process when an iron nail in an exposed redgum post turns the area around it black over a period of time. This 'ebonising' process can be simulated on 'new' wood by using natural or applied tannins and then swabbing with a solution containing iron. The naturally low level of tannins in some woods (mostly softwoods

by different metallic ions. Opalised and petrified woods result. This is another world, that of geology, lapidary and stone masons.

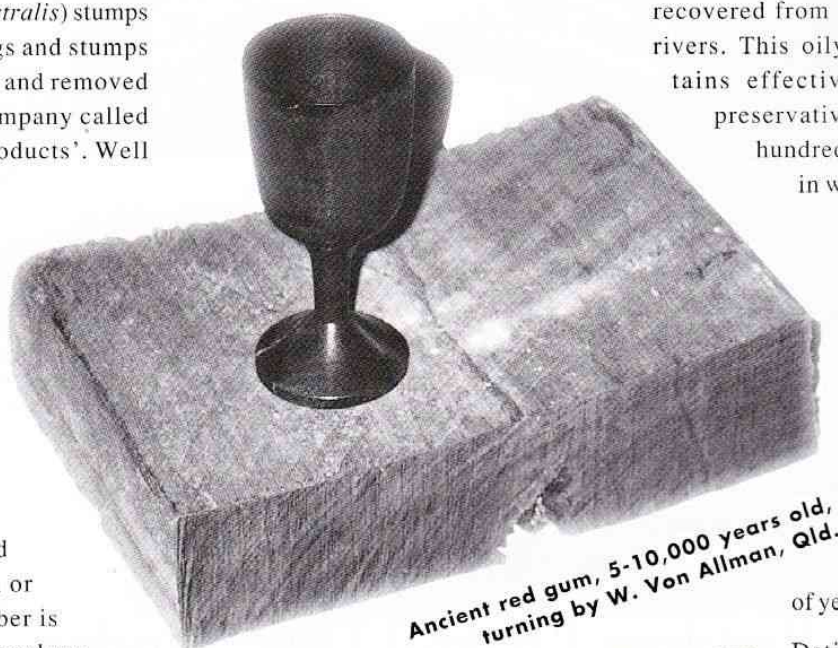
One cannot talk of ancient timbers without mentioning another survivor—Tasmania's Huon pine (*Lagarostobus franklinii*). As these trees are no longer cut down, all supplies depend on logs recovered from burial sites and from rivers. This oily, yellow wood contains effective natural phenolic preservatives. The trees live for hundreds of years and remain in workable condition for even longer after they fall. A lone male tree surrounded by a clonal forest of itself growing (unlike most Huon pines) on a mountain was an amazing discovery. Near Mt Read, this Huon pine is thought to be many thousands of years old (see AWR#13).

Dating wood can be difficult. When it is less than 50,000 years old dating is done by radiocarbon with mass spectrometers which can separate natural isotopes of carbon. University staff at the ANU in Canberra and Auckland, New Zealand have dated ancient red gum and kauri with this method. The diffusion of recent organic matter

into the wood fibres can, however, make the wood seem younger. With very old samples, like those found in brown coal pits, geological dating methods are used. These are based on stratigraphy or association with known rock types, geological processes and mineral and fossil evidence.

No doubt future discoveries of ancient timbers will continue to delight scientists, wood collectors and woodworkers alike.

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Ancient red gum: Mathews Timber (03) 9874 1666, (02) 9604 2077



Bog oak from Belgium, age unknown.

like the New Zealand kauri) seems to prevent blackening by salts, but they do weaken with age and under the forces of burial.

Ageing for millions of years slowly degrades the wood cellulose until carbonisation (the first stages of coalification) sets in. The wood then loses its strength, becoming brittle and largely unworkable. In alkaline conditions, where silica diffuses into the pores and replaces the organic cellulose structure, the 'wood' turns into stone and is often brightly coloured

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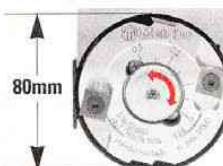
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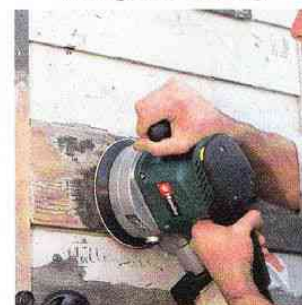
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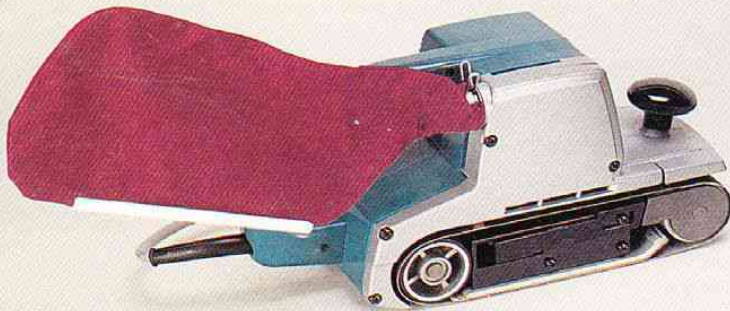


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German Industrial Power Tools

BELT SANDERS: A REVIEW OF CURRENT MODELS



Makita 9401



Porter Cable Whisper 22-362-56

The portable belt sander is a multi-purpose and a must-have tool for the workshop. For smoothing and shaping surfaces, edges, edgings and components, the belt sander is generally the fastest and most convenient route.

In larger workshops a wide-belt sander will thickness and sand tabletops and panels. The smaller workshop, however, will rely heavily on the belt sander to achieve a panel surface which is perfectly prepared for final sanding. For tricky grain, unusual curves, on-site work and installations your belt sander will sometimes be the only tool for the job.

Most belt sanders work the same way—a motor powers a rear-drive roller which in turn drives the belt. The freely rotating front roller is adjustable for belt tracking and is spring-loaded to tension the belt. A lever is used to release the tension for changing belts. The platen (the flat part between the rollers) provides a flat base for the belt when it contacts the wood.

Personal Safety

A belt sander is a relatively safe machine to use, however there are a few safety precautions which should always be observed. Firstly, belt sanders are very noisy and prolonged periods

of usage are common, so ear protection is a must. You will also generate dust and flying particles so protecting your eyes and respiratory system is also recommended.

Always disconnect the power before changing belts. Take the time to ensure your work is securely clamped in place and at a comfortable working height. Two-handed usage is safer and will give you the best control—these machines are quite powerful and tend to run away across the bench.

Using Belt Sanders

Sand with the grain at a uniform speed whilst keeping the sander level at an even pressure. You don't need to press down—let the tool do the work. Long even strokes will give the most consistent results.

Some skill is required to obtain a flat, even surface over larger areas. Check your surface for square and for high and low spots before you commence work. The abrasive will cut very quickly so maintain your concentration and

don't leave the sander in one spot for too long or you will create depressions instead of removing them.

The edges and ends of panels and boards require special care. It is generally better to sand out towards the edges and work lightly in these areas to avoid rounding over the surface. This is especially important when sanding panel products.

The belt sander can also be used as an edge sander on both straight and curved edges. When sanding straight edges you'll need to keep a steady hand while constantly checking the squareness of your edge.

Inverted on the bench your belt sander doubles as a small finisher which will allow you to use both hands to guide smaller components which may be square, tapered or curved. Of course you should take care to keep your fingers well out of the way.

Sanding Belts

Sanding belts are available in various

grits ranging from 36 grit through to 180 grit. Most woodworkers seem to only use two grits, often 80 and 120. I have found the quality of belts on the market varies enormously, but in general the more you pay for a belt the longer it will last. With quality belts your sander will actually be quite cheap to run in terms of the amount of timber you can sand with one belt.

Always make sure you install belts correctly, checking the direction of the arrow to ensure the seam of the belt won't catch on the work and tear. 3M now manufacture belts which use a special adhesive tape to give their belts a flat join. These belts can be used in both directions, thereby doubling their sanding life.

The Comparison

For this evaluation of belt sanders currently on the market I was sent five models which ranged in price from around \$290 to \$500. I put the sanders to the test over a period of some weeks, using them on a variety of projects in my workshop. In addition, I carried out several tests on both figured and extra hard timber to see how well each machine performed. I used the same type of belts on all of the sanders to ensure that comparisons between the results achieved were fair.

All the sanders tested achieved good results, but generally I found the two 4" models out-performed the 3" models in terms of both power and final finish. Of course the larger models sand faster because of their larger belt surface area, but on the downside they are heavier and require more effort to use.

The two *Makita* models use a graphite slip cloth on the platen which makes for a very smooth surface and also extends the life of the belt by keeping it cooler. By comparison the *DeWalt* and *Porter Cable* sanders use a metal platen over a hard cork base while the *Hitachi* also has a metal platen, but over a plastic base.

From my tests I felt the *DeWalt* and the *Porter Cable* sanders left the finest finish and ran the smoothest over the timber. The *Makita 9401* was the heaviest sander tested and the *DeWalt* the lightest. Weight did not seem to play much part in the sanding process while the sanding belts were sharp. Weight is a concern to the operator however—the heavier the sander the quicker I found I tired, especially after a long period of use.

The *Porter Cable* has, in my opinion, the best overall feel and grip and was the easiest to use and hold on the work. The lighter *DeWalt* machine would

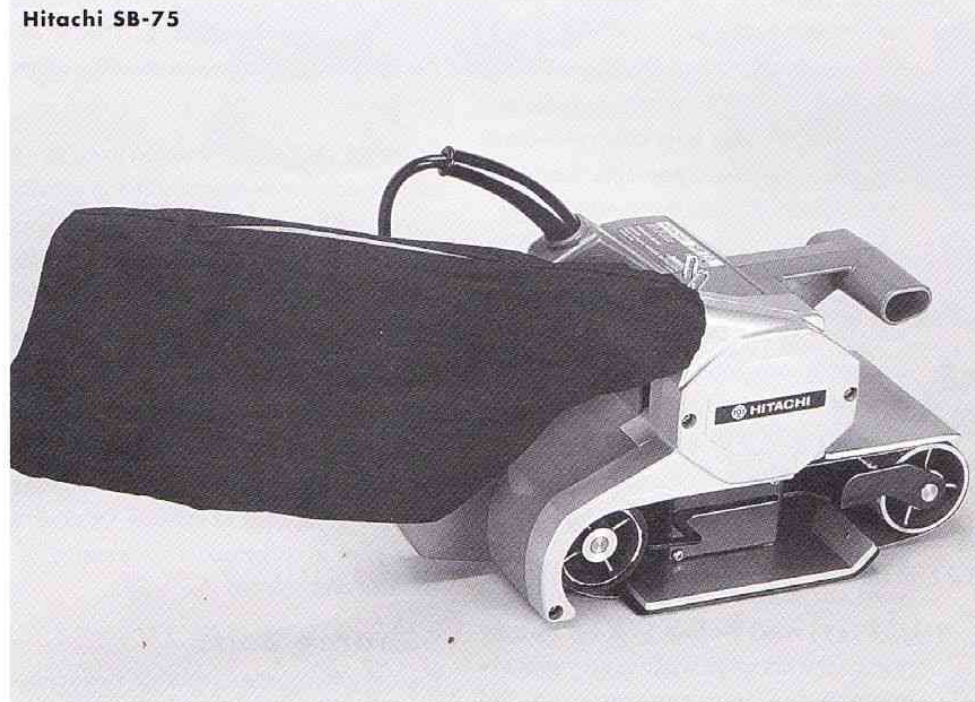
suit the home handyman or someone who wants to sand vertical surfaces, such as table edges, where a light machine would be an advantage.

The dust extraction systems on the *Makita*, *DeWalt* and *Porter Cable* sanders worked well. The *Makita 9401* and the *Porter Cable* were the most effective—no doubt because they had the largest fans. One problem I encountered with the *Makita* sanders was that when sanding at bench height at a certain angle the air tended to blow in my face. Coming from the fan outlet this can tend to direct dust in the operator's eyes.

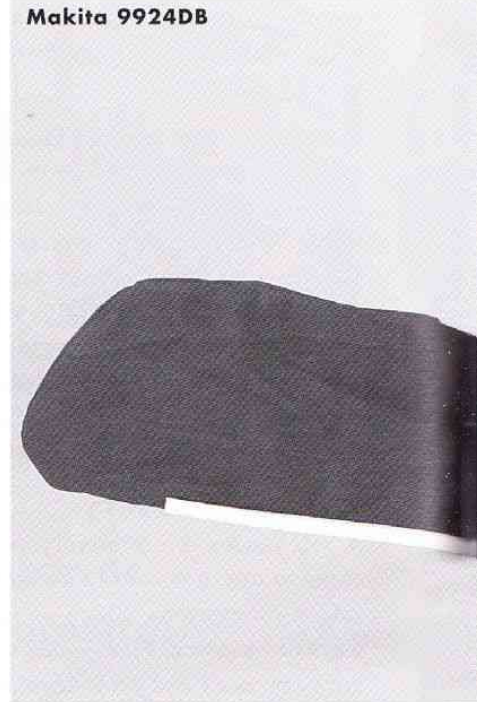
Adjustment of the belt tracking was easy on all of the models tested. The *Porter Cable* and *Makita 9401* (both 4") sanders kept their belts very accurately on the line once set. All 3" sanders tended to be slightly harder to adjust and their belts tended to move around a bit during sanding. This didn't seem to affect the sanded surface finish though.

The *Porter Cable* 'Whisper' model has been developed to operate much more quietly than their standard model. Although I didn't have the standard model to compare it with, I wasn't able to detect significant differences between the noise level of this machine and the others.

Hitachi SB-75



Makita 9924DB

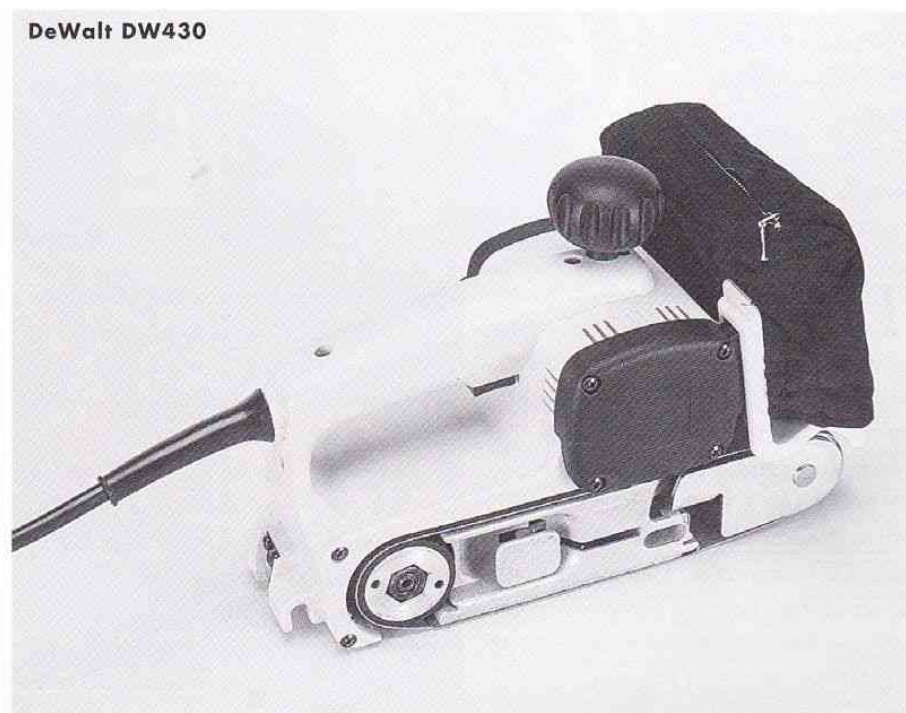
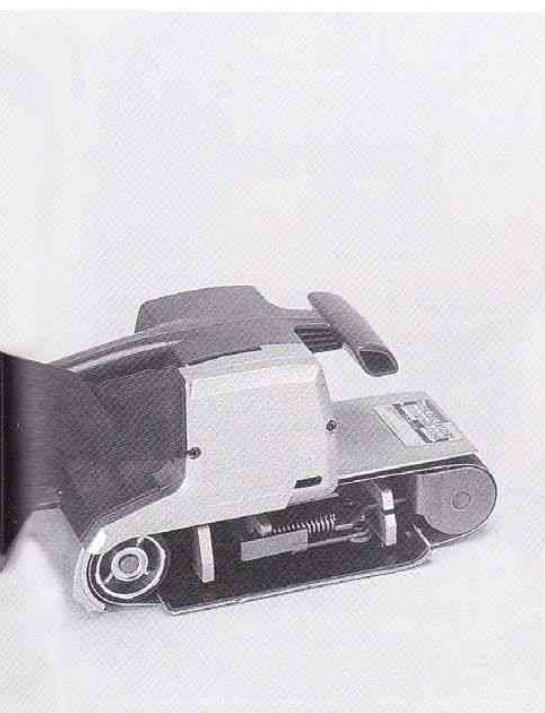


	DeWalt DW430	Hitachi SB-75	Makita 9401	Makita 9924DB	Porter Cable Whisper 22-362-56
Origin	Italy	Singapore	Japan	Japan	USA
Motor	650w	1000w	1040w	850w	1150w
Belt size	3"	76 x 533mm	100 x 610mm	76 x 610mm	4" x 24"
Speed	320m/min	450m/min	350m/min	400m/min	1500 sf/pm
Dust collection	Good, but bag gets in way of front handle	Fair	Good quality bag, excellent collection	Good	Good quality bag, works very well, easy to empty
Belt tracking adjustment	Easy and accurate	Okay, but not consistent	Excellent	Okay	Excellent
Features and comments	Lightweight machine which leaves a good finish	Could be smoother, with persistence will achieve good results	Very heavy, but easy to control, uncomfortable near front knob, comes with bench mounting jig and spare graphite pad	Good feel, a bit awkward near front knob	Good feel, easy to operate switch, very well made and finished
Price (inc tax)	\$329	\$289	\$499	\$289	\$499 (approx.)

For those who rely heavily on their belt sander for a variety of tasks I would recommend the *Porter Cable* or *Makita 9401*, both 4" models. In fact I would say that for the profes-

sional user a 4" model is a must. Both these sanders are very well made and are built to last. For less frequent users I would recommend the *Makita 9924DB* (3" model).

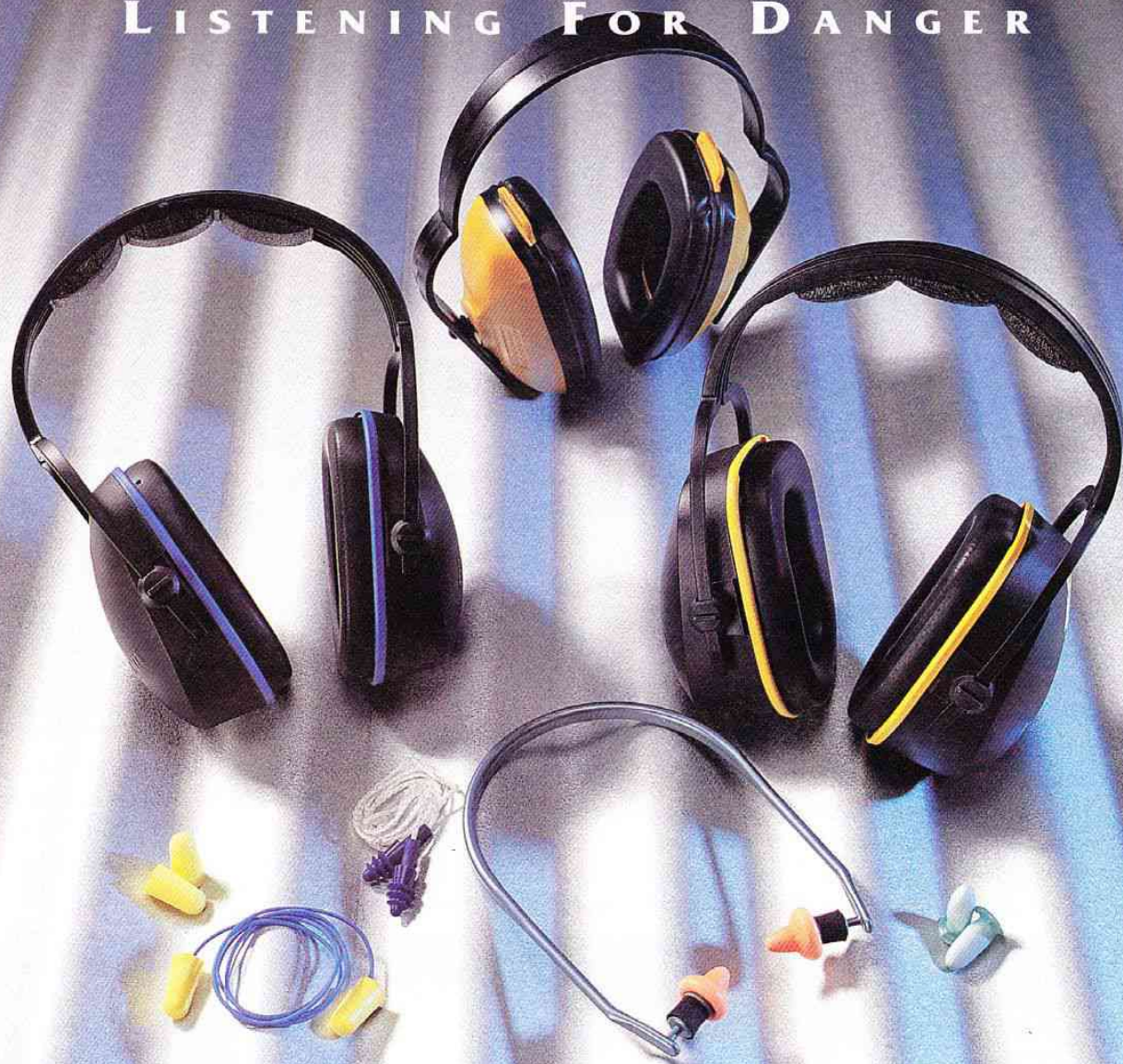
Prices quoted are from The Tool Centre in Richmond, Vic, and were current at the time of writing. Power tool prices are competitive, check with suppliers. Porter Cable tools are only available from Carba-Tec 1-800-658 111



By Dinah Hall

SAFETY

PART III: LISTENING FOR DANGER



The reality of living with a constant ringing, buzzing or roaring in your ears every moment of the day and night for the rest of your life may not be as far-fetched as it sounds. The workshop can be a very noisy place, so noisy in fact, that the safe daily noise dose could be exceeded within just a few minutes. The result could be temporary hearing loss or even permanent damage, and the devastating condition known as *tinnitus*.

Signs of Hearing Loss

Noise induced hearing loss may start with dulled hearing or a faint ringing in the ears. This may be followed by an inability to hear high pitched sounds such as the letters, S, T, K and C, before permanent impairment is more noticeable. But there are health risks also associated with excessive noise exposure—raised blood pressure; increased heart rate; stress resulting in irritability, fatigue, anxiety, depression, hostility or aggression, insomnia

and headaches; and a reduced ability to hear malfunctioning equipment, alarm signals or verbal warnings.

Sound and Noise

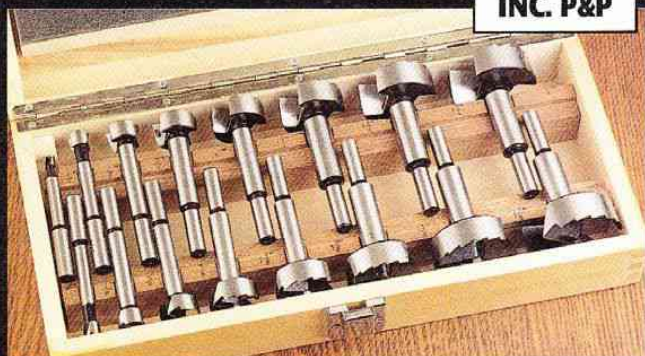
Changes in atmospheric pressure (from sound waves) are detected by the eardrum and carried to the hair cells in the inner ear. Here they are converted to electrical pulses and then sent to the brain for meaningful interpretation.

Noise or sound pressure is measured in decibels (dB) with a compressed

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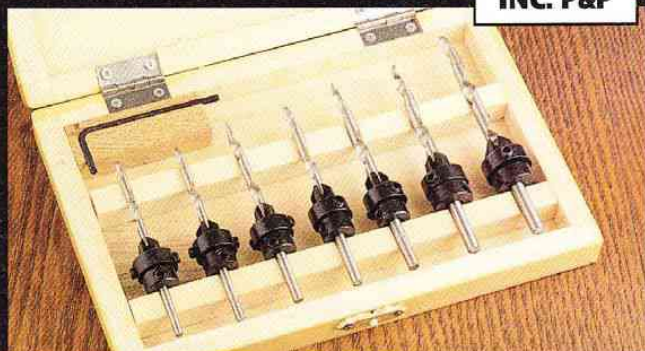


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scale of change, so that for every unit change in sound there is a greater than unit decibel change. For example, an increase of 3dB represents an approximate doubling of the sound pressure level; or an increase of 10dB represents an approximate ten-fold increase in sound pressure level.

Noise Damage

The amount of damage caused by noise depends on the total amount of energy received over time—as noise becomes louder, it causes damage in less time. The national standard for noise exposure in the workplace is an eight hour equivalent continuous A-weighted sound pressure level of 85dB(A). Studies indicate that noise exposure beyond this standard presents a high risk to health and safety. For peak noise, the national standard is a peak noise level of 140dB.

While each state and territory has its own health and safety legislation and regulations, each is moving towards a uniform national standard. It is worth remembering the levels referred to are maximums. The table above is more useful for reading levels in the context of daily doses. For instance, a person exposed to a continuous sound pressure level of 94 dB(A) over a period of one hour has had their daily dose of noise which is equivalent to a continuous sound pressure level of 85dB(A) over 8 hours.

Controlling Exposure

Other than eliminating it, the best way to control exposure to excessive noise is through engineering and/or

administrative noise control measures. Engineering measures are permanent controls which are built into the work process, such as the isolation of a noisy planer in a sound proof enclosure, so that only the operator need wear personal protective equipment.

Designers, manufacturers, importers and suppliers of plant are obliged under most Workplace Health and Safety

Acts to ensure plant is designed to be safe and won't risk the health of the operator when properly used. This includes ensuring appropriate information about the safe use of the plant is available. There are also requirements for the manufacturer or supplier of plant to specify minimum noise testing information.

Administrative control measures may involve rostering workers to use noisy machinery at short intervals, with appropriate hearing protection equipment. While this doesn't actually reduce workplace noise it does reduce the duration of exposure.

Noise Reduced Tools

The range of noise-reduced products on the market is increasing as awareness of noise related hearing damage

Noise Level (dB(A))	Exposure Time (Hours)	Daily Noise Dose (Hours)
85	8	1
88	4	1
88	8	2
91	2	1
91	8	4
94	1	1
94	4	4
97	0.5	1
97	1	2

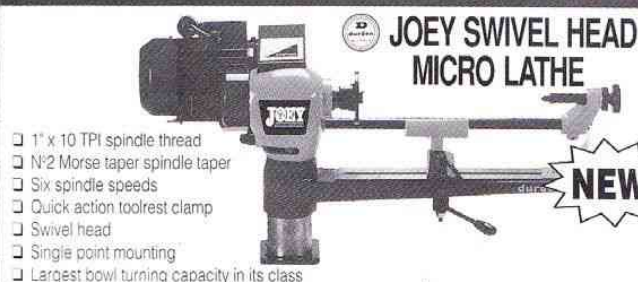
Table from: *Compliance and Advisory Standard for Noise*, Workplace Health and Safety, Queensland 1996.

grows. While earmuffs or plugs may still be needed the comfort zone and safety offered by a noise-reduced tool is worth considering.

The American *Porter-Cable* company, for instance, has already made a heavy investment in the development of noise-reduced power tools. *Leitz* sawblades are engineered for noise reduction by means of metal foils, laser-cut ornaments and teeth spacings.

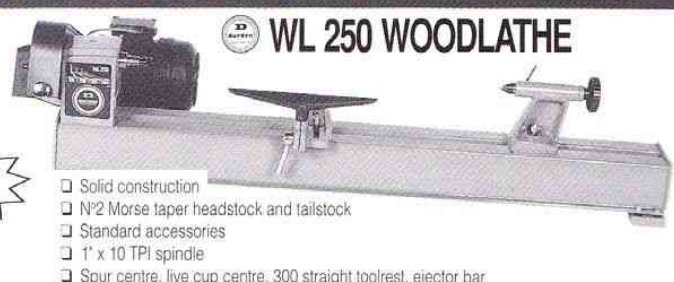
Choose your plant carefully, noise emission data should be obtained from suppliers with the lowest possible noise level selected. Spending money on good plant in the first place will have greater benefits in the long run.

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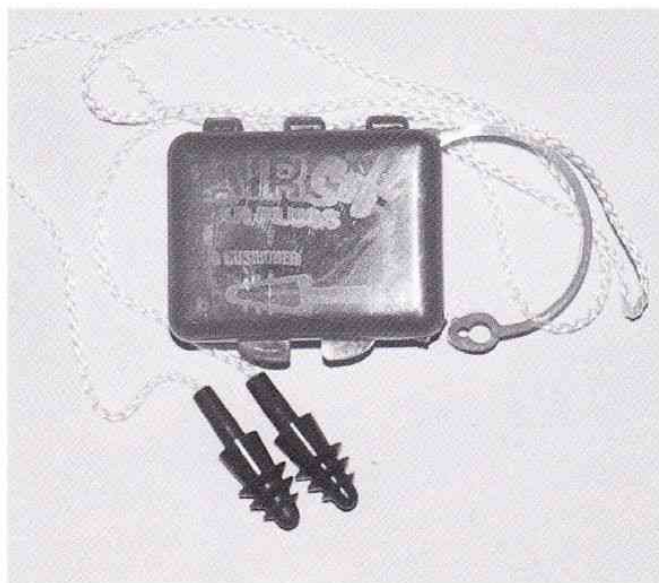
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Hearing Protection

How often have you noticed the warning 'Hearing Protection Must Be Worn' and just thought it was referring to someone else, probably one of the workers or full-timers? Yet where this sign appears, personal hearing protection equipment will most probably be available.

Often this sign will not be present in the workplace, especially if it is your personal workshop. Personal hearing protectors should be worn when excessive noise cannot be eliminated or reduced by other measures. There is a wide range of affordable personal hearing protectors on the market including everything from disposable earplugs to earmuffs, which reduce the risk from industrial noise, and even provide communication and entertainment.

Plugs and Muffs

Personal hearing protectors reduce noise at the ear. The most effective earplug is the one that actually gets worn and therefore must be comfortable. Removing an earplug for a short period while exposed to noise dramatically reduces the effectiveness of the plug. Plugs with a nominal protection of 30dB removed for half an hour during an eight hour day will have their effectiveness reduced to a mere 12dB sound level for that eight hour period.

Personal hearing protectors must comply with Australian Standard 1270 and specify the hearing protection they offer. For instance, an earplug that offers 15-20dB protection can be worn in a noise environment measuring 100dB and still be within the standard daily noise dose.

While the amount of noise being generated in a plant can be identified by the machinery in use and

the use of an official sound level meter (an instrument consisting of a microphone, amplifier and indicating device) it is more difficult to identify the amount of noise being generated by a power tool. The amount of noise will depend on the type of material being used and also the number of people using power tools at any one time. A sander on wood will generate approximately 100dB—without any hearing protection, the daily dose may be exceeded after thirty minutes. It is essential that hearing protection be worn 100% of the time during which the wearer is exposed to noise.

Final Word

Hearing damage is an insidious threat to personal health which may, over time, prove just as disabling as sudden and severe physical injury. While the purchase of noise-reduced power tools and machinery may fall into the realm of long-term planning, in the short term the advice of the experts is to wear hearing protection and not take one-off risks.

Planning your workplace for protection will also have long and short term benefits for workers. Obtain a copy of your state's advisory standard on noise from the government printer for a more detailed approach on how to reduce noise in the workplace. 

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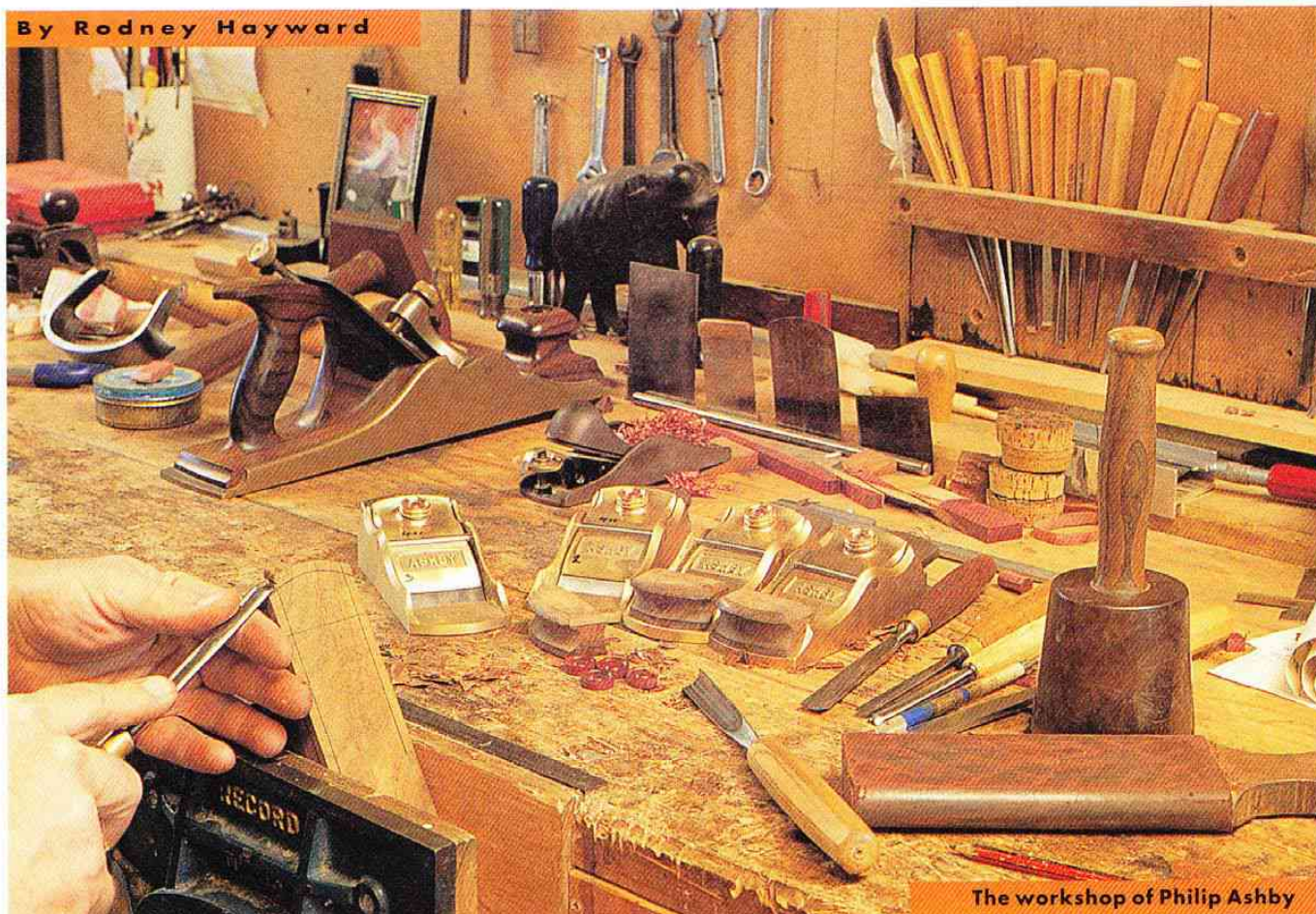
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By Rodney Hayward



The workshop of Philip Ashby

TO MAKE A TOOL: FOUR AUSTRALIAN TOOLMAKERS

A good tool can become an almost magical extension of the hand. Rodney Hayward profiles four Australians who specialise in the handcrafting of fine tools.

We seem to have an exploitable curiosity about the genius of past makers and the hand tools they created in rosewood, gun-metal, brass and fine steels. The old names are in their graves and apparently the individuality, the pride, the genius, the essence of the word *marque* which might describe these tools died with them.

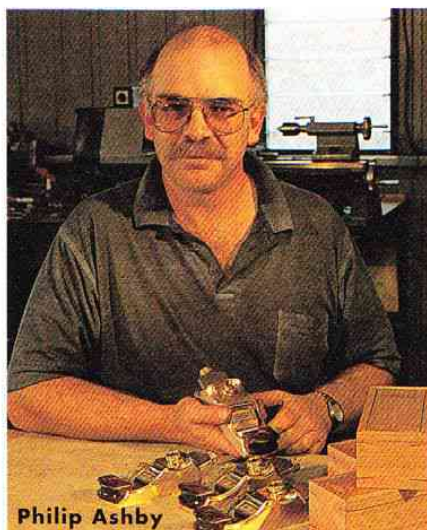
The dice was rolled against the old legendary names by marketplace economics and the changing needs of the craft. Yet, a few craftspeople have continued to make their own tools out of fine woods, brass and steel—not out of nostalgia for bygone days but, because with really fine tools to hand, there was quality and a sense of rightness in the process of their world. A

few of these few have taken the next step to make tools for others and thus the circle of the history of toolmaking runs on unbroken. The makers

detailed below are, save one, woodworkers who have become, in a way, late 20th century equivalents of the small Sheffield toolmakers.

PHILIP ASHBY

Philip Ashby became a plane maker because he couldn't afford the tools he wanted. He yearned for a plane with a capacity to create finer surfaces than those given by regular *Stanley* and *Record* planes. He achieved his goal after a year's experimentation with cold chisel, file and scraper on a rough casting and fitments purchased from Bristol Design of the UK. The result was an Indian rosewood infill, Norris-style, panel plane. Looking back on this achievement now, he feels that in the face of his limited metalworking skills at the time, what he achieved



Philip Ashby



Ashby planes

was something only a little short of a miracle.

The initial release of what is hoped will be a line of five traditionally based planes from the Ashby Tool Company, is a low angle block plane with a body cast from hard bronze. It is a plane that has been designed and made by a user: a plane that iconically through its lusty form, select materials and uncompromising qualities, reaches back to the *marque* of the planes by Mathieson, Spiers and Norris.

No accountant designed this plane. The logic that strings it together is of someone who has used planes for many years in his daily work. From the metallurgy of the iron, to its precise bedding and adjustment, the intention of the tool has been kept to the forefront of its design.

The low angle block plane has a clearly defined role since, as the iron is mounted bevel up, the cutting angle is not determined by the geometry of the body, but by the angle honed on the iron. A long iron is 'life', in principle at least, to be used up in repetitive cutting angle changes as different species are worked. Further, the long bed supports the iron virtually in its entirety and, pitched low, the classical mechanics of the inclined plane translate into easy fine adjustment.

Casting is economic reality and while Ashby uses a mill to work the rough castings, the final plane still reflects the necessity of many hours of painstaking handwork. Fitting the infill involves careful woodworking in iron-hard woods. The old planemakers used mainly Indian rosewood, a wood that is beautiful, select, durable and dimensionally stable in service. While plantation rosewood is available, Philip

Ashby prefers to utilise timbers from the palette of species found in inland Australia. Lancewood, ooline, yarran, black gidgee, beefwood, mulga and others, are from fallen trees and old stock fences. Besides having highly appropriate properties, this infill will uniquely mark the Ashby planes when introduced to a wider, off-shore market.

In going about making planes, Philip Ashby has focused on his identification of the need for fine finishing tools. Most of the older planes of this genre have vanished from the bench into the collector's cabinet. Yet, to describe the plane he is now marketing as a 'block plane' perhaps confuses

its intention. The block plane is a smallish, skittish thing. The Ashby plane brings with it the essence of the English traditional mitre plane; heft, tight mouth, and beautifully supported low pitched iron. By the alternative names appended to these now near-forgotten planes, these details were seemingly more valued than the facility of choice of cutting angle. The old mitre planes were always identified with fine surfaces and fine work.

IAN PERCIVAL

Ian Percival is an artist and artisan who has worked in the advertising world and has been a freelance graphic designer, graphics teacher, exhibiting



Tools made by Ian Percival

artist, and a repairer of antique clocks. He is a private man who has always made things as far back as he can remember.

Yet, if there was ever a formative experience in his life, it was when he was about 15 years old and came into contact with patternmaking and patternmakers. Their tools and standards of precision opened the young Percival's eyes to the marvellous potential for precision woodwork and that a fine tool was not hung on a nail. The tools were kept in the finest working order, not perhaps for what they were, but for the art these tools promised. They assisted in making the most intriguing patterns and sculptures which in turn would make interesting and practical things in bronze or cast iron.

Percival is not a specialist toolmaker but rather makes tools of a necessity for his art and his craft: small gouges that nestle in the hand and fingers like an engraver's burin, goose quills for calligraphy, knives, tools for repairing clocks.

The skills and knowledge he has acquired to make these little tools, have come from some 30 years of study and meticulous analysis of the processes of working the steels that are the core of an edge tool.

As a guest lecturer at the Wood Workshop of the Canberra School of Art, Ian Percival runs short courses in tool-making and brings a quality to his

teaching that is not often found—passion. A positive perfectionism that, while it recognises and embraces human frailties, will not allow for compromise. A point that impresses many of his students is that he *knows* his gifts and what he wants to do. Only a specific type of person can locate a vocation and then have the ability and the will to follow this through and actually do it.

COLLEN CLENTON

The tools that Colen Clenton makes attend to the seemingly small details essential in layout, set-up and joinery. The Clenton recalibratable squares and the various members of the marking gauge family we now see in the marketplace, evolved and devolved as engineered solutions rubbed against criteria like end use and feasibility of production. At one stage he had eight different prototypes for his squares on the go before a final decision was made.

Some of the details included in his tools arise from personal experience. Someone who, on their way out of the shop, dropped an expensive engineer's square intended to be used as a workshop master, is going to have very clear ideas that a square should be recalibratable. Squareness is one of those things we imagine as a certainty but, in fact, what we believe is true may accumulate change through the

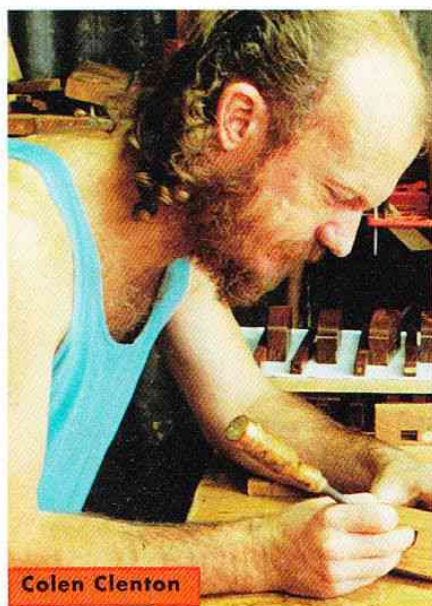
years by trauma or workaday wear and tear.

The Clenton squares are all able to be trued via two concealed alignment screws operating brass followers within the heel of the square. The design detail of having the adjusting screws not torquing directly upon the blade is typical of the detail and sensitivity that is in place in these products.

Pick up a Clenton cutting gauge: the brass detailing 'inlay' that runs through the head looks good, but there is a subtlety here. Wood moves with the whims of humidity but brass doesn't. The discrepancy between the two tells us what the gauge (and our timber stocks) might feel about the day. This is finger-tip sensing and it forces an intimacy with the tool material and process that is hard to ignore.

This level of sensitivity is innate in the man. He has worked for many years with people who have impaired social or sensory function. His willingness to share is ongoing and he still divides his time between workshop and Community Services. He still remembers vividly the orientation program for new staff at a school for the blind where a simple, temporary blindfold produced dysfunction, confusion and distress.

He progressed from his early training as an automotive engineer to the wood workshop of Leon Sadubin. Clenton had engineer's tools but, they were



Colen Clenton



Clenton marking gauge and square

inappropriate in the processes of working a warm and sensuous material like wood. He found that the lay-out tools specifically marketed for the woodworker were usually crudely designed and hardly much more sympathetic to the material. Rather than making do, he found the challenge of accuracy, and having 'things working nicer', much more tempting. He became a toolmaker and in that one step the dualities of his life took flight together.

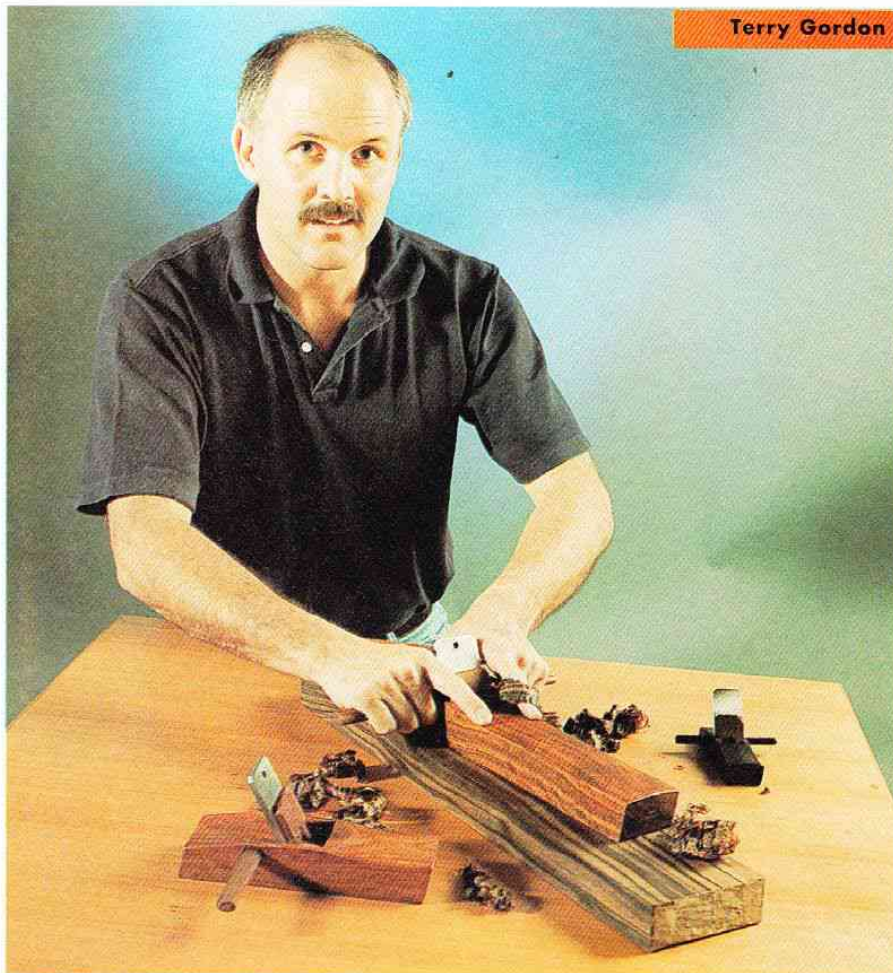
TERRY GORDON

In the wooden planes of HNT Gordon & Co of Victoria there is an adaptive melding of Eastern and Western wood-working traditions to give a simple, accessible tool.

Terry Gordon's life-path to be a tool-maker is woven from the typically diverse strands of interest and circumstance that shape all lives—his native ability and love of working with wood; the restoration of a sugar-bag of old wooden moulding planes from his future father-in-law, dissatisfaction with regular, store-bought planes; a posting to Malaysia in his job in the RAAF. The former experiences hinted at things that could be done, the latter pulled them together and set him about making planes.

While in Malaysia he was impressed with the quality of the planed surfaces produced by local Chinese cabinetmakers using their traditional handled push-planes. These planes are well balanced, the hands low and close to the work to economically deliver the power of the upper arms, shoulders and back. The other feature apparent to Terry Gordon was the variable, but usually high angle, which the Chinese cabinetmakers set the blade in the body.

Although rarely seen in Western planes today, pitches higher than 45° are in our plane-lore. They were derived in response to the need to cleanly work harder and or highly figured woods. With the iron pitched at, say, 60° as in the case of the HNT Gordon planes, there is now a greater component of



forward compression of the wood fibres.

The requisite failure of the wood now occurs not along a tension crack running ahead of the blade as with a pitch of 45°, but along a diagonal plane of shear, right at the cutting edge. With a heavy iron, cap-irons are redundant at these higher pitches. However, more substance is required from both the user and the iron with such a compressive mechanism. The design of the plane can help the former, metallurgy the latter.

Following a brief flirtation with ebony for the larger bodies of the smoothing and trying planes, Terry Gordon's switch to using such massively dense Australian timbers as Cooktown ironwood brought economic rationality and a superior material. Dried to an 8-10% moisture content in a homemade dehumidifier kiln, the ironwood bodies have proven stable to the vicissitudes of climate and weather systems.

The irons used are hard, thick (6mm), heavy and of impeccable Western

metallurgy. As they are rectangular and parallel-faced, when sharpened to a bevel of 30°, the iron can be flipped over and re-wedged on its 60° pitched bed to give a scraper plane for those species of timber that have a set against being planed at all. With the stiff blade now supported almost to the cutting edge, chatter is unthinkable. This simple accessibility of function is part and parcel of the manufacture and use of these planes and allows the user to *feel* the tool at work.

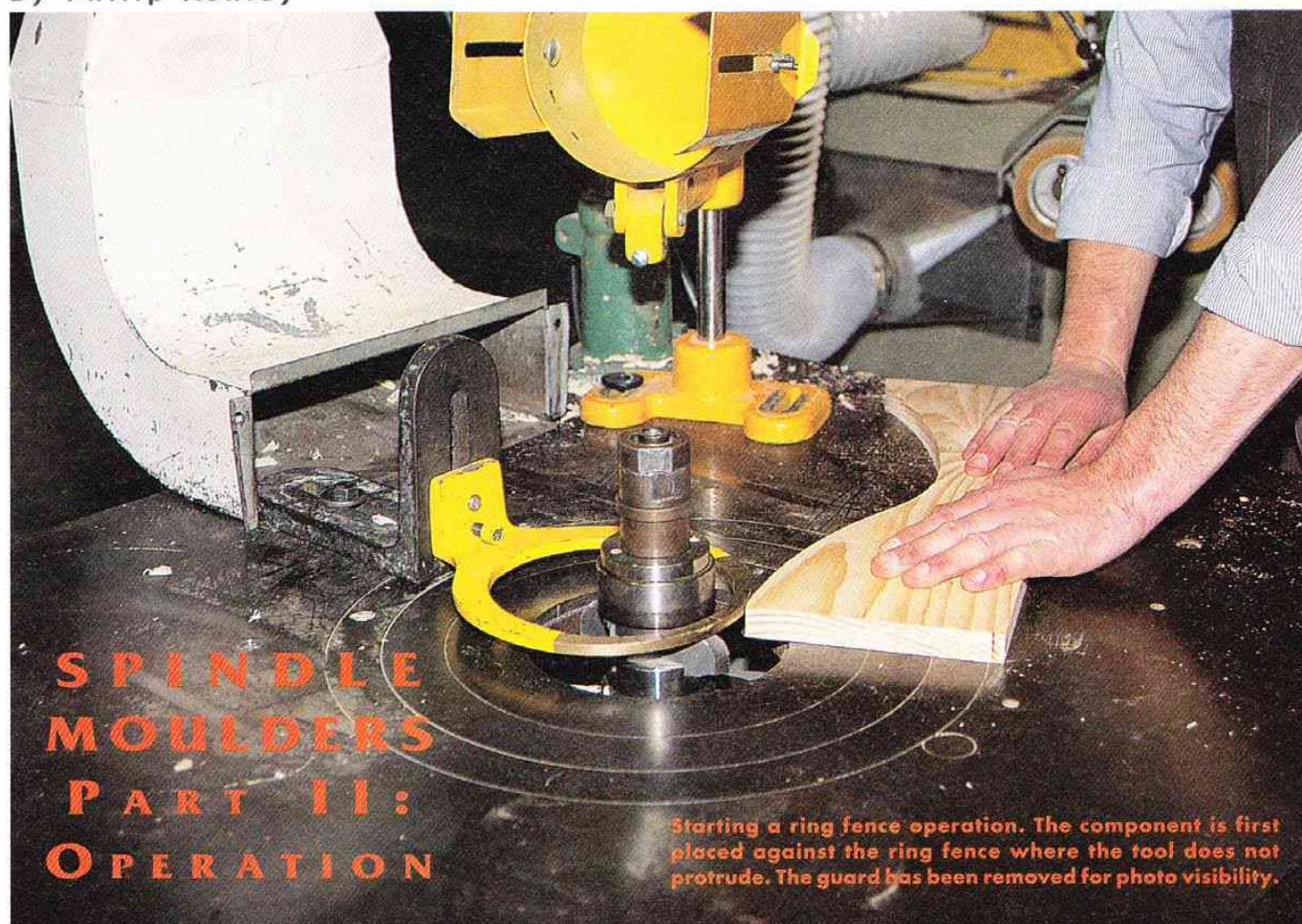
In our secularism we would never talk about our tools having soul. Yet, bringing together brass, bronze, fine steel and select wood can hardly be done with detachment—there is passion. The maker of a fine tool acts under a compulsion greater than himself. The very spirit of the toolmakers is in the tool as it lies in our hand.

Ashby Planes: MIK International (08) 8333 2977, Woodworks (02) 9807 7244.

Colen Clenton Tools: Carba-Tec 1-800 658 111, MIK Int. (08) 8333 2977, Woodworks

(02) 9807 7244, Colen Clenton (049) 90 7956.

HNT Gordon Planes: Carba-Tec 1-800 658 111, MIK Int. (08) 8333 2977



SPINDLE MOULDERS PART II: OPERATION

Starting a ring fence operation. The component is first placed against the ring fence where the tool does not protrude. The guard has been removed for photo visibility.

In Issue 14 Philip Ashley introduced the spindle moulder, its tooling and setting. Here he discusses the operation and possibilities of this versatile machine.

The spindle moulder or shaper is regarded by some as the most useful in the woodworking shop. New profiles and shapes can be quickly and safely produced in a cost effective way to deliver maximum flexibility of production. Resembling an overhead router the spindle moulder has a flat table with a cutter or spindle in the centre. It is, however, more solid than the overhead router, and its larger diameter tools are more efficient. Power is delivered by a V-belt which runs off a stepped pulley which allows for adjustment of speed.

On some machines the spindle can be tilted—this allows angled cuts to be made with straight cutters, and reduces the cutter projection on some tools. Some machines have the tilt forward towards the table, but this can be dangerous, and limits the

space for guards and hold-downs. Look for machinery which limits the forward tilt to 10° with the main tilt to the rear and to about 45°. A typically heavy cast iron or steel fabricated base makes a stable and vibration free platform for safe and accurate machining.

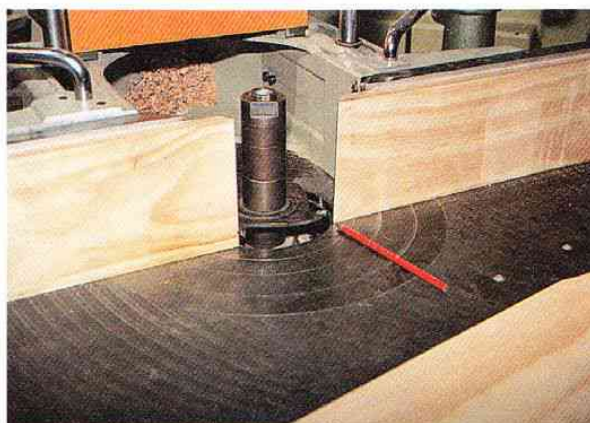
The techniques of good shaper operating are more often than not learned

over many years, but there are some basic operating principles that will make this process easier and a lot safer. On this machine, you don't want to learn what not to do by painful experience.

Care is required because this machine can expose the operator's hands to the cutters more than any other. When running straight mouldings against a fence the hazards are smaller, but still significant. More complex work can be done against a ring fence, or with collars fitted with a bearing. Here the dangers are higher, but are controlled with the use of jigs and other fixtures, along with safe working practices.

Spindle Speeds

For reasons of safety, the larger the tool diameter, the lower the required rotational speed.



The setting of the fences are made as close as possible to the tool, in this case a sawblade. The guard has yet to be fitted.

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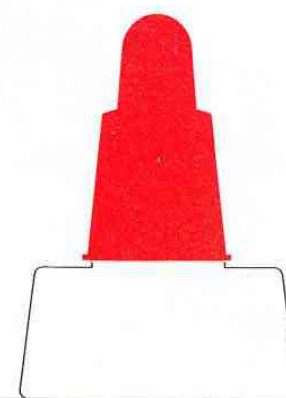
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The quality of the finish will take into account the material feed speed, and to some extent the design of the tool. If you don't have a power feed fitted to your machine the rotating speed of the tool may have only a small bearing on the quality of the finished piece.

A high rotational speed will generally give a better job, but the geometry of the tool needs to be more precise. There will also be a stage where the rotational speed is so high that the cutter tips are not removing chips, but merely scraping the wood. At this point the tool starts to rub and will soon become blunt.

Unlike a router which relies on high speed for efficiency, the shaper is happy running between 3,000-10,000rpm, depending on the tool and material to be worked. Most tooling suppliers can give you a chart or cardboard calculator to work out the correct speed for the tool you are using.

The following general rules apply for tools no more than 150mm diameter. Solid profile heads can be run up to 10,000rpm, planing heads up to 9,000rpm, loose cutters in keyed moulding heads up to 5,000rpm, and friction held loose cutters up to 4,500rpm. These spindle speeds are an absolute maximum and should never be exceeded. Look for the tool manufacturers maximum recommended rotational speed, usually stamped on the tool body.

Feed Speeds

The speed at which the material is fed into the cutters will have a big impact on the quality of the finish. The faster the rotational speed of the tool, the faster the required feed rate. A slow feed rate on a high speed rotating tool will cause the cutting tips to rub and burn. A fast feed speed on a slow rotating tool will give a poor finish. This is of course true with all power driven rotating woodworking tools; the trick is to match the feed speed to the geometry of the tool.

When planing and moulding, the rotating cutters form a series of ridges,

referred to as pitch, which is the cutting mark of the tool. A good surface finish is achieved with a pitch mark of around 1.5mm. A smaller figure gives a better surface finish and is preferred on the shaper, but the tool life is reduced. A higher number gives a poorer surface finish but the tool lasts longer.

The simple formula here is to multiply feed speed by 1000 and then divide by the number of cutters (or cutting tips) for a pitch size in millimetres. The pitch size from a solid profile cutterhead with four cutters running at 8,000rpm and fed reasonably fast would therefore be:

$$\frac{10 \times 1,000}{8,000 \times 4} = \frac{10,000}{32,000} = .3125\text{mm}$$

Such a small pitch would however cause the tool to dull rather quickly. Even slowing the rotational speed to 4,000rpm would only achieve .6mm pitch, and a faster feed speed could only be achieved with the use of a power feed unit. In reality a spindle moulding machine is more often than not hand fed rather slowly and the pitch will never be much more than .5mm. The tools never achieve the life of high speed moulding equipment, but it is good to keep this formula in mind. When you are hand feeding the wood, never pause; keep the feed rate as steady as possible.

BASIC OPERATIONS

For grooving, rebating and most moulding operations the setup will be similar. If your front fence and rear fences are set up in line, the gap between the tool and the fence will be minimised. If possible use a false (or through) fence. This can be made from a piece of timber around 10mm in thickness and the same length as your machine fences and attached to the latter by nailing or clamping.

The fences are pushed into the rotating tool which cuts a slot, the remaining false fence making a sound continuous fence over which the work is passed. Before you attach the false fence, make



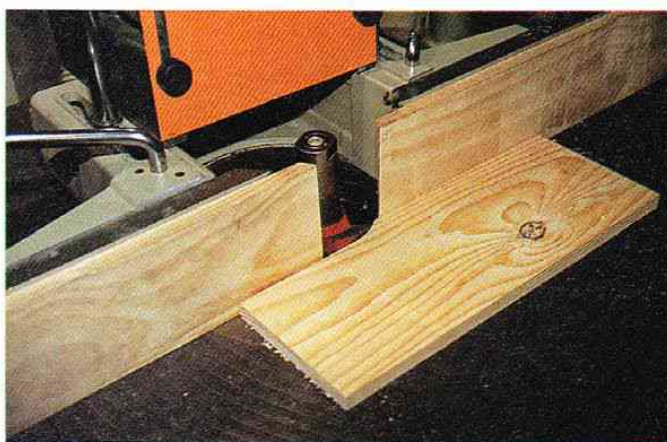
After nailing or clamping the false fence to the machine fences, start the tool and carefully but firmly push the fence back into the tool, allowing it to cut to the required projection. I always do this with the top guard removed, so I can see how close the tool is to the machine parts.



On operations where the tool projects over the top of the work, attach a strip of wood to the fence to keep your hands out of the way. Remember to keep both hands flat on the wood.



A simple wooden straight edge can be used to set the tool height; this can otherwise be difficult if the table rings need to be removed.



In situations where a full cut is taken from the edge of the workpiece, it is necessary to set the outfeed fence in line with the finished machined edge.

sure you allow enough room between the cutters and the machine fence to allow the cutters to cut through the additional 10mm of false fence.

Set the height of the cutters accurately, as it may be difficult to reset them after the false fence has been broken through. Make yourself a tool setting aid from a straight piece of hardwood with some short rulers inset at either end and your job will be much easier.

For situations where the mould takes off the entire edge of the work, you may need to set the infeed fence slightly behind the line of the deepest part of the cut. In this situation a false fence is not workable, but you can still attach a piece of timber to the fences above the work to keep your hands clear of the danger area. A spring guard should also be provided with the machine for this purpose.

When machining deep moulds take

more care. If possible do the job in two stages—take the bulk of the mould out, then reset the machine for the final cut. Always stand out of the line of the work, just in case the wood kicks back, and if you keep your hands as much as possible on the infeed side of the table, the chances of getting hurt will lessen.

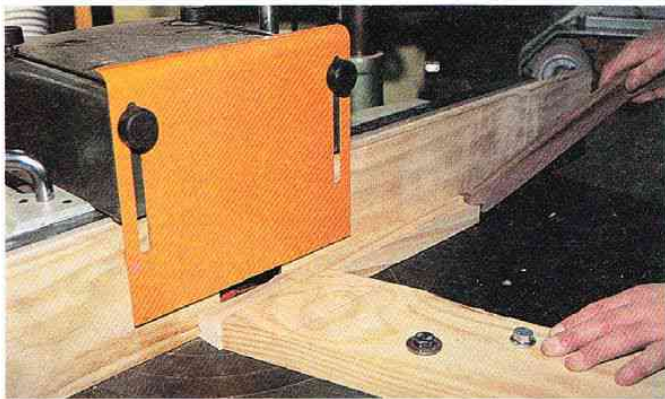
Feeding The Wood

When you feed the wood across the machine, hold it firmly on the table with your hands flat on the wood. Keep your hands clear of the cutting area at all times. Alternate the feed so that one hand is always on the wood whilst the other changes position. If the cutterhead begins to slow, either the tool is blunt or you are feeding the wood too fast. When machining slightly bowed timber, a shorter fence will help to keep a consistent depth of cut.

When moulding all four sides of a

piece of solid timber, such as a door panel, you should first machine across the grain, down one side, across the grain on the other end of the board, and finish along the grain. This will eliminate as far as possible any breakout at the end of the board. To avoid this problem when machining across the grain, try following the part with a piece of wood of the same thickness, fed immediately behind the component.

For small sections which are difficult to hold, you can cut yourself a 'comb' or finger guard. This guard, or feeding aid, is a piece of solid wood as wide as possible and long enough to cramp to the machine table or fence. A series of close bandsaw cuts are made at the end of the board—the closer the cut the springier the guard. These handy homemade guards are attached to the table and fence and



A comb guard is handy for feeding thin stock past the cutters. Make sure it is bolted or clamped firmly to the table, and feed the last piece through with a pushstick.



Starting a ball race operation. The work is held in a jig which fits over the workpiece. The part is first supported by the 'lead-in' piece seen bolted to the table. A bonnet guard must be used and, as usual, the hands held flat.



A ring fence operation using a jig, which is always preferable.

are positioned so that the wood being fed will bend the fingers back, creating a good hold and a form of anti-kickback feature. When using the comb guard to machine short pieces feed the pieces one after the other, guiding the last one through with a pushstick.

Additional Operations

On some thinner components such as drawer sides, it is not easy to machine them to size using a panel planer. Widthing, or the sizing of parts, can be safely done on the spindle moulder if you have a power feed unit. The set up should be the same as for moulding, with the infeed fence set back far enough to allow the drawer sides to be fed into the cutter. A strong metal or wooden 'widthing' fence should be set parallel to the outfeed fence the

distance of the drawer side width. Use a power feed set to push the wood away from the cutters into the widthing fence.

Machining thin beads such as cover strap or flywire bead is difficult, as they tend to break and flex. This job is made simple by starting out with wide boards the same thickness as the bead width. The boards are fed into the spindle moulder to first cut the bead profile on the edge. When all of the boards have been shaped, cut off the beads with a sharp TCT sawblade on the panel saw and remould the edges again. Repeat this process until the boards are too small to shape any more beads from.

The ring fence makes it possible to apply a moulding to a pre-shaped curved component using saws and profile tools. The ring fence is bolted to the table behind the spindle, and is set so that the cutter protrudes past the curved fence only at the narrowest point. The work is fed onto the fence from the side, and rotated until the full shape is being cut. The component is then fed, held onto the ring fence at this point, until the job has been done.

Working with ball bearing slotted collars is another way of machining curved components. The ball bearing follower is mounted above the cutter for safety, and a 'lead-in' or starting piece bolted to the table which supports the component until it is cutting freely and supported by the follower. The component is then fed against the follower and moved away from the lead-in. When using the ring fence or ball bearing collars, a hood or bonnet guard must be used, and wherever possible the work held in a jig.

Think Of Others

If you work in a workshop where others share the equipment, be sure that you never leave a spindle moulder while it is still running. Stop the machine and apply the brake to completely stop the cutters. If you are interrupted by the phone when setting the shaper, leave a sign to let others know the machine is not set properly, and never run a machine that has been set by someone else without checking it thoroughly.

Use Your Imagination, But Be Safe

The shaper has enormous potential and with a little ingenuity is capable of an almost unlimited range of jobs. Remember though, that there is not one single setup on this machine where safe working practices can be relaxed. The further you stray from what may be called 'normal' machine setups the more stringent your safety requirements will be. Work safe, be creative, and the shaper will repay you many times over.

Photos: Stephen Nathan

Suppliers of Spindle Moulders

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DESIGNING OFFICE FURNITURE

Furniture for the office must meet specialised requirements. Andrew Rogers, an industrial designer, discusses some major considerations and illustrates how these were addressed in one of his recent commissions.

As the principal designer and partner in a small industrial design consultancy based in Adelaide, I have the enviable position of being able to work in both a studio and a workshop. I often reflect on how lucky I am not to be chained to a desk all day. Many people, however, spend eight hours a day, five days a week, for fifty weeks of the year at their desk. Often their desks are completely unsuited to the purposes they are used for.

In the West, until not so long ago, bookwork or accounting was done in pen and ink at desks set at standing height, because the ledgers were large and heavy, and were difficult to turn from a seated position. The desks had built-in ink wells and were sloped to allow easy reach over the surface of the large book. A ledge prevented the book from sliding off the angled work surface. In another time and place Japanese tax collectors, travelled the country on horseback, setting up 'office' in rice paddies and villages. They used scrolls, ink and brushes and kneeled at their samurai tansu (travelling chests) which served as their work surface, filing cabinet and safe.

The nature of the contemporary office is just as

dramatically different. Computers have changed the way we record, write, draw, and organise our workspaces. Desks have changed beyond recognition in response to new criteria of function. The new work environment is not, however, as specific to its purpose as it once used to be.

Workers are now very often multi-skilled and furniture in the contemporary office usually represents a compromise. A designer's desk now looks the same as an accountant's

or computer programmer's, is this the way it should be? All have subtle differences and furniture designers and makers should carefully consider specific criteria when designing and building furniture for the office of the present.

Adaptability

Whether designing a one-off commission or a stock range, the office environment and the comfort and needs of individual workers must be considered. Workers sharing



Above: Andrew Rogers.

Left: Meeting desk detail shows the custom made cast aluminium foot and extruded leg section with a timber veneered MDF top.

Inset: An example of a typical office workstation with a meeting table, shelving, rise and fall computer desk and conventional work surface with a return.





A single desk is the base module of the system. Aluminium ducting carries power and data cables—easily removable covers make for convenient and quick reconfiguration. Rise and fall mechanism allows for work tops of various widths.

space and even jobs need maximum flexibility.

The work environment is filled with the flicker of computer screens, the heat of CPUs, the whirr of fans, and the noise associated with telephones. Privacy screens are used to provide acoustic and visual privacy. The vanity panel is an effective way of providing privacy beneath a desk. An open and comfortable meeting table is an essential part of an office environment. Modularity of the furniture should take into account the fact that offices change their layout and may be reconfigured from time to time.

As soon as people become familiar with one piece of equipment, it becomes obsolete and replaced with a newer, faster piece of equipment. A good office furniture system will allow efficient and unseen conducting of cables and placement of electronic equipment. As the work surface is invariably going to have a phone and computer, we should provide facilities for computer power, voice and data connections.

Materials

These will be selected on the basis of cost, look, colour and strength, though

not necessarily in that order. Can the work surface be cleaned easily? Can it be reconditioned? Screens may require new fabric and the tops may need at some stage to be removed and refinished. Furniture hardware, especially moving systems, should be carefully designed or selected for strength and durability.

Ergonomics

The ideal working height for the work surface of an office desk is sitting elbow height—this has been shown to reduce fatigue and the incidence of RSI. An adjustable height chair will partially meet this need, but having height and tilt adjustment on the work surface is a better solution. The ideal is a variable angle from horizontal to 15°. Another important consideration is the placement of lighting and its quality.

Cost of Manufacture

Every project must be designed to a budget and the final design and selection of materials will be compromised to some degree by this consideration. Careful research of materials and fittings available as well as consultation with clients, manufacturers and retailers will ensure realistic budgets are set.

Design Process

The first stage in any design project is research. When all design requirements have all been considered the actual design process can start. I normally commence with small thumbnail sketches followed by more detailed drawings. My first sketches are done in ink in an A4 sketch book. Sometimes I add emphasis to certain details with coloured pencils or watercolours.

When I think that the concept has developed to a stage worth pursuing, I move to my CAD system to construct full size layouts to confirm the feasibility of the design. With the CAD system I can confirm sizes of components and fasteners and figure out assembly methods with absolute precision. To develop the concept further it may be necessary to move to the workshop to construct foam styling models or fully detailed prototypes of a single detail.

Once satisfied with the concept the detail design stage can be undertaken using an extensive range of computer tools. A fully detailed solid model (all on computer screen) complete with ergonomic figures can be made. The models are pulled apart and reassembled to confirm fitment and order of assembly.

When I feel the product can be built, I take another look at the styling by generating a full colour photorealistic computer generated illustration. This is a great way of creating a visual representation of the colour and grain features of a material. By scanning different materials the computer can answer such questions as to whether the table top will look better in poplar or Tasmanian oak, what direction the grain should run, or whether the legs should be stained. All these options can be imaged in minutes, allowing combinations to be evaluated without the cost of producing prototypes.

I use three computer programmes for design: *Autodesk's* mechanical desktop for technical drawing and 3D modelling, *CorelDraw* for presentation graphics and *Kinetics 3D Studio*

Max combined with *Adobe Premier* for photorealistic illustrations and animations.

When everyone from research and development to production teams has had an opportunity to evaluate the design, it is time to produce the first fully functional prototype. The first will not be the last so this is usually built from cheaper materials, veneer is not applied and some of the final detailing is not completed. The prototype is fully evaluated and changes are made and documented before the next model is built. Subsequent models will usually be fully finished so that they can be put in the showroom for evaluation by customers.

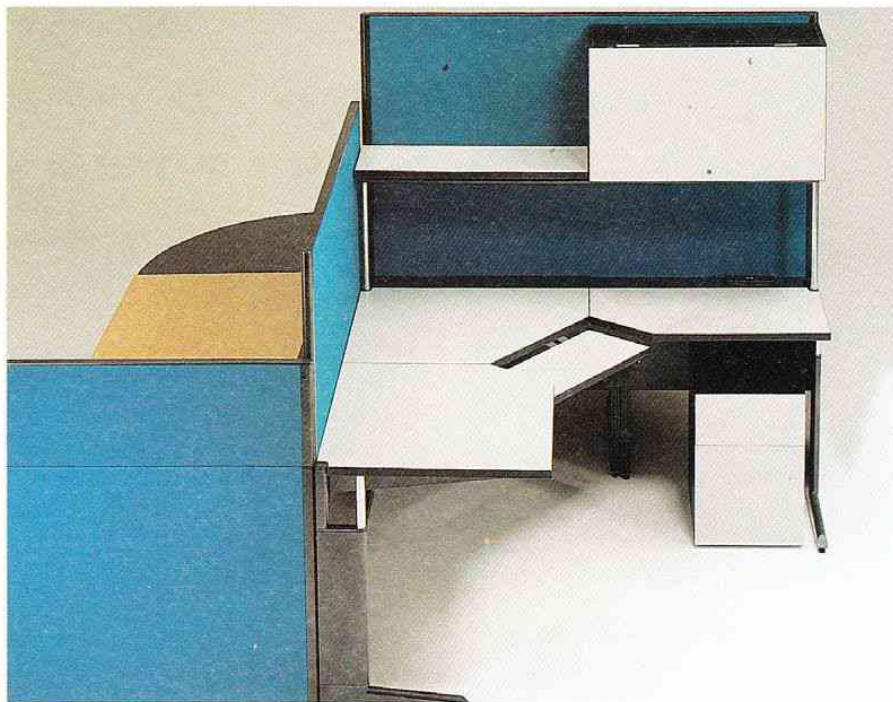
If the design is deemed a success, a graphic designer and photographers are called in to produce the sales brochures and the new furniture system is ready for sale. The design process should never end—as a designer I always want to improve my products and so encourage constructive criticism. How else is the next project going to be better? To this end the completed project is reviewed so the next project can commence with a head start.

A Design Brief

The design brief for the *Carlton Linear* commercial furniture system as shown here incorporated most of the factors outlined above. I set out to design a modular office furniture system based on a desk which would adapt to a variety of office tasks.

It had to allow for the office to grow as the business expanded. The system had to cater for a large variety of computer and communication equipment that would probably be updated frequently. Most importantly, the system had to be able to adapt to the varying sizes and proportions of the people who would use it.

Designing furniture for mass production is very different from designing and making a one off piece. The designer is only one member of a team—without the experience of the cabinetmakers, veneer layers, an open-minded management and suppliers, this product



Above: The corner module is designed specifically for use as a computer work station the dropdown keyboard surface is included to enable optimal positioning.

Materials used include veneered and plastic laminated MDF, diecast zinc, low density fibreboard, extruded aluminium, injection moulded plastic and fabric screen coverings.



Left Detail showing placement of task lighting.

would never have been produced.

Features Of The System

The result is a desk-based office furniture system, providing optimum flexibility in layout which requires minimal effort to reconfigure. It is designed to grow from a single desk to a sophisticated workstation with height adjustable work surfaces, integrated storage and modular screens.

The aluminium ducting incorporated within the slim clean lines of the substructures will carry all computer and phone cables. The open structures contribute significantly to the efficient air conditioning of the work environment.

Although thin, the screens are made from a unique low density fibreboard with excellent sound absorbing qualities, suitable as pinup boards with fabric that can easily be replaced. Facility for task lighting is integrated with the

desk's support and shelving system.

Most importantly for the client, the final retail cost fell well within budget allowing the product to be sold at a competitive price with a good profit margin on the construction cost. The initial design budget of \$25,000 was increased to allow me to employ myself and another designer for 18 months.

The brief was to design a furniture system to be used in any office situation and the research showed how tasks, equipment and of course people vary in size and function. The system was designed to allow almost any configuration. The desk heights can be adjusted—starting height is 720 with 100mm rise and fall. The work tops are available in more than ten sizes and configurations, and with the addition of lighting, shelving and storage cupboards, can be tailored to almost any working configuration. □

Andrew Rogers (08) 8234 1833

THE THIRD DIMENSION: MAKING SCULPTURAL FORMS



Photo: James Latter

Last year I was commissioned to make a table for the entry foyer of the new wing of Sydney's St George Private Hospital. Because its function was to be purely sculptural, I was freed of some of the practical considerations of tables, such as height and leg spacing. At 860mm the table is taller than the normal 750-775mm, and the legs flow out further from its 1.83 metre diameter than would be ideal if people were sitting around it. The extra height gives the table more presence, and opens up the view of the base.

I have a fascination with spirals, and the combination of geometric and organic forms in general. My initial thought was for a base that spiralled upwards, and I tried first to develop this idea with sketches, but abandoned these in favour of wax models (photo 1).

I cannot emphasise enough how useful this process is in developing three-dimensional forms—compound



curves are not easy to draw at any time, and are especially difficult in the early, exploratory stages. The models quickly showed me the way the curves needed to run (quite differently to my original ideas), how the leg forms related to each other, and finally, that five legs worked better than six. All



this became particularly relevant when I moved from the unrestricted air of design to the confined space of figuring out how to actually build the thing.

I agonised over the pros and cons of either laminating the curves of each leg, stack laminating the entire base as one solid unit, or stack laminating each leg separately. I ruled out the first option because the compound curves would have required very wide laminates; not at all practical. The second was tempting, but I had visions of this large mass of jarrah self-destructing with a loud crack in the dead of the night under the influence of a few months of air-conditioning. So that left me with stack laminating each leg.

There were, however, two major problems with this option, the least not being how to actually obtain the form. If I was to glue eighteen layers of wood to create each leg, how did I work out the shape of each piece, and the position it was to be glued in?

Secondly, how would the five legs fit together with the necessary strength and stability, and allow for wood movement.

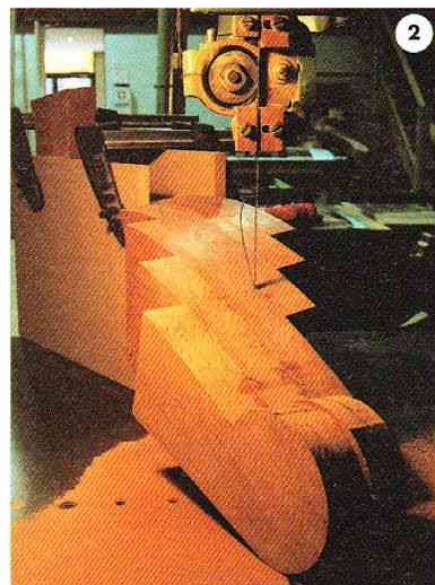
Using my model as a guide, I drew a full size plan view of the table base, showing each completed leg. I then drew a side-on view of one leg, or at least as much as I could visualise. In particular, I needed the outside silhouette of it. (Because the leg is a compound form, this silhouette was a projection of the leg on a flat plane and not the real shape of the leg, but it was close enough, provided I left enough waste). I divided this shape into eighteen equal slices which I then cut from jarrah boards thickened to 46mm.

While all this figuring was happening I was also trying to work out how I would actually make the legs. I needed some reference point (or reference surface) to work from especially with regard to joining the legs in the centre. From my model I estimated the degree to which each leg would lean

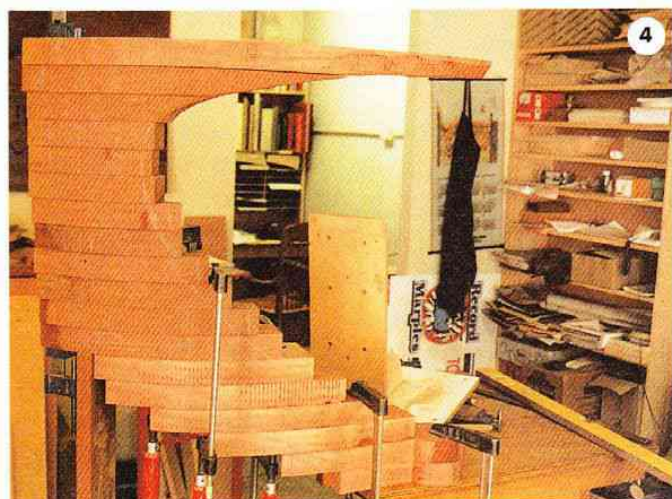
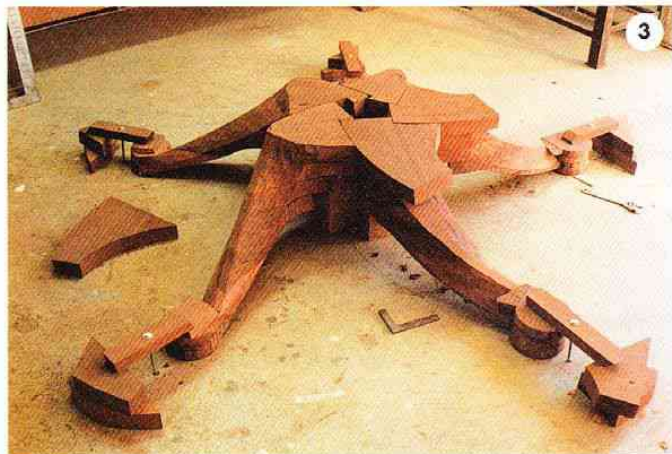
backwards. This determined the amount the top layer would offset from and across the bottom layer. For the sake of simplicity I spread the offset equally among the eighteen layers.

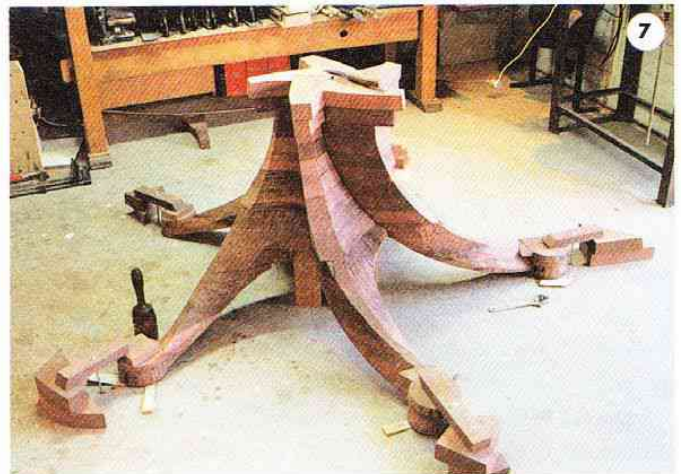
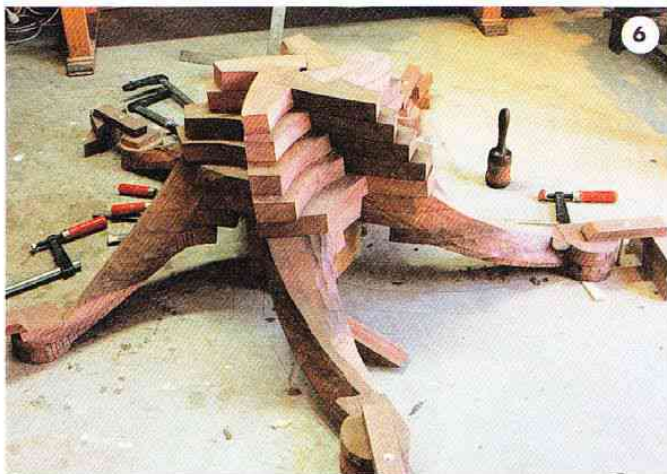
I tilted the bandsaw table by this amount to cut each segment out. The segments were glued up to create a continuous reference surface (see the left hand line of the middle legs, photo 6). By working between the plan and elevation drawings I was able to determine a shape and length of each segment and thus reduce wastage.

It was reasonably simple up to the point where the legs came together. From there upwards I had to worry about the joints. Each leg has a triangular cross-section, with the apex of the triangle shifting from the far right at the bottom to the far left at the point where the legs come together at layer six. This creates a sloping face on the right hand side of each leg which in turn creates a curved line of intersection with the back of the next leg (photo 6).



Photos 7 and 8 show the way the rear surface of each leg penetrates into the leg behind it. The distance it penetrates reduces as the height of the layers increases. This is the effect of the outside curve. When the joints were cut for each layer, I had to allow for this ever-reducing penetration, even though I didn't know exactly how much it would be.





When I was ready to begin, I drew a plan of the base on the workshop floor, then drilled the floor for the *Dynabolts* visible in photo 3. I cut out the first seven layers for each leg, taking care to be generous with the waste. Just before gluing, I ran each surface of each segment over the jointer, taking a very fine cut with sharp, new cutters (you're asking for trouble if you glue surfaces that are not freshly cut). I didn't want to hand plane or sand any surfaces, as there were too many of them. I then glued each leg up, using AV201 urea formaldehyde (from AV. Syntec) with a powder hardener, although AV 203 might have been a better choice.

Photo 5 shows a mistake I made—for the first three legs I glued up seven layers instead of six. This meant I later had the awkward job of cutting the joints in those three legs after they were glued up.

After gluing, I cleaned up the reference face and drew onto it the outline of the side-elevation of that section of the leg. I then bandsawed this shape using two pieces of chipboard clamped to layers 5 and 6 to keep the block steady and vertical (photo 2). I drew the line representing the top edge of the leg onto the top surface and roughly bandsawed the triangular cross-section of the leg. This was done freehand, a somewhat hairy (and advanced) operation.

I bolted the five legs in position on the floor (which necessitated cutting the joints in the three legs with seven layers), and then carved each leg a bit closer to its finished shape. I left some meat around the top edge as I wasn't sure if it was in the correct position (see photo 5).

The next stage was to build up the central mass of the table base. Because the five legs had to remain separate from each other, my idea was to cut the joints layer by layer, rather than gluing the legs up and cutting five huge joints. This worked well, and could have worked perfectly, except for another mistake I made, 0which I'll come to in a moment.

I worked from the plan and elevation drawings to estimate the size of each segment for each layer. These were cut the same way as the lower segments with the bandsaw table tilted, creating in the process a sloping rear reference face.

I needed to bandsaw as much as possible away because anything left from here on would be chiselled off by hand.

Estimating the waste required a clear idea of what the end view of each leg would be as shown by the centre leg in photo 6. Photos 6 and 7 show successive refinements of these shapes—notably before and after gluing up. Because of the difficulties of handling large numbers of segments, I decided to glue up each leg in three blocks of six, seven and five layers. Each block was roughly shaped before gluing.

To cut the joints for each layer, I first placed one segment on one of the legs bolted to the floor. A piece of wood of the same thickness was then placed on the next leg, counter-clockwise from it. I could then sit the segment of that next leg on top of this spacer piece so that it overlapped the first one. When both segments were in position, the overlap gave the joint shape provided due allowance was made for the slope of the cut (all cuts were made with the tilted table on the bandsaw). I worked around the five legs in this manner, cutting and fitting each one in turn, layer by layer.

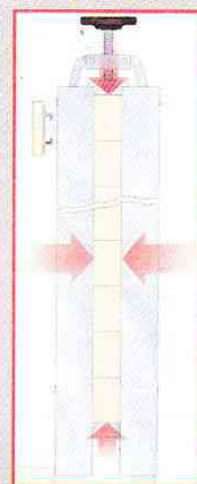
The carefully jointed layers were disassembled, the edges freshened up over sharp jointer blades and then glued up. The mistake I made was not to screw the segments of each leg together as I went. I didn't do this because of my fear of exposing a screw or two in the final shaping. I should have remembered that when you put a clamp across a stack of boards separated by slippery glue the pieces move. What fitted beautifully before gluing didn't fit at all afterwards, and this created a minor nightmare—fitting five 600mm long compound curves of predominantly end grain jarrah.

Photo 10 shows the five legs being fitted together upside down on the bench—this ensured a flat surface to fix the top to. The fit was very difficult because of the way the legs locked together. An alteration to one potentially altered them all, so I had to keep chasing the changes round and round until I achieved the required fit. Each leg was screwed to its front neighbour, top and bottom. I also fitted a cover plate underneath to cover the joint. All that remained now was to sand and polish the base, and make and fit the top.

Building this table was an exhausting job, by far the most difficult I have even done. A complex three-dimensional form such as this is extremely challenging because it taxes both your skill and your imagination. It is not easy to visualise the way the lines and surfaces flow and intersect, but these skills can be developed. Moving from two to three dimensions or learning to deal with sculptural forms is, in my opinion, worth working at as it opens up an enormous range of possibilities. Here I was reasonably happy with the result, but with the knowledge of hindsight I would certainly have tackled the job a little differently.



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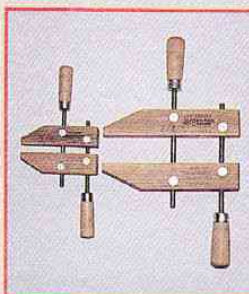
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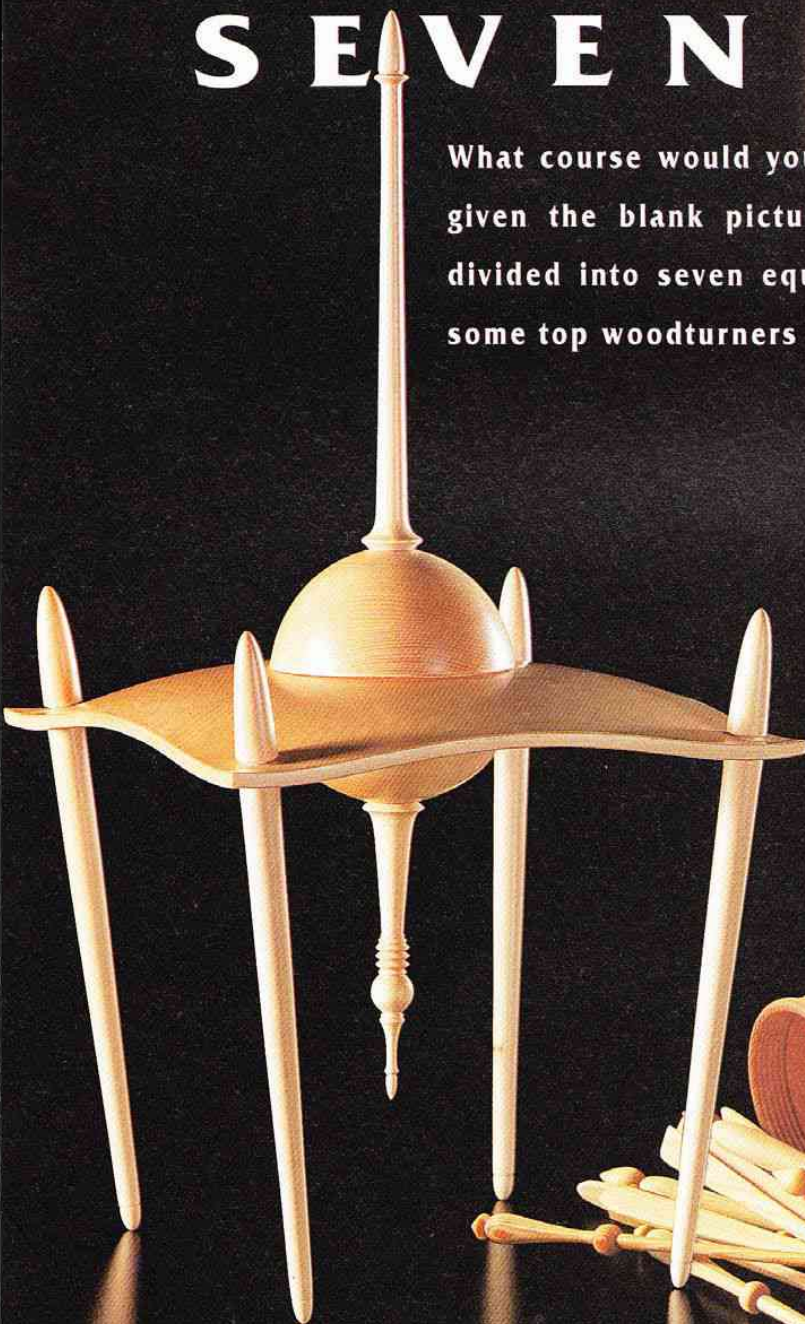


Turned and carved form by Vaughan Richmond



SEVEN EQUAL

What course would your imagination have taken if you had been given the blank pictured top left? A flitch of Huon pine was divided into seven equal pieces 240 x 200 x 100mm. We asked some top woodturners to let their imagination loose with the only



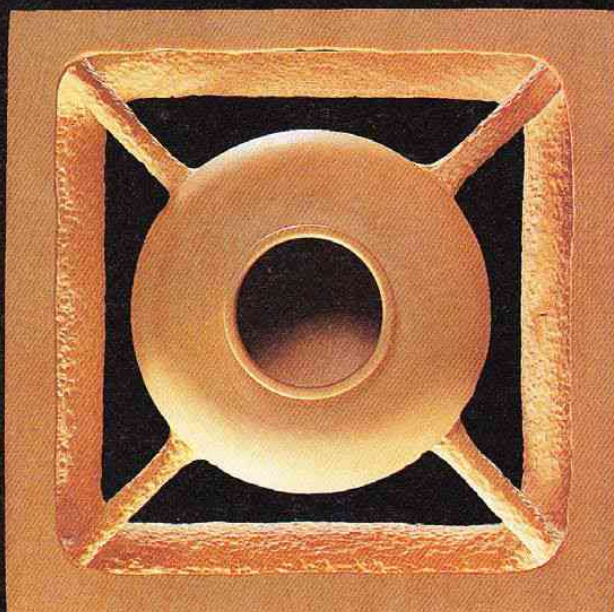
'A Bent Sphere Having A Galactic Ball', Stephen Hughes

Lidded boxes and spillikans by Richard Raffan

Segmented and re-assembled bowl by Andrew Potocnik



'Vessel in a Box' by Terry Martin

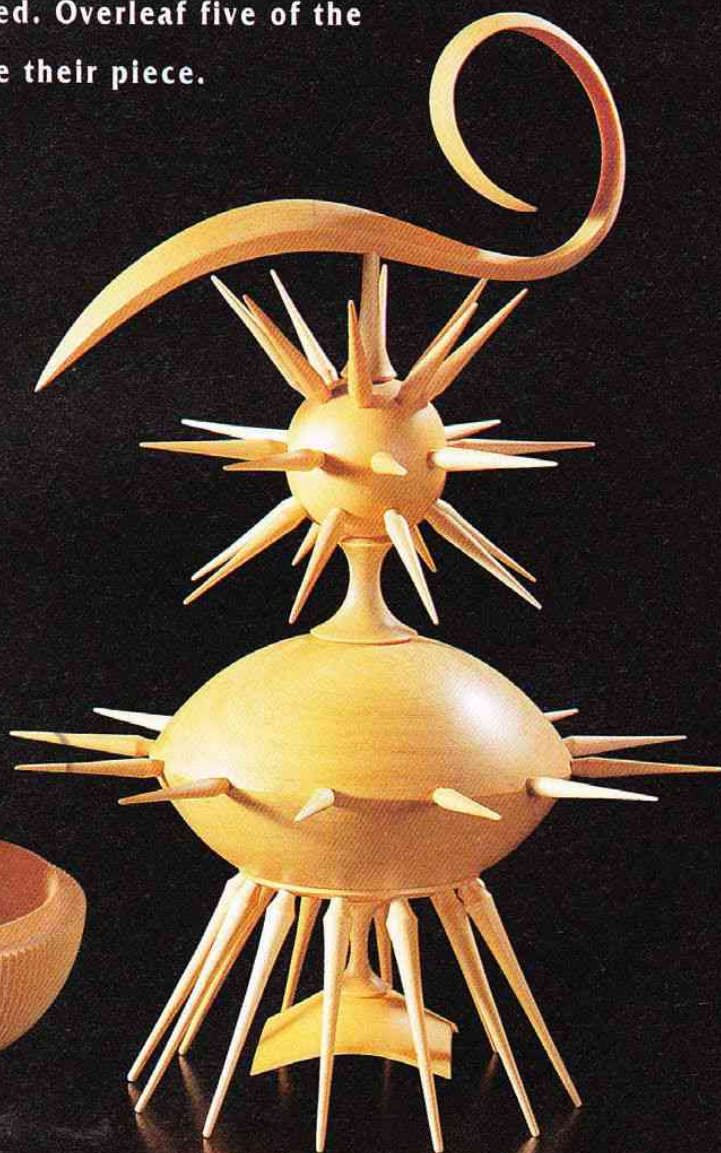


PIECES ...

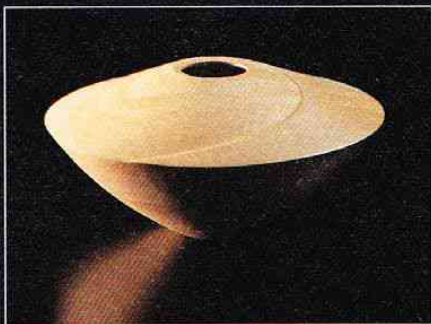
proviso they used the maximum amount of the wood. Any amount of division or type of surface ornamentation was permitted, only the incorporation of other materials was precluded. Overleaf five of the makers describe how they designed and made their piece.



Lidded forms by Dean Malcolm



'Huon Pine Space Vehicle' by Anthony Hansen



Hollow form

Vaughan Richmond, WA

'This 'challenge' was a great opportunity to turn a beautiful Australian softwood. Most people know that Western Australia is basically 'hardwood country' with jarrah, sheoak and a range of desert woods being our main turning timbers. At one stage I thought that I might be adventurous and create a contemporary work out of the Huon blank, but as I was unfamiliar with the turning characteristics of Huon I opted for a more 'traditional' form.

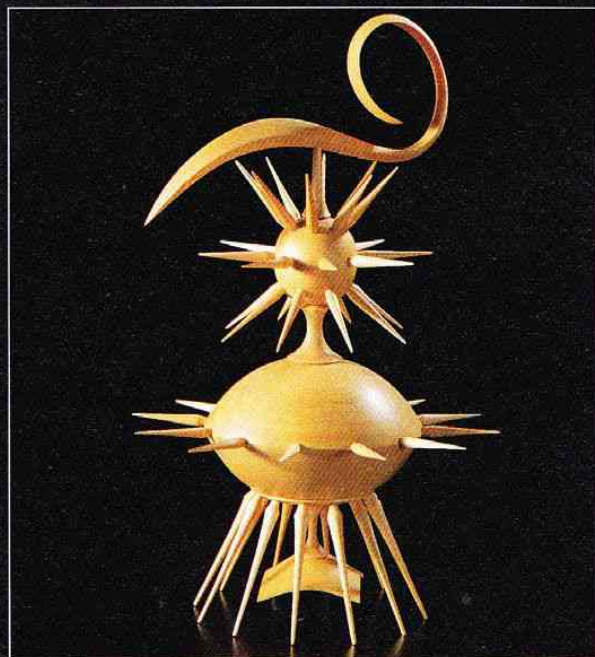
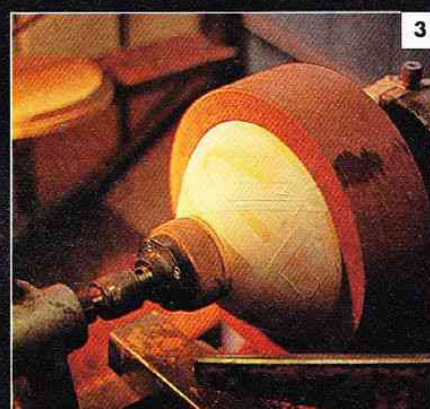
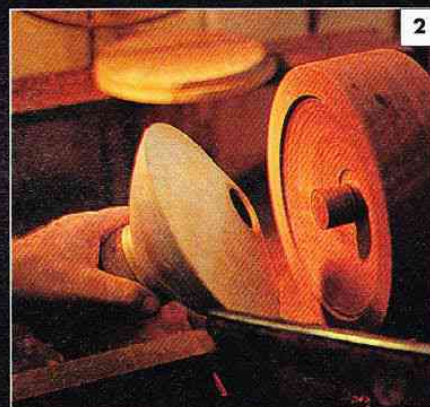
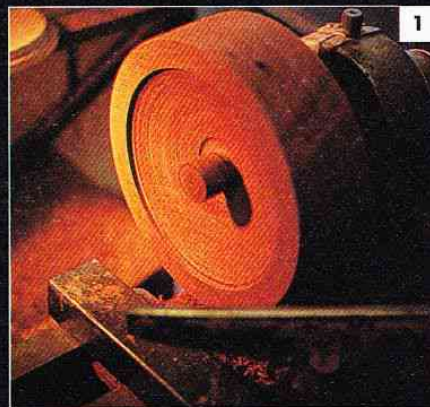
My 200 x 100mm blank was not without fault, and I was able to avoid a split, a bark intrusion, and a pin hole by turning the form that you now see. It was a delight to have the shavings peel off the spinning Huon with little effort. Light sanding revealed a beautiful honey-coloured surface with distinctive growth rings. A small swirl carved into the top from the centre to the rim completed the piece.

The method I used to turn and finish the base of my piece is not new but offers precision. I use this technique for fragile, thin-walled work, where there is a great risk of splitting the rim or ripping the 'guts' out of the wall as the work spins. Photo 1 shows how a scrap blank is screwed to a metal faceplate and turned to a round. The profile of the work is taken with a cardboard cutout profile gauge, and the scrap blank turned to this profile. A spigot is left in the centre—this centralises the work. The rim is recessed into the scrap blank slightly for added support.

The bowl is placed into the recess of the scrap blank. Note the tape across the work. This is used to support the work during the hollowing process (photo 2).

With the bowl in position (photo 3), the tailstock is placed into the back of the faceplate the Huon blank was originally glued to, this centralises the work and hot glue is placed on the rim and scrap blank, tape can also be used in addition to the glue. Once centred, the tailstock is removed and the metal faceplate unscrewed. The tailstock is then brought up to the scrap blank on the base and turning completed with due care.'

Photos: Darren Richmond



'Huon Pine Space Vehicle'

Anthony Hansen, Qld

'This is a theme I have been developing over the last six years. The finial was cut out on a bandsaw and then sanded to shape. The spikes were turned one at a time while held in a Jacob's chuck without support at the other end. The main body was turned while held in a Vicmarc self-centering chuck. A homemade hollowing tool was used to remove excess weight.

As Huon pine is a timber that can be easily marked by dirty hands or dust, it needs to be completely coated with a suitable finish. I have used shellac, and each part of the space vehicle has been french polished four to ten times.

The holes for the spikes were drilled while the body was on my Vicmarc lathe using the indexing holes on the rear of the headstock pulley.'

'A Bent Square Having A Galactic Ball'

Stephen Hughes, Vic

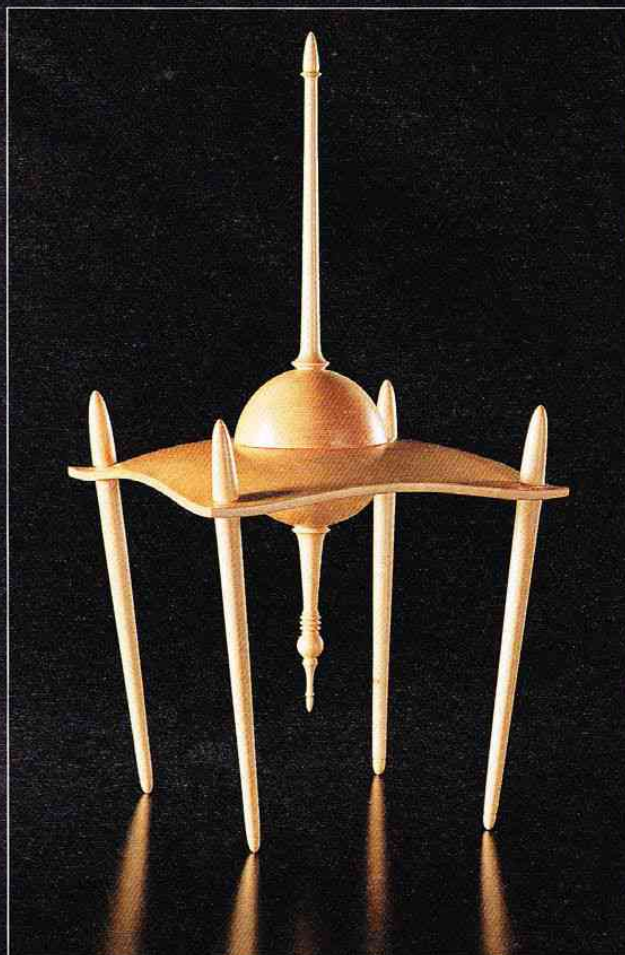
This sculptural container was designed to use as much of the original blank as possible with all work, minus a little band-sawing and drilling executed on the lathe.

This piece was inspired by Vic Wood's square edge technique and my aim was to create a tactile and visual lightness. I tried to give the illusion the piece was so light it was lifting upwards. From start to finish the project took about eighteen hours, four of which were spent sketching and thinking about how to use as much of the blank as possible.

The block was bandsawn into sections for the legs, centre spine and tail. The central remaining profile was turned on an angled axis using glued-on scrap to protect the square edge (a Vic Wood technique).

The lid of the sphere was then parted off and both halves hollowed out. The top and underside of the square skirt were turned down and finished. The legs, spine and tail were all turned from offcuts. The square edge was obtained by removing the scrap.

Holes for the legs were drilled in the corners. All sections are push-fitted without glue—only the tail is glued due to cross-grain weakness in the base of the sphere.'



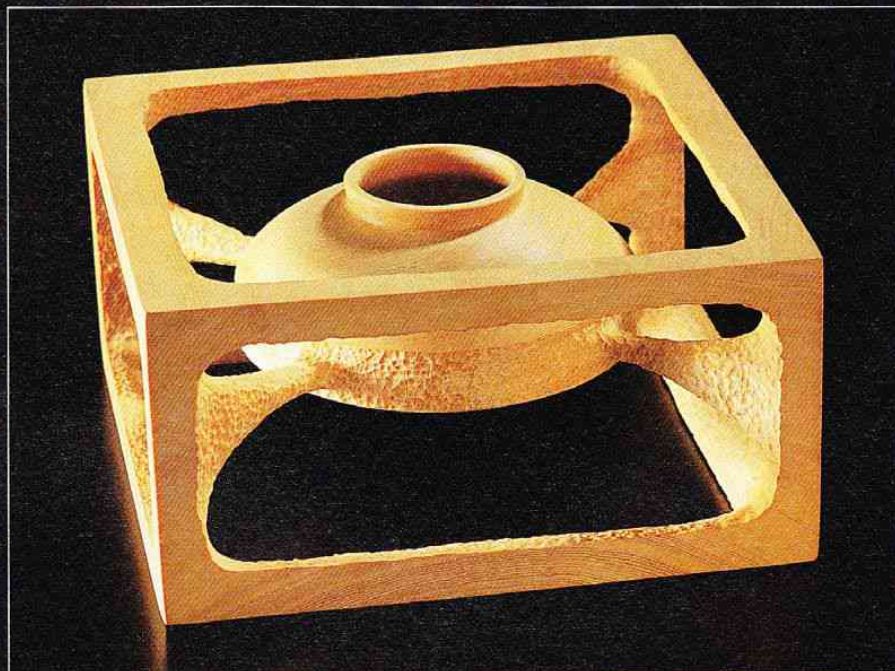
'Vessel In A Box'

Terry Martin, Qld

'I was delighted when *Australian Wood Review* gave me a block of Huon pine to turn. To meet their challenge, I decided to do something on a lathe that nevertheless looked like it couldn't have been turned. I also wanted to preserve the exact dimensions of the original block as a statement about saving our resources. Both of these aims fitted well with the direction my work has been taking—turning and carving combined.

With the block on a screw chuck, I turned the bottom half of the vessel and arms, leaving a spigot for re-attaching. Next I turned the top half, then hollowed the vessel.

Up to this point it was just like normal turning, but with the difference that there was a box spinning with the work. This restricted access to the vessel, so I had to modify my cutting technique and keep my fingers well out of the way.



I drilled out the sides on a drill press, and then finished the turning of the area between the arms using the device I described in AWR#14. Turning the spigot off the bottom was easy as I expanded the jaws of my chuck into the surrounding box to hold it. Last-

ly, I textured selected areas using a rotary burr.

I enjoyed the challenge, especially because, if I had broken the piece, I could hardly have asked for another block. It's amazing how the lack of any more wood focuses the mind.'

Lidded forms

Dean Malcolm, WA

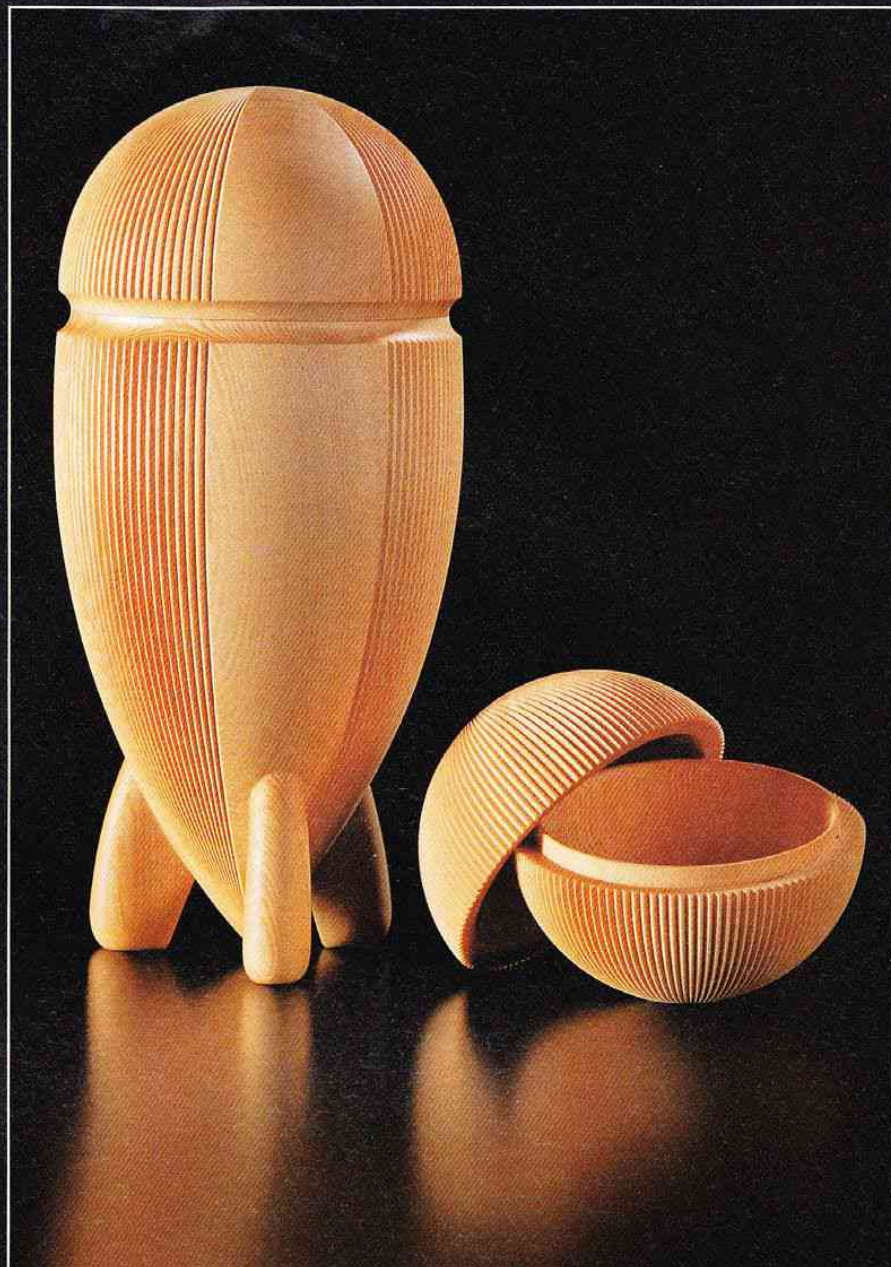
'The design of an article of wood-turning based upon the brief provided offered a few challenges. Firstly, I had used very little Huon pine before, having primarily worked with much harder timbers. Secondly, in general, I like to develop a design and then seek out a suitable piece of timber; in this case the material came first and I was asked to make maximum use of it. Thirdly, as the project was for a feature article I considered originality to be of great importance and hence intended to develop something quite new and unusual.

In the design phase of the project my first task was to assess the material and to consider possible breakdowns of the piece for turning. After a session of sketching, my first attempt at a model utilised the blank as a face-plate turned block (200mm dia) turned into a box with a carved lid. I used radiata pine, about half scale, for modelling and, unhappy with the results, went back to drawing.

My second attempt at the design process led me to a box made from half the block turned into the endgrain. There was insufficient material to turn a box of the height I would have liked so I considered using half the blank as the base of the box and the other half to form the lid and another box to fit inside the first.

The models of the second design went more smoothly and I felt relatively happy with the basic concept, but had some trouble getting the lid to look right. I've never been keen on 'legged' bowls (I always feel that they look as if the maker is trying to be clever) but for the effect I wanted with the fluting I had little choice. At that stage I tried computer modelling the design (using *Adobe Dimensions*) and improved on the lid design somewhat.

Making the piece proved to be easier than coming up with the design. The blank was sawn in half down the grain to give two 100 x 100 x 200mm pieces.



The outside of the base of the box was turned to shape, then routed using a 1/2" straight bit in the Hitachi TR12 which was mounted on a pivot based on a spherical jig.

The routing in combination with an index left behind the three leg portions which were then hand-finished. The fine v-flutes were cut using the same spherical jig pivot and my home-built miniature 'spindle moulder'. The base was then held in a wooden jam chuck and the inside turned out. The lid was fluted using the same cutter on a much smaller radius spherical jig.

The internal box which is completely v-fluted with 120 cuts was made as a spherical box. Each half was held sep-

arately in a wood jam chuck while it was fluted. The piece has been sanded to 1200 grit paper on all but the fluted surfaces (these were left as they came off the cutter) and then finished with *Organoil Woodsheen* applied by hand with a cloth.

It was a pleasure to make but as is so often the case, I wasn't *totally* happy with the end result.'

The pieces featured here are currently on display and for sale at The Contemporary Art and Design Gallery in 32 Logan Rd, Woolloongabba, tel: (07) 3392 0033

Next issue Richard Raffan and Andrew Potocnik will describe in detail the making of their pieces.

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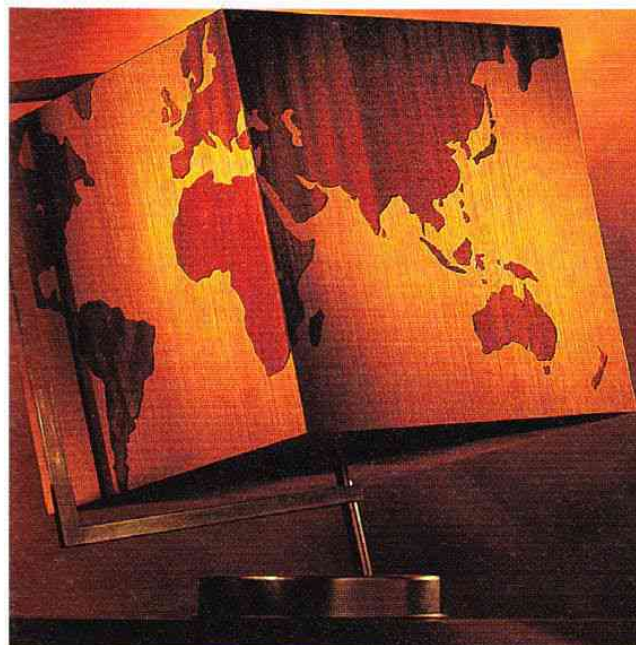


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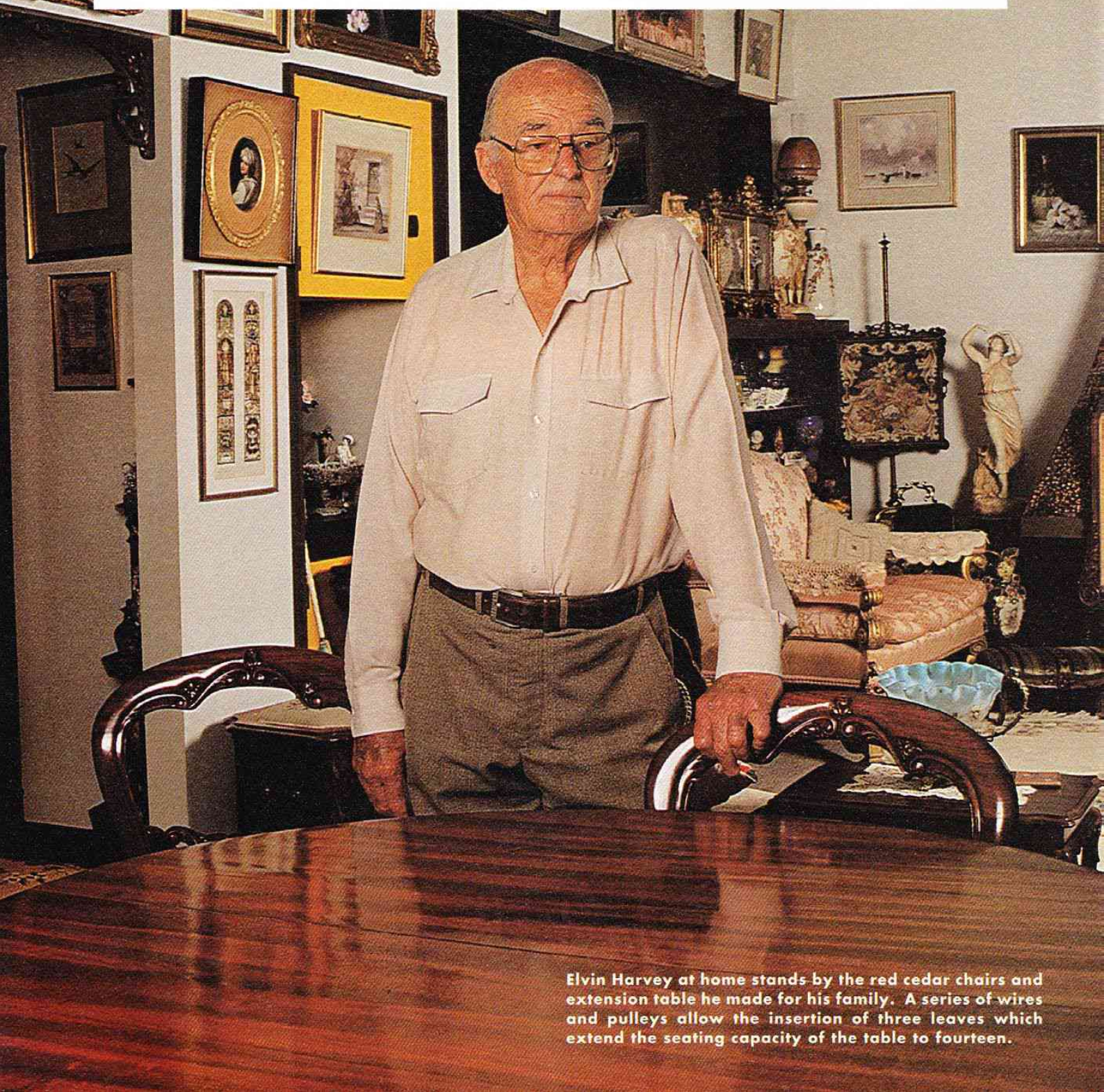
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In fact if you can't find it at Mathews Timber, it probably doesn't exist.

By Dinah Hall

LIKE FATHER, LIKE SON: ELVIN BEVERLEY HARVEY

The closure of Harvey Brothers in Brisbane marks the end of a rich family tradition of furniture making and woodcarving.



Elvin Harvey at home stands by the red cedar chairs and extension table he made for his family. A series of wires and pulleys allow the insertion of three leaves which extend the seating capacity of the table to fourteen.

In the sub-tropical city of Brisbane, stone staghorns cling to the walls of Parliament House while mango and paw paw trees bear fruit under the coat of arms on the sandstone columns of the General Post Office. In the cathedrals and churches a unique blend of neo-Renaissance, Art Nouveau and Aestheticism's flowing organic symbols effuse from altar rails, hymn boards and pulpits.

It is not often that one person can have such a profound influence over the decorative arts in any one place, yet Lewis Jarvis Harvey literally carved out a sense of purpose, permanence and beauty into what many regarded as a shanty town earlier this century.

Elvin Beverley Harvey was born into this rich heritage of arts in 1913 as both youngest son and student of LJ Harvey. His life has been dedicated to continuing the standards of excellence set by his father but now, having sold his remaining timber (20 tonnes of cedar, mahogany and silky oak) to an investor and closed the filing cabinet on 64 years worth of personalised service, there is an all-pervading sense of loss. Two creative generations of knowledge, skill and sheer talent in fine woodworking have come to an end with little recognition. Other than a book produced by the Queensland Art Gallery on his father's school, there is no documentation of the Harvey Brothers tradition or their work.

Carving was a way of life in the Harvey household, where his father's award winning art was just another piece of furniture. As a boy, one of Elvin's favourite tricks was to ask visiting women to sit on the spinning chair which received the 1924 British Empire Exhibition Award, just so he could see the imprint of the waratah carving on their dresses when they stood up.

According to Elvin, the only time his father wasn't producing was for a single hour on a Sunday morning when he sat reading in his squatters chair. While waiting for dinner to be served, LJ sat at the table in the early evenings with his excited children as he carved birds

and other small animals to place on the table. After dinner it was up to the studio in the trees to experiment with wood. Elvin couldn't help but learn.

Yet, by the time he was 16, typical of any lad his age, Elvin wasn't too sure what he was to do with the rest of his life. After a stint as a dye caster making badges with a German friend of his father's, and another as a wool classer, a certain inevitability led him to commissioned carvings from the family home 'Milo' working for leading Brisbane furniture makers Bell Bros and Rosenstengel Furniture. 'The Depression years made it hard to make a living so they ensured they included a bit of carving work for me in their furniture,' says Elvin with the hint of a twinkle in his eye.

A cedar bed, one of his first pieces, features an angel at its head and another asleep at its foot, the four posts are dragons heads. Executed with the skills usually refined towards the end of one's career, Elvin's future was certainly cloudless.

By 1932 he had gone into business for himself as a cabinetmaker and then with his brother George, Harvey Brothers Furniture was established in a tin shed in southside Woolloongabba in 1936. Ten years Elvin's senior, George carried on the family's artisan tradition as a stone mason, however, as he watched his colleagues die in their mid-thirties of consumption and other respiratory illnesses, George realised his future was with his younger brother cabinet-making and woodcarving. Within a few years three adjacent homes, the



Cedar sideboard intricately carved by LJ Harvey, 1909.

oldest in Brisbane, were acquired to house the business. Post-war prosperity echoed a demand for crafted furniture in the churches. Harvey Brothers never once advertised as news of their skills was passed on by word of mouth.

For Elvin's generation and his father's, life was mapped out by the world wars. In 1941 furniture making was considered a luxury not befitting a country at war and the shop was closed down. Elvin was manpowered into *Maxam-cheese* canning baked beans for food rations. 'After six weeks I nearly went mad, so I joined the air force'.

The war years found him in Darwin serving with the First Australian Liberator's Squadron No 24. 'It was the best thing I'd ever done, I'd lived a fairly sheltered life and I was a bit shy I suppose. In a squadron of 750 men you have to learn to stick up for yourself pretty quickly.' Meanwhile George turned his hand to building Tiger Moths. Back in business by 1946 the brothers focused on their art and Elvin began 35 years of teaching part-time at Brisbane Central Technical School.

Today, work made by Harvey Brothers grace churches and homes from Brisbane to Cairns, while their more notable public commissions have been shipped overseas to Britain's royal family. The grandfather clock given as a wedding present from the people of Queensland to Di and Charles now tells the time in Kensington Palace. The Queensland coat of arms, (the brolga and reindeer), with gum leaves, gum nuts and Prince of Wales feathers tells, in cedar, the story of Queensland.

A 1954 gift of a casket of fiddleback maple, containing an illumination of welcome now serves as a jewellery case for Queen Elizabeth II. The type of timber, where it was grown, how old the tree was and even the features of the timber are carved into the box. The Queen Mother reportedly serves morning tea in Clarence House to her grandchildren on a nest of tables presented by Harvey Brothers. But these are not her only Harvey acquisitions.

In 1930 she and her husband as Duke and Duchess were presented with a baby's head in crocheted bonnet carved by LJ Harvey.

Closer to home and another seat of power, pieces commissioned from Harvey Brothers adorned the Parliamentary Annexe in Queensland's Joh years. A red cedar table, balloon backed chairs, mirror and buffet took centre stage. 'Joh was entertaining international ambassadors and high ranking delegates in a room where desks would be dragged together to make a round table discussion. For all the criticism of him, he wanted to prove that Queensland was not a hillbilly state,' explains Elvin of this unlikely patron.

With their new broom the Goss Government swept to power on a tide of reform and in an almost revolutionary act the entire suite was literally sent to the dungeon. In an action akin to a political statement, ironically reminiscent of the Futurists, the organic lines of the hand-carved works were replaced with clean, hard, cold surfaces of glass and iron. For three years the collection accumulated dust and indifference. Upon re-election the Government ensured it was banished forever as it was sent off to be auctioned. In the industrial outskirts of Brisbane, Elvin bought back his own work from an auctioneer more used to trading in farm machinery than artworks.

There is little doubt that Elvin is his father's son. LJ Harvey was a true Renaissance man practising and experimenting by daylight with the theory he gleaned from books at night. So great was his knowledge of local timbers that the Forestry Department employed him to carve, glue and polish timber samples and provide notes on their characteristics and applications. However, most of these works on display in the Forestry Department building were lost in a fire of 1928.

The relief of Paderewski (a musician as popular as Pavorotti in his time) is a classic example of the way LJ employed Queensland timbers. The hair

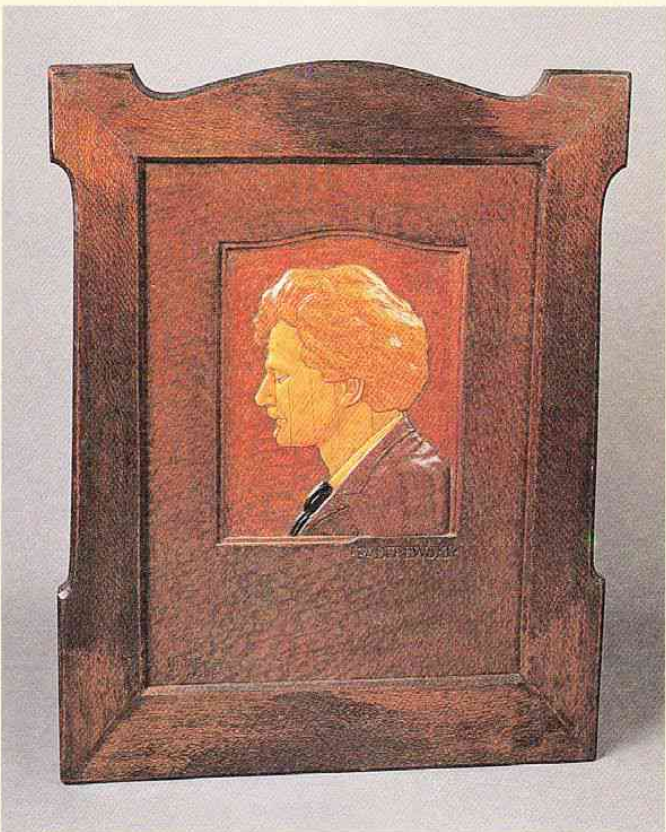
carved from Queensland maple, the face of snowwood (which grows sparsely in the brigalow country of Western Queensland), the collar from ivory-wood, are depicted on a background of silky oak.

As a self-taught scholar with little formal education, LJ Harvey taught for forty years, everything from wood-carving to jewellery making and ceramics at the Brisbane Central Technical School. Noteworthy students included artists Lloyd Rees, Ruby Bennet and Daphne Mayo (designer, most notably, of the Neo-classical tympanum on the Brisbane City Hall and the doors of Sydney's Mitchell Library).

Despite his father's obvious brilliance Elvin was not overshadowed: 'I could never put myself in his class. We were great friends and I always felt honoured and proud to be his son'. Of his own sons, neither of whom followed his path he says 'I always told my sons I didn't care what they did as long as they did it well,' he says of the two who became an engineer and a dentist respectively.

Atop a cabinet in the living room of Elvin Harvey's home overlooking Moreton Bay, sits a row of carved heads of the various people in the lives of the Harvey family. They belong to a huge family of wooden images scattered throughout Elvin's home. While some people take snapshots of their friends, in the Harvey home, friends, acquaintances and notoriety are remembered in wood as relief panels standing alone or adorning the leg of a table, bed end or mirror frame, etched through poker work into wood, carved from blocks or created from the layering of different types of wood.

'There has been some talk about the Queensland Art Gallery acquiring the family home, which was designed by well known architect Robin Dodds, and furnishing it as it was,' says Elvin of the home of artists and collectors. Elvin and his wife Merle, have made a declaration that they will contribute the family heirlooms to the Gallery should this eventuate. 



Top: The spinning chair with padding made by Elvin Harvey displays Art Nouveau lines.

Above: A relief sampler of Paderewski by LJ Harvey, 1929.

Top: The spinning chair which won LJ Harvey the 1924 British Empire Exhibition incorporates nearly every known carving motif. Above: This beech mirror, a recent work by Elvin Harvey, features butterflies, birds and other floral motifs.

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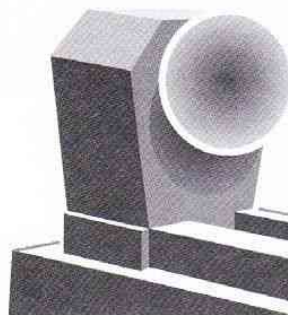
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1997 LATHE REVIEW

If your thoughts have recently turned to buying a lathe you will have noticed the burgeoning range of lathes on the market. But which is the right one for you?

Woodturning is the most magical of all the woodworking skills. Before your eyes a square piece of timber 'morphs' into a cylinder or bowl, and it all happens so fast. Even a relative newcomer to the craft can achieve respectable results quite quickly, once the basics have been mastered. The latter, of course, is one of the reasons for the incredible surge in popularity of woodturning over the past ten years or so.

The base tool for the woodturner is the lathe and there is a bewildering assortment out there to choose from, so how do you choose? The first question to ask yourself is what do you want to turn, the answer to this will narrow down the field considerably.

Basically, the lathe holds and spins the timber whilst the operator controls the cutting tool. The quality of the lathe will affect the degree of vibration, the actual selection of speed and the ease of supporting the tool. The lathe itself is a bed (on a stand or

bench), headstock, tailstock, tool rest and tool rest holder (or banjo). A motor drives a spindle in the headstock via a belt and pulley.

Size

The size of the lathe is measured by the distance between centres and the swing, being the respective maximum length and diameter of wood which can be mounted in the lathe. For varied professional use a capacity of at least 910mm between centres is recommended, but if you are turning pens and other smaller items then 300mm is going to be adequate.

The swing capacity can be misleading, a capacity of 300mm is normally more than adequate because, quite simply, this is a damn big piece of wood. A capacity of 500mm is impressive, but are your skills up to the task? Once again, your choice will be guided by what you want to turn. Lathes which have a gap bed will have a greater 'swing over gap'.

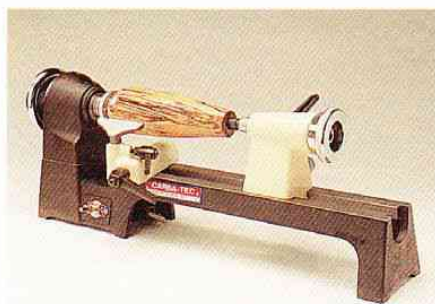
The Bed

Traditionally, cast iron has always been recommended, but new design methods have seen other systems such as steel bars work particularly well. Weight and precision machining are important. Some vibration may occur on fabricated lathes. Lightweight lathes are, nevertheless, suitable for lightweight work.

To assist vibration-free turning consider weighting your lathe with sand-bags or bolting it to the floor. Be careful here though, there are stories of people mounting very large blanks to their lathe only to find the whole workshop floor starts trembling and flexing.

Headstock and Tailstock

Once again cast iron is recommended for both. The headstock is the working end and houses the threaded drive shaft which should be mounted in quality bearings, large diameter turning work will need large bearings. The threaded shaft or spindle size does vary from lathe to lathe although (cf'd p.62)



Carba-Tec HM 1A Mini-lathe



Vicmarc VL 200



Teknatool Nova 3000



Hafco WL-14



Tui WL 002 40"



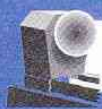
Record CL5 12x15



1997 LATHE REVIEW

Make	Model	Origin	Bed	H/T*	B/C*	Max. Swing (mm)	Motor (kw)	Wt (kg)	Speeds (rpm)
Carba-Tec	HM 1A Mini-lathe	Australia	CI	CI	300	150	.15	13	700,1100,1700,2800
Durden	Joey	Australia	CI	DC	300	250	.375	30	450,850,1200,1850,2400,3400
	WL-250	Australia	S	CI	1000	250	.375	50	570,1100,1800,3600
	L-500	Australia	S	CI	1000	410	.75	55	570,1100,1800,3600
	TT300 Top Turn	Australia	CI	CI	1000	310	.75	240	350,900,1800,3500
	TT400 Top Turn	Australia	CI	CI	1000	410	1.1	250	350,900,1800,3500
Elektra Beckum	HDM 1000	Germany	ST	CA	1000	180	.55	40	350,550,800,1100
Hafco	WL12	Taiwan	CI	CI	925	300	.56	42	480,820,1300,2100,2980
	WL18	China	CI	CI	900	410	.56	80	Variable 400-2600
	WL14	Taiwan	CI	CI	1000	360	.75	80	Variable 450-2700
Hegner	HDB 200S	Germany	S	CI	1000	200	.5	57	400,800,1400,2400,2800
Jet	JWL-1236	Taiwan	CI	CI	876	305	.56	83	Variable 550-3000
Leda	H-1000	Taiwan	CI	CI	1000	480	.75	123	Variable 416-3000
Omega	Nugget	Australia	CI	CI	500	250G	.25	30	Variable 0-3000
	Stubby S500	Australia	CI	CI	750	540G	.75	160	Variable 0-3500
	Stubby 750	Australia	CI	S/CI	1000	740G	1.1	230	Variable 0-3000
	Stubby 1000	Australia	CI/S	S/CI	1000	1000G	1.1	240	Variable 0-3000
Record	RPML 300	UK	CI	CI	305	229	.25	41	450,950,2000
	CL5 12x15	UK	SS	CI	305	381	.25	58	450,950,2000
	DML 24x	UK	S	CI	610	229	.25	40	450,950,2000
	CLO 24 x 12	UK	SS	CI	610	381	.25	63.5	450,950,2000
	CLI 36 x 15	UK	SS	CI	914	381	.25	69	450,950,2000
	CL2 36 x 18	UK	SS	CI	914	457	.38	84.5	450,950,2000
	CL3 36 x 30	UK	SS	CI	914	762	.56	86	425,690,1110,1790,2900
	CI3 48 x 30	UK	SS	CI	1219	762	.56	95	425,690,1110,1790,2900
Scheppach	DMT 180	Germany	SS	SS	1000	360	.55	45	600,900,1400,2100,3100
Tanner	Tanecraft 500	NZ	SS/ST	CI	1000	500U	.75	60	300,630,1200,1820,3000
	FS 100C	NZ	CI	CI	990	470G	.75	76	460,830,1250,2100,3100
	R.H.1000	NZ	CI	CI	600	406	.75	85	232,410,760,1220,1810,2620
Teknatool	Nova Comet	NZ	CI	CI	355	355G	.37	37	450,570,850,1200,2000,3000
	Nova 3000	NZ	CI	CI	600	740U	.75	70	178,300,570,850,1200,1800,2400,3000
Timbertop	H-100	Taiwan	CI	CI	1000	480U	.75	123	Variable 416-3000
Tui	WL-002 40" Swivel	Taiwan	ST	CI	1000	305	.37	38	575,980,1560,2520,3580
	WL-002 37"	Taiwan	ST	CI	940	305	.37	38	575,980,1560,2520,3580
Vicmarc	VL 100	Australia	CI	CI	300	230	.37	26	570-3600
	VL 850	Australia	SS	CI	1000	350	.75	100	231-2721
	VL 200B	Australia	CI	CI	1000	400	.75	120	Var. 231-2721
	VL 300 SV	Australia	CI	CI	400	600	1.1	150	Inf. var. 200-3000
	VL 200 VCM	Australia	CI	CI	1000	400	1.1	180	Inf. var. 231-2721
	VL 300	Australia	CI	CI	1300	600	1.1	180	231-2721
	VL 300 VCM	Australia	CI	CI	1300	600	1.1	250	Inf. var. 200-3000
Woodsmith	Tough 636	Australia	CI	CI	915	300	.75	120	520,950,1600,2500
Woodman	WL 240	Taiwan	SS	CI	1000	340	.75	135	Var. 250-2700/5 speed
Woodfast	Cobra 500	Australia	ST	CI	500	460	.75	120	250,350,600,1000,1900,2500
	Cobra 1000	Australia	ST	CI	1020	460	.75	125	250,350,600,1000,1900,2500
	C450	Australia	CI	CI	400	460	.75	130	250,350,600,1000,1900,2500
	M408H	Australia	CI	CI	450	610U	.75	165	370,650,1200,2000,2700
	MC 908	Australia	CI	CI	1000	610U	.75	165	370,650,1200,2000,2700

Key: *H/T—Headstock/tailstock construction, *B/C—Maximum distance between centres, CI—Cast Iron, S—Steel, SS—Solid Steel, ST—Steel Tube, DC—Die cast, CA—Cast aluminium. Max. Swing: G—refers to swing over gap, U—Outrigger/outboard, MT—Morse tapers.



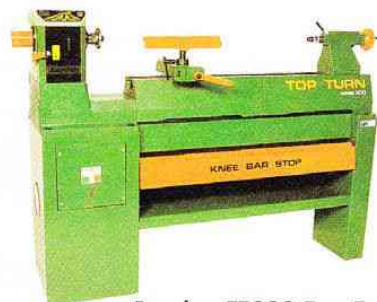
1997 LATHE REVIEW

Idx T/Lock Price Options & Features
(Inc tax)

No	Camlock	\$294 (lathe) \$99 (motor)	150mm toolrest, V-tool rest, 75mm faceplate, 150mm sanding disc, chucks. Hollow head/tailstock with MTs on both. Tabletop or under table motor mounting.
Yes	Lever	\$540	Microlathe, swivel head, opt. bowl turning attachment.
No	Lever	\$1090	Opt. bowl turning & copying attachment, 2yr warranty.
No	Lever	\$1500	Bowl attachment stand., opt. copy & sanding attachments.
Yes	Camlock	\$3526	TT300 and TT400 models have opt. knee bar stop, spindle break, bowl/copy attachments & ext. bed systems.
Yes	Camlock	\$3850	
No	Camlock	\$1300	Opt. stand, copy/sanding attachments, horiz. boring kit.
No	Lever	\$299	Inc. 1000mm faceplate, 310/160mm tool rest, live spur.
No	Camlock	\$445	Inc. stand and swivel head, 300mm toolrest, live spur.
Yes	Camlock	\$1090	Safety guard, 310/590mm toolrest, twin banjos.
Yes	Camlock	\$2600	Swivel headstock.
Yes	Levers	\$975	Hollow headstock for long hole boring.
Yes	Camlock	\$1340	Opt. copy attachment. Includes disc sanding attachment.
Yes	Camlock	\$2196	Mini scale Stubby with large capacity. faceplates, toolrests.
Yes	Camlock	\$3416	Stubby 500/750/1000 inc. faceplates, toolrests, easy to disassemble, heavy, robust. Stubby 750 bench mounts.
Yes	Camlock	\$4636	Stubby 1000 floor standing, allows inboard turning.
Yes	Camlock	\$5368	
No	Lock nut	\$750	Record RPML300 is a swivelhead mini-lathe.
No	Lock lev.	\$899	CL5 12x15/CLO 24x12 have swivel headstocks. All
No	Lock nut	\$465	Record lathes are precision machined, have sealed for
No	Lock lev.	\$1025	life bearings and carry a 5 year guarantee.
No	Lock lev.	\$1235	52 accessories are offered. DML 24x comes with three
No	Lock lev.	\$1499	tools and faceplate. CL2 36x18, CL3 36x30, CL3 48x30
No	Lock lev.	\$1119	have a fully adjustable tapered bronze bearing system.
No	Lever	\$1335	
No	Camlock	\$1295	Opt. stand, tool rests, long hole boring, copy attachment.
Yes	Lever	\$889	Tanecraft lathes come with faceplates, spur drive, live
Opt.	Camlock	\$2295	centre. Opt. motor, bed extensions. FS100C/RH1000 have
Yes	Camlock	\$2520	opt. var. speed. RH1000 has hollow spindle N° 2 MT.
Yes	Camlock	\$672	Mini-lathe, features ext. bed, guarded pulleys.
Yes	Camlock	\$1568	Full swivel/lock h/stock, motor. Optional rests, faceplates.
Yes	Camlock	\$1125	Opt. copy attachment, chucks. Inc. disc sander, N° 2 MT.
Yes	Lever	P.O.A.	Both Tui lathes have opt. N°1 MT, 4 jaw chuck, sanding
Yes	Lever	P.O.A.	disc, cup/screw chuck, faceplate, bowl turning rest.
Yes	Camlock	\$562	Stand/motor/switch \$990. Plate mount/motor/switch \$898.
Yes	Camlock	\$1307	Complete with stand and motor \$1748.
Yes	Camlock	\$1824	Complete on stand with motor \$2550.
Yes	Camlock	\$3572	Designed for large bowl work (550mm inside dia.).
Yes	Camlock	\$3511	Mech. variable speed, constant torque on low revs.
Yes	Camlock	\$2660	Cabinet mounted with motor \$3750.
Yes	Camlock	\$4515	Mech. variable speed, constant torque on low revs.
Yes	Camlock	\$1795	Opt. chucks, faceplates, long hole boring, drive centres.
Yes	Camlock	\$2675	Opt. bed extension, extra stop switch. Inc. stand, swivel head, extra heavy duty with large capacity.
Yes	Camlock	\$2391	M408H/MC 908 have opt. 1.1 motor, prices quoted
Yes	Camlock	\$2391	include stand, bench models are less. Cobra models offer
Yes	Camlock	\$2413	large turning capacity, deep boring, hollow head/
Yes	Camlock	\$3252	tailstocks, N°2MT, H.S. steel bearings sealed for life.
Yes	Camlock	\$3560	Cobra 500/Woodfast M 408H have opt. variable speed.



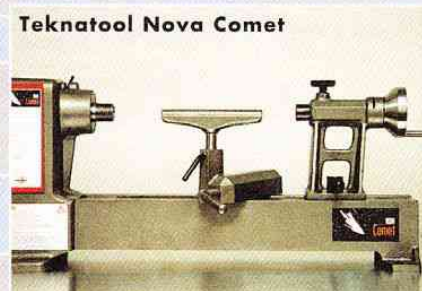
Omega Stubby 5500



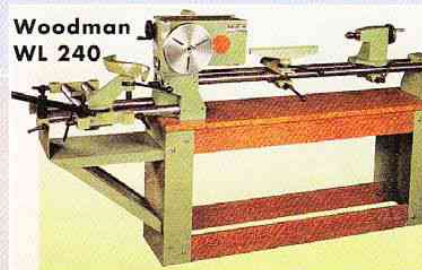
Durden TT300 Top Turn



Elektra Beckum HDM1000



Teknatool Nova Comet



Woodman WL 240



Hegner HDB 200E

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Jet JWL-1236

(from p. 59) 30mm x 3.5 is fairly standard for large lathes—some lathes use 1" x 10 or .75" x 16, which are still adequate.

Check that accessories such as faceplates and chucks will fit your lathe spindle. The tailstock should slide easily along the bed and lock in place quickly and securely. The head and tailstock must line up perfectly at their points.

Hollow spindles permit boring through head and tailstocks and allow for placement of drive and live centres. A swivel head option affords greater turning diameters on smaller machines than ever before, and gives the operator easier and clearer access to the workpiece. On swivel head models look for very secure locking.

Toolrest and Holder

The holder is normally cast and needs to have fast locking and release. The toolrest post on standard lathes should be at least 19mm in diameter but 25mm is better. Most lathes come standard with at least two tool rests, you will need a short and long rest. For bowl work an aptly titled bowl rest (curved to allow access to curved walls) can be an advantage.

Spindle Speeds

A minimum speed in the range of 150-300rpm is desirable, especially for larger work where low speed is critical for safety. Variable speed is the most flexible of all, for non-variable speed you should look for at least four or five speeds up to 3000rpm. Check the method of speed change for convenience.

Motor

Power of 0.5-0.75kw (3/4-1hp) should prove sufficient for most work, al-

though mini-lathes will require much less. Some of the larger lathes offer up to 1.1-1.5kw in power. Not all makes come standard with a motor, so include this in your budget if needed and check for easy mounting.

Price

As always, cost is a large factor in determining your choice. As your skills improve though you will require more from your lathe, hence it is better to purchase a lathe that you can grow into rather than out of. The second-hand market is full of lathes that people grew out of while the better quality lathes seldom enter the open market. A good lathe never dies.

Indexing

This allows the workpiece to be locked at set positions and is usually effected by a pin on the headstock which locks into machined holes in the pulley face. Indexing opens up new design and decorative possibilities by allowing carving or routing on the workpiece.

Accessories

Woodturning is awash with after-market products, many are brilliant and some will look great on your wall where they may remain forever. Faceplates are useful, scroll chucks are excellent for bowl work and gauges and calipers promote accurate work. Having dealt with the choice of a lathe and chucks, the turner will next be faced with the selection of tools and sharpening systems, not to mention materials to turn and incorporate.

Suppliers

Carba-Tec (Carba-Tec) 1-800-658 111
Durden (F.W. Hercus) (08) 3346 5522
Elektra Beckum (Craftmaster) (02) 9534 4555
Hafco (Hare & Forbes) (02) 9933 8916
Hegner (MIK Int.) (08) 8333 2977
Jet (Woodman) (03) 9555 5199, (02) 9708 3233, (07) 3844 4433, (08) 8346 4561, (08) 9272 3844
Omega (03) 9782 5226
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Scheppach (WMS) (03) 9416 9022
Tanner (Crawford) (02) 9546 2941
Teknatool (Latalex NZ) 0011 649 838 7633, (02) 9938 6699, (08) 9272 3844, (07) 3844 4433, (045) 775 277
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Tui Sydney fax (02) 9522 0162
Vicmarc (07) 3397 2577
Woodman (Woodman Group—see above)
Woodfast (08) 8445 2577, MRH (07) 3283 1558, The Turnery (08) 8358 1400
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REMARKABLE PINE

Just as gum has become the colloquial name for any hardwood in Australia, pine is synonymous with the softwoods of the country. Pine refers to anything resembling a conifer and not just those of the *pinus* species. Both imported and indigenous species are successfully grown in plantations in this country. Some native species are harvested from managed forest estate; others are now quite rare and highly sought after. In addition, Australia also imports a number of species of pine from abroad. Here we look at some of the more readily available species.

PLANTATION PINES

Ever since gold-seeking Californians rushed to Australian shores in the 1850s, with the seeds of 'remarkable pine' in their pockets, *radiata* pine has been established and grown in commercially viable plantations. Fast growing softwoods have offered the vigorous growth, relative ease of drying and timber workability not initially apparent in Australian eucalypts. Today nearly two million cubic metres of coniferous sawlog are produced each year in Australia with plantations estimated to be growing at a rate of 35,000-40,000 hectares per annum.

Australia is, despite this, still a net importer of wood products. With nearly \$3 billion worth of forest products being imported in 1995 (mainly represented by paper and paper products) exports only totalled approximately \$1 billion, and were predominantly woodchip (ABARE Sept 95).

It is anticipated that within 20 years we will be exporting timber products due to an increase in Australian pine plantations and a world reduction in available timber. Our rapidly growing

plantation estate of 1.1 million hectares consists mainly of coniferous species (963,873 hectares or 87%), *radiata* is the main species representing 65% of the estate with other softwoods making up 22%. Publicly owned plantations account for 695,186 hectares while privately owned plantations made up 268,687 hectares of this total (National Forest Inventory 1996).

Remarkable Radiata

Pinus radiata

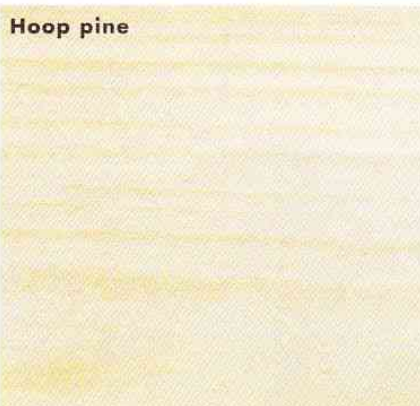
'Monterey', 'insignis' or 'remarkable pine' was planted in South Australia in 1896 to form the first pine plantation established in Australia. As its potential as a fast growing source of timber was realised, commercial plantations were also established in other states in the 1920s.

Radiata is now distributed widely throughout the world due to the ease of propagation, speed in growth and adaptability to a wide range of soil types. Usually kiln dried directly from green condition, its outstanding qualities include the fact it is easily sawn, nailed, glued and planed. Its versatility as both structural and appearance grade timber and timber products has ensured its prominent 30% occupation of the Australian timber market. While it now represents 40% of the sawn timber production, projections suggest *radiata* will provide 65% within 30 years.

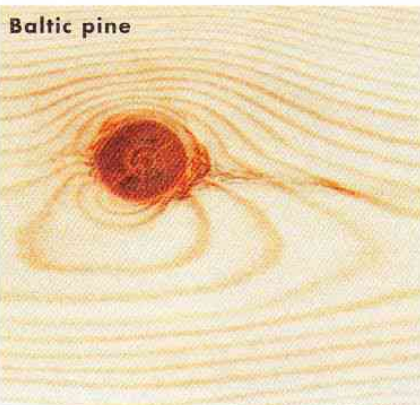
The meteoric rise of *radiata* from its fruit box days of the 50s to its dominance of the house wall framing market cannot be overlooked. In 1979 19% of house framing was *radiata* and 72% was eucalypt. By 1996 73% was *radiata* with eucalypt framing accounting for just 8% of the market.

Easily identified by its wide growth rings and occasional large knots it is

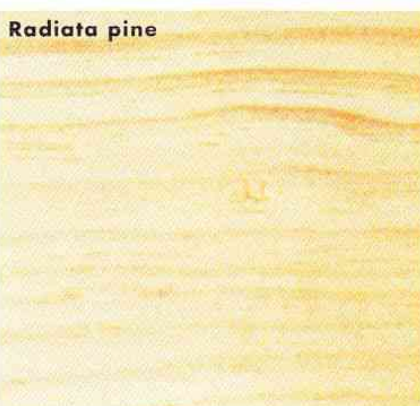
Hoop pine



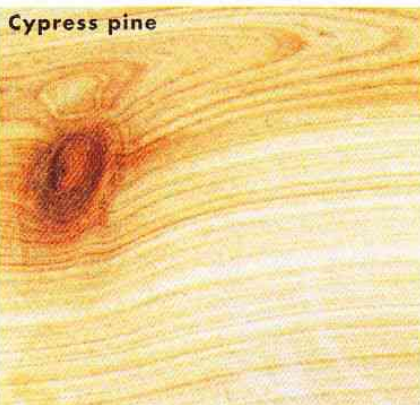
Baltic pine



Radiata pine



Cypress pine



used for everything from house framing, flooring, panelling, furniture, joinery, plywood, particleboard, fibreboard, paper, scrimber and glue-lam. *Radiata* cannot take the wet and its heartwood resists impregnation with preservative, however the wide sapwood readily accepts preservatives. Treated *radiata* is used for external cladding, decking, trim, poles, fencing piles and landscaping. On the 'Janka' hardness tests it rates as being harder than Douglas fir, hemlock, Philippine mahogany, meranti, white Baltic and western red cedar.

Maritime Pine

Pinus pinaster

Commercially successful crops on poor sandy soil are the stuff of dreams, yet in Western Australia, *pinaster* is successfully being grown in plantations, on soil too poor in nutrient to grow *radiata* and with only medium rainfall (400-600mm per annum). Imported from Portugal 100 years ago, *pinaster* has been subjected to genetic experimentation to ensure its commercial viability. The seeds from the Leirian provenance have proved most adaptable and have been cropped since 1942, though only pedigree hybrids since 1974.

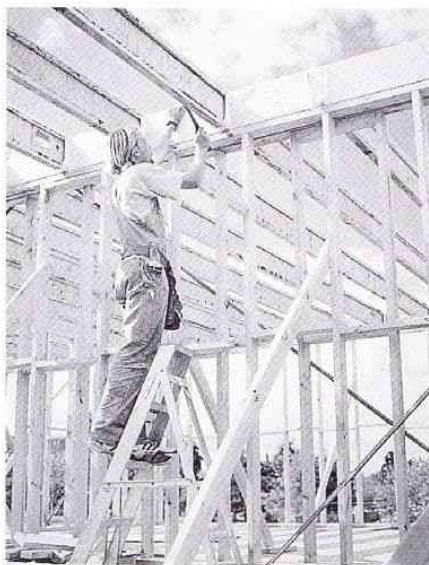
Originally farmed on Perth's northern sandplains, it is now being introduced to other areas of intermediate rainfall as a viable method of lowering salinity, especially useful for farmers, with the Southern Aboriginal Land Council also planting trees on corporation farmland in a joint venture with CALM. It is suitable for veneers, sawn timber, fence posts, power poles and panel products. Internal applications include moulding architraves, doors, shelves, joinery, turnery, and furniture. Much of the *pinaster* being grown in WA is actually used for the production of MDF, with small amounts being shipped east as structural timber.

Both *radiata* and maritime pine are classed as non-durable timbers as they start to decay within a year when exposed to weather, however, when pressure and preservative treated the timber can be guaranteed to last over 40 years.

Hoop

Araucaria cunninghamii

Also known as *dorrigo* or *colonial* pine, hoop is the only Australian rainforest species successfully grown in plantations. Queensland was already valuing the commercial potential of hoop in the 1920s with state foresters fighting to protect natural hoop forests from selectors while also establishing plantations. One of the first hoop plantations was established in 1938 outside Blackbutt



Pre-fabricated radiata pine 'Hybeam' framework from Carter, Holt, Harvey used in a town house construction project in Victoria.

by ANZAC diggers, survivors of the Battle of Hill 60, where 1100 people lost their lives. The plantation was recently harvested producing 34 500 cubic metres valued at \$3 million.

Araucaria's importance in the timber industry is currently booming with new markets being secured in Japan. Here the term 'pine' is associated with resinous wood of distinctive early/late wood zones and thus hoop is being marketed as 'Arakaria'—an entirely different product to pine. The heartwood is a desirable shade of white to pale yellow and not easily distinguishable from the sapwood with virtually no grain appearance and a fine even texture making it ideal for joinery and furniture making. It also lacks resin and glues well with little movement. *Araucaria* prefers the tropical climates of Queensland growing to 60 metres high and to nearly two metres in di-

ameter. Most trees mature within 30-40 years.

Pioneering Maryborough sawmillers, Hyne and Co are gearing up to produce 125,000 cubic metres per annum of sawn *Araucaria* (under the trade name 'Arakaria') for domestic and international markets, mostly with value-added treatments. Glue-edged panels are finding their mark in quality furniture manufacturing and competing well with other softwoods, especially *radiata* and *agathis* in stock being used for joinery. Preservative (LOSP) is being applied to hoop for external joinery.

Australian White Cypress

Callitris glauca

Referred to by some east coasters as the 'woody weed of the west', cypress naturally regenerates and forms part of the managed forest resource. As such it is not a plantation timber and a softwood in cell structure alone. Harvested since Europeans first arrived, it is said to be denser and sturdier than teak with the termite resistant properties of cedar and the durability of ironbark.

It is perhaps best known as flooring where its durability, appearance and economical application have ensured its popularity. Growing with vigour throughout western NSW and south western Queensland, white cypress is managed on a 75-110 year rotation with a view to maintaining sustainability.

Approximately 107,300 cubic metres of cypress pine passed through Australian mills in the 1995-96 period (ABARE 1995). Many say the unique qualities of this indigenous species mean it is under-used and underrated, and that if it was marketed more aggressively there would be a risk of undersupply. Variegated brown heartwood and pale yellow cream sapwood and tight knots provide a decorative finish on the planed surfaces of cypress. While the sapwood is resistant to Lyctus borer it can be susceptible to fungi and termites. The heartwood is heavy and termite resistant.

Cypress has the top durability rating for Australian building softwoods, lowest uniform shrinkage and highest joint strength group rating of all the softwoods. As such it is a good multi-purpose building timber while also especially suitable for flooring, joinery and furniture. Glue-laminated benchtops, structural beams and stair treads are also available.

Slash Pine and Caribbean (Pitch) Pine

Pinus elliottii and *Pinus Caribaea*

These medium sized softwoods, indigenous to south eastern USA and Central America respectively, are important plantation pines in Queensland, accounting for 40% and 35% of the State's total softwood resource. Both are highly resinous and as such are essentially structural timbers.

Baltic Species

Low import tariffs and limited knowledge of indigenous species before the second World War meant huge quantities of Baltic pine were imported. Today the market for red baltic, Scot's pine or red deal (*Pinus sylvestris*) and white Baltic pine, Norway spruce or white deal (*Picea abies*) is centred on those restoring heritage homes and buildings as well as quantities used for bathroom and kitchen cabinet doors, flooring and panelling.

The past ten years have seen the biggest source of these timbers change from the shipping lanes of Finland to the more expensive but perhaps more direct route from the former Soviet Union. Official figures indicate that from 1994-95 a total of 10,700 cubic metres of imported saw-log came from Finland valued at a total of \$5.9 million.

Slow growth and frozen ground for most of the year produce the tight growth rings characteristic of these timbers, with summerwood rings marked by a darker brown. The creamy white to pale yellow sapwood of the red Baltic is easily distinguishable from the reddish brown heartwood.

White Baltic is actually the traditional Christmas tree of northern Europe and offers none of the darker rings of red Baltic and has an indistinguishable heartwood which is also less durable than that of the red Baltic, and is less resinous. White Baltic is also susceptible to anobium borer as many of the floorboards of pre-war homes now show. In a future issue we will look at some of Australia's other indigenous pines.

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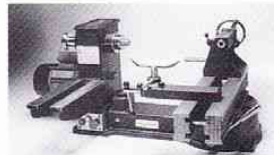
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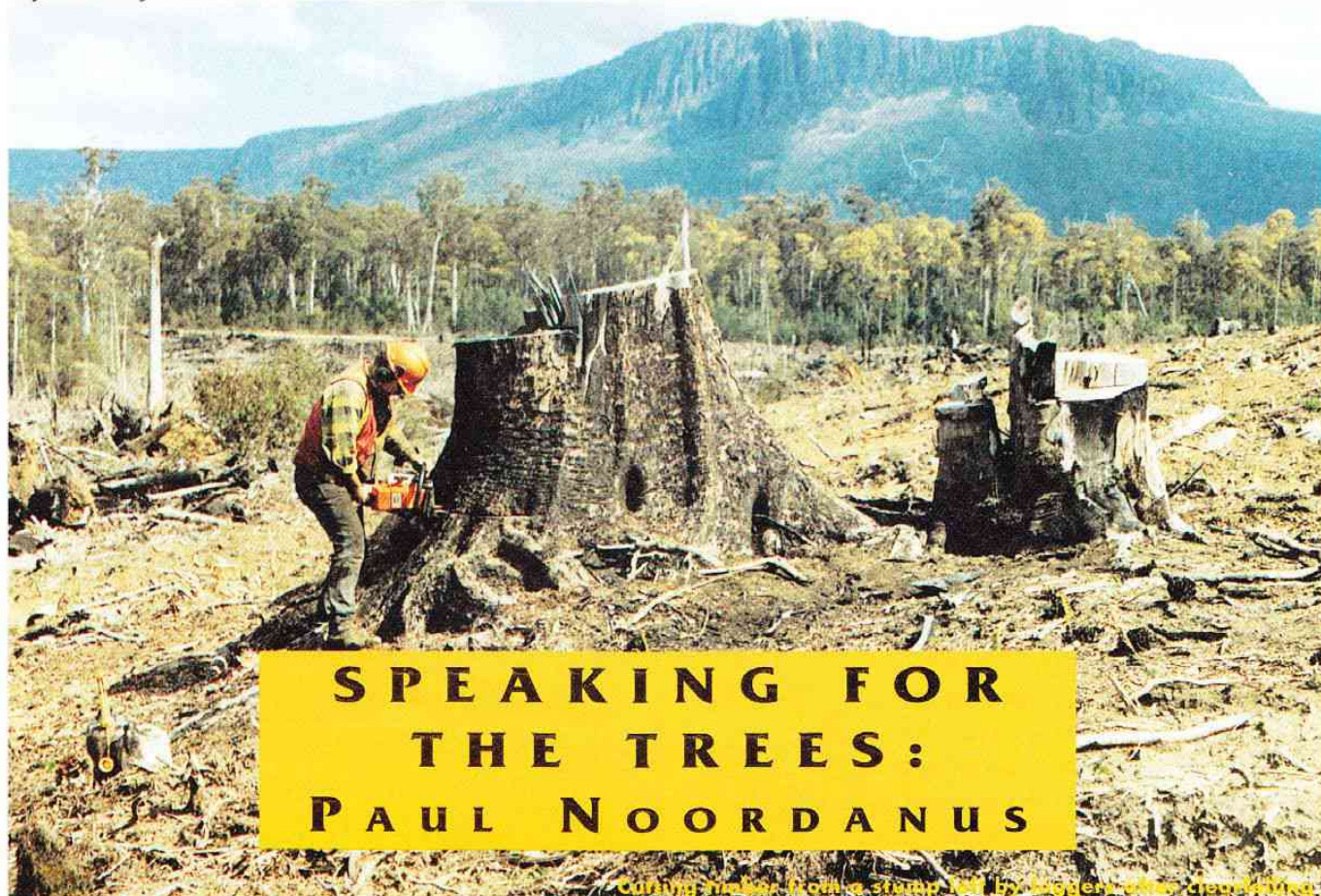
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SPEAKING FOR THE TREES: PAUL NOORDANUS

Cutting stumps from a stump field by loggers near the Deloraine

It's rare today to find anyone who can trace their work from the source of the raw material all the way to the finished product. Among woodcrafters there are few now who live near their supply of material and who really understand the implications of its use. Paul Noordanus is such a person. He is a sculptor who works in wood as well as a dedicated conservationist who fights a constant battle to educate others about the importance of our native forests. Born in Holland, Paul came to Australia in 1980 and travelled extensively throughout the country. As a young man he had studied forestry in Holland and when he first saw Tasmania it seemed that the place was tailor-made for him.

Paul had played around with sculpture from early childhood and so when he settled in Tasmania he decided to go back to college to study design in Hobart. After graduation he moved to Deloraine to combine the two loves of his life. With ideas of living near the forest and using its resources to make fine work he was shocked when



Blackwood platter by Paul Noordanus, 940mm diameter.



The workshop near Deloraine.

he saw how much waste there was after logging. In his forceful manner he explains, 'Some of the stumps they leave are 2 metres tall. If it's rough, the loggers don't want it—they can't be bothered to get out of the excavator to trim it. The stumps have the most beautiful colour and grain and if I didn't get it, it would all just rot.'

Paul decided that he would devote as much time as he could to salvaging the beautiful timbers left behind. It's brutal work reducing huge stumps to useable flitches and carrying them out by hand to his truck, but he has managed to accumulate one of the best stocks of timber I have ever seen. He provides select flitches to the veneer makers and sells some to woodturners, but his greatest love is to carve the wood himself.

'I originally started to carve platters with a mallet and chisel, but I found I didn't really have the patience to make things that took days to finish. Then along came the *Arbortech* with its promise of removing large amounts of timber in no time at all. I was reluctant at

first because of the potential dangers, but the day I mounted the tool on an angle grinder and started cutting, it changed my life. The first two pieces were sold within a week and I was on a learning curve.'

'Unfortunately that curve took a sharp upswing when I got overconfident and decided to change the angle of the safety guard on my angle grinder. I lost control and cut into three fingers, but luckily no permanent damage was done. Although I put the guard back the way it should be and took more care, I still had kickback from time to time. This is caused when a tooth can't cut through the wood, so the force is reversed, throwing the tool back at the operator. Eventually this was solved by buying a *Metabo* angle grinder. It has a clutch that releases if there is kickback and now I won't use any other kind. My serious advice to anyone wishing to work this way is to spend the extra and buy an angle grinder with a clutch. Also, never do what I did and change the safety guard from

the recommended angle.'

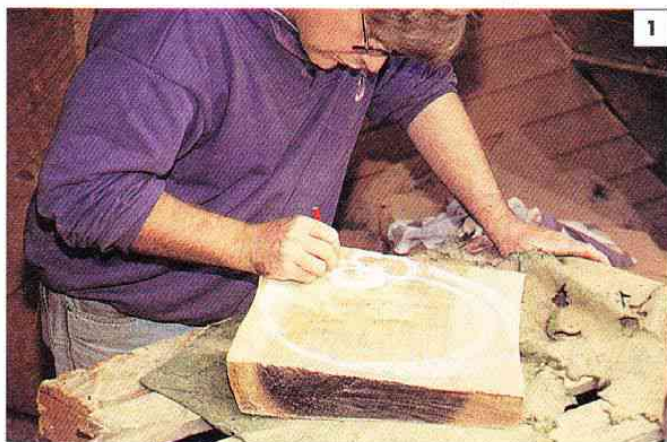
Now *Arbortech* have changed their designs and replaced the chainsaw-type teeth with round cutters. There is also a new competing product called the *Rotary Chisel*. None of them are as aggressive as the original and are much safer to use. I find the *Arbortech* very fast, but the teeth are expensive to replace. I like the *Rotary Chisel* because it has flat tungsten teeth which I can sharpen instead of replace. This is important for me as I cut for 6 to 8 hours a day when I am roughing out work. I find that I can only get 8 to 15 hours of use from the tungsten teeth on wet wood and then I have to sharpen them. I used to sharpen with a flat diamond file, but now I use a rotary diamond sharpener mounted on a grinder and the result is as good as new.'

Paul took me to his workshop to show me how he works. The workshop is a statement in itself—all angles and offset windows and the walls are decorated with reject platters nailed up like hunting trophies. Selecting a flitch of green

wood, Paul quickly sketches a swirling design on it with chalk and pencil. All of Paul's vessels have distinctive swirling designs on one side of the rim, often with bold, slashing bars of wood intersecting the curves. 'I don't know where my ideas come from, but you can see there must be Celtic or Maori influences there,' he explained.

Next Paul roughs out the bowl recess with the *Rotary Chisel* in the angle grinder (photo 2). He wears a helmet of his own design which is supplied with air from his compressor. With an in-line pressure limiter and filter, it provides a constant clean flow of air. When the basic bowl form is there, he cuts as much of the rim decoration as he can with the same tool (photo 3). Next Paul drills out the waste (photo 4) and then cleans up the holes with a rasp (photo 5).

The design is then refined with a rotary burr in an air-driven die grinder (photo 6). Up to this stage the piece has been held quite well by the friction of the flat base on a piece of



Sketching the design on the flitch.



Carving the bowl recess.



Cutting in the edge of the design.



Drilling out the waste.

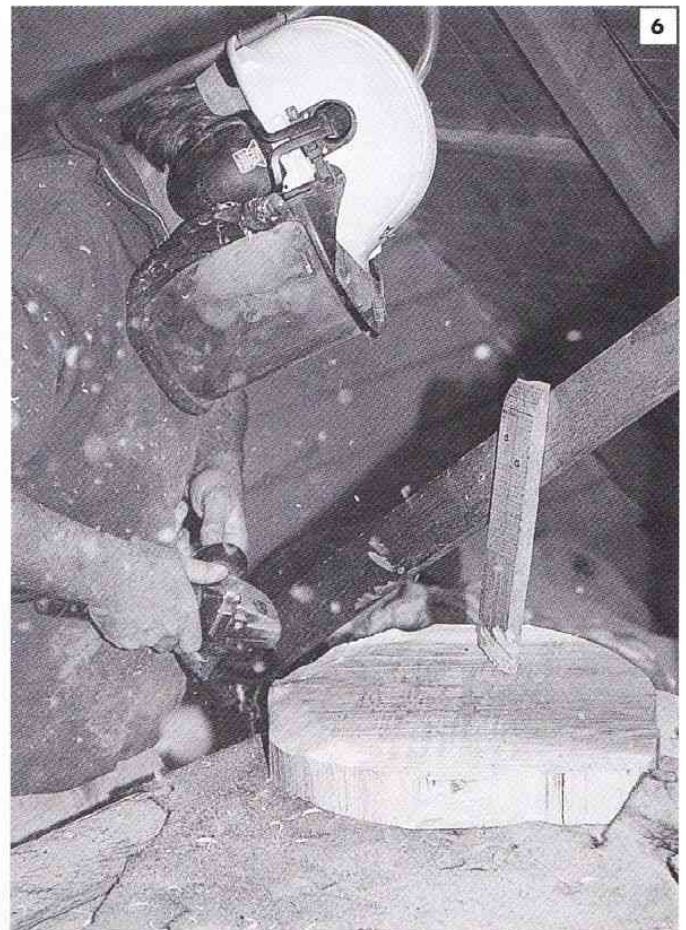


Smoothing the holes with a rasp.

carpet. After some trimming of the rim on a bandsaw, Paul turns the piece to finish the base while he holds it down with a simple foot-operated clamp made of wood. Usually Paul roughs his work from green timber and then stores it for some months to dry. Finishing is done with a rotary sander.

Watching him work is impressive. He attacks the wood with extraordinary speed and never pauses once he has started. 'I am not interested in the process of making the object, but in designing the work and seeing the result. Really I just butcher the wood as fast as possible into the shape I want!'

Whatever you think of the technique, the results are extraordinary. In a gallery full of woodcraft Paul's work always stands out because of its organic quality. The shapes he produces are often improbably difficult and there is always an element of surprise with swirling, writhing curves which breathe life back into the wood. His contrasting



Finishing the base.



Refining the design with a burr in an air-powered die grinder.

use of straight lines and curves is inspired and the light which shines through what he calls 'negative spaces' gives depth to the work.

Paul never forgets the plight of the trees and on a very rainy day he insisted I accompany him to the rainforest. 'The colours are better when it's wet.' With rain dripping off our hats and pouring down our necks we trekked into the myrtle forest, slipping over rotting logs. The huge trees loomed in the mist around us and he introduced me to these giants one by one

as old friends. It was impossible not to share his love of the primeval scene. Then we came upon a clearing where unlicensed thieves had been felling trees. One tree had hung up dangerously in another where they had inexpertly dropped it, while others lay where they had fallen and crushed younger trees. 'Look at this!' he said. 'Bastards! Don't they know what they are doing!'

I, for one, have been powerfully influenced by this dedicated man. I believe he is making a difference and his work is an eloquent statement about the use of our trees. Significantly, he is on good terms with the loggers who work in his area and he offers them the same respect they show him. 'It won't help if we fight all the time,' he says. 'We have to work together.' I was astonished when a senior forester from the area told me, 'It's been good over the years working with Paul. He's easy to deal with and he's educating us. He knows what he's doing and you can trust him.'



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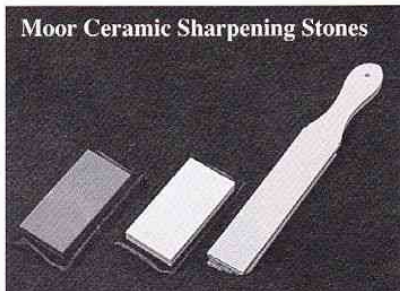
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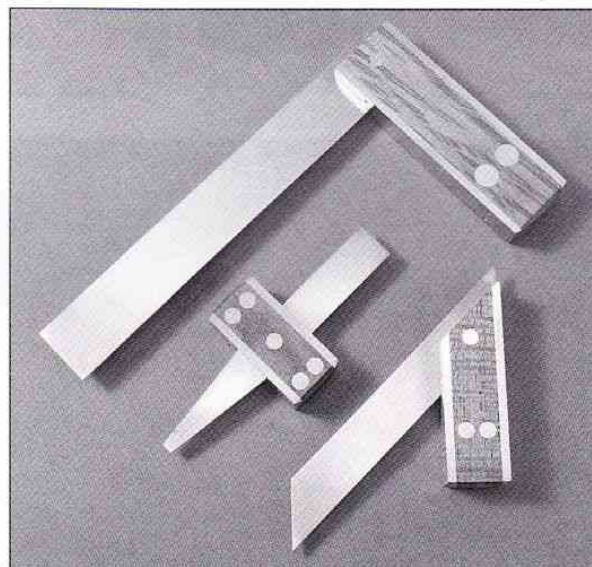
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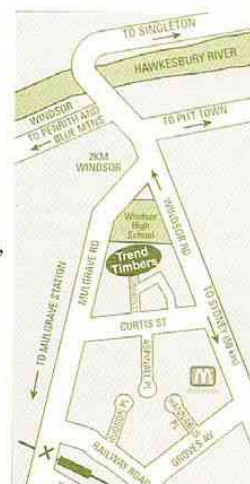
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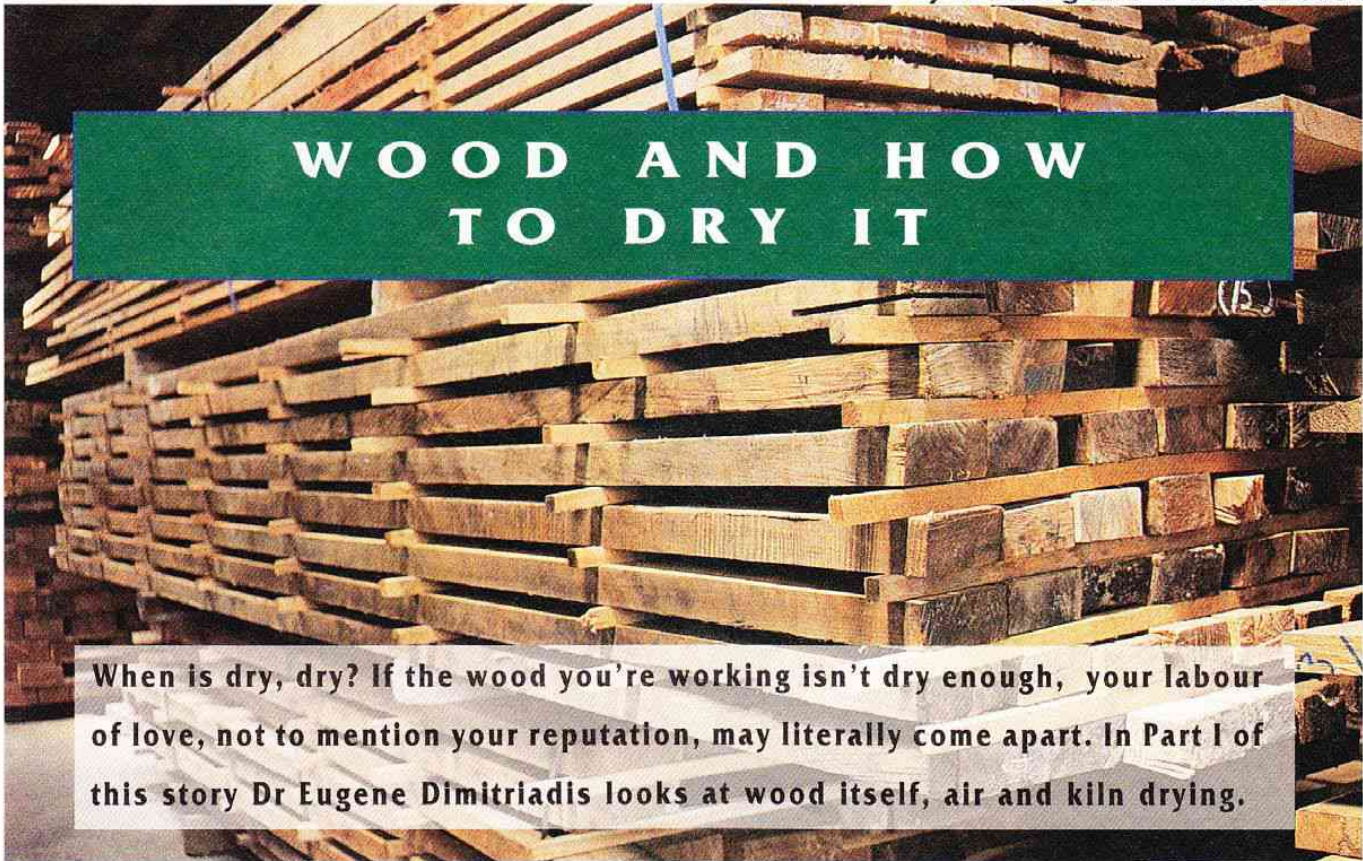


Huon Pine grows for thousands of years only in the undisturbed forests of Tasmania. Combined with Blackwood columns and inlay this table will seat 8-12 people and is 2400mm long and 880mm wide. The table is for sale direct from the maker, Rod Nathan, and delivery can be arranged anywhere in Australia.



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WOOD AND HOW TO DRY IT

When is dry, dry? If the wood you're working isn't dry enough, your labour of love, not to mention your reputation, may literally come apart. In Part I of this story Dr Eugene Dimitriadis looks at wood itself, air and kiln drying.

Wood is almost always used after it has been dried in a controlled manner, and there are good reasons for this. Drying reduces weight and transport costs, improves ease of handling, increases strength and stiffness and, importantly, increases stability, durability and resistance to attack by fungi and insects.

Dry wood is a prerequisite for most applications where gluing, finishing and dimensional stability must be retained. In Queensland there is legislation in place to control the quality of sold timber and there are quality standards that the industry adheres to. Freshly sawn wood typically contains more than half its weight in water. Some species have much more water than others, desert species can have a natural moisture content below 25%. All sawn timber should be end coated and controlled drying begun as soon as possible to prevent degradation and loss of value.

The Nature Of Wood

Softwoods and hardwoods microscopically consist of elongated cells, their features varying somewhat from species to species as well as between

these two wood classes. The cell walls are essentially composed of cellulose, the fibres that are extracted from wood-chips to make paper.

Water, starchy material and other chemical entities and minerals within the cells provide plant nutrients, by-products and substances necessary for plant growth. Sticky resins are important cellular fluids in the softwoods, the eucalypts have 'kino' (a dark sappy exudate) while acacias have a gummy sap.

Coloured materials (such as lignin, polyphenols, kino) occur at low levels in the cells of hardwoods along with the water. They remain, together with aromatic chemicals and pigments, important contributors to wood properties and appeal after drying. Most softwoods lack these chemicals and pigments and are therefore paler in colour. The colour, figure, hardness and drying response of a species of tree is determined by its genes and its growing environment.

Free water in the cells of sawn wood dries out relatively rapidly reducing the moisture content of most woods below 30-35%, or the fibre saturation

point. But, water bound by weak bonds to the cell walls and other residues in the cells requires more time and energy to dislodge and diffuse out. To prevent degradation or 'degrade', high value logs are kept wet by water sprays, or held in dams until they are ready to be milled. Fire damaged pine logs must also be kept wet to prevent bluestain, an unsightly fungal attack.

Pre-Treatment

Pre-treatments to freshly sawn wood are sometimes used to slow the rate of drying and degrade or to control attack by invading organisms. Softwoods are particularly prone to blue-stain fungus which reduces their value and utility. This fungus rapidly attacks most species of pine (except cypress) in their unseasoned state. The tannin in many wet eucalypt species is often responsible for a blue-black stain. This chemically induced stain occurs by reaction of some wet woods with the iron of the sawblade. Unlike bluestain, this bluish-black stain is on the surface and does not penetrate or harm the wood underneath.

Specialised surface coatings or films are sometimes applied to reduce checking

or surface cracking or other degrade. Application is by spraying or dipping the freshly milled wood. Alginates (non-toxic polysaccharides, derived from seaweed) can be effectively used at 1.5% solution in water. When dry they leave a hygroscopic (water absorbing) skin on the wood which reduces the rate of surface drying and therefore surface checking but still allows water vapour loss to the surrounding air. With added fungicides, I have found alginates can be even more valuable, reducing surface checking and mould growth. I've also used water-based clear acrylics (like *Dimension-4*) applied with a brush to prevent mould and retard drying of difficult craftwoods.

Other water-based dips or coatings containing materials such as borax, sodium fluoride or copper salts are effective in conferring resistance to insect and or fungal attack. Except for borax, they should be used with extreme care and with advice from specialists like CSIRO. Small craft-wood blocks for turners are sometimes not dried at all but rather sold 'green' or 'wet', coated with paraffin wax. In this case slow air or microwave assisted drying of the wood is done during and after turning in controlled stages. This can result in distorted products but is also very successfully used by many turners.

There are two primary methods used for the bulk drying of wood: air drying and controlled atmosphere or kiln drying. Air drying is commonly applied to dimensioned timber or slabs cut using a chainsaw, bandsaw or bushmill. The aim is to reduce the green log moisture content firstly to around 30% and then down to a stable, air-dry condition, typically around 12-15% moisture content. This process predictably results in shrinkage and often twisting of the wood.

Air Drying

This method of drying timber is widely practised and is preferred where rapid throughput is not important and long term storage is available. The main requirements are time, space, stacking facilities, a suitable climate,

and for some species, pre-treatment facilities.

Freshly sawn, dimensioned timber should be stacked on blocks off the ground, the boards separated by 'stickers' or wooden spacers which should be cut to the same size (for example 20mm square). If this can't be done soon after sawing, the boards should be kept wet or wrapped in plastic—the initial drying *must* be slow.

A stack 1.2-1.5m wide and 1.2-1.8m high works well. Weights are often placed on top to control distortion as the timber dries. The stack should ideally be neat and square. Odd lengths can be accommodated within the stack. Board thicknesses up to 50mm work well but square sections (particularly those over 50mm) are often problematic. The wood in the stack must be protected from direct sunlight, strong or overly dry winds.

A ventilated shed is best but a frame with overhanging roof, the sunny sides covered with shade cloth or hessian also works well. Leave adequate space at the top—an iron roof can reach temperatures of 70° C, enough to destroy the nearest boards.

Short sample or test boards are usually incorporated into the stack so that they can be easily removed and weighed or tested from time to time. When the sample boards have reached a stable (steady) weight the wood in the stack can be said to be 'air dry' and will have an EMC dependant on the humidity of the surrounding air at the time. Further drying may still be advisable.

Kiln Drying

This is a more expensive way to dry wood as heat and humidity are artificially controlled for periods up to 20 days (for 50mm boards). Boards are carefully stacked and stickered onto trays which run on rails to allow movement of the stack into and out of the kiln.

This technique is used for the large volume commercial drying of softwoods and hardwoods used in the building industry. Kiln design and

research into pre-drying, reconditioning (steam injection) and drying regimes have been the subjects of considerable research by CSIRO.

With high value, native hardwoods for furniture end uses, a careful drying regime is followed. This will vary according to species, thickness of boards and even how the boards are cut—quarter sawn boards, for example, can handle more extreme measures.

Heating cycles are controlled to accelerate the rate of evaporation from the surface of the wood and air movement through the stack is carefully controlled as is the temperature. High temperature driers operating at over 100°C have had some success as have pre-steaming treatments to open pores and increase permeability of water vapour.

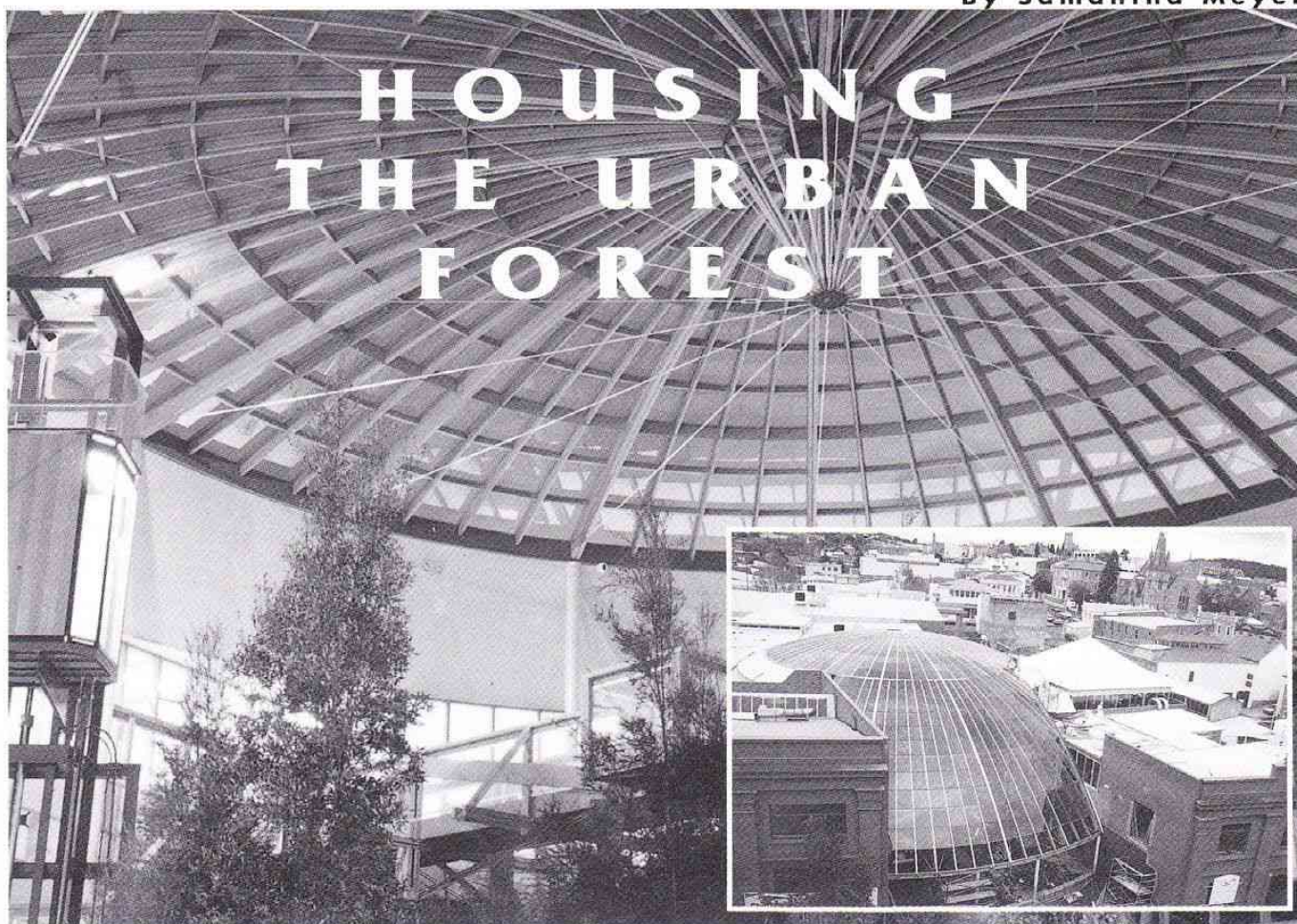
Re-humidifying or reconditioning the wood during the end of the cycle can relieve stresses and reduce degrade with some woods, particularly southern eucalypts. These regimes are all designed to maximise recovery by reducing twisting, checking and collapse in prone wood species.

Good drying occurs when moisture is transmitted smoothly from the inside of the wet boards to the outside surface without the high gradients (moisture differences) between the inside (core) and outer surfaces. If the outside dries too quickly the surface shrinks and cracks and checks appear and can eventually penetrate deeply enough to weaken the wood. Fine surface checks will usually disappear when the core is dry and shrinks.

Useful References

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HOUSING THE URBAN FOREST



The dome which is the focal point of Forestry Tasmania's new head office in Hobart makes a statement intrinsic to the industry which is housed in the building. Beneath the dome grows a small forest, the living heart of the building.

The brief from Forestry Tasmania was for a building which made innovative use of timber showing diversity by using different timbers in a variety of ways, as well as expressing the essence of what forestry is about. 'It was an abstract brief and we wanted to meet it by trying to tell the story of forestry in as many different ways as possible. This led to the use of new materials and also to using traditional materials in a slightly different way, to make people stop and think', says architect Robert Morris-Nunn.

Two heritage listed buildings on the site were incorporated as part of the new development. Their history as former homes to a sawmill and a wood yard complemented the telling of Tasmania's forestry story. Timber elements within the buildings were recycled to provide a sense of continuity between the old and the new. 'The bridge in the atrium was built from huge pieces of timber recycled from the two existing buildings on site and was constructed using old methods. It was intentional to have this bulky structure and above it the dome, a very sophisticated lightweight structure spanning much farther with much less, showing how the same material can be used in more inventive ways'.

Above: The dome spanning the recycled timber bridge and mini-forest. Inset: The new structure is flanked by two existing Federation buildings. Photos: Katherine Meyer

In further contrast with the stark precision and high-tech image of the dome are other, less eye-catching features such as the handrails throughout the building which are made of Tasmanian horizontal wood.

For Forestry Tasmania, the project was an opportunity to put into action its philosophy on future wood use. 'That future lies in techniques and world best practices that enable the production of wood from multiple use forests where intensive forest management techniques are used and more timber is produced from less land at higher quality and quantity', said FT's General Manager Operations, Kim Creak. 'Worldwide demand for wood is ongoing. But although we plant three trees for every one we harvest, ultimately we can only grow so many trees per hectare' he said. 'The answer lies in research and development—maximum recovery of quality wood and making that wood go further through 'new age' veneers and reconstituted wood products'.

For Robert Morris-Nunn, the Forestry Tasmania project was not just about creating an eye-catching CBD development, but was as much about provoking thought and generating debate. 'Sometimes some of these visual catalysts have an impact beyond what you expect, and visual statements can have a way of changing expectations'. □

CHIP CARVING

PART I—AN INTRODUCTION

Chip carving has a long history of use in decorating various wooden household items including furniture, as well as in creating purely artistic pieces. Although the finished pieces often display an intricacy and beauty one may think is attainable only by a long-lived master carver, chip carving can be surprisingly easy to learn.

Basically, knives are used to remove selected 'chips' of wood in a single piece. In theory, chip carvings have just two levels, or planes: the wood surface, and the point beneath the surface where the cuts meet. Patterns can be free form or based on simple geometric figures, such as triangles, circles, simple lines and curves.

Almost every society throughout history has experimented with this art form, which makes the precise origins of chip carving debatable. There are, of course, variations in the tools and designs favoured by chip carvers of various cultural backgrounds. The approach described here involves basic principles and requires only a few simple tools.

TOOLS

My father and I use two knives for our chip carvings. The first is a 'cutting' knife which is plunged into and dragged through the wood. This knife is sharpened to a steep angle to ensure minimal resistance. The other knife, used to a lesser extent, is the 'stab' knife which, when pressed into the wood, creates an elongated triangular impression.

Both knives are easily shaped and

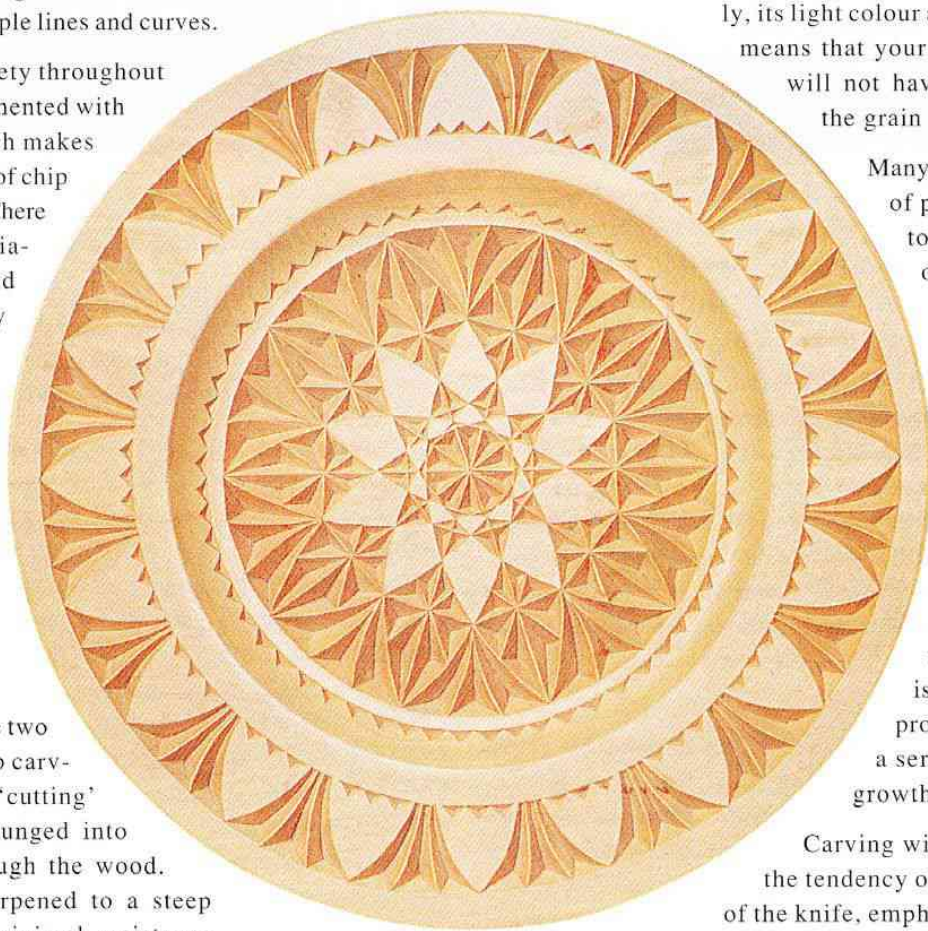
polished on hand held stones and a leather strop. We recommend ceramic sharpening stones, which remain perfectly flat forever, do not become worn or 'dished' and require no lubrication.

WHICH WOOD?

Basswood, or English lime, is my preferred carving wood. It has the benefits of a hardwood in that it will stand up to the most intricate of details while remaining easy to carve. Additionally, its light colour and clear open grain means that your completed carving will not have to compete with the grain for visibility.

Many Australian varieties of pine are comparable to basswood in terms of appearance, but inserting a knife into them will reveal a number of important differences. First and foremost the grain of pine, which is more visible than in basswood, is stronger and more fibrous. The result is that cross grain cuts provide the carver with a series of hard and soft growth areas.

Carving with the grain reveals the tendency of pine to split ahead of the knife, emphasising the need for stop cuts. Huon, hoop, cypress, kauri and Norfolk Island pines are all worth considering. Other species which we have recently tested in Australia and found satisfactory include jelutong, and camphor laurel.



Triangular chips of various sizes create the pattern on this basswood plate which is 300mm in diameter. Thin ridges emphasise the shadows. Carved by the author.

The Australian pines are also much harder than their North American counterparts, and even harder than basswood. Butternut, another North American species, is a nice carving wood though rather soft for a hardwood. Although its grain is more predominant, some carvings (those that leave a lot of surface wood) benefit from this added feature. A suitable Australian substitute would be Queensland or white beech.

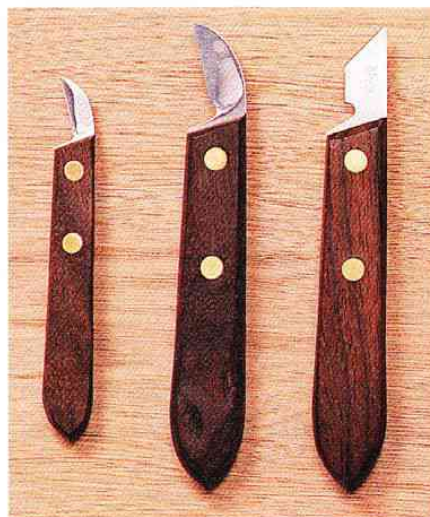
Theoretically at least, any type of wood can be chip carved. However, in practice one should make sure the result is worth the effort. If your carving is to be the main emphasis of the finished project it is worthwhile selecting a species and individual pieces of wood carefully. Even if this means spending a few more dollars, the extra cost is negligible compared to the value you will add to the piece with your carving. If you are a woodworker who wishes to add highlights to furniture don't be alarmed, such furniture often requires very little carving to add the desired effect and there are a few shortcuts.

Consider the grain of the wood which exists throughout the thickness of the board rather than just across the surface. When a chip is removed the grain will be visible on the wood surface, then going down into the chip, then coming back up the other side of the chip, then proceeding along the surface again. Use this to your advantage. Woods with a prominent grain are generally quite beautiful and this is usually a primary consideration for selecting a particular type of wood for a given project.

When choosing a carving pattern use the grain to its fullest advantage by selecting a design that will accent or be enhanced by the grain. Do not select an intricate pattern that will fight

with the grain for attention. Stains can also be used very effectively to enhance your carving and the grain, but the decision to stain must be made before the pattern is chosen.

In some cases the grain will seem to control the knife instead of you! All woods with prominent grain will effect your carving technique, even



Chip carving knives, left to right: small and large cutting knives, stab knife.



Jewellery box and plate showing two carvings of the same pattern. The box incorporates a positive diamond grid for its background. The plate shows various rings of shading in its stained finish.

butternut, although this is certainly no reason to avoid them. Simply be aware of the character of the wood and keep it in mind when executing your cuts. Most importantly, when carving hardwoods, you must keep your tools very sharp. Have your strop handy, your knife will require polishing more often than with softer woods.

TECHNIQUE

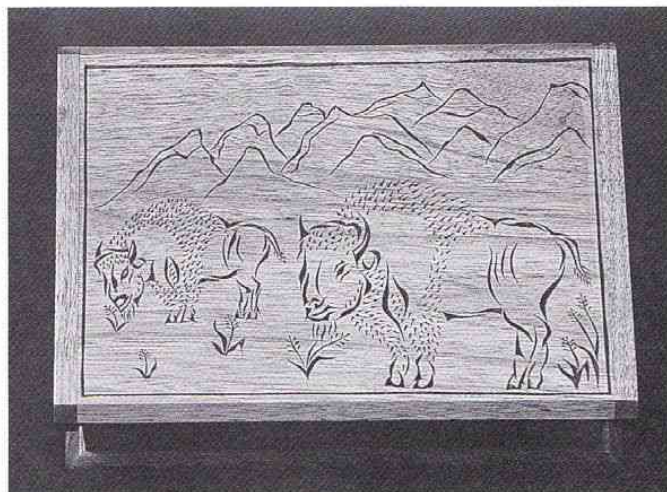
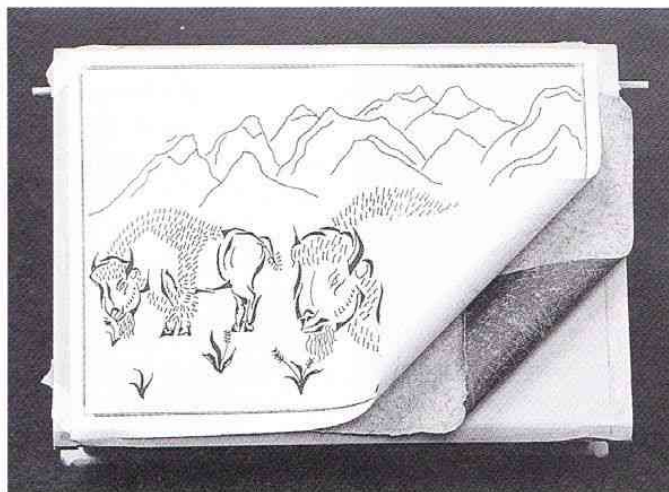
Developing strength is a primary concern of learning to effectively chip carve. Try taking one step at a time by removing the chip in a series of progressively larger chips, rather than in one big chip. At first this method may seem to take longer, but rest assured it will save you time. Attempting to remove a larger chip in one pass often fails, resulting in the necessity of re-carving the original cut a little deeper.

The number of times you will have to go back over that original cut depends on how much strength you have. Once the chip has been completely removed you will probably find it has not only taken you longer, but it also looks as though it has been gnawed out rather than cleanly excised. By starting with a smaller chip and increasing its size with each new cut, you will finish with a large chip perfectly carved and without any tell-tale signs of numerous cuts.

THE DESIGN

The photo above shows the same geometric rosette carved on both the lid of a small jewellery box and on a small wooden plate. One of the pitfalls of geometric designs is that they tend to reveal carving inconsistencies in the repeated patterns.

Geometric patterns can be carved in a variety of ways. Inspection of the finished box and plate will reveal two of the many alternative ways of carving



Left: The pattern is positioned and taped to the wood, with graphite paper (dark side down) underneath. Pressure is applied to transfer the lines. Right: The completed jewellery box carved in butternut.

this particular rosette. Deciding which areas of a geometric pattern to carve will depend on the effect you desire as well as your level of confidence. Simply, more intricate patterns will require more time, greater care, and more precise carving skills. Once you have selected the pattern your other decisions will be fairly straightforward.

The rosette pattern is suited to the clean and open grain of basswood, which will not detract from the carving. Basswood tends to give rise to some difficulties in staining. You will notice that any patterns that reveal thin ridges of wood in between chips are best suited to a clear finish. If you intend to stain your basswood carving be sure to leave significant surface areas of wood.

LAY OUT

Your carving can never be better than your drawing—start with a sloppy drawing and that is exactly the way the carving will look when completed. The truth of this statement will become more apparent after you succumb to the desire to go ahead with a carving even though you have a few inconsistencies in your drawing.

Unfortunately the reverse of this rule is not true. An impeccable and accurate drawing in no way guarantees your carving will turn out similarly! Take time and care in the pattern transferring stage and you will at least have the potential for an accurate carving. There are a variety of ways in which

patterns can be transferred to your project, and each method has advantages and disadvantages.

Drawing Directly

Patterns can be drawn directly onto the wood using various devices (for example, mechanical pencil, T-square, accurate compass, plastic templates). If the design is an original you will find that working it out on paper first will save you a lot of erasing or having to sand off mistakes made directly on your project.

The big advantage of drawing directly on the project is accuracy, as well as a clean-up that is fairly easy. If you sand your project with a high grit paper (400 or higher) before you apply the pattern, your pencil marks will stay only on the surface of the wood and will be easy to take off with an eraser. Softer lead helps too and clean-up is always easier if you carve off your lines. The disadvantage of drawing the pattern directly onto the wood is that it is time consuming.

Tracing Patterns

Patterns can also be traced onto your project. Simply place some graphite paper (cleaner than carbon paper) under your pattern once positioned on the wood. Applying pressure over the lines of your pattern page transfers the graphite to your project. The advantages of tracing is that it is fast, cleans up very easily (a little isopropyl alcohol on a cotton bud or rag will lift the graphite right out of the wood)

and allows for easy transfer of non-geometric designs. Tracing tends to be less accurate than drawing (although you can minimise this by using a ruler and compass as guides where appropriate). Be forewarned that it is also easy to miss tracing some of your pattern lines.

Mylar Film

Another way of transferring involves the use of mylar film which is available at architect supply shops and some printing outlets. This is a clear or transparent sheet (as for overhead projections) also available with a self adhesive backing. The adhesive is strong enough to stick to your work but weak enough to peel back off without a trace. Photocopy your pattern straight onto the mylar film, remove the backing and stick the pattern onto your project.

This method is extremely fast and very accurate, however it is also more expensive with mylar film costing around \$2 per sheet. In addition, you will have to carve through clear paper and adhesive, which can make your knife blade sticky.

Photocopies

Some people iron their designs from fresh photocopies onto the wood. A disadvantage of this method is that the heat can loosen glue in projects that have laminations. There is a similar method of transferring that is a bit easier and less risky than using the iron.

Position a fresh photocopy of your pattern face down on the timber. Tape down the pattern, taking care not to overlap any area that has drawing on it. In a well-ventilated area, dampen (not wet) a rag with lacquer thinner (read the warnings and instructions on the container first; lacquer thinner is very flammable and vaporises quickly) and rub it on the back of the photocopy. The pattern is transferred when it shows through the paper. This method is very quick and accurate, however it

is easy to smudge the pattern (if the rag is too wet) and nearly impossible to clean off marks. Any lines that are not carved off will need to be removed by sanding. Also keep in mind that this method transfers the mirror image of your photocopy to your project. If this makes a difference, such as for free form patterns and lettering, make a photocopy on transparent paper first and then copy the flip side. There are many other little tricks for copying patterns and replicating designs, however

these are the methods that I have found work best for me. Part II of this series will describe how to sharpen, hold and use chip carving knives to create an endless variety of patterns.

Todd Moor and his father Dennis travel worldwide teaching the art of chip carving. They have a television series in Canada on community cable stations and publish a quarterly newsletter both under the name of Chipping Away! Their Internet address is www.chippingaway.com Chipping Away Australia can be contacted on (08) 8379 6994 or fax (08) 8379 9444.

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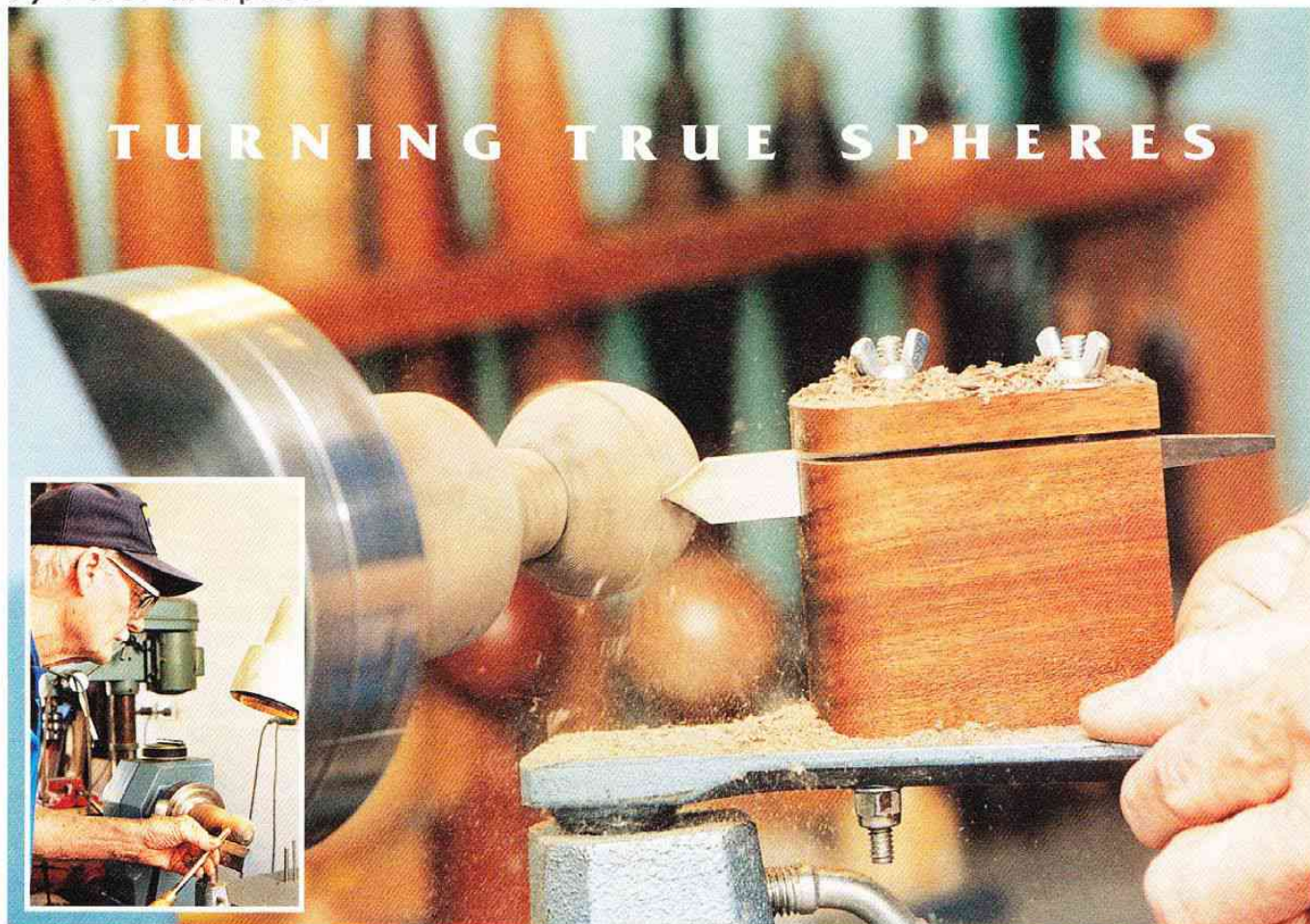
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TURNING TRUE SPHERES

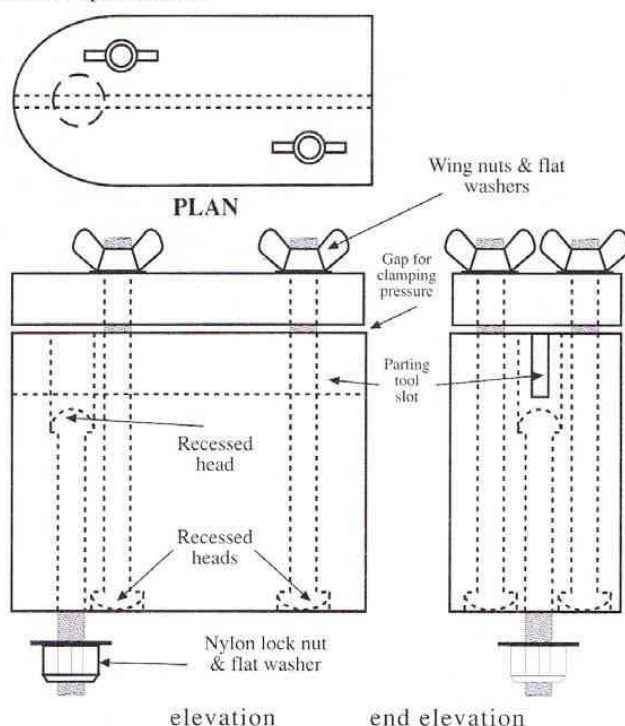
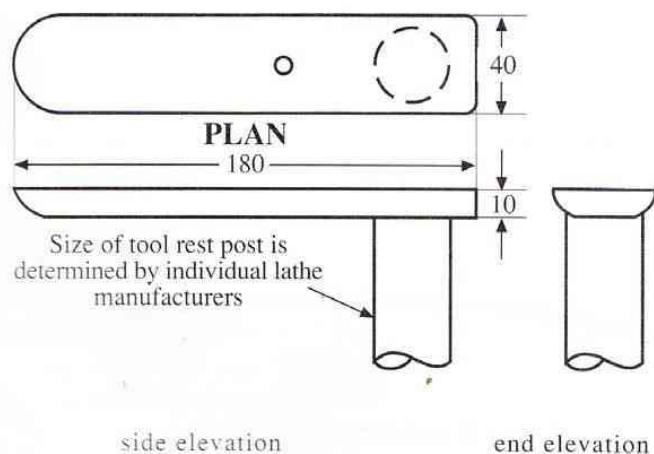


Turning on the round is a very effective way of highlighting the grain of timber—the results from rose mahogany and sheoak in particular are beautiful. On the number of occasions I have needed to turn a ball or sphere, the only methods I could find involved masses of mathematics, templates and jigs which only rewarded me with a series of balls turned between centres.

This method was satisfactory to a degree, but I was left with large dowel-like pieces of timber connecting the balls which had to be removed and sanded very carefully to preserve the profile of a true sphere. Reducing the diameter of these connecting pieces resulted in excessive whipping of the whole assembly—a state which could

lead to fracture and was, in any case, completely unsafe.

The jig described here will give a sphere 98% perfect leaving a very small stem on one side only which can easily be removed. After sanding, a variation of half millimetre has been found. Not only can the sphere be turned accurately, but more importantly, the jig will return a rapid result.



MAKING THE JIG

(These measurements apply to a *Vicmarc VL200* lathe, spindle height of 200mm.)

Requirements

- A tool rest with a flat upper surface (a *Vicmarc* goblet tool rest is ideal). Drill a $\frac{1}{4}$ " hole in the upper surface
- 65mm from centre of post.
- A block of 80 x 85 x 40mm Australian walnut or other hard, dry timber.
- Two $3\frac{1}{2}$ " x $\frac{1}{4}$ " cup head bolts
- One 3" x $\frac{1}{4}$ " cup head bolt
- Two $\frac{1}{4}$ " wing nuts
- One nylon self-locking nut
- Three flat washers

Method

1 Drill lid clamping bolt holes into the block. Recess the holes so the bolt heads will be under flush.

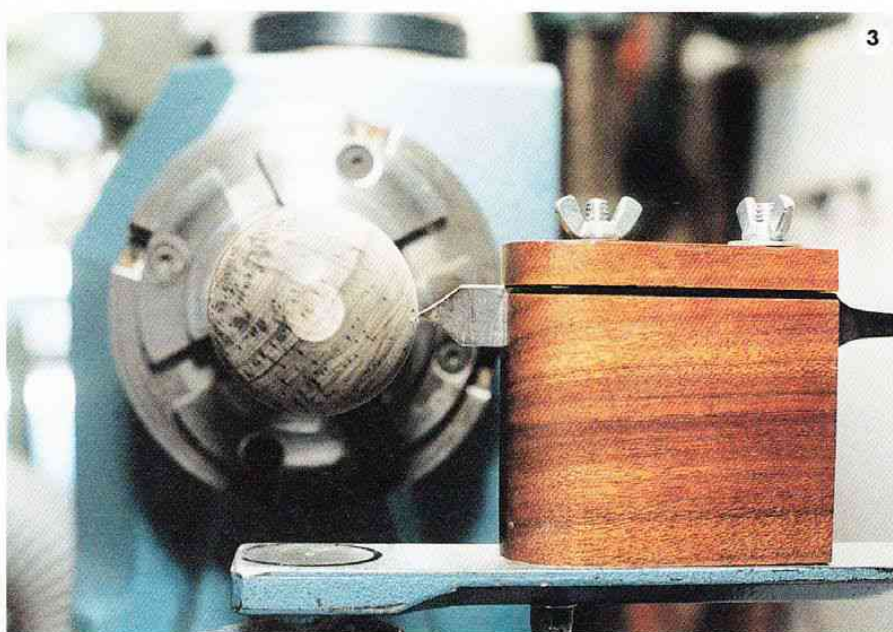
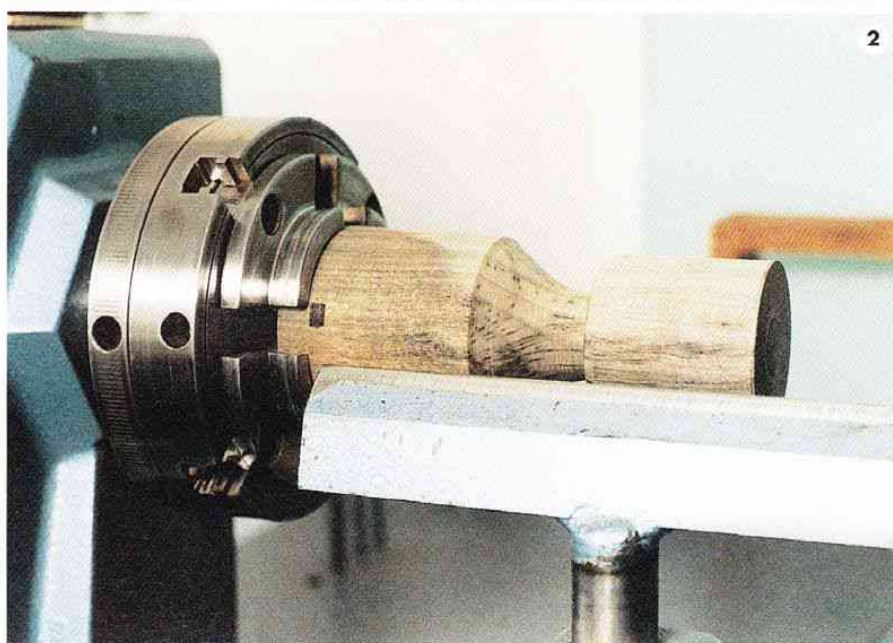
2 Round off the front of the block and then cut off a 10mm thick 'lid'.

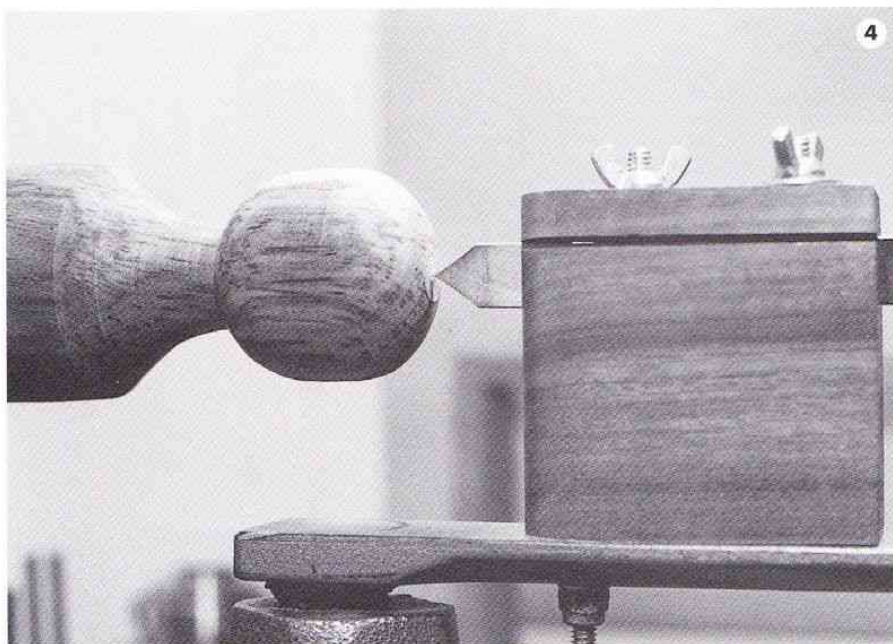
3 Cut a slot in the block to accommodate the parting tool. The slot should only be deep enough to allow 1-2mm gap for lid to achieve satisfactory clamping pressure. The depth of the parting tool will determine this.

4 Drill the front or pivoting bolt hole and recess so that the bolt head will be below the parting tool slot.

5 When the parting tool is clamped into position, the point of the tool must be the exact height of the centre of the headstock spindle (photo 1). (The spindle height can quickly be determined by clamping a piece of timber in the chuck and turning to a point.) If the parting tool point is a fraction too high or too low for dead centre, re-grind the tool to suit.

6 Assemble the block to the tool rest and fit the parting tool. The nylon locking nut must be tight enough to prevent shifting under normal operation yet allow movement by firm thumb pressure.





TURNING THE SPHERE

To turn a sphere with a nominal diameter of 50mm using the jig described on the previous pages clamp a 55 x 120mm piece of close grained timber into a chuck.

1 Rough the blank down to a cylinder. Mark off the length of the diameter, here 55mm (photo 2).

2 Using a parting tool, run in a cut on the waste side of the line to a diameter of approximately 20mm. Remove some more waste timber (photo 3).

3 Using a bowl gouge or a detail gouge, turn a rough sphere.

4 Fit the sphere turning jig to tool rest saddle (photo 4).

5 To centre the jig correctly three measurements are absolutely critical. The tool rest saddle must be adjusted so the point clearance to the work is the same on both sides of the sphere and at the end.

6 Each cut should be about 1mm deep. Begin at the axis and carry tool right around as far as possible.

7 By deepening the cut 1mm each time 90% of the sphere will be created. Callipers are used to measure the desired diameter.

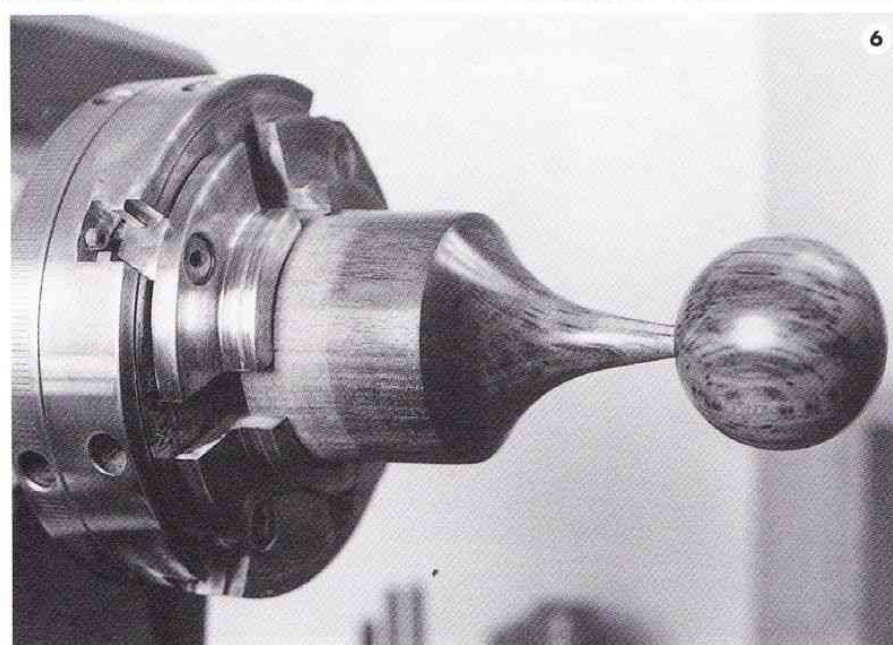
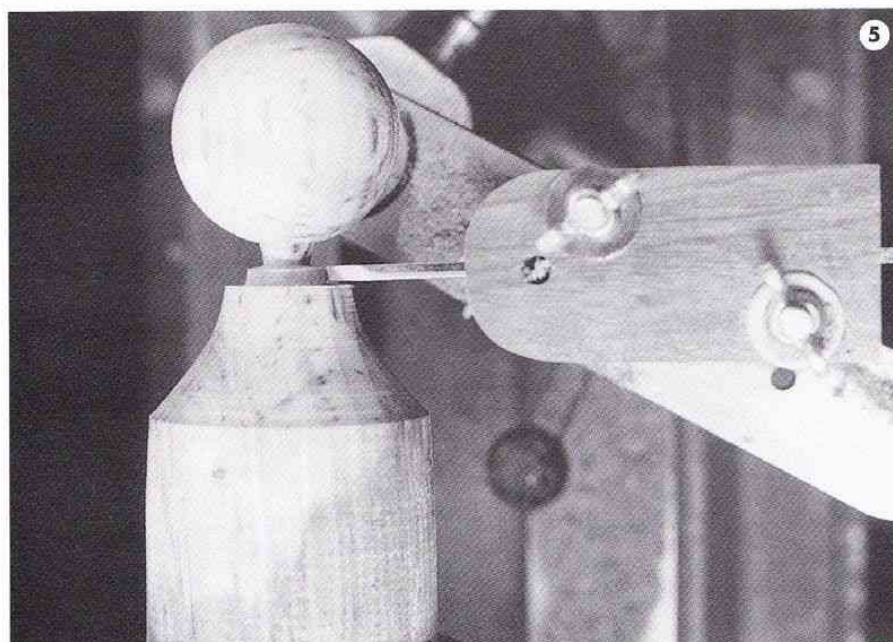
8 Pivot the tool holder to refine the sphere leaving a small stem (photo 5).

9 Remove the jig, fit a standard tool rest and turn off more waste timber, creating a visually pleasing stem (see photo 6).

10 Sand the sphere as little as possible to avoid losing the spherical shape.

By drilling another pivot hole in the goblet tool rest, spheres with diameters of up to 165mm are possible using the jig described.

Photos: Chris Higgins



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WOOD DIARY

1997

Wood Dreaming Exhibition

29 Aug-26 Sep: Mackay City Library
2-15 Oct: Emerald Art Gallery
22 Nov-3 Jan 98: Cairns Reg Gallery

9-10 August

Woodturners Society of Queensland

Sales and Exhibition
Mt Cootha Botanic Gardens Auditorium
Tel: (07) 3397 8156

9-13 September

Tekhnos 1997

Woodworking machinery, tools
St Petersburg Tel: +39-2-69 210 244

9-21 September

Designing in Wood

Coles School of Woodcraft
Meat Market Craft Centre
(03) 9486 3766, (03) 9415 1075

12-14 September

Illawarra Exh of Fine Woodcraft

Illawarra Woodworkers Group Inc
(042) 718 182

19-28 September

Treasures in Timber

15th Annual Exhibition of Woodcraft
Guild of ACT Inc
(06) 286 6817

25-28 September

Turning Towards the 21st Century

World Turning Conference
Philadelphia, USA
Tel: 215-844-2188 Fax: 215-844-6116

1-2 October

Annual Exhibition Woodcraftsmans Guild of Qld Inc

Mt Cootha, (07) 3269 4628

1-5 October

TIMI 1996—Int. Woodworking Industry Trade Fair

Frederica, Denmark
Tel: +45 86 43 5155, fax: +45 42 95 25 63

3-6 October

Dorrigo Woodcrafters Demo/Sales

Dorrigo Masonic Centre, Hickory St,
Dorrigo, (066) 572231

4-5 October

Forest Heritage Festival

Forest Heritage Centre, Dwellingup, WA
(08) 9538 1395

8 Oct-2 Nov

Conviviality

An Exhibition Of Contemporary Chairs
Craft ACT, (06) 241 2373

11 October

Eildon & Dist Woodworkers Guild

10th Birthday Celebration
Alexandra Timber & Tramway Museum
ah (03) 5774 2495 bh (03) 5774 2575

11-12 October

1997 Classic & Wooden Boat Festival

National Maritime Museum,
Darling Harbour, Sydney

Tel (02) 9552 7777

17-19 October

Melbourne Timber & Working With Wood Show

Melbourne Exhibition Building
Riddells: (02) 9712 5623

29 Oct-Nov 2

33rd Nagoya Int. Woodworking Machinery Fair

Nagoya, Japan
Tel (052) 321 4470 Fax (052) 321-4412

30 Oct-2 Nov

Australian Craft Show

Brisbane RNA Showground
(02) 9957 4514

30 Oct-2 November

Adelaide Timber & Working With Wood Show

Wayville Showgrounds
Riddells: (02) 9712 5623

3-14 November

Wesfarmers Fine Wood Awards

Central Park St Georges Terrace Perth
(09) 538 1395 Fax (09) 538 1352

6-9 November

Australian Craft Show

National Convention Centre, Canberra
(02) 9957 4514

8-9 November

The Native Timber & Furniture Expo

Old Methodist Church, Echuca
Greening Australia Deniliquin
(03) 5881 5631

21-30 November

14th Vic Woodworkers Association Festival & Exhibition

Manningham City Offices, Doncaster
(03) 9497 1916

25-30 November

Australian Craft Show

RAS Sydney Showground
(02) 9957 4514

29-30 November

Woodturners Society of Queensland

Sales and Exhibition
Mt Cootha Botanic Gardens Auditorium
Tel: (07) 3397 8156

Dec 12-Feb 1, 1998

9th National Dame Mary Durack Outback Craft Awards

Queensland Museum, Brisbane
Tel: (07) 3221 5300

3-23 January 1998

Australian Wood Design Exhibition

Wood Inc, PO Box 626, Orbost 3888
(03) 5154 0126, (03) 5154 1773

*Listings in Wood Diary are free. Details to:
Australian Wood Review PO Box 4336,
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PRODUCT REVIEWS



DELTA B.O.S.S. SANDER

I was recently sent a Delta B.O.S.S. (bench oscillating spindle sander) to test out and review. My first impression of the machine was that it looked somewhat lightweight and not really up to the job. But upon closer inspection and subsequent testing I found the B.O.S.S. to be a very well made and finished machine.

This machine uses a heavy duty 1/4hp induction motor that is *exceptionally* quiet and smooth. I sat the B.O.S.S. straight on my workbench and detected absolutely no movement at all during use. In fact timber placed on the 18" cast table while the machine was running didn't even move at all.

Dust collection/extraction is through specially designed table inserts which surround the sanding drum. A built-in fan draws in the dust through the insert into a dust bag, or for even better extraction, a dust extractor can be attached. I found the dust collection worked quite well, except on the coarser grits where a lot of stock was removed.

The B.O.S.S. comes with a standard 3/4" sanding drum and an accessory kit is available with 1", 1 1/2", 2", 3" sanding drums and table inserts. This accessory kit, while an extra expense, is a must if you want to get the full use out of the B.O.S.S.

The B.O.S.S. performed very well on my tests, with all surfaces sanded flat and square every time right up to 3" high. I found it was very easy to sand right up to a line, as the machine was so smooth. The B.O.S.S. had ample power for all sanding tests carried out on various timbers and curved shapes. The smooth oscillating action takes a bit of getting used to and was somewhat slower than I had imagined. The oscillation helps keep the sanding drums clean and also provides a slightly more aggressive action than a standard drum sander. I feel the B.O.S.S. sander would be a handy addition to any workshop, and represents very good value for money. Available from Carba-Tec 1-800-658 111.

By Anton Gerner



MULTICAM ROUTER / ENGRAVER

One of the major considerations when purchasing CNC machinery is the purchase price. Machinery in the region of \$200,000 is not uncommon, with the average price tag of a good point to point or cheap router in the vicinity of \$140,000. When this kind of money is being considered, manufacturers often adopt the 'safe' approach and do nothing. I was recently invited to view the Australian-made *MultiCAM* routing machine in operation, and was very impressed with its performance, especially when I was told the price, starting at \$24,850.

Here is a machine with much of the performance you'd expect from a machine costing four times the price. All you need to get going is a CAD system that outputs DXF, HPGL or NC files. *Autocad*, *Procad*, *CorelDraw* and *Generic Cad* are all suitable. Design your part on your preferred CAD system, and the *MultiCAM* software adds lead in and out, drill patterns, allocation of shortest cutting path, and

will even combine jobs. The toolpath in DXF (or similar) format is converted to machine code with the *MultiCAM* software, and then downloaded to the routing machine.

Machining of the part is almost immediate, on a standard table of 1220 x 1220 (option 1441 x 2550) using German 3.5hp Perske routing heads. Features of the on-board, 30 function controller are auto-positioning, relocation of start-point and on-table digitising.

The *MultiCAM* is lightly constructed in comparison to traditional wood-working machinery, but will cut 32mm MDF with ease, and should handle most timber sections. The machine was originally designed to cut plastic, acrylics, aluminium and other soft metals and many hundreds have been installed in Australia and South-East Asia over the last six years. It's horses for courses, and in many cases this Aussie-built machine will do exactly what you need at a fraction of the price, with what I believe are outstanding software features.

More information from (049) 68 4877.

Reviewed by Philip Ashley



JET 14CS BANDSAW

A 14" bandsaw is a remarkably versatile tool and I wanted one that runs smoothly and is able to take light, controlled cuts. I chose the JET 14CS because of its quality construction, fine adjustment for blade guides and weight (185lb).

The saw is made in Taiwan to imperial specifications. It has 6" high and 13 1/2" wide cutting capacities on a 15" square table, taking 1/8" to 3/4" blades, 93 1/2" long. All the castings—wheels, table, chassis—are good quality with no rough edges. There is only one speed (3000 sf/pm) which works well. The 1hp motor is powerful enough and I cut a large quantity of dry york gum burl almost 6" thick without holding back.

Working is comfortable for my average height and I found the position of the large 'off/on' switches convenient. The dust chute would be easy to attach to an extractor, although I will have to make an adaptor. The table tilts both left and right after releasing two positive locking levers, although tilting to the left is less convenient, requiring fiddling with the level-registering screw. It is a stable, quiet-running unit that I highly recommend. From Woodman Group (03) 9555 5199, (02) 9708 3233, (07) 3844 4433, (08) 8346 4561, (08) 9272 3844

By Terry Martin, woodturner.

PORTER CABLE PROFILE SANDER

First we had the orbital sander, then the random orbit sander, then the oscillating sander and now just released is the inline profile sander. The advantage of the inline sanding mode is that no cross-grain scratch or swirl marks are produced if the tool is used correctly.

The tool comes with three different sanding heads, one of which is a very useful flat V-shaped sanding pad designed for sanding into corners. There are seventeen rubber profiles for tackling the majority of shapes that woodworkers



or renovators would encounter.

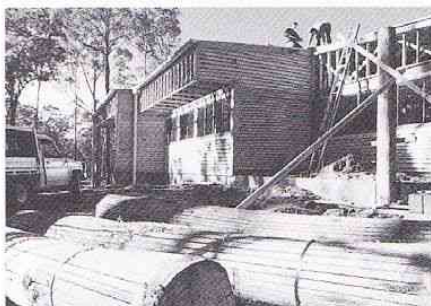
The machine has a dust extraction attachment for connection to portable vacuum equipment which is an important requirement for personal safety. As I was in the process of completing a mahogany dining table and restoring a silky oak sideboard I trialled the machine and compared it to my usual methods.

The tool proved to be very useful for flat corner sanding, however the sandpaper did wear out rather quickly, suggesting that cloth backed sandpaper instead of the paper backed type supplied might be preferable*. The paper also wore quickly when sanding profiles, although easing it around will extend its life.

The sanding profiles were easy to change and the on/off switch was likewise easily accessed whilst operating the tool. The weight of the sander, however, is substantial for continual use and I found that it was rather noisy. In conclusion I suggest that the purchase of such a tool would primarily be for a professional woodworker, in workshops where repetitive processes are common or for those undertaking restoration projects. Available from Carba-Tec 1-800-658 111

Reviewed by Charles Sale.

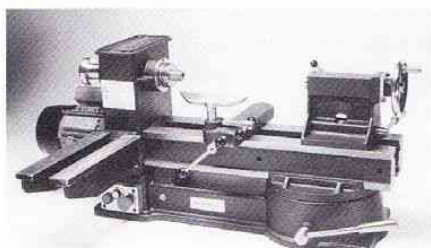
**Tech. editor's note—Porter Cable have the abrasive paper used on the profile sander especially made for the tool, cloth backed is not available.*



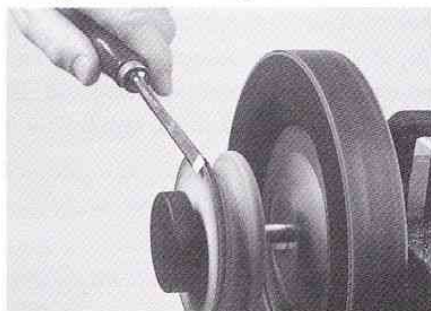
Radially sawn yellow stringybark weatherboards, delivered in the round, were used to construct the new facility at East Gippsland TAFE in Victoria.



Lie-Nielsen low angle and standard block planes now available in Australia.



Omega's new Stubby 5500 lathe



Tormek's new profile Leather Honing Wheel for the inside honing of gouges and V-parting tools.



The Atlas Copco PJ710 professional use biscuit joiner, a new release.

Smaller Brother

New release from Omega is the *Stubby 5500*. It can transform from a 750mm between centres spindle lathe to a compact 300mm between centres mini-lathe in seconds and then on to a bowl lathe with capacity for a timber blank 550mm diameter by 240mm thick. All this and variable speed, cast iron and cam-locks. Designed and built in Australia, it is ideal for any professional or serious part-timer. Contact Omega on (03)9782 5226.

Sharp Secrets

One secret to successful woodworking is sharp tools and the latest attachments for Tormek grinding systems are sure to help. Pictured is the profile Leather Honing Wheel the LA100 for the inside honing of gouges and V-parting tools, normally a fiddly job. Available from Promac (07) 3279 4811.

New Vocation

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New Tools

Just released from Metabo is the SXE 450, a big 400 watt, 150mm size pad, variable speed 4000-10,000 rpm sander which operates with both orbital and rotational movement. Other features include a velcro-based pad and integrated dust extraction system. Also out is the LF 714S rotary planer, a very clever tool designed to remove paint and other surface finishes without affecting the timber. The tool uses carbide cutters adjustable in cutting depth from 0-0.3mm.

New Spaces

A Diploma of Arts in Furniture Design is being offered in 1998 at the East Gippsland TAFE. The new fully equipped, purpose built facility forms part of the new Network for Excellence in the hardwood timber industry complex. Most exciting are the 'incubator' workshops which link to the machine and design workshops. These

provide space for graduates and others to begin working in their own businesses with access to local timber supplies. Contact Kevin Breheny or Andrew Butterworth on (03) 5152 0774 or (03) 51520736.

Contemporary furniture and textile designers and makers have a new retail outlet in Melbourne. *Internal Elements* is located at 311 Bay Street, Port Melbourne and is well positioned in a very trendy and fast growing area, only minutes from the city centre. If you are interested in purchasing fine furniture or are a maker wanting to have your work represented contact owner Dee Biggs on (03) 9646 5911.

The *Victorian Design Group* was formed around two years ago when some of the graduates of the Box Hill TAFE college banded together to share tools and workshop space. In July the group, which now numbers twelve, opened 'Profiles' a retail outlet at 252 Johnston Street, Fitzroy in Melbourne. Profiles is collectively managed and operated and can be contacted on (03) 9415 7394.

Retailer and mail-order supplier of machinery, tooling and accessories for the woodworker *Carba-Tec* has opened a new outlet in Sydney. Carba-Tec is centrally located at 200 Coward Street, Unit C1 Mascot. Phone (02) 9317 2700, Fax (02) 9317 4838.

IFF Singapore '97

The success of the 1997 International Furniture Fair held in Singapore in March (US\$178 million in spot order sales during the event) has paved the way for future success stories with annual fairs planned up to 2002. Already 400 exhibitors from 28 countries are planning to exhibit a full range of furniture and decorative accessories. With US\$700 million in projected sales for the next 12 months following the '97 Fair, it's not surprising space is already being booked. Contact project manager Jorinda Tan (65) 568 2626 or Fax (65) 568 2922 (Singapore).

Lie-Nielsen

MIK International have become the

Australian Wood Design Exhibition 1998



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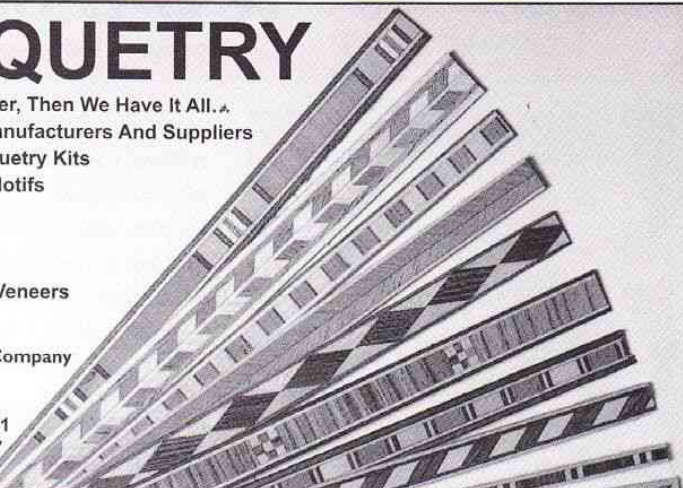
extended
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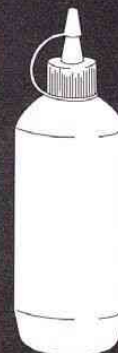
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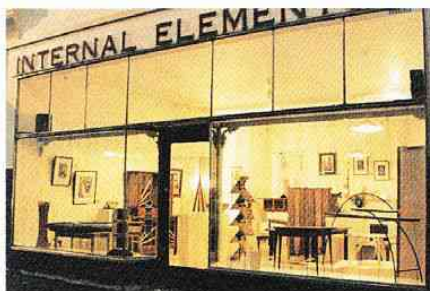


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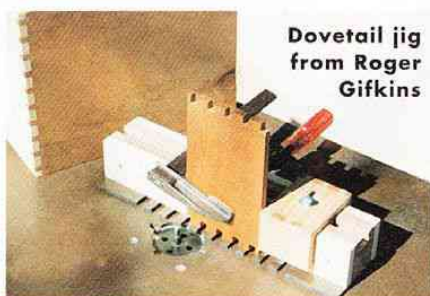
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Internal Elements, a new retail gallery space for furniture designer/makers.



Woodworking Warehouse in Highett, Victoria now has 20,000 square feet of display and demonstration space.



Dovetail jig from Roger Gifkins



Above a very happy Mr Tony Gunton, winner of the Promac Workbench which was one of the subscription prizes from Wood Review issue 13.



Panasonic have released a new cordless 12v metal cutting saw—a similar version for cutting timber will follow shortly.

new Australian agent for the highly crafted *Lie-Nielsen* handtools. These beautiful tools aim to reproduce or surpass the quality and performance of the traditional tools of the good ol' days. Call MIK for details of the full range on (08) 8333 2977 or Fax 08 8364 1685.

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Record are currently promoting their high quality woodworking vices with a special trade-in new for old deal. Take in the family heirlooms, grandfather's old vice and trade up for a new *Record* vice. For your nearest participating distributor contact *Record* on (02) 9748 6800.

Easier Dovetails

Roger Gifkins, fine box-maker, has released his own through dovetail jig featuring laser cut templates, recycled grey gum, metric scales and micro adjustment. The jig accepts standard dovetail cutters. Prices start at \$179. Contact Roger on 065 674 313.

What's On

The 1997 Classic Wooden Boat Festival at The National Maritime Museum, Darling Harbour, October 11-12 offers plenty of fodder for those with a passion for maritime heritage and the various products used to preserve and promote it. With boats for sale both in the water and on the hard, promoters are expecting between 10-20,000 visitors.

The Forest Heritage Festival, Dwellingup WA is on again this year (October 4-5) with the added attraction of a number of craft demonstrations. Over 1100 passed through last year and it is expected craftspeople both within and without the industry will be there again to enjoy the demos and the commission free sales. Further information is available from the Fine Wood Industry Project (08) 9538 1395, fax (08) 9538 1352.

From September 9-21 Melbourne's Meat Market Craft Centre plays host to an exciting exhibition. *Designing in Wood* is the work of 23 contemporary furni-

ture makers, students of the Coles School of Woodcraft. Over 40 pieces will be on display with selected items for sale. Further information (03) 9486 3766.

Build it Yourself

What a great idea! Furniture kits that include pre-machined timber, instructions, biscuits and screws. All you need is glue, a few handtools and a sander to make a hallstand, bookcase or coffee table. The hallstand pictured opposite is just \$195, contact *Realwood Furniture* tel (02) 4942 3909, fax (02) 4947 8666.

On the Move

Woodworks Book and Tool Co has moved to new and larger premises at 8 Railway Rd Meadowbank, 5 minutes walk from the ferry and just across the river from the Homebush site. Mike Jeffreys has taken over the business from Leon Sadubin who will return to the bench to meet some long-standing commissions. The company will continue to offer quality hand tools, equipment, books, Sadubin benches, Teknatool lathes and accessories to the public. *Woodworks* new number is (02) 9807 7244, fax (02) 9807 7344.

Adams Timber have moved their ACT machining service *Close Shavings* to Yallourn Street and are now offering faster turnaround times. Adams stock over seventy species of timber, recent arrivals include 50mm thick anegre and iroko. Iroko has excellent durability and looks and performs like teak. Phone (06) 280 6467.

Bob and Loma Spencer of *Brisbane Valley Woodworks* are set to semi-retire after 30 years of producing high quality domestic and commercial joinery. The company is looking for a new proprietor to cater to the loyal clientele they have built up over the years. Situated one hour west of Brisbane with close access to the major centres of Toowoomba, Ipswich, Caboolture and the Sunshine Coast the business faces no existing close competition and offers tremendous potential. Phone (07) 5424 1486

Woodworking Warehouse (formerly *Malvern Machinery*), is a new big woodworker's store located at 22 Wannan St, Highett. There are 20,000 square feet of display area for instantly demonstrating most woodworking machinery including *Jet*, *Cyclone Systems* (USA) and the new *Excalibur* range from Canada. *Excalibur* scroll saws operate with a unique parallel link drive system which counterbalances all movement and virtually eliminates all vibration. Check them out at the new warehouse or at the Melbourne Timber & Wood Show in October. Tel (03) 9555 5199.

Orbost Permanency

Every year for the past six years the Woodworkers of the Orbost District (WOOD Inc) have successfully staged the Australian Wood Design Exhibition attracting top name woodworker participants with prize money over \$10,000. The annual purchase of an Acquisition Award piece has led to the establishment of the Victorian National Collection of Wood Design

which now includes works by Ellen Burton, Jeff Nunn, Robert Slater, Kim Harris, Daryl Clavarino, René Melis, Tom O'Reagan and Peter Wellington. Now WOOD Inc is taking the collection one step further by planning to establish a permanent home for the collection. Entry forms for the 1998 event are available by phoning (03) 51 540126 or (03) 51 541 773.

Art for Sale

If your art is for sale you must know what your clients want. A research report commissioned by the Australia Council surveys visual art and fine craft buyers. *To Sell Art Know Your Market* is available by calling 008 226 912 or (02) 9950 9000. A newly released grants handbook is also available by phoning this number.

Open House

Not to be missed are Altendorf's special 'open house days' in Melbourne, Sydney and Brisbane. You can drool over the panel saws while you are treated to beer and nibbles. For times and places call: (02) 9756 6669.



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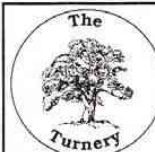
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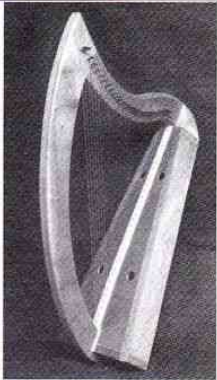
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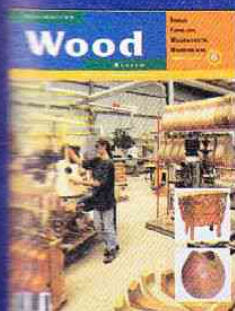


BACK ISSUES

No. 9—Limited stock: Low cost machinery, planer blades, traditional workbench plans, restoring furniture, building timber decks, Stephen Hughes' turned and carved bowls, salvaged timber, woodworking in Europe, cordless technology, pricing your work, oak.

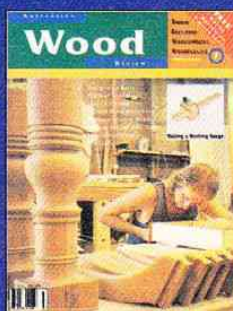
Winners from last prize draw:

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Festo ET2E
Random Orbit Sander
R. Ford, Vic
Bosch PEX12AE
Random Orbit Sander
L.F. Seymour, Qld
Hitachi FSU13Y
Random Orbit Sander
W. Hill, NSW
Colen Clenton
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W. Kirkham, Vic
DeWalt DW670XE
Laminate Trimmer
J. Flower, NSW
Jorgensen Clamps
C.P. Cholmondeley, NT
Marples Marking Gauges
I. Flewelling, Tas
A. Branford, SA
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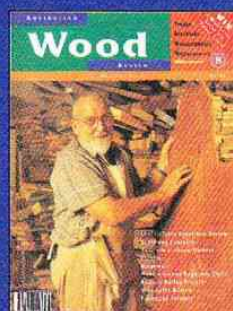
No. 6

Musical instrument making in Australia, timber veneer design, Chinese Furniture, laying a sunburst veneer match, computer design software reviewed, sanding and abrasives, bandsaws, winning at exhibitions, turning natural edged hollow forms, Maton Guitars



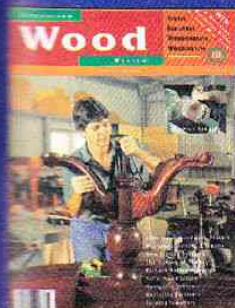
No. 7

Designing chairs, torsion boxes, spray finishing, making a marking gauge, plywood, second-hand machinery, circular saws, education survey, blackwood, Parker furniture, making lathes, gift trade woodturning, computer software, veneering. Free Special Timbers Poster



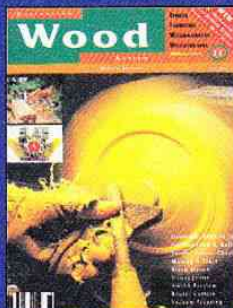
No. 8

Designing cabinets, panel saw review, desert & inland timbers, plantation forestry, Robert Dunlop, mini-lathe review, turning a lidded bowl, Wendell Castle, hingedware, the chisel, history of machinery, mahogany, making a Vienna regulator clock



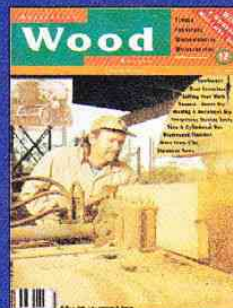
No. 10

Anniversary Australian Woodwork feature, designing tables, buying timber, joining systems, turning jewellery, pedestal table project, mortise & tenons, restoring furniture c'd, mulga turnings, Raffan interview, machine sanding, solid wood joins.



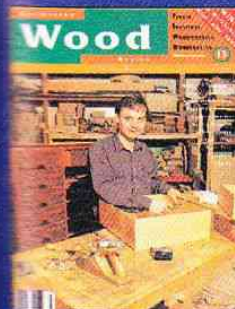
No. 11

Dovetails, router cutters, veneer reference chart, dowel joints, carving claw & balls, making a colonial table, block planes, turned and carved 'winged' forms, AWISA 96, Cook's Endeavour, collecting timber, walnut, tiger myrtle, vacuum pressing, Jah-Roc, MAP.



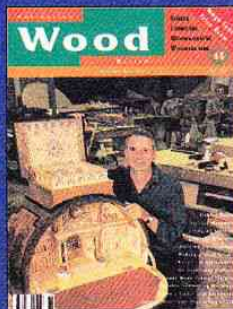
No. 12

Sawblades, dust extractors, routers, document box plans, sharpening turning tools, more from CNC, Japanese saws, distressed finishes, selling your work, sawmilling, Griffith Furniture, teak alternatives, French woodturners, veneered table top.



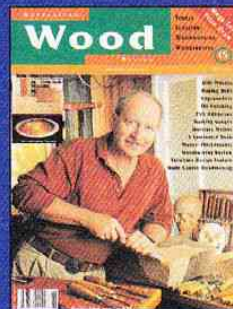
No. 13

Panel saw review, making drawers, safety, making a hall table, router usage, jigmaking, Huon pine, Leo Sadlek's clocks, working smarter, sawmilling, laminated and segmented turnings, teak alternatives, woodturning collaborations, Wentworth Furniture, Jeannette Rein.



No. 14

Making doors, spindle moulders, clamps, laminate trimmers, squares, making shoji, random orbit sanders, WA Goldfields timbers, drawer systems, portable sawmilling, carve a backboard, scroll chucks, turning handled bowls, inlay, David Boucher.

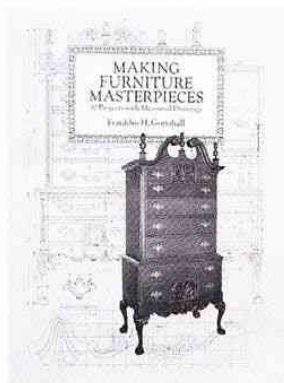


No. 15

Furniture design comp. review, making beds, drill presses, edgebanders, oil finishing, PVA adhesives, marking gauges, moisture meters, a laminated desk, planer-thicknessers, new woodturners, multi-centre turning, turning bookends, eye safety, Don Powell

Bookshelf

Book reviews by James Brook.

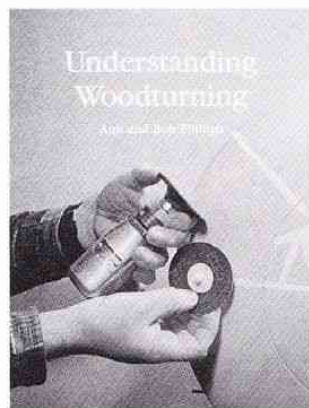


Making Furniture Masterpieces

By Franklin H. Gottshall

I had heard of this book some years ago and believed it to be some sort of classic. It's actually not quite as good as its reputation would have it. It's let down, I believe, by imperial measurements, text that is too brief and mediocre photographs. That aside, there are thirty projects with detailed technical drawings and measurements that vary in difficulty from medium to advanced. If you are looking for projects then this book offers you years of activity, combining as it does American styled reproduction furniture with applied carvings.

Softback, 220 pages, Dover, \$29.95

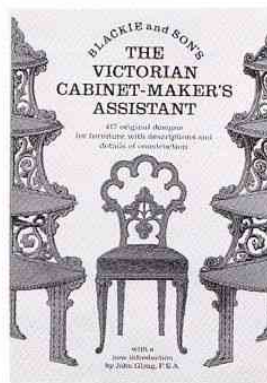


Understanding Woodturning

By Ann and Bob Phillips

This is a very good book for beginners. A concise introduction to tools and timber followed by twelve introductory projects that will keep the young student or beginner hard at it. The next part tackles more difficult work, large platters, hollow forms and deep bowls, quite a jump really from the initial projects. This is a friendly book, easy to read, in some cases a bit simplistic but it should sit well with schools and individuals just starting out. Good turning.

Softback, colour, 152 pages, GMC, \$34.95



The Victorian Cabinet-Makers Assistant

Blackie and Son

First published in 1853, this book is a reference source both for technical information and Victorian style furniture. Divided into three sections, the first covers technical drawing, practical geometry and drawing instruments used. The second section looks at the popular timbers of the era (particularly mahogany) with notes on seasoning, 'cutting-up' and even purchasing. This is followed by shorter notes on veneering and woodcarving. The third section features plates or drawings of hall, dining, parlour, drawing room, bedroom and miscellaneous furniture. The accompanying notes are quite detailed, but I found them a little heavy going. Whilst there is ample inspiration for things to make as well as elements to adapt into modern furniture, what I really liked was the underlying philosophy that emerges constantly from the notes—after all, this was the golden age of cabinetmaking.

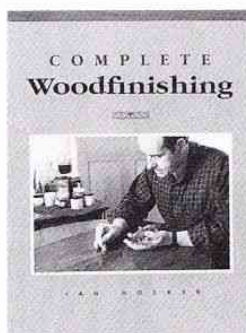
Softback, \$35, Dover

Complete Woodfinishing

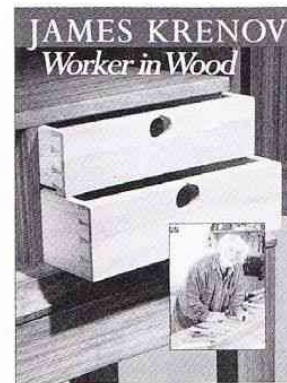
By Ian Hosker

This is a very well presented book with drawings and photographs which are clear and easy to follow. The author covers a lot of ground in the book so in some cases the text is a little light on, considering the depth of some of the topics. However if you can absorb everything on offer here you will learn much. The strength of this book is also its weakness, trying to cram so much information into one title and do it all justice.

Softback, 168 pages, GMC, \$34.95



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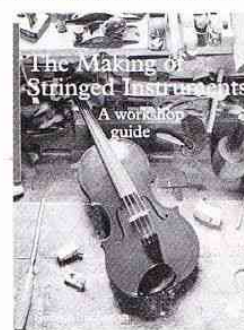


James Krenov, Worker in Wood

By James Krenov

About 17 years ago I stumbled across Krenov's book 'The Fine Art of Cabinetmaking'. At last here was someone who understood my feelings towards woodwork, the spiritual approach to the craft that I thought the archetypal craftsman would have. Thousands of other born-again woodworkers also benefited from this man's quiet anecdotes, quest for the perfect joint and the images of his fine detailed work. Looking again at his work some years later is like returning to the backyard of your childhood, everything seems a lot smaller, but the emotion is still there. This book is an overview of his work and for those of you who aren't yet acquainted with him it may well give you the prod in the back you need to move forward in your work. Krenov is the grandfather of contemporary fine woodwork.

Softback, 128 pages, Sterling, \$29.95



The Making of Stringed Instruments

By George Buchanan

I've always been fascinated by stringed instruments, the making of which seemed too mysterious and arcane for the average Joe like myself to attempt. This book doesn't remove this mystique but it's interesting reading nonetheless—what a fascinating craft this is. If you can make a violin you can make anything. I recommend this book to those who aspire.

Softback, 205 pages, Batsford, \$39.95

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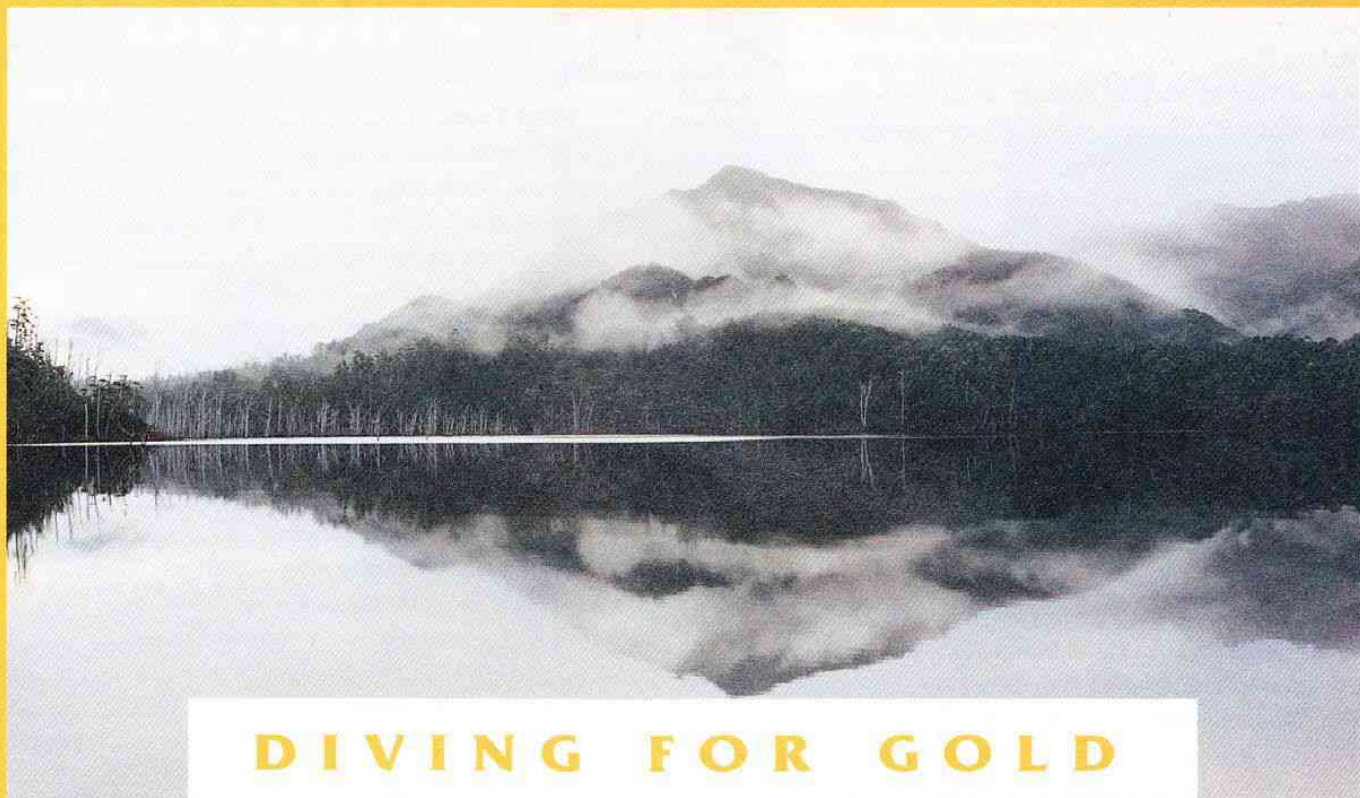
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DIVING FOR GOLD

Dealing with the unexpected is all in a day's work for Dave Roberts, who has a government contract to salvage 1500 tonnes of Huon pine from Lake Gordon and the Wild Waters National Park (pictured above and right). Diving into the freezing and largely uncharted waters of Lake Gordon, he is faced on a daily basis with the hazards of exposed rocks and other debris, not to mention the constant risk of his ropes becoming entangled with the propellers of his boat.

When you go bush in a pristine World Heritage Area on a timber salvaging mission, you have to tread very carefully—a varied life has equipped Roberts with the necessary bush skills for this. To avoid damage to other vegetation a system of ropes and block and tackle forms the flying foxes needed to bring the huge logs from the forest floor, down the steep slopes of the mountainous terrain to the river rapids below. His motto: 'We recover the dead to preserve the living'.

This isolated and unforgiving work is real wildman stuff. Dave greases his face against the wind, dons polaroids against the glare and thermals for most of the year round. However, inevitably when something is going to go



wrong, one is never dressed for the occasion. 'If ropes tangle around the propellor (you've) usually just taken off the thermal wetsuit and have to quickly jump in the water to untangle it in the clothes you've got on,' he says with a note of irony in his voice.

With just 100 tonnes already floated out in rafts, in a method similar to that employed by convict labour 180 years ago, it should take at least another two and a half years to fulfill the contract. While Roberts has been on this contract for just two months

he already has 15 years experience of Huon salvage under his belt, having collected the Huon debris from the flooded Huon River as it retreated to the ocean.

While Roberts works with boatman Peter Clarke, communication with the outside world is pretty limited as radio is virtually useless in the mountainous area and satellite has failed too. 'Our only fallback is flares, but if anyone actually saw them out here they'd probably think they were UFOs'. Possibly the Airforce F111's, that roar out of the wilderness at low level on their practice runs, scaring the living day-lights out of the frontiersmen, before screaming away to other training areas know the two are there.

Once the log rafts are landed and graded by Forestry into sawlog, utility and craftlog, they are transported to a sawmill 300km away. But Roberts won't mention names because in the mists of the Tasmanian wilderness the green gold has the habit of disappearing. So why, in the face of atrocious conditions, intense isolation and scrutiny does he do the job? 'Because even the smallest piece of Huon is worth salvaging, this is it, there won't be anymore.'

The Huon Piner: (03) 6267 9796, 6280 1110



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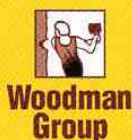
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