AUSTRALIAN

Wood

REVIEW

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Spindle Moulders
Clamping Systems
Laminate Trimmers
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Making a Shoji Screen
Random Orbit Sanders
WA Goldfields Timbers
Ready Made Drawer Systems
Portable Sawmilling Machines
Carve a Traditional Backboard
Getting More From Your Scroll Chuck

David Boucher's ébénistes, story page 32

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AUSTRALIAN WOOD REVIEW

CONTENTS

Timber

42 Taking The Mill To The Tree: Portable sawmill options.

56 West Australia's Kalgoorlie Goldfields timbers are hard, dense and beautiful.

58 Desert Timber Products: Drying desert timbers requires special technology.

66 Japanese Timber Getters. Terry Martin

Furniture and Design

21 Making Doors. John McLennan.

32 David Boucher and His Ébénistes.

Projects & Techniques

12 Bob Howard carves a traditional Australian backboard.

28 Japanese Shoji construction. Philippe Brooks.

40 Simple decorative inlay.

Woodturning

48 Terry Baker: On the surface.

62 Spheres of Influence: Leading US turners.Terry Martin.

72 Getting More From Your Scroll Chuck. Richard Raffan.

76 Turning A Handled Bowl. Terry Martin.

Woodworking

81 Ready Made Drawer Systems. Philip Ashley.

51 Spindle Moulders: Machines That Value Add. Philip Ashley.

Tools & Equipment

18 Random Orbital Sanders: Which One?

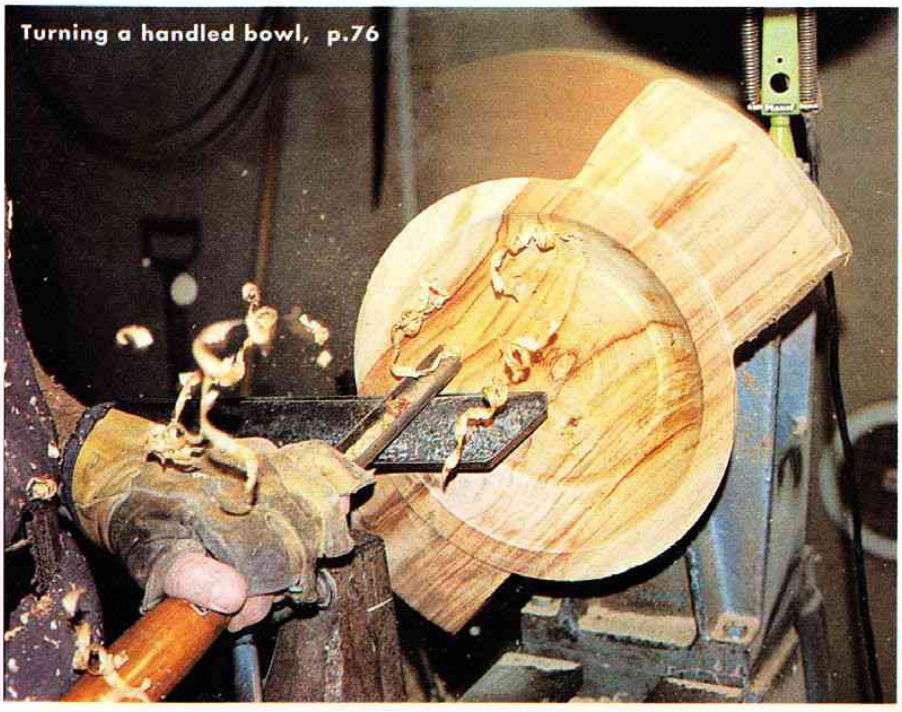
26 Laminate Trimmers: Richard Vaughan reviews four models.

68 All About Clamps. Anton Gerner.

38 Getting square: Marking tools reviewed.

Regulars

4 Exhibitions
84 Product Reviews
86 Wood News
94 Bookshelf
96 Wood Diary
96 Advertiser Listing



Turning a handled bowl, p.76

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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.

Safety: Woodworking can be dangerous. Do not undertake any work, process or action without adequate skill, training, safety equipment and/or awareness.

EDITORIAL

This is the first issue of the sixth year of publication of Australian Wood Review. The look and content of the magazine has evolved since then and will continue to do so. Our distribution of 14,000 copies has given us a firm position within the woodworking publications produced in this country.

We couldn't publish Wood Review without advertising input and we thank the companies that support us. Our guiding light though, is the interest of you the readers and the relevance the stories have for you. Many of you have written and phoned to comment on, or to suggest stories. This feedback is very welcome.

Our cover story features David Boucher whose company relentlessly pursues an ideal of perfection and is dedicated to finding and using the finest materials in the highest form of value adding imaginable. David Boucher's *Jewel of Persia* (pictured on the cover) has had no expense spared in its creation. I found it inspiring to visit a business which has overcome the nowadays almost unchallenged god of profit-making in deference to creativity.

Bob Howard's traditional Australian 'backboard' makes a good case for maximum effect from a basic toolkit and carving skills. The carving described would easily adapt to other items of furniture, cabinetry or architectural fitments.

Philippe Brooks, a furniture designer/maker who has lived and worked in Japan, demonstrates the making of and inspiration behind the beautiful screen pictured on page 28. The principles of shoji construction could be adapted to a variety of purposes.

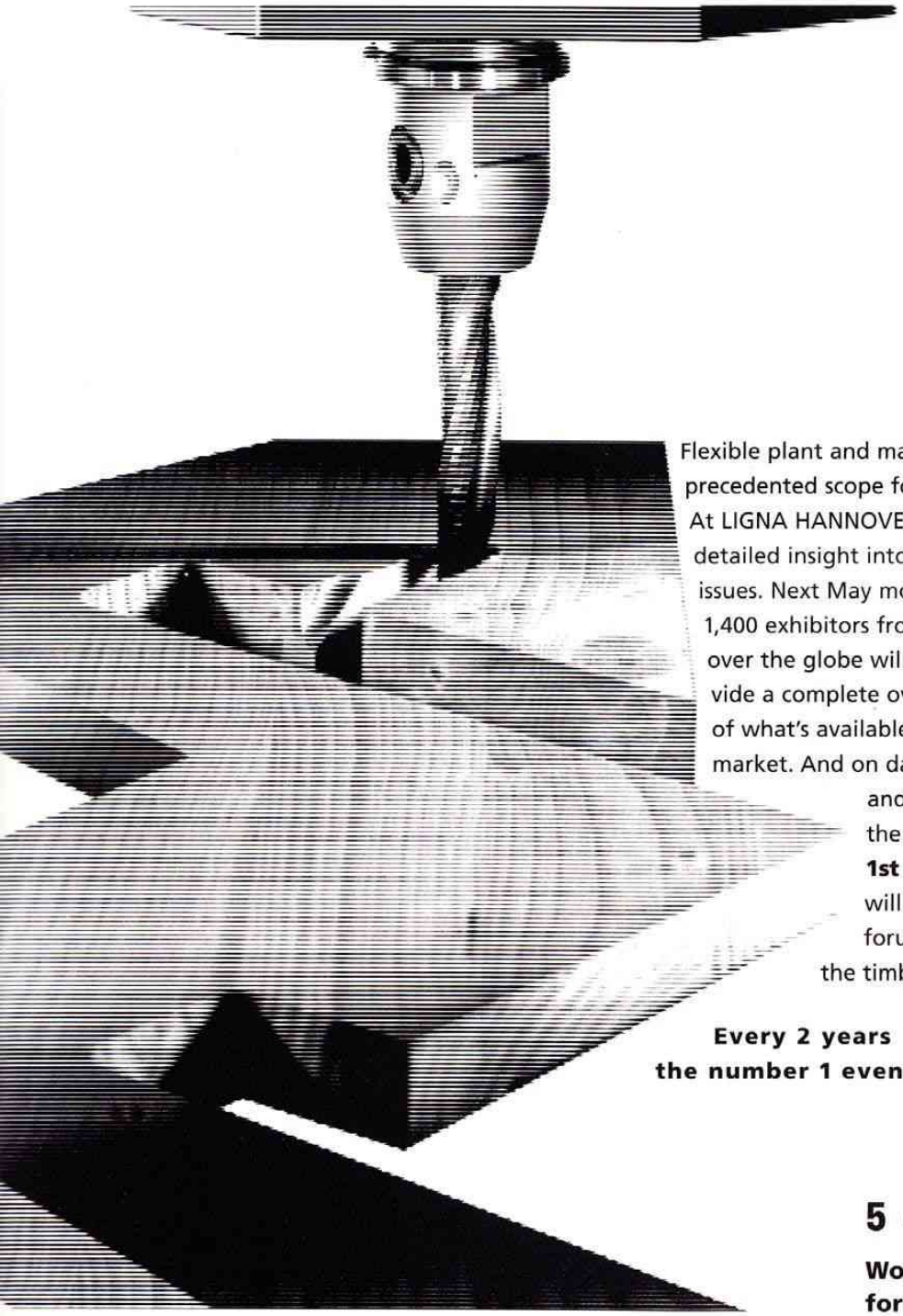
Following on from his 'winged vessel' project in AWR #11 Terry Martin describes how he uses a die-grinder to cut the handles of turned bowls. In another story he writes about some of the trends he has observed in the work of American turners, and refers to developments in this country.

There's lots in this issue for hand and power tool lovers. We review laminate trimmers, random orbital sanders, scroll chucks and marking squares—and that's in addition to our usual *Product Review* segment! Philip Ashley takes us through the ins and outs of spindle moulders and argues that here is a machine that, judiciously used, can elevate your items of production well above the ordinary.

Last issue we announced *The Crown Cut Veneer Furniture Design Competition* and called for entries from manufacturers and designers. The calibre of entries received promises a field of innovative designs which cannot fail to find favour with manufacturers, furniture buyers and readers of this magazine alike. The competition is jointly sponsored by Gunns Veneers Pty Ltd, Forests & Forest Industry Council of Tasmania and Australian Wood Review. Next issue we will feature competition entries and of course, announce the winners.

Linda Nathan, Editor

In Hannover the wood and furniture industries tap into the latest technical solutions.



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EXHIBITIONS

Photo: John Farrow

Console table *Lured To The Surface* by Leslie John Wright (pictured inset).

LURED TO THE SURFACE

Works by Leslie John Wright at Anibou, Redfern, NSW,November, 1996
Reviewed by Leon Sadubin

My first impression of Leslie John Wright's exhibition pieces was that they were fashioned out of driftwood or perhaps the cartilage and sun-bleached bones of a long stranded whale. I imagined that this beautifully wrought flotsam had been stumbled across on an isolated beach somewhere between Cape Grim and Cape Sorell on the wild Tasmanian west coast. First impressions can be so vivid!

The reality of course is far more prosaic, though the technique of production is probably just as exotic, as are the actual materials used: shaped steel rod, abaca plant fibre, alpha cellulose and carved medium density fibreboard. The cellulose is wet-formed into a skin which dries to a tight membrane over the substructure. Time honoured paper sizing techniques using animal glues and shellac are also pressed into service.

I suppose the concept of using these techniques makes good sense if working in driftwood just doesn't turn you on. It also makes sense if you know exactly the form you wish to produce, and you want complete control over the outcome.

This work was produced for a Master of Fine Arts Degree during Leslie Wright's four years of lecturing at the University of Tasmania's School of Art—Centre for Furniture Design. In total there are four freely sculptural works, one highly shaped leather and timber settee, two dining tables (one with a stunning set of chairs) and an audio-visual cabinet. The central piece—a gem of a console table entitled *Lured To The Surface*—gave the exhibition its name.

On close inspection the 'freely sculptural' works are beautifully constructed, obviously functional yet highly decorative; surfaces shimmer and invite one's touch. The best is a foyer table named *Then She Turns* which has at least five legs and an amazing urgency, as though it were about to gallop across the room.

Beneath the Indigo Sea has a more relaxed character. The top is a limpid deep blue colour contrasting with the tension and 'sea-current' movement

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of the base. It all may sound contradictory, but that is how these pieces are. At first the construction baffles you, then the personality of the piece challenges you. Two more pieces '*Incandesce* and *Last Summer* continue to lead you through the labyrinth of Leslie Wright's imagination.

The more you study these works the keener the realisation that they evoke a sense of the shoreline, that they are an artist's three dimensional expression of his deep love for the sea and all that goes on at its edges. Leslie's muse is that sinuous line between ocean and beach. This line is charged with a power which is relentless, frequently harsh and at the same time supremely beautiful. He has always been fascinated by its shapes and forms and by the influence it exerts over its human visitors. Where else can we observe nature's elements in such dynamic turmoil? Where else can we observe human beings in so much carefree action?

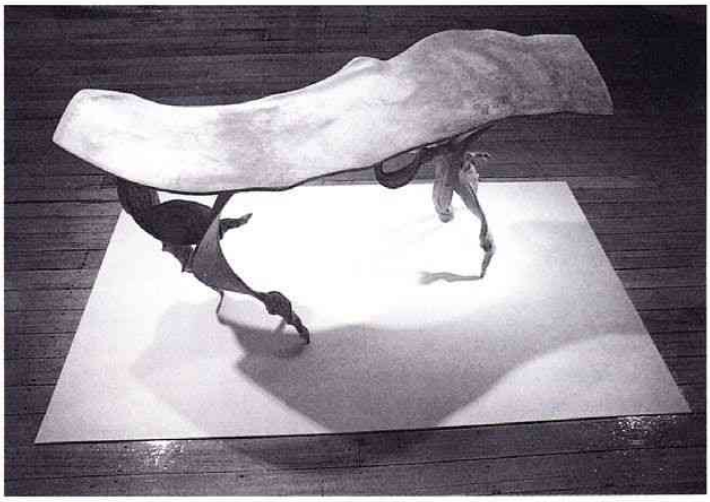
There are few designers in Australia who are capable of expressing their intent as clearly as Leslie Wright. There are fewer who are so multi-media skilled and capable of translating this intent into such polished works. The other pieces on display are further explorations of designs Leslie produced in his Western Australian studio.

The *Gymnos II* table setting is a sophisticated example of contemporary Australian furniture design. The table features highly figured Tasmanian ash veneer with tricky solid timber and laminated edge and end-grain detailing. The leg connectors are an interesting structural resolution to a practical problem and are produced in cast alloy. The chairs have strong leather elements which provide excellent seat and lumbar support. They are handsome from both front and back views.

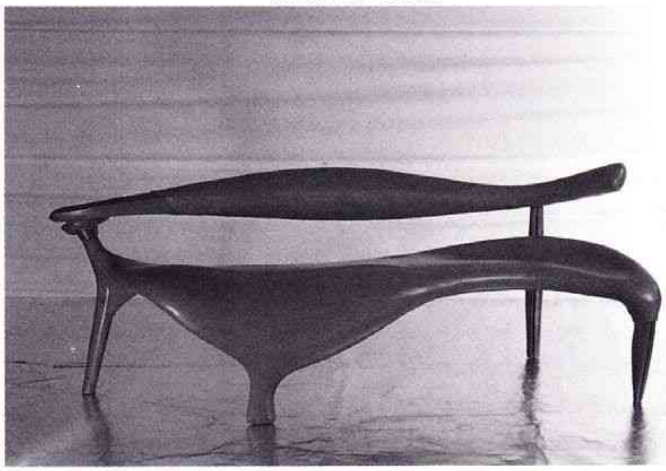
The leather *Settee For Jo* served as a useful transition piece between the carefree 'shoreline' pieces and the more functional items. It also has a weathered 'rolled in the sea' look which invites admiration and use. Surprisingly the settee is less about comfort than aesthetics. To give Leslie his due, this piece succeeds so completely in the good-looks department that a little discomfort serves to remind us how difficult it is to integrate the two.

Ultimately, says Leslie, the medium which bridged the gaps between inspiration, theory and the three-dimensional works was drawing, and more drawing. From small concept sketches to full size, richly detailed drawings Leslie John Wright worked to translate ideas into beautifully wrought pieces. That he is an undisputed master of form made his task so much the easier.

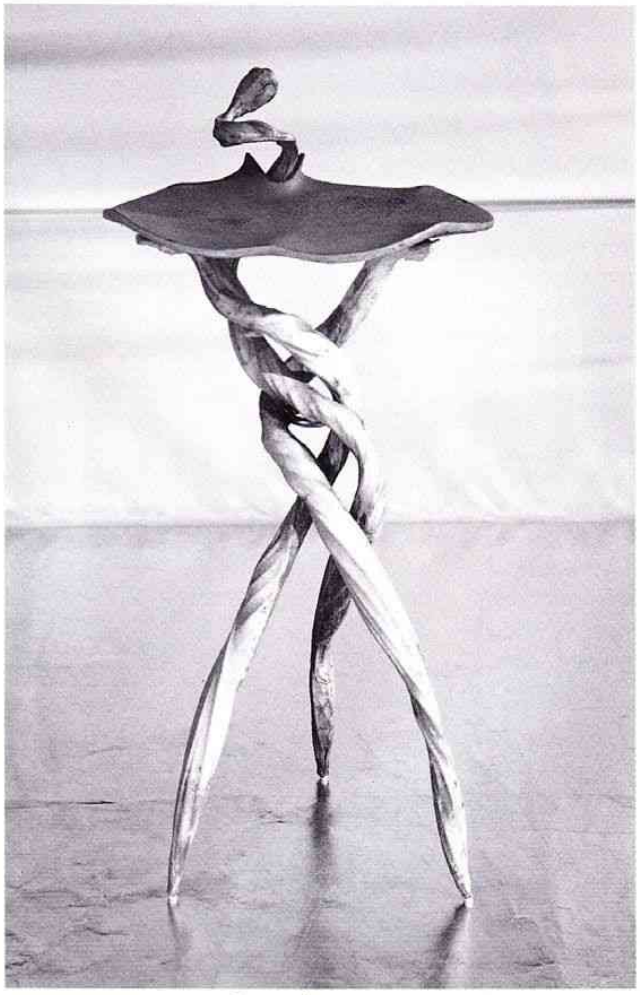
Photos this page: L.J.Wright



Then She Turns



Settee For Jo



Incandesce

EXHIBITIONS

ACTUALLY MAKING IT

Reviewed by Alex Selenitsch

Students of architecture at the University of Melbourne have two opportunities in their course to actually make their own designs. In second year, everyone is required to design and make a timber box to hold A4 size paper. This simple requirement and the need for basic jointing techniques in limited time (six by three-hour sessions) appears to force students towards individual and creative solutions. The variety exhibited in this exercise often comes from an analysis of the way paper can be stored. The ability to handle form also plays a part, but the best boxes are always those that find some elegant and obvious synthesis of form, use and construction.

This ability to synthesize, that is, to design, is tested more thoroughly later in the architecture course by a selected group of architecture students in final year. A limited number of students do a Timber Furniture Workshop Elective during the final semester of their degree. Again, the restrictions are severe. Students are required to design and make a piece of furniture substantially of timber. It must not only be useful but challenge or expand some aspect of its use or purpose. All of this has to be done in the equivalent of two weeks full-time work, although in practice the workshop sessions are spread over the entire semester.

The technical ability of these furniture makers varies. Despite this- maybe because of it—students combine their developed skills in form-making, with functional analysis and a pragmatic need for a specific piece of furniture. From the range of portable and demountable projects that have been proposed year after year, one can easily imagine the nomadic metropolitan space that students inhabit.

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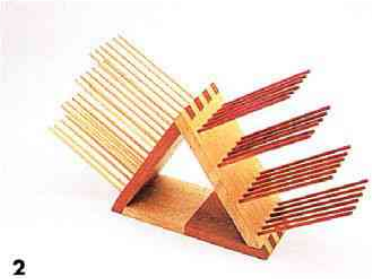

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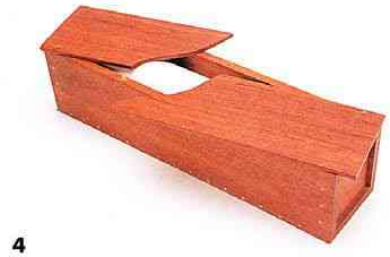

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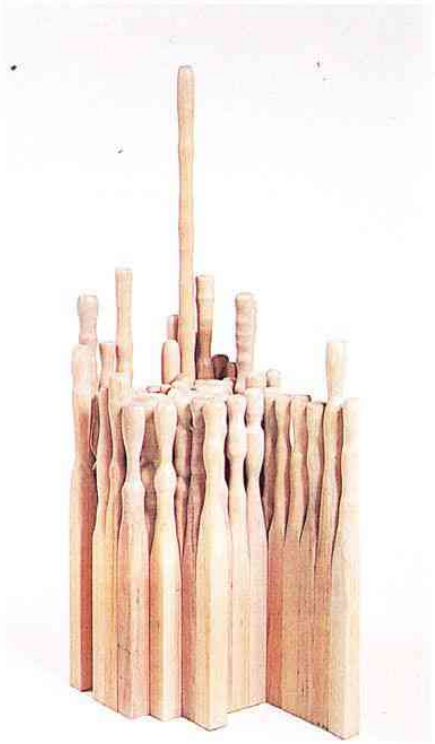

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7

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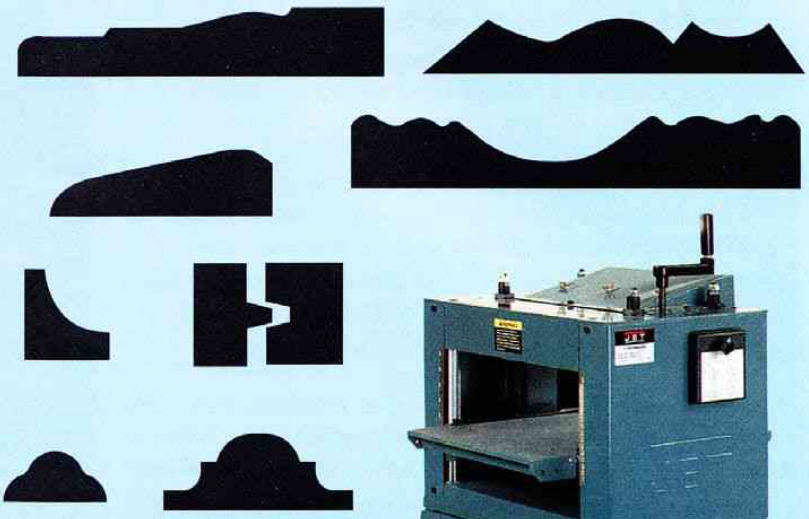
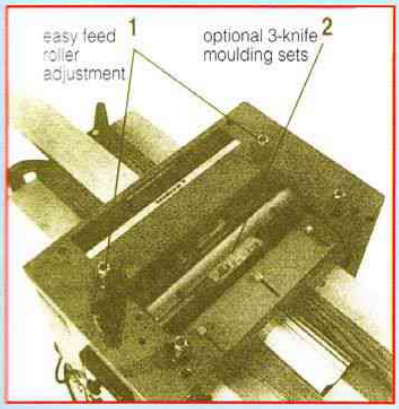
Here are just a few examples of mouldings that can be machined. Call your nearest Woodman Store for a full listing of all available profiles set up for moulding.





SPECIFICATIONS

Maximum Planing Width:	330mm
Maximum Planing Thickness:	153
Full Width Depth of Cut:	1.5
Minimum Planing Length:	355
Number of Knives:	3
Cutterhead Speed (rpm):	4500
Cutterhead Diameter:	65
Feed Rate	
Planing:	20fpm
Moulding:	10fpm
Motor:	1-1/2 hp 1ph

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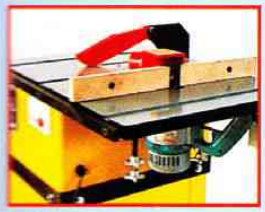
Blade diameter	235mm
Saw arbor	16mm
Depth of cut	80mm
Table ahead of blade	225mm
Fence length	500mm
Fence tilt	45 both ways
Max - blade to fence	370mm
Height to table top	830mm
Overall width	750mm

JOINTER	METRIC
Max width of cut	150mm
Max depth of cut	10mm
Max rebate depth	10mm
Total length of table	780mm
Cutter head diameter	60mm

SANDER	METRIC
Sanding disc diameter	230mm

MOTOR
1HP (0.75KW) Single phase



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be useful but challenge or expand some aspect of its use or purpose. All of this has to be done in the equivalent of two weeks' full-time work, although in practice the workshop sessions are spread over the entire semester.

The technical ability of these furniture makers varies. Despite this—maybe because of it—students combine their developed skills in form-making, with functional analysis and a pragmatic need for a specific piece of furniture. From the range of portable and demountable projects that have been proposed year after year, one can easily imagine the nomadic metropolitan existence that students lead.

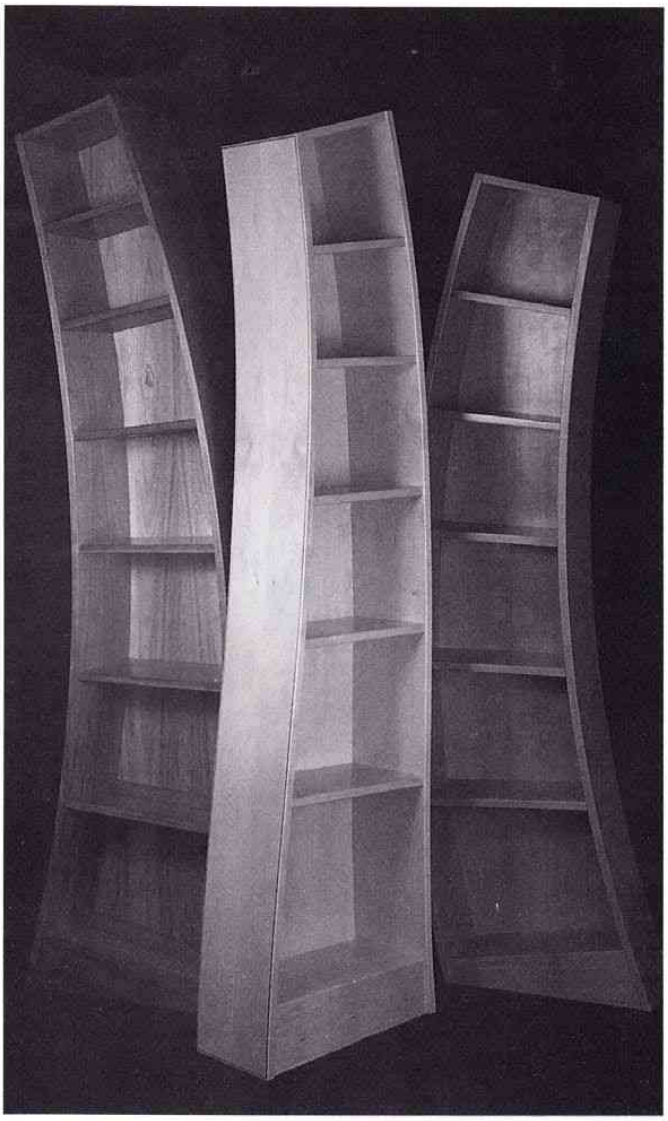
As might be expected, finished pieces emerge that do not easily sit in established categories. Peter Ho's *Hard Wood Seat* is a good example. Based on ideas of smooth and striated space being explored at the same time in his design thesis, it is made of over 60 sticks of limed hardwood, square section and close-packed at floor level and turned to different profiles at their tops. The contrast between individuation (the 'striated') and the mass block (the 'smooth') are clearly set out. So is the phallic imagery which lends an air of ribald danger to its uses as a chair. In fact, it is more comfortable than it looks, and sculptural qualities aside, could be used as a seat, hallstand and storage shelf in much the same way that an occasional chair provides these services.

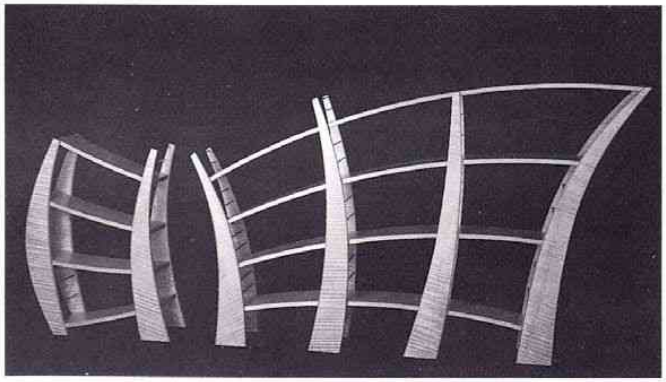
Brenton Weisert's *Hallstand* appears to be a complete contrast to Ho's work. Weisert's piece is obviously a standard lamp with a tray for keys and some metal pegs for hats and coats. It is an open, lightweight object made from a variety of woods and other materials in contrasting shapes, and more like the kind of object an industrial designer would envisage. But it is not entirely free of architectural thinking. Naval imagery is a deep undercurrent in modernist architectural aesthetics and Weisert's stand could just as easily be seen as a lighthouse tower or a buoy.

Kirsten Johnstone's *Storage System* also appears at first to be a standard piece of furniture. Lying horizontally, it consists of a plywood outer box with two cubic storage boxes made of timber placed inside it. Two castors enable the assembly to be easily wheeled around so that it can be used as a coffee table or as a sideboard at whim. But it also stands vertically, in which case the storage boxes are simply taken out and re-stacked. This piece takes up ideas of standardisation and component variety and resolves them into a simple object that could very easily be put into production. Without being noisy about it, it sidesteps the conventional furniture type. It is a small table, sideboard, cupboard, and wheelbarrow all at once.

Alex Selenitsch is a poet, and an architect and Lecturer in Architecture at the University of Melbourne.

Kiln dried messmate, Victorian ash and red ironbark for the 1996 A4 Boxes was donated by Stan Collins Sawmillers P/L of Bairnsdale, Victoria via the Timber Promotion Council.



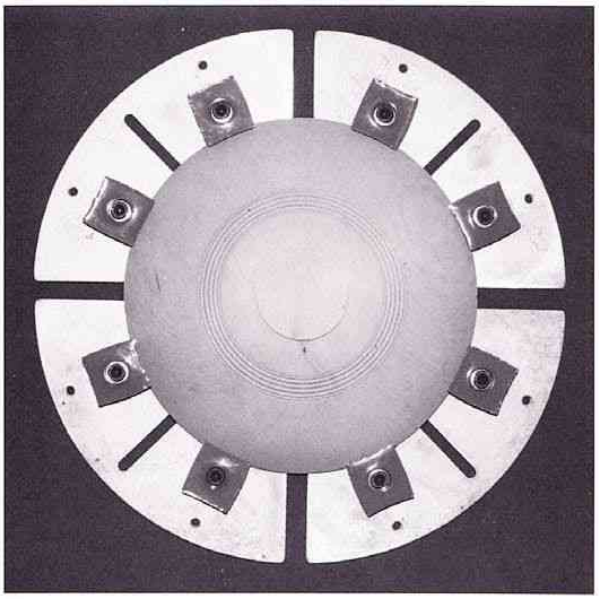


Novel Furniture

Handmark Gallery, Hobart, October, 1996.
Solo exhibition by Peter Walker.
Above are two pieces from Peter Walker's recent exhibition 'Novel Furniture' in Hobart during October last year. Walker, who was featured in Wood Review #9, received a $10,000 grant from the Australia Council in 1995 to develop his ideas. The bookcases are prototypes and intended for commercial production. Walker has just been appointed Head of Furniture Design Studio at Adelaide's Jam Factory Craft and Design Centre.

Photos: Michael Englert.

The Leader in Woodturning Innovation



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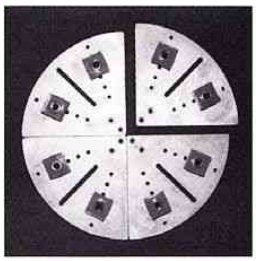

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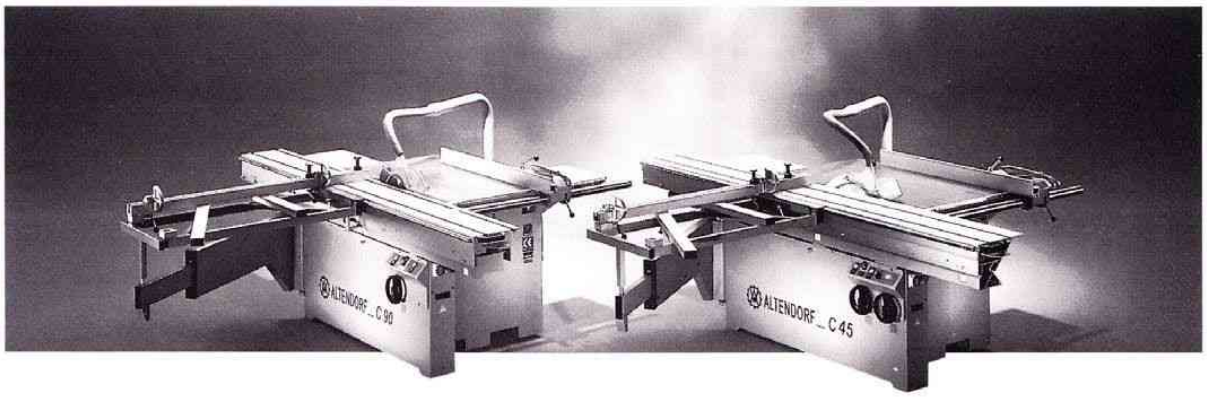

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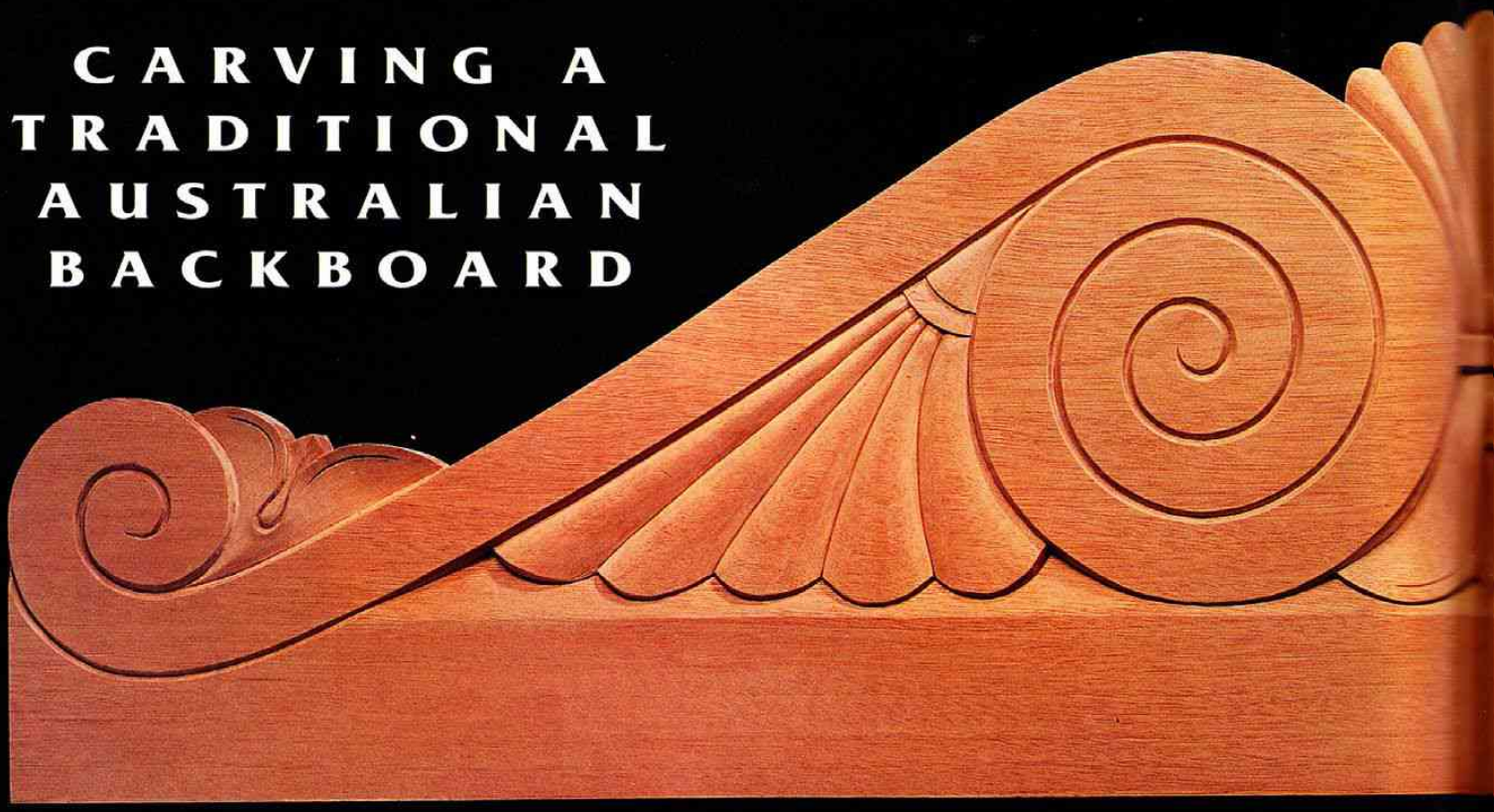
By Bob Howard

CARVING A TRADITIONAL AUSTRALIAN BACKBOARD



This is one of those rare carvings that looks spectacular, but is not particularly difficult to do. It requires only a few tools, and two types of cuts (V-cuts and round-over cuts) account for about 80 per cent of the work. The main difficulty, as with all decorative

Before we begin with the carving, there are some general points I would like to make, and which I encourage you to re-read several times as you work through the carving.

The Drawing

A good carving begins with a good drawing. This cannot be emphasized enough, and is particularly relevant to inexperienced carvers. The bottom line is—you carve what you draw. This is hard enough, without also having to worry about correcting as you go. Resist the temptation to get into the work as quickly as possible, and instead take as long as is necessary to get the drawing right first.

Flow Of Lines

So how do we know when the drawing is right? There is no easy answer as it depends on how good your eye is. But there are some specific points you need to be aware of.

The most important point is that lines should flow correctly and in harmony with each other. Curves should be smooth, without flats or corners, and when lines run in towards each other they should always do so gracefully. Your eye will extrapolate from where the line finishes, and the extrapolation should go where it is meant to go.

Technique

V-Tools & Grain Direction

When you cut diagonally across a board with a V-tool, as shown in photo 1, you will find that one side of the tool always cuts with the grain, while the other always cuts against the grain. (Of course, this is also true of gouges, particularly the deeper ones.)

With some timbers this is not a problem. The wood is forgiving enough to cut cleanly on both sides of the cut. With other woods, or where the wood is weak, such as on the top of a ridge, tear-out does occur on the side running against the grain. There are two basic ways to deal with this:

Firstly, if one side of the cut forms the finished carving and the other side is waste that will be carved away, make the cut in such a direction that any tear out occurs in the waste wood.

Secondly, if both sides of the cut are required to join part of the finished carving (as in the central large scrolls of our design) make a small beginning cut safely between the lines, and then carefully work each side of it, each time cutting with the grain) until you widen and deepen the cut to its finished size.

It is important to be alert to what is happening at the top of the tool at all times. Theory might tell you that you are cutting with the grain, but if the wood begins to tear out, immediately stop, discard the theory, and try cutting in the other direction. If all else fails in particularly tricky wood, you may need to discard the V-tool, and instead cut vertically down with a gouge matched to the curve of the line.

Photo: James Latter

carving, is to keep the work clean and neat. The design is a variation of one shown in the book *Nineteenth Century Australian Furniture* by Fahy, Simpson & Simpson, where it is shown on an old four poster bed.

It is also worth noting that, unlike cabinetmaking, where we generally think in terms of cutting along the grain, woodcarving is done wherever possible across the grain. This is partly because when we cut across the grain we are independent of its direction, and partly because it actually requires less power to cut across the grain.

Control Of The Tools

Carving is a very physical activity, and if you do enough of it your body will eventually find the most efficient way to do it. I never like to see carvers working seated, unless there is a medical reason for it, or the work is very small. You need to be able to move easily and quickly so as to always work from the most comfortable position, and to have the freedom to use your whole body to generate the power necessary to push the tool.

If you sit, you push the tool with your arms. It you stand, quite often you will lock your power arm (the right arm for a right hander) to your body and generate the power by leaning your weight on the tool, and/or pushing with your legs. This gives much more power and, importantly, vastly improved control.

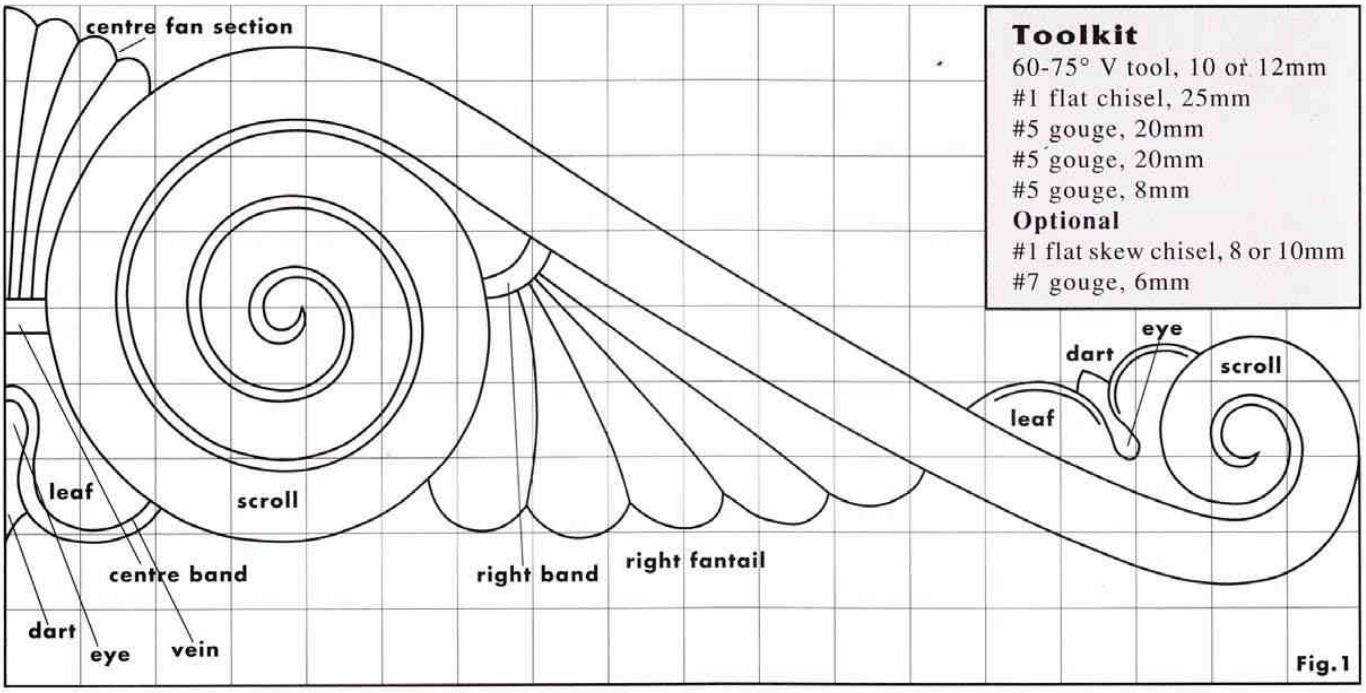
For safety, always have both hands on the tool, and cut away from your body. The front hand (left hand for right handers) is the brake hand. It should grip the tool by the blade, and always be on the wood. In other words, don't carve with both hands in the air, and only the tool touching the wood (except in some cases when using a mallet).

The normal carving motion (for right handers) is for the left hand to grip the blade of the tool while the heel of the right palm rests on the tool, steering and pushing the tool. The rounded end of the tool handle should be seated in the palm of the right hand, so that the tool can be pushed *even if the fingers do not grip the handle*. The heel of the palm of the power hand pushes the tool, not the fingers. With the front (left) hand anchored to the job, the tool is only free to move as far as that hand can stretch without the heel moving on the wood. At that point we stop pushing and move the left hand to a new position.

When control is critical, the front hand needs to grip the blade quite fiercely and pull back against the power of the rear hand. Juggle the power and the brake until there is just enough excess power to make the tool cut. Another way, of course, is to use the mallet to carefully tap the tool through the wood. It is also a good idea, right from the start, to force yourself to use the tool with both left and right hands. If you can become competent both ways you will save yourself a lot of unnecessary work in constantly turning the job around.

Sharp Tools

Sharp tools are essential for any fine



Toolkit
60-75° V tool, 10 or 12mm
#1 flat chisel, 25mm
#5 gouge, 20mm
#5 gouge, 20mm
#5 gouge, 8mm
Optional
#1 flat skew chisel, 8 or 10mm
#7 gouge, 6mm

Fig.1

woodwork, and this is particularly true for carving. A sharp tool requires less power to push, and thus is easier to control and therefore also much safer to use. My rule of thumb is that if you can't shave with the tool after sharpening, it isn't sharp enough.

Lighting

You will find it much easier to see what you are doing if you have a variable position light to throw a light across your work. This will create shadows which make it very easy to see how smooth your surfaces are, and, most importantly, how true your curves are.

On Repetition

Finally it is worth noting that, when all is said and done, the only way to learn to carve is to cut a lot of wood. Grinling Gibbons, the great 17th century English woodcarver is said to have claimed that you couldn't call yourself a woodcarver until you had carved six miles of egg and dart moulding. There is another Australian colonial backboard that I have carved about 70 times, and I can assure you that the difference between the first and, say the twentieth, is dramatic to say the least.

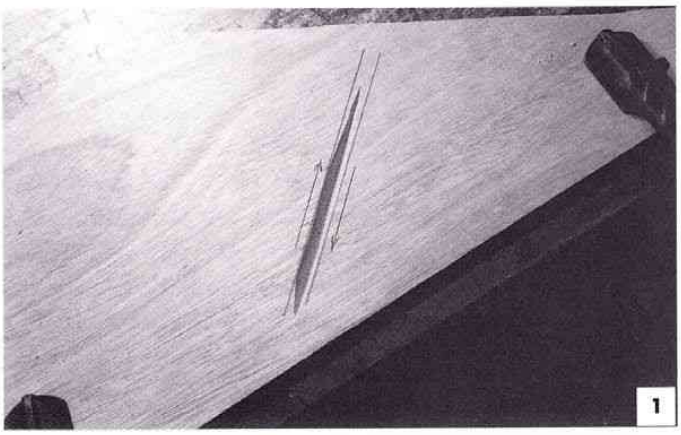
The Carving

This design can be used either as a headboard for a bed, or the backboard of a sideboard or chiffonier. Its size will obviously depend on your requirements. I have made this one to fit between two 90mm square posts at the head of a queen size bed. It is thus 1385mm long, 360mm wide and 22mm thick. The wood here is mahogany, which carves particularly well.

If you have a specific purpose in mind, prepare the complete panel before you begin carving. If boards need to be glued up to achieve the required width, surface plane them before carving.

You will need to enlarge the drawing (fig.1) up to a full scale. Using the grid lines as guides make a new drawing to scale on wax paper. Place carbon paper between the wood and drawing and transfer the drawing to the prepared timber. You will need to redraw the design after the tracing because shapes are always altered by the movement of the pencil from one side of the line to the other.

When you are happy with your drawing, the outer shape can be cut, either with a bandsaw or a hand-held jigsaw. Allow a margin of safety because the sawn surface will need to be cleaned up to give a smooth edge to the carving. If you go through the line anywhere, you will need to modify the drawing so the lines still flow well (photo 2).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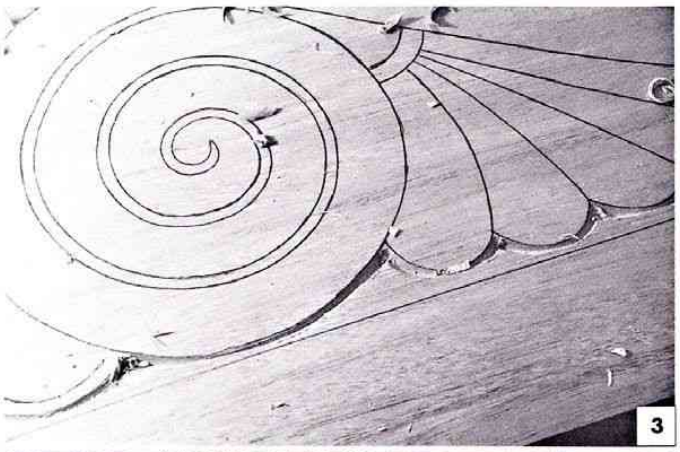
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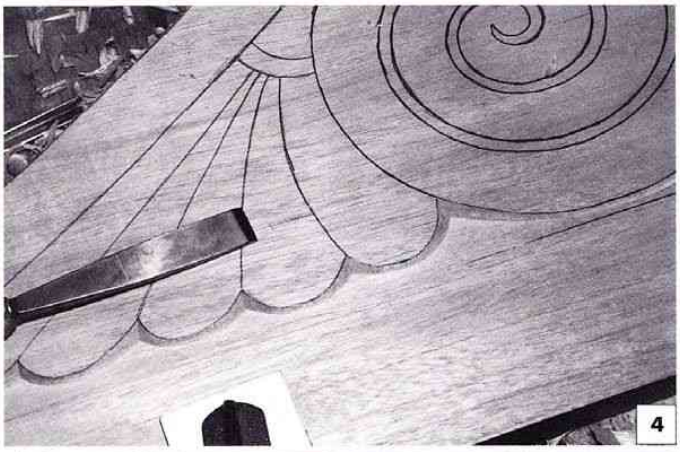
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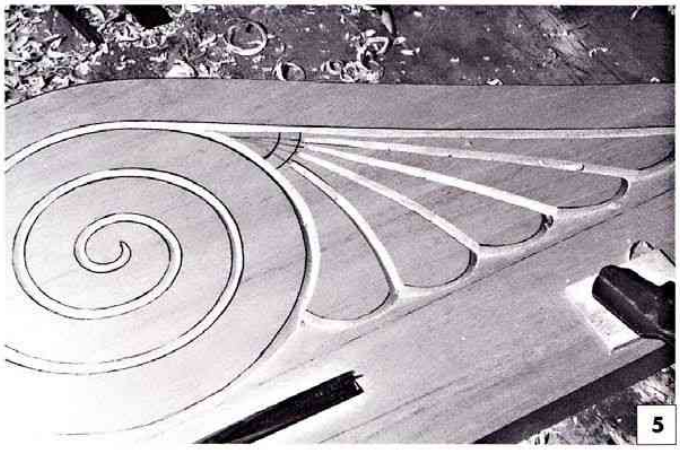
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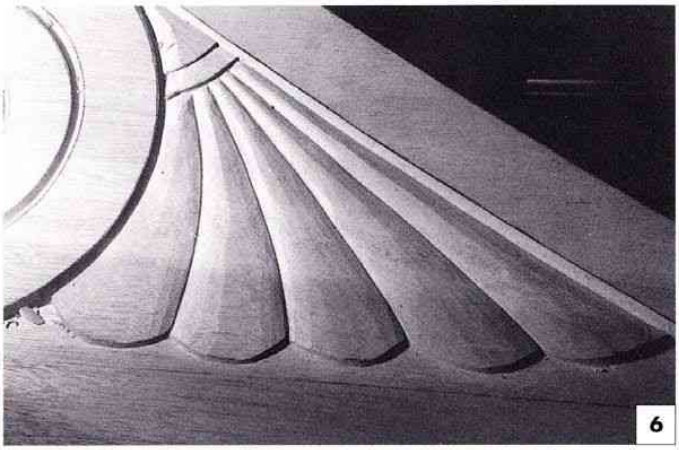
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Now, finally, we are ready to begin carving. Start by establishing the boundaries of the carving—in this case the lower outline that separates the carving from the rest of the panel. This is, for the most part, a straight line joined by the edge of a plane which slopes down and appears to run under the carving.

To carve this, we run the V-tool (10 or 12mm) around the outside of the carving lines, choosing the direction of cut so that the side of the V-tool next to the line cuts with the grain. The cut should be shallow when close to the straight line, and get progressively deeper as it moves away from that line. This increasing depth defines the slope of the flat plane, as shown in photo 3.

Using a 25mm flat chisel, carefully cut away the wood isolated by the V-cuts, taking care to create a consistent slope for all the sections across the board (photo 4). To clean out the corners, ensure the sides of the V-cuts run right into the corners and meet. This cannot easily be done with the V-tool. It is best done with the flat chisel held so that its edge runs along the almost vertical side. Take care not to cut too deep when creating the bottom outline. You are cutting partially through the board in a line that extends virtually right across the board, and so creates a weakness.

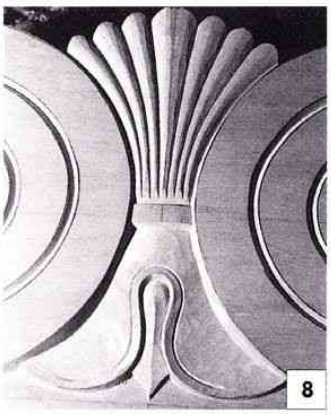
Once this lower outline is complete, begin working the lines of the carving with the V-tool (photo 5). Cut the small 'V' between the lines of the large scrolls, and then work each side separately until the desired width and depth have been achieved, taking care to work with the grain at all times.

For the rounded over sections, begin by running the V-tool down the lines, cutting deeper as the sections get wider. The outside lines are defined by cutting on the outside of the scroll lines. As always, take great care to make sure the lines flow harmoniously. The end scrolls and leaves, and the central leaves, can all be outlined with the V-tool at this point.

When the V-tool work is finished, take the 25mm flat chisel and begin to work the rounded over 'fan-tailed' sections. If you have them, gouges that match the curve of the round over will give a more consistent finish. Create the curve by methodically cutting a series of facets and then smooth them over with sandpaper (photo 6).

The bands at the narrow end of the rounded over sections can be carved next. The centre band (photo 7) can be defined top and bottom with the V-tool, and then carefully rounded down on the left and right hand ends. In


7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ends. In other words, it is a flat band, starting low on the left, rising to a maximum height in the centre, and dropping low on the right. The basic shape of the left and right hand bands (photo 10) is created by continuing the outermost rounding over facets of the fantail roundovers through the band on up until the two sides meet in the scroll V-cut. This rounds over the band and the triangle of wood behind it. The band outline can be cut in vertically using a 20mm #5 gouge (or whatever gouge suits the shape you have drawn). Using the gouge, taper the narrow ends of the rounded over sections of the fantail down to the bottom of this outer vertical cut.


9

Using the flat chisel, cut the band so that it slopes from a high at the outer, larger radius to a low at the inner, smaller radius; the low coinciding with the bottom of the vertical outlining cut. This creates two vertical or near vertical surfaces, and hence two shadow lines in the carving, for each band.

All that now remains is to carve the leaves in the lower centre section and inside each of the outer scrolls (photos 9,10). These will have already been outlined with the V-tool. The leaves are hollowed out using the 20mm #5 gouge, taking care to carve with the grain and right to the edge of each leaf. You will find it necessary to work the inside deeper with the V-tool once or twice, and cut the hollow deeper each time until a satisfactory final shape is achieved.

Where the two leaves come together the hollows flatten out and join to form another rounded over section. This can also be worked with the flat chisel. The darts between the leaves can be shaped with the #5 gouge, but you will need a smaller gouge, around 8mm, to round over the inside end of the dart in the eye between the leaves. An improved effect around the eye can be created by lowering the outer round over until the edge of the eye stands up like a collar. After the leaves have been carved and sanded smooth, draw in the vein lines parallel to the leaf edges, and carefully cut them with the V-tool. Great care needs to be taken with these, using the V-tool like a calligrapher's pen. The lines need to run correctly, and have pleasing variations in weight. In other words, the lines in the outer leaves, for example, begin thin, reach their maximum depth and width at the widest part of each leaf, and then taper away to nothing before reaching the end of the leaf.

The carving will now seem to be finished. However you will find that after you fine sand all the pencil and carbon paper marks off the flat surfaces, all the V-cuts will need to be considerably re-worked. The pencil and ink marks can disguise all sorts of flats, corners and miscellaneous wriggles.

If you are patient, methodical and neat, the carving will proceed logically and easily. Try to enjoy the process of carving, and don't get too fixated on getting the job finished. By Grinling Gibbons's reckoning you would probably only need to carve another 799 backboards to earn your woodcarving stripes!


10

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By Dinah Hall

RANDOM ORBITAL SANDERS

Sanding is the job that everyone hates. That's why you buy a sander—but which type?

Back in the bad old days, no matter how professional the user, orbital sanders inevitably left their circular scratches on your finest woodwork. Sandpaper also had to be repeatedly reattached or replaced as the abrasive surface of the paper wore away at the clamps holding it to its plate.The random orbital sander has been around as an air tool for about 15 years, for most of that time however, in the panelbeater's shop. Then someone (Bosch) came up with the idea of an electric oscillating disc or random orbital sander which mimicked the random motion of a human hand. After all, isn't that what machines are supposed to do.

The random action results from the rotation within the rotation, which means there is no need to apply any downward pressure. Applying pressure actually stops the second rotation and burns out the machine while just holding the sander in contact with the surface reduces the chance of scratching the surface. Around three years ago the random orbital sander with its counter-clockwise, eccentric motion was released on the woodworking market.

Abrasive Fixing

The random orbital sander addresses many problems posed by the previous generation of sanders. Velcro (hook and loop) or stick on (peel off adhesive) are the commonly used methods of joining the paper to the tool base. Velcro fixing is more expensive, but it does allow you to remove and re-affix abrasive sheets. The cheaper stick-on system is only good for one use. Check that the model sander you buy has the standard size base and dust extraction holes, so that any standard abrasive paper will fit. The velcro pad system is also one part of the random orbital that is constantly working and therefore it is important to check that this is replaceable on the model you buy.

Dust Extraction

The paper usually incorporates 6 to 7 holes to provide for dust extraction through the base, a standard feature on all random sanders. Expect no more than 60-70% efficiency with most bag type extractors, although newer models are following the European trend

Porter Cable
125mm
200 Watt
12,000 orbits/min
USA

to incorporate disposable paperbags in preference to cloth bags. Cloth bags need to be emptied, which may then re-expose you to the dust you were trying to avoid when you were sanding. Disposable bags are also a health feature if you are involved in sanding materials such as MDF which you definitely don't want to breathe in either. Some sander models can be hooked up to independant dust extractors and are reputed to offer 90%

Makita BO 5000
125mm diam
180 watt
10000 orbits/min
Japan

Hitachi FSU13Y
125mm diam
270Watt
variable speed
Italy

Bosch GEX 150AC
150mm diam
340Watt
4500-12000 orbits/min
Switzerland

extraction efficiency. Rupes random orbitals are designed to only run with extractors and do not come with dust bags at all.

Variable Speed

One of the most significant innovations of the new breed sander is the infinitely variable speed control which allows the user to reduce or increase the amount of stock being removed at any one time. The trigger provides flexibility throughout rough sanding jobs to the more delicate applications. The variable speed control and positive rotation means each job can be 2-3 times faster as the amount of stock being removed can be increased (or decreased) as needed.

Selection of Pads

Most brands of random orbital have a selection of pads for sanding, polishing and buffing. The medium pad is suitable for general purpose application, the hard pad for large flat surfaces while the soft pad moulds to concave and convex surfaces, such as the seat of a chair. Black and Decker even have a sander that takes a round or a pointed base.

Add a lambs wool bonnet and the ideal polishing tool is born as the sander can be slowed to ensure less burning. Attach foam pads and two-pack paints can be polished to a fine finish. The pads prevent burning as there is less friction and are ideal to cut the fine scratches caused by the lambs wool.

Black &Decker KA220E
125mm diam
155Watt
6000-10500 orbits/min
England

DeWalt DW421
125mm
245 Watt
12,000 orbits/min
USA

What to Look For

There is a large range of random orbital sanders available on the market, from home-use machines through to heavy trade tools. Whilst some of the lighter duty tools will be sufficient for occasional use they will not bear up to regular demanding work. If you're in the market for a random orbital sander to use on your fine woodwork as well as the car and the boat, look for a machine with decent wattage, say, around 300-400 watts.

Pad size will be 115, 125 or 150mm in diameter, although 150mm is considered standard for heavy duty usage. Look for variable speed control as some are single or two speed. As mentioned, check for standard size disks and replaceable pad systems. Remember the sander is round and corners are going to be difficult to access.

Price

You can buy a cheaper priced sander for around $120 or spend right up to $550 for a top of the range tool. Expect a good trade quality tool to cost you therefore, around $200-$300. Variable speed, the sophistication of the dust extraction, pad size and motor power are the variables which will add to the final price. Like all woodwork equipment, a higher price will often indicate better performance, but, you may be pleasantly surprised to find that a couple of phone calls to power tool retailers can yield a saving of up to $60 on the same tool. Good sanding!

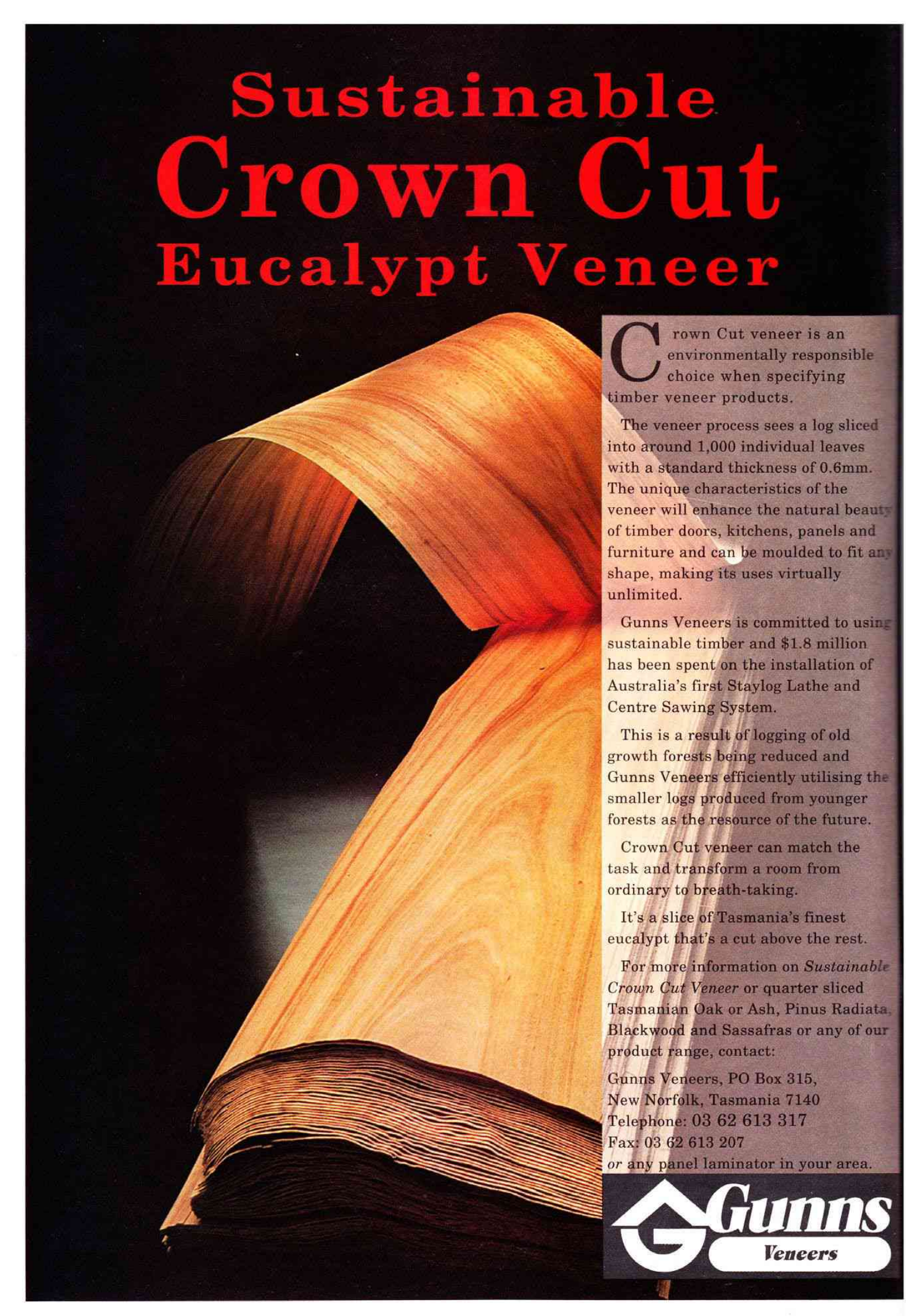
Thanks to Harold Lauer, Power Tool Specialists in Canberra (06) 280 4966; Chris Brigland of Queensland Trade Tools; and Laurie Herron of The Tool Centre in Richmond for assistance in compiling this article.

Festo ET2E
150mm diam
250Watt
8000-20000 orbits/min
Italy

AEG EXE450
125mm diam
450Watt
4000-5500 orbits/min
Germany

Rupes BR55AE
150mm diam
550Watt
3500-7000 orbits/min
Italy

Sustainable Crown Cut Eucalypt Veneer



Crown Cut veneer is an environmentally responsible choice when specifying timber veneer products.

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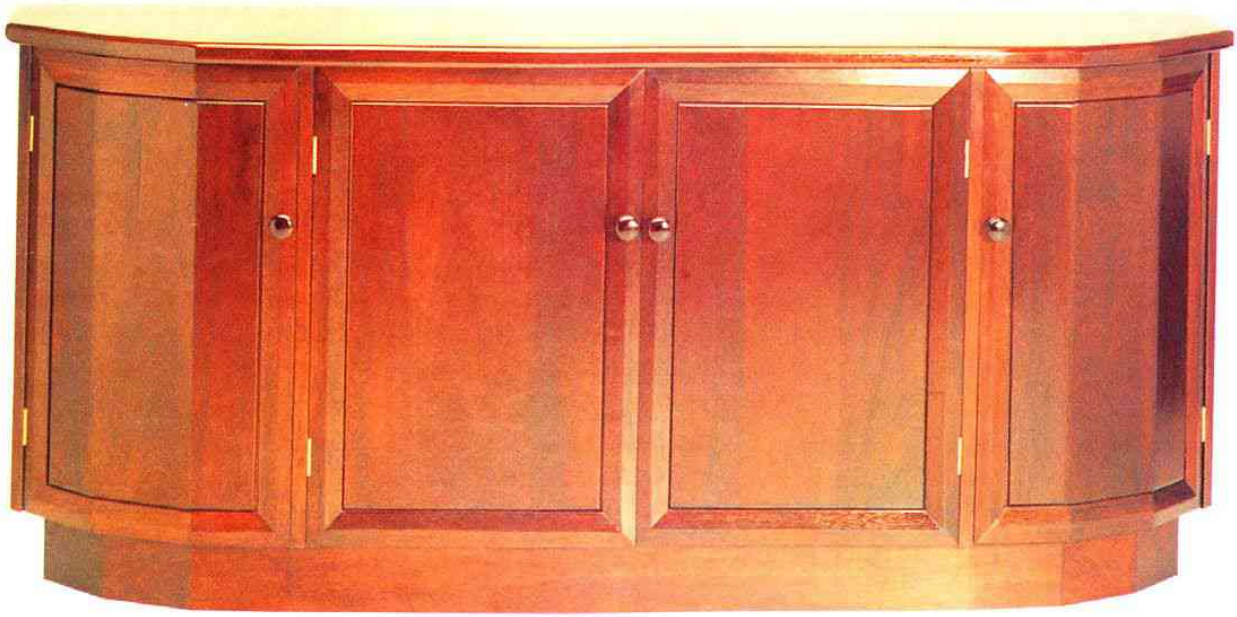
Gunns Veneers

By John McLennan

MAKING DOORS



The rules of balance and proportion apply to doors as they do to all other aspects of cabinet design. Indeed, because doors are often the most prominent and visually important part of a cabinet, getting them just right is worth a bit of extra attention to detail at all stages—design, selection of material, construction and finishing.

The age old rule of thumb for 'correct' proportions, commonly known as the 'golden mean', applies to individual components such as doors, as well as to the overall dimensions of a cabinet. The golden mean is the ratio 1:1.618 (width:height) and is discussed in Wood Review #8 (see page 21).

All rules, especially those claiming to be the only correct ones, are made to be broken and slavish adherence to the above ratio can lead to boring uniformity. Tall thin doors can add excitement and interest to a cabinet, but the opposite just does not work. Square doors also cause aesthetic problems if not handled with careful sensitivity at the design stage. Generally speaking, doors should always be taller than they are wide and the closer to 1:1.618 the better.

As well as good overall proportion doors should have an internal integrity or balance. The bottom rail should be the same width or wider than the top rail of the door or it will look top heavy.

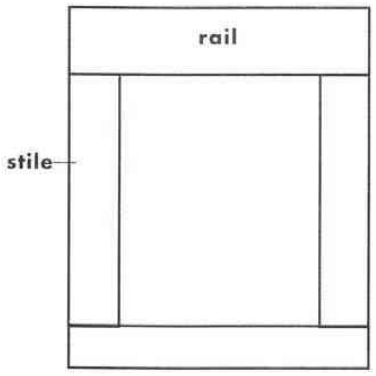


Fig.1: a heavy top rail creates an uncomfortable imbalance.

Similarly, thought should be given to the width of the stiles. Heavy stiles in a glazed door will probably look wrong but could work very well with a solid panel.

Construction

Frame and panel construction is my favoured method of making doors. The frame gives dimensional stability while allowing the panel to float thus minimising the problem of doors sticking in winter and rattling during the drier months. This method of construction has been used by cabinet makers since Elizabethan times but does not necessarily need to look traditional. Panels can be shaped, carved or moulded, as can the rails and stiles.

All the weight of the door is carried by the hinges and the hinge stile and this weight is transferred through the rail/stile joints. For this reason I favour a good strong mortise and tenon for door joints. There are quite a number of variations of this joint (through mortises, blind tenons and pinned mortises) and all are suitable for doors.

I usually make the panel dado (or groove)

the same width as the tenon which allows me to run the dado the full length of the stile and then lastly cut the mortise within. The haunched tenon fits snugly into the exposed end of the dado.

A coffering cutterset provides a good and simple machined joint for smaller doors but should be used with caution for heavier doors. Sets are available for both router and spindle moulder and produce matching interlocking mouldings that key together in a type of mortise and tenon. A dowel or biscuit joint may also be used but these are not as strong as the mortise and tenon.

Panels

Because cabinet doors and drawers are usually the main focal point of the design and the panel is the most visually important part of the door, it is understandable that traditionally the most highly figured pieces of timber be reserved for these parts. Fiddleback and flame figure are especially prized for panels and because of their rarity and value are often used in veneer form. Excellent decorative effects may also be obtained by bookmatching what are otherwise fairly ordinary backsawn boards. Sometimes a contrasting timber may be used for good effect.

Anticipating the inevitable movement of timber is essential when using solid wood panels. Timber will expand across its width when it absorbs moisture from the atmosphere but remains relatively stable along its length.

When assembling a panel with dry wood in dry conditions remember to plane a few millimetres from each side or the frame joints will be pushed apart when the timber expands. Similarly, when assembling a door in humid conditions make the panel a tight fit to compensate for later shrinkage. Because of this anticipated shrinkage it is a good idea to apply at least the first coat of your chosen finish to the panel before assembly to avoid an unsightly strip of raw timber appearing months after delivery when the panel shrinks away from the frame.

Any board will warp if sealed on one side only so make sure you always seal both sides of door panels and any other component of the cabinet. Solid panels should never be glued or pinned rigidly into the frame. If you must, a dob of glue or a pin near the centre of the top and bottom of the panel may be used, as each side of the panel can then move away from the central fixed point. If using a composite board or plywood for the panel, movement is not a consideration.

There is a bewildering and ever-growing range of cutters available for both routers and spindle moulders for producing decorative moulding for door panels. Most of these will give a period or reproduction look but many of the simpler profiles will give a more contemporary feel to the door (see fig.2, p.25).

The profile you choose should produce a slight taper to the tongue to minimise the chances of the panel rattling if it should shrink and become loose in the frame. If the panel shrinks it can drop a little into the bottom dado and the taper maintains a tight fit.

Panel raising mouldings such as the ones in fig.2 are designed for solid timber. Decorative effects can be achieved if using a veneered composite board or plywood with the use of applied mouldings. These are mouldings made from solid timber and glued to the face of the panel (see fig.3).

Some kitchen door manufacturers have dispensed entirely with the construction of doors and merely cut the doors from a sheet of MDF or similar material and trench out a moulding with an overhead router (see fig.4). However it is difficult to achieve anything but a cheap look with this type of door.

Materials

Almost any timber may be used to make doors but the designer should be aware of the different properties

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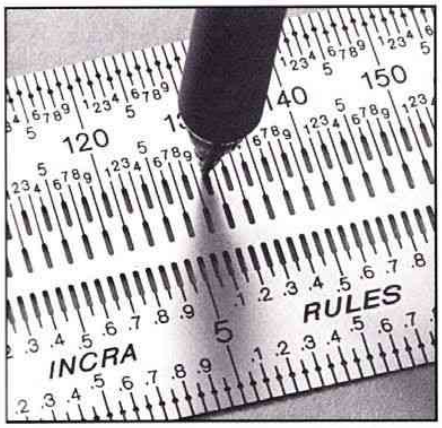

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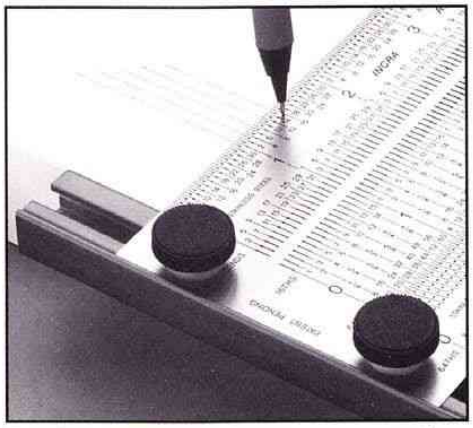

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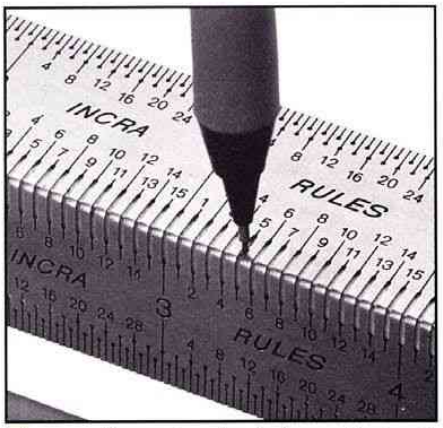

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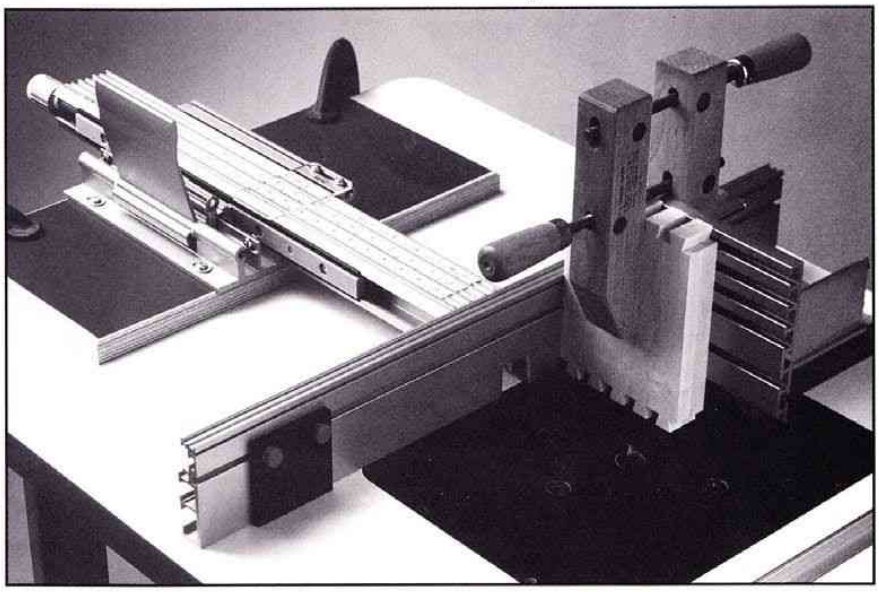

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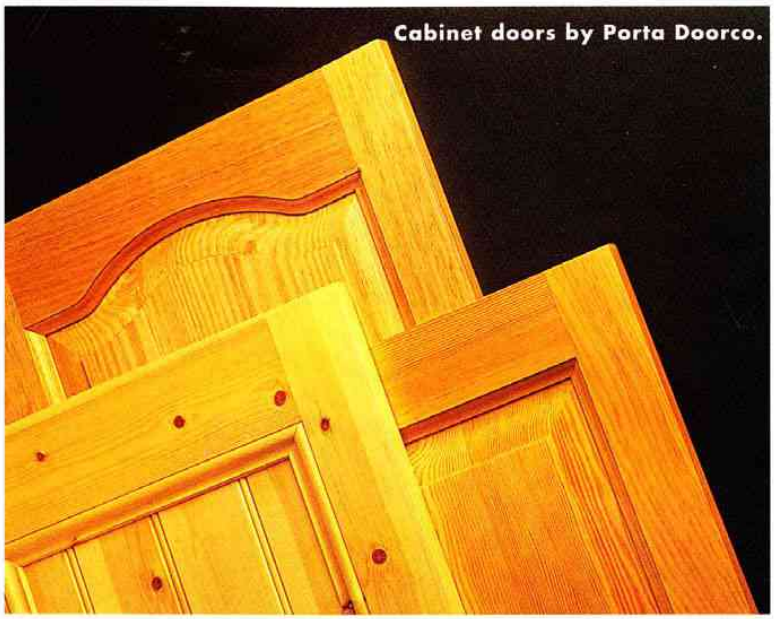
of different timbers. Doors are free to warp and twist, being held only by hinges on one side, unlike other elements of a cabinet that are more or less constrained by adjoining sections. A stable timber should therefore be used for the frame and not too many liberties taken with the panel.


Cabinet doors by Porta Doorco.

The more highly figured the timber, such as crotch or flame figure, the more likely it is to be unstable. Consideration should be given, when confronting this situation, to cutting a veneer of the highly figured material and laying it onto a more stable base. This has the extra benefit of allowing the prized figured material to go a lot further than if used in the solid.

Given the propensity of timber to move with the seasons and to occasionally warp or twist, it is perfectly understandable why many mass produced kitchen and other cabinet doors are manufactured from a variety of types of particle board. This material is dimensionally stable and if handled correctly does not warp or twist.

Hanging Doors

Hanging doors can be frustrating and test the patience of any woodworker but most of the problems can be traced back to poor assembly of the door or the cabinet. If either is out of square or twisted then head scratching and dark muttering are inevitable.

Sometimes the sheer weight of oversize clamps can pull an assembly out of square so choose appropriate clamps or provide additional support if necessary. Doors should be carefully laid out on a flat surface while the glue dries. It is usually, however, a twisted or bent rail that makes the door out of square.

There are some tricks of the trade to help overcome the problems associated with twisted doors. Hinges can be adjusted in or out a few millimetres to compensate; rails and stiles can be planed down and/or the cabinet altered to suit, or a cover strip can be added to hide the unsightly discrepancy between two mismatched doors. But it is much easier, less frustrating and a better job will result if the extra care is taken at the assembly stage.

Hardware

The pages of hardware catalogues are filled with an astonishing variety of hinges and catches for cabinet doors and a whole article could be devoted to this topic alone. Some hinges are designed primarily for mass production techniques and are quite a fiddle for the smaller scale woodworker. Some look quite acceptable in a cheap cabinet but would de-value a more classy piece. If using particle board it is important to use a hinge that has been developed for this material—butt hinges are not suitable as the screws will not hold into the edge of the door.

Having experimented with quite a few different types of hinges over the years I now almost exclusively use brass butt hinges or *Soss*-type concealed hinges.

Magnetic catches are simple, work well and are easily installed. Some types are fully adjustable which makes installation even easier. Brass double ball catches look classy and are adjustable as well.

The selection of handles is a difficult area for both cabinet makers and their clients. There is a huge range available but in my experience the one I really want just does not seem to exist. More often than not I end up making my own wooden handles or pulls which are quite often incorporated into the design of the cabinet with great effect.

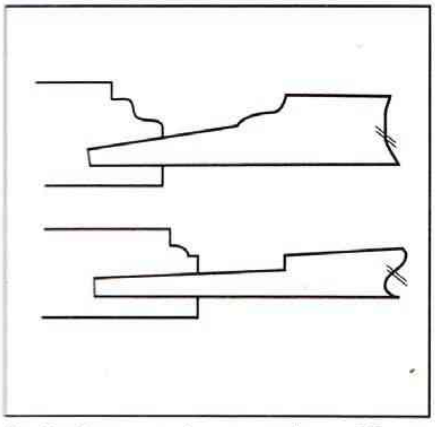


Fig 2. Common door panel mouldings.

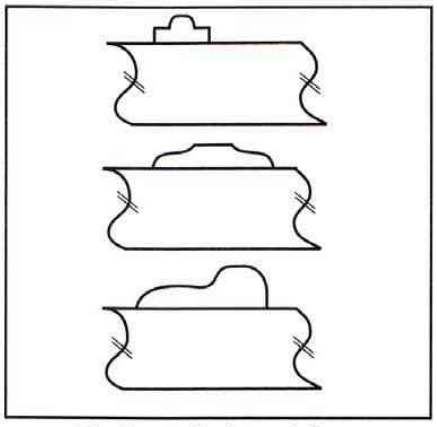


Fig.3 Applied Mouldings

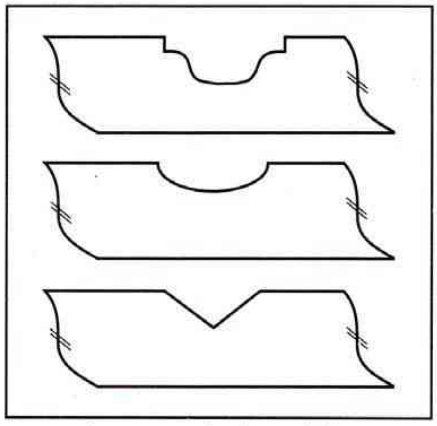
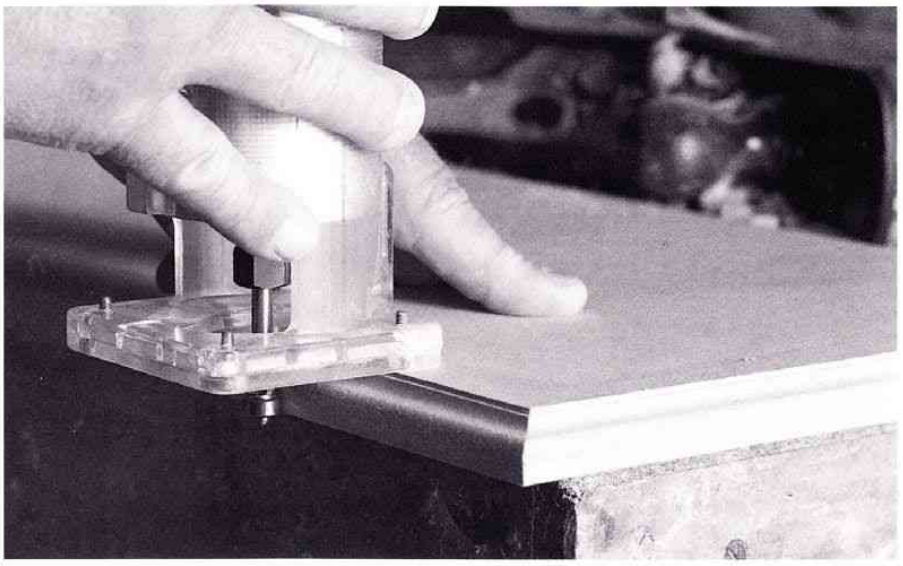


Fig.4 Trenched Moulding

By Richard Vaughan

LAMINATE TRIMMERS: MORE THAN THE NAME IMPLIES

Laminate trimmers are a multi-purpose tool—a smaller scaled router and a 'very rapid chisel' in one. Richard Vaughan reviews some of the popular makes on the market.



As its name declares the laminate trimmer was designed for trimming flush laminates, commonly for kitchen benches and shop fittings. In most factories it quickly became an essential, but more often than not, a single purpose tool. Many woodworkers, however, have learnt what a generous repertoire this scaled down router has, and how quickly and accurately it can take out the waste in various joints, inlays or when setting hinges for example. It is a welcome backup for the router, capable of that wonderful tool's tricks but a good deal less cumbersome for smaller work such as jewellery boxes. The tool has been refined over the years in acknowledgment of its broader role, but is still known as a laminate trimmer.

Ten or twelve years ago I was asked to make a batch of dovetailed humidors with variable dividers, inlaid brass plates, locks and stay hinges. I bought my first trimmer. It paid for itself in time saved on that job alone, and I've been a devotee ever since. I must say that I tend to regard a trimmer more as a hand tool than a power tool. You could think of it as a 'VRC' (Very Rapid Chisel).

A vital and probably the first consideration in acquiring any hand tool is simply how comfortably it fits in your hand. For a trimmer this will include the ease of single handed grasp and control,(note the size of the base) balance, access to the switch and whether the cable gets in the way. It is very handy for the switch to be operable by the hand holding the trimmer.

After the general feel of the tool you can look at the ease, or otherwise, of changing the bit. Methods requiring two hands (as most routers do) are liable to damage tool and/or knuckles, particularly when loosening the collet. This is a problem whether one or two wrenches are used and some sort of shaft locking device. The method of two wrenches operable by one hand remains the most effective in my opinion. The locking nut should have at least six faces so the wrenches can be aligned for one handed operation.

The visibility of the bit is another important factor, even more so when you use the tool for more than laminate trimming. I take the transparent base of my Makita for granted and missed that easy visibility when working with other makes. Of course it's possible to work with an opaque base but that transparency is very convenient indeed. Plastics now are so tough that breaking is not a real worry.

Controlled depth setting is a very useful feature but it does need to be capable of both fine and large adjustments. Some have knobs that are a little difficult to manipulate so it's worth checking that what is intended as a convenience actually is just that.

Weigh up what you get for your money in terms of accessories. The straight guide and the trimmer/bearing guide are basic requirements and should be included or bought at the same time if they are not.

I didn't rate power as a significant factor in this comparison—the models reviewed range from 440 watt to 670 watt and I couldn't pick any difference in their performance. The trimmer is not intended for hefty removal of material and certainly this power range was comfortable being used appropriately, though quite possibly more power would prove more durable over time.

I haven't found the perfect trimmer which would include (and exclude as appropriate) all elements I've commented on, so your choice will involve trade offs and the usual process of getting familiar with the quirks of your machine. Whichever trimmer you go for, you'll be very glad of having a VRC to hand. I've reviewed four models on the market opposite. Prices quoted are RRP's and include sales tax, but it's definitely worth shopping around.

Hitachi TR 6

RRP $236

500 watts

The Hitachi includes bearing guide with a somewhat scratchy sleeve rather than bearings, a straight guide which reverses to form a very basic circle guide capable of radii from 50-120 mm, and a single flute 6mm bit.

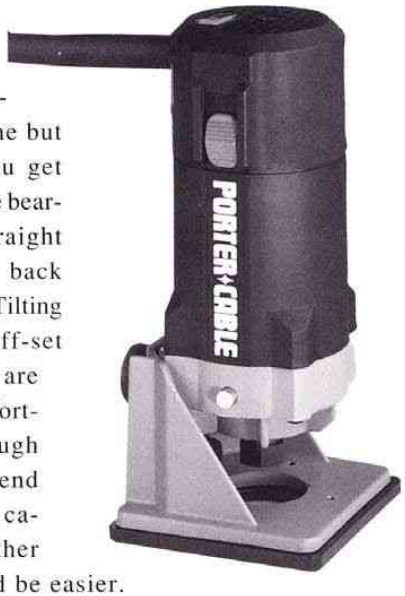
Its a little awkward to hold even with my large hand—a colleague with smaller hands wanted to use both hands for stability. The switch is not accessible with one hand and the cable position was awkward. The base is 65mm x 90mm with a 24mm wide hole. It tilts using the provided Allen key but generally looks like it was designed for economy of manufacture.

Changing the bit is easy using one hand and two wrenches. Visibility is a bit difficult. A little under 30 mm of depth adjustment is possible in increments.

Porter-Cable PC 7310

645 watts

RRP $220.50



It's a nice business-like looking machine but for your money you get only the trimmer. The bearing guide and the straight guide will set you back another $47.50 each. Tilting base ($96.32) and off-set base ($172) options are also available. Comfortable to operate though my broad hand did tend to press against the cable—out the top rather than the side would be easier.

Good one-handed switch operation. Good stable feel on the 90mm x 96mm base with 30mm diameter hole.

Single wrench bit changing liable to bang the base. Bit visibility is adequate. Very nice depth adjustment which includes large and fine movement over about 25mm.

Makita N 3702

440 watts

RRP $284

Includes bearing guide (sleeve rather than bearings), straight guide which reverses to a basic circle guide, template follower and single flute 6mm bit. There is also an excellent transparent tilting base attachment which deflects waste and provides a good guiding grip. The non-tilting base model (N3701) costs less ($255rrp) but I recommend paying the extra.

The tool is comfortable to hold, but you need your other hand for the switch. The cable could be better placed. Very stable on the 90 x 98mm base with 30mm diameter hole. Easy one-handed bit changing. Visibility of the bit is excellent. Depth adjustment is no frills—loosen the wing nut and slide the sleeve of the base up or down the body. Fine adjustment depends on your hand skills. About 45 mm is possible but not desirable—30,000 rpm could cause it to whip.

DeWalt DW 670 XE

670 watts

RRP $275

The DW 670XE includes a good bearing guide but the plastic clip-on in lieu of a true straight guide (which is not available) is a drawback.

Tilting base and offset base are available as extras or options.

Very comfortable in the hand with good switch access and well placed cable. Sits well on 88mm x 91mm base plate with 30mm diameter hole.

Single wrench collet locking is made easier by simple removal of complete base.

About 20mm of depth adjustment is possible, winding all the way with a knob which would be improved by having more grip for the finger.

By Philippe Brooks

MAKING SHOJI

The Japanese aesthetic is one of clean simple lines, typified perhaps by the timber and paper sliding screens known as shoji. As well as being very beautiful these screens are highly functional, a single screen can serve not only as a door but also as a curtain, a window or a room divider. Apart from the simple elegance of shoji their real beauty lies in the quality of light that passes through them, a soft calming light again typical of the Japanese aesthetic.

The principal of shoji, that is, paper stretched over a timber latticework, is used in many ways and its applications are all based on screening a light source. As a result they are used not only as door sized sliding screens but also as screens that cover windows, as light fittings and as free standing lamps. These are traditional uses in Japan, however we in the West are not bound by Japanese cultural norms and can push the principal further.

I lived in Japan for some three years working as a furniture maker. I also gained some experience in a shoji workshop. Back here in Australia part of my business entails the making of shoji and to this end it is a Westernised version that is made in my workshop. The differences are only minor and relate mostly to the fact that we use different timbers, and that in Japan the grooves that the shoji slide in form part of the structure of the house. They work essentially like an all timber version of aluminium sliding doors.

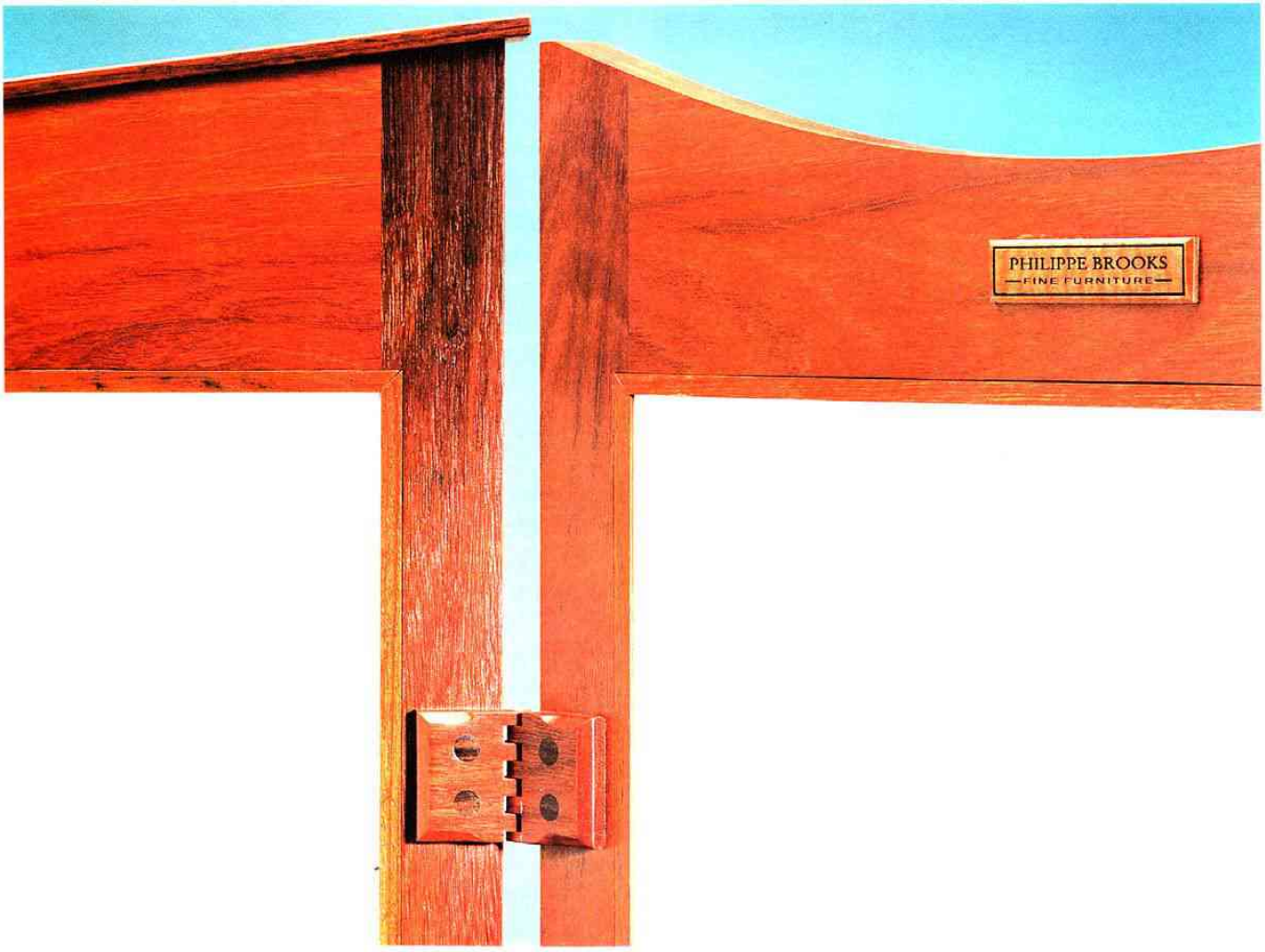
Following is an introduction to the making of shoji. I will be brief on the parts that are familiar and basic to most woodworkers in the West and will focus more on the Japanese tools and techniques.

Timber selection is important, in Japan they use old, slow growth cedar which is strong and stable in small sections. Here in Australia I most commonly use Tasmanian oak and western red cedar, however, most timbers are suitable providing they are stable and relatively straight grained.

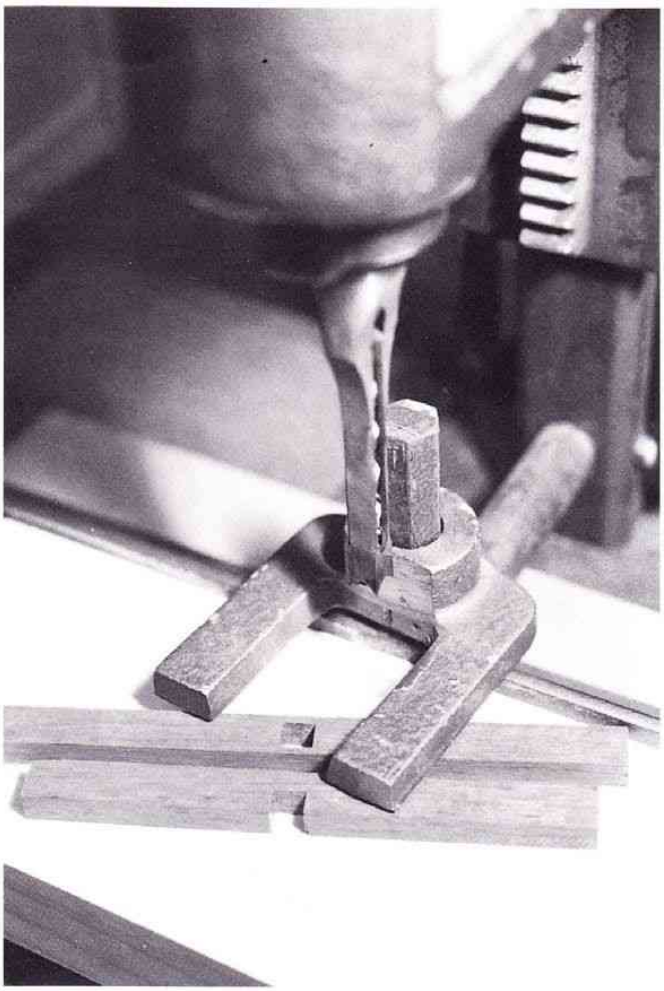
I make shoji in two basic parts, the frame and the latticework or kumiko (see diagram). This method of construction allows the paper to more easily be applied to the kumiko and then neatly inserted into the frame. Constructing the frame is straight forward, traditionally the joints are mortised and tenoned, often however I will use biscuits (two per joint). These joints are not highly stressed and I have found biscuits more than adequate. Kick panels are appropriate in some situations and whilst the norm is a solid or veneered panel edged with 6mm quarter round moulding it is nevertheless an area where many other ideas could come into play—figured veneer, inlay or fretwork for example.

As an aside, black quarter round is used on the kick panels of the higher class shoji in Japan. This timber is similar to the European bog oaks in that it has been retrieved from swamps and in this case is jet black in colour.

The kumiko is somewhat more delicate in construction, having a section of 8mm x 12mm. This is typical of the dimensions used in Japan, however I have sized them to a chisel I use in my hollow chisel mortiser. With this machine I cut the mortises and the half laps. The latter being achieved



To make the 8 x 8mm tenons for the kumiko the fence of the table sawblade is set to 90°, coinciding with the top dead centre of the blade and with a stop on the other side. The workpiece is pushed into the side of the blade.



The 8 x 12mm sections are sized to the chisel in the author's hollow chisel mortiser in order to cut the mortises and half laps. For the half laps the fence is set so that the chisel cuts through half the width of the stock whose back face has been scored.

by setting the fence so that the chisel chomps through half the width of the stock. Providing the back face has been scored, the result is a quick and clean half lap.

The mortises for the outside members of the kumiko are a full 8mm x 8mm chisel cut through the stock. To make the 8mm x 8mm tenons I set a fence at 90° to my table sawblade, the fence coinciding with TDC of the blade and with a stop on the other side I push the workpiece into the side of the blade. This is certainly not textbook stuff, but I am taking off such a small amount of timber that the technique has proven to be efficient and effective.

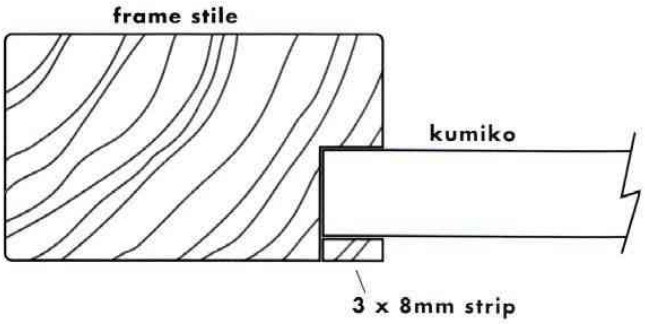
If all the joints have been cut and sized accurately gluing up the kumiko should be a simple matter of snapping all the joints together. Once dry plane everything flush and apply your finish. In Japan no finish is applied but rather all surfaces are handplaned, Japanese planes giving the cedar a silky lustre that is arguably better than any finish could provide. If applying finish however, be cautious not to coat the back side of the kumiko that will receive the paper.

At this stage both the framework and the kumiko should be finished with the latter ready to accept the paper. The paper I use is imported from Japan, however it may be available locally through art supply shops. Wallpaper paste is used to glue the paper.

To apply the paper cut an oversize sheet and tape down one end next to the kumiko (see opposite above). Apply paste to the kumiko. Stretch out the paper above the kumiko and then gently lower it. Immediately the paper touches the paste it should adhere to the frame, hopefully without any creases (if there are any, gently pull them out). Allow for the paste to dry and then carefully trim the paper. Lastly, gently mist the paper with water—I use a plastic spray bottle. The lightly dampened paper will shrink and pull tight for a clean look.

All that remains is to place the papered kumiko into the rebated frame. Screw through the kumiko into the frame. I then place an 8mm x 3mm timber strip all around the kumiko to conceal the screw heads, these strips are held with double sided tape. I attach the kumiko in this way to allow for easy removal should the paper need to be replaced.

Philippe Brooks is a furniture designer/maker.



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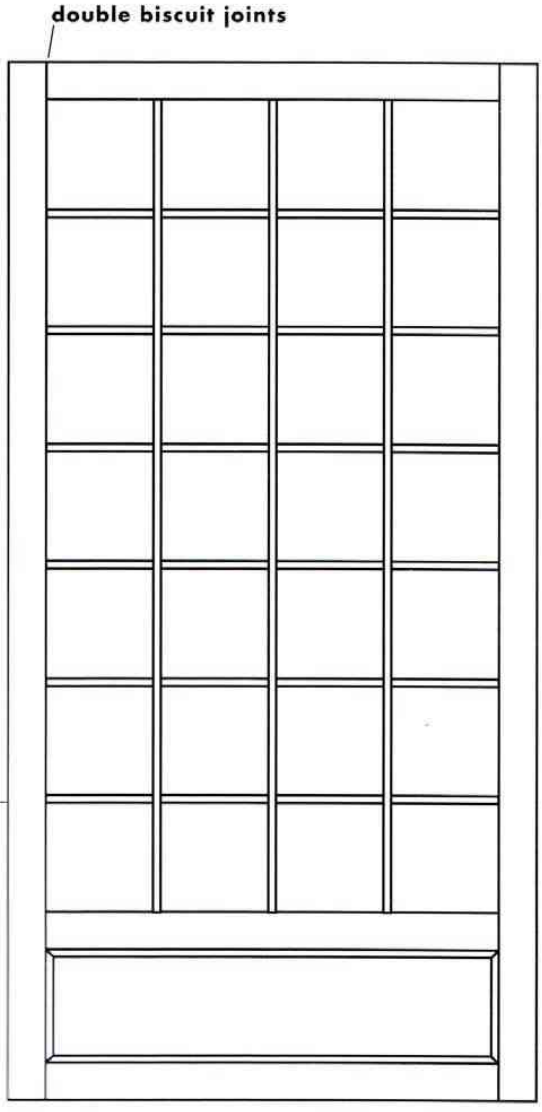
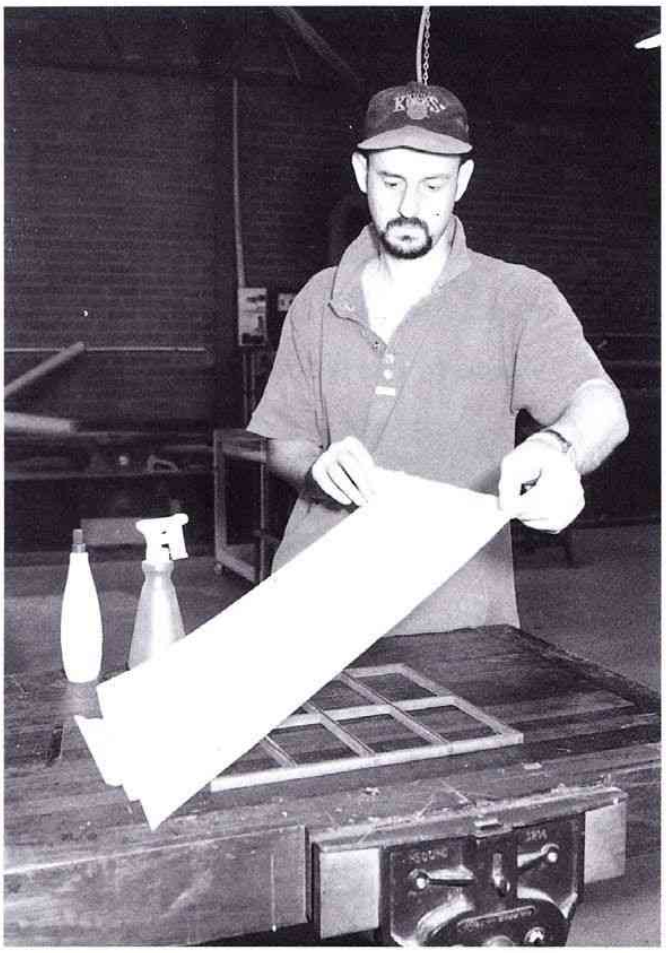


All internal kumiko joints half laps. All external kumiko joints mortise and tenon.



Top right: To apply the paper cut an oversize sheet and tape down one end next to the kumiko .

Right: After the paste is applied the sheet is stretched out over the kumiko and lowered onto the lattice.

By Linda Nathan

DAVID BOUCHER—ÉBÉNISTES: JUST TO BE DIFFERENT

It's really just a question of superlatives. The finest, most rare, precious, exquisite, expensive and time-consuming-to-make works of art take shape in the workrooms of David Boucher and his elite team of ébénistes.

David Boucher

The ébénistes of old were multi-disciplinary artisans who produced artworks for the French Crown in the 18th century. As ornaments and items of furniture the function they fulfilled was artistic rather than utilitarian. Boucher borrowed the term 'ébénistes' because it seemed to most accurately describe the activities of his company.

Secret compartments fire outwards with bolt-like precision, panels rise and fall at the press of a button, doors float on air, compartments fold out, drawers glide, panels revolve, orbs, clocks, statues and lights are the instruments of an orchestra that respond to the baton of its conductor, David Boucher. The players are the ébénistes who breathe life into the figments and fancies of Boucher's imagination using the finest materials available. There are fine timbers and sumptuous veneers that ripple like satiny deerskin, or arrest the eye with wild figurings and imagery created by complex matchings. These are commonly highlighted with gold, bronze, brass, fabric, leather, marble and granite.

The majority of Boucher's clientele however, want the uncommon—for them there are diamonds, rubies, gemstones, shagreen, ivory, and metals such as rhodium, even more precious than gold. Base metals are cast and forged in-house for the mechanical devices; the levers, pulleys, catches, hinges and plates which, from a concealed vantage, give rise to the push, pull, rise and fall of the complexities of a Boucher piece.

Why indeed would anyone just open the door of a cabinet when, by turning one of a pair of specially cast gold lions, you could make it spring outward? Wouldn't you expect an exquisitely veneered and stringed chess board to invert to an infinitely adjustable leather topped writing surface with the touch of a finger? When it's time for the *Bollinger* you'd want to reach for your handcrafted walnut remote control unit to signal a multi-tiered drinks cabinet to slowly rise like Zarathustra from the depths of a buffet and then, after a time lapse, light up as well? Of course you would—if you wanted to have things that were different.

David Boucher loves to surprise and delight the viewer, he loves to 'take you further'. Open the doors of a cabinet and find a medieval scene painted in veneer. Slide out the sides of a small chest of drawers, press another lever and hey presto you have an occasional table to serve tea on. More buttons open drawers for your silk lingerie or secret compartments for your diamonds and baubles.

Boucher the conductor is Boucher the magician, the master of sound and light paintings, the master of the most subtle concealments and the most showy and opulent displays. This is the workplace of the 'nth' degree, where time and money are lavishly spent—as long as someone is willing to pay. There is surely no other business like this in Australia. As Boucher himself says with a mischievous glint in his eye, 'you'd have to be mad to do this'.

Years ago when Boucher fielded the idea of setting up a furniture business to friend and furniture maker Robert Dunlop, the latter told him not to expect to make money out of it. Since then the business has evolved. Boucher no longer makes furniture, but artworks, after all, he says, 'who would really use them. My clients put these works on a pedestal and show them off.' So elite is the Boucher clientele that their names cannot be uttered, the prices they pay cannot be numbered, the exact location of the pieces, let alone the secrets they are made to contain, can never be divulged.

The company doesn't advertise and keeps a low profile. There has been some exposure on television and a one page story in *Business Review Weekly* a couple of years ago, but generally speaking, Boucher keeps out of the eye of the media where he feels both individuals and companies can end up as targets. So how does word of his work reach this fraction of a percent of the world's population? Easy—it finds him. There's nothing like unsolicited word of mouth for a testimonial to one's worth, and it would seem the owners of Boucher artworks are very, very satisfied.

From the urbane, softly spoken manner you'd never expect this tall, elegant

man with such a keen appreciation of the finest materials and their workings came from the other side of the tracks. His father, who died when Boucher was 13, ran the family orchard and was an influential role model. If the tractor broke down you just pulled the engine apart and fixed it. Why would you need to be a mechanic to do that? When problems arose you just solved them. When it was a chore to haul the firewood up to the house Boucher's father used spare parts to build a hydraulic platform which, at the touch of a lever, raised the wood up to the living room window. Isn't that what anyone would do?

Despite the influence of his father and mother who had a keen appreciation of music and fine things Boucher had a 'difficult' childhood. When he speaks publicly to young people now, as he is sometimes called upon to do, he harks back to his school days, where he was 'no good at anything', where he got '1' for maths (because he remembered to write his name at the top of the paper), when he left school halfway through year 11 to take up the itinerant life of a long-haired, leather-jacketed bikie who carried a knife in his boot.

His 'from zero to hero' story would give courage to even the most despondent student faced with the pressure of modern societal and parental expectations. Boucher tells them the story of a time in post-war England where Winston Churchill was billed to give a public lecture. Rising to the podium Churchill uttered just four words to the expectant crowd: '*Never, never, never quit*'!' The impact of that speech is still influencing lives as far afield as Toowoomba, Australia.

A stint digging ditches was followed by a rise in status to backhoe driver. Somewhere around that time a combination of divine inspiration and the 'wake up to yourself' comments of a friend punctuated his life. Burning

some packing crates Boucher perceived a wasted resource, some of which he took home and fashioned into a bar stool. Six weeks knocking on doors found a market for the recycled timber product. It didn't take a lot of encouragement for him to set up a business making pine furniture.

The business grew rapidly in capital, staff and volume of production until it crashed disastrously in 1982. That was the start of a new found faith and adherence to Christianity. The belief that sustains him has given a moral ground for his business dealings—and even resulted in the bypassing of some would-be customers who had what he considered to be somewhat doubtful sources of wealth. Cleanliness is next to godliness in the Boucher workrooms which are cleaned each morning and receive top to bottom spring cleanings a few times each year from Boucher and his wife Margaret, who also doubles as the financial and operations manager of the outfit.

With nothing left to weigh him down after his experience in 1982 Boucher moved to Dalby and took up furniture restoration. 'I had Margaret, two kids and a pushbike'. The work required a minimum of equipment and proved a valuable learning ground.

Ads in the local papers of surrounding regional centres would announce his week-long visits. Items for restoration would be pulled apart on the spot, packed into the truck and taken back to the home workshop. It was nothing to travel 2,000 kilometres a week, sometimes out to the remote, flat, nether regions of western Queensland. He made a lot of friends in those days with people who looked forward to his visits, no matter how late he was, and got up to cook him a meal and have a chat even if it was 2.30 in the morning.

As things improved the family moved to Toowoomba and set up a workshop. The intervention of one of the worst droughts Queensland has ever known again sent the company's fortunes down the longest snake on the board. The company has only operated as it does now for the last six to seven years. The new direction dates from Boucher's discovery of his own talent for conceiving pieces which are far and away out of context in the suburban lives and homes of today's middle class masses.

Above: A recent commission. Opposite: Detail shots of the company's work. Centre is an internal view of *the Jewel of Persia* cabinet featured on this issue's cover. The doors open out when the specially cast gold lions are turned.

Initially he spends about 3-4 hours with a client on average, getting to know their personality and requirements. Then, on the spot, he will take out his blue pencil and parchment and with swirling flourishes let loose the inspiration which he feels can only come from above. 'You must sit up all night drawing these,' people say to him. 'No I just *do* them,' he responds, though that is in the knowledge that while inspiration may have divine origin, it is also the product of 42 years of living on earth.

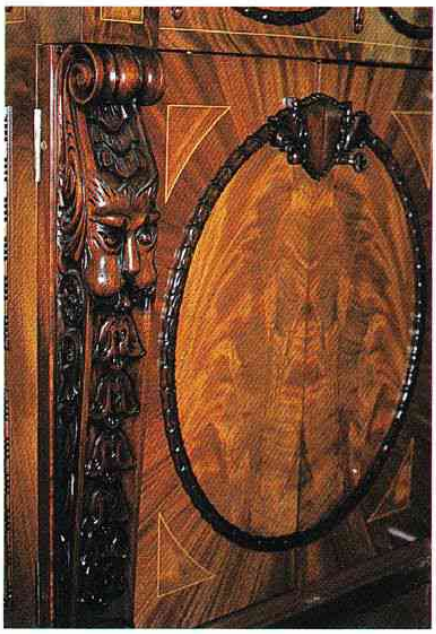
David Boucher is a self-proclaimed bookworm who draws ravenously on both past and future technologies. Eighteenth century style marquetry, carving and gilding are juxtaposed with fibre optical lighting, Bang & Olufsen audio-visual equipment, space age alloys and bulletproof plastics such as kevlar.

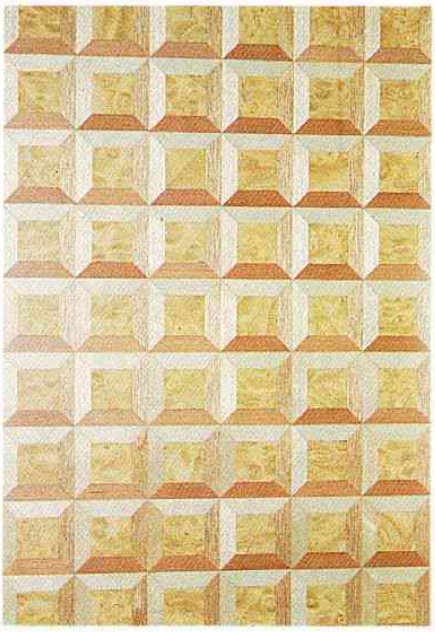
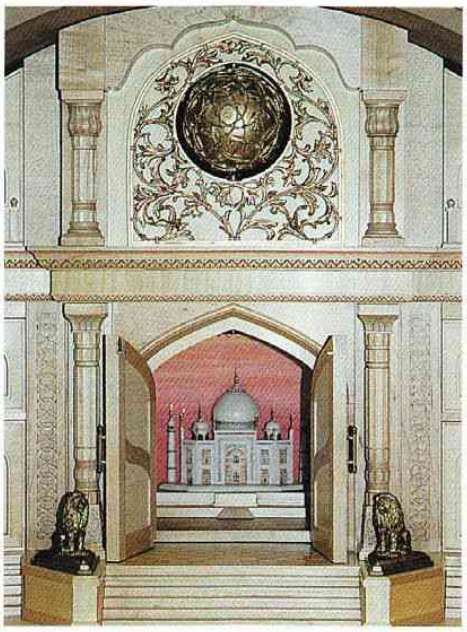
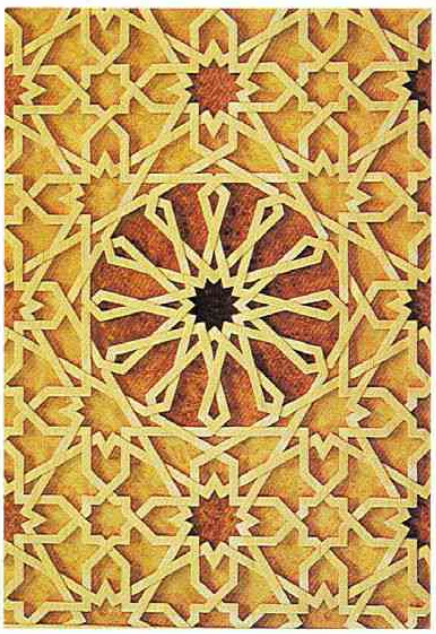
At the moment he is reading a book on the life and works of Emile-Jacques Ruhlmann, who is, according to Margaret Boucher, the closest artistic progenitor to her husband she has identified to date. If Boucher had to typify his style he would say that it takes most from Art Deco: 'The Art Deco school/style was exciting, fresh, accepting of challenges and offered the ability to break out.'

Ruhlmann made for art collectors and potentates of Asia Minor such as the Maharajah of Indore. He was one of the new lights at the 1925 'Exposition Internationale' in Paris which was mounted to promote French arts and crafts in response to competition from foreign countries. Ruhlmann's pavilion, 'The Home Of A Wealthy Art Collector' was lauded by the critics, and he was described as the only truly artistic cabinetmaker of the 20th century.

In fact Ruhlmann himself was not a craftsman but sourced and co-ordinated a reservoir of talent which he uncovered in Paris. The parallel is clear, though Boucher has certainly put in many hours at the bench. As Ruhlmann's small-scale inspirational sketches were reworked into working plans by others, Boucher's preliminary sketches are refined by his team. This often takes place at a city coffee shop where the crew might meet for breakfast at 6am.

All who work at Boucher's start off with a basic trade background probably



with prior experience at a joinery or cabinet shop. Everything else has to be learnt. Every piece made there is a one-off, a prototype and a world first all in one. To make them are needed the skills of a furniture maker, woodcarver, sculptor, an engineer, toolmaker, metalworker, jeweller, gilder, textile designer, glassworker and an electronics whiz. To design and make the mechanisms and spring-loaded devices which enliven and activate a piece requires the equivalent of James Bond's backup laboratory.

The staff are crucial, but whilst skill is important it is their personality and ability to attend to, in some cases minute, details which determines their suitability. Boucher has a keen interest in human psychology and has spent a long time experimenting with, as he puts it,

'round holes and square pegs and vice versa before knowing which went with which'. It's a matter of knowing what kinds of activities people are comfortable with. Boucher is more the 'big picture' kind rather than one to complete things or attend to the details. The need for more talented staff is almost always constant, and once again, they generally find him.

The business and marketing side of the enterprise has seen a number of different tacks taken. The pine furniture days taught Boucher the difficulty of trying to compete at the lower end of the market. Recently there have been a few departures into smaller-scale, but similarly high quality more affordable treasures and even miniature ceramics which are intended to retail in the $100 to $500 range. Leaning against the wall in the workroom is another idea for a Santa Fé style furniture range, complete with distressed and adzed timber sections and black forged iron strappings, hingeware and cast glass detail. There simply hasn't been time to pursue these ideas further at the moment.

The workrooms are currently putting the finishing touches on a collection of pieces designed for the private hotel suite of their wealthy and royal purchaser. You don't just ring up or call on clients of this nature, explains Boucher—they find you. And so it was in this case when the client who was shopping for furnishings in Vienna chanced to meet a friend who hailed from a Gulf country. 'Don't waste your time with this stuff, he said', recounts Boucher in his own vernacular, 'there's this guy in Australia who does beautifully inlaid and tricky stuff. I don't know his name—he lives up the top end of Australia, sort of inland'.

A private jet went out on a mission to find the 'guy' two weeks later. It was his representative who called one Saturday requesting Boucher come down to the office to open up. The visitors who inspected Boucher's artworks passed no comment and displayed no emotion. As they left one of them pronounced: 'this is the man'. Boucher was none the wiser until two weeks later when a congratulatory call came through from an architect friend. The private hotel suite is the first of five which the ébénistes will create masterpieces for. The work will take at least five years to complete and will be interspersed with commissions from both here and abroad.

Such a highly specialised business, which relies on perhaps only one or two clients a year has resulted, as Boucher says, 'in the systemisation of an unsystemisable setup'. Despite the size of the company's turnover in terms of sales and expenditure the profits are not, to date, proportionately high. 'I'm the third highest paid member of the company', he notes, but quickly adds 'though I'm not going to work this hard, for this long for so little.' In the meantime, he adds 'the job satisfaction is incredible, where else could I conceptualise ideas for clients and work with such a fantastic team.'

With such a select and small market Boucher naturally thinks on a global scale, attending exhibitions and having appointments with clients and suppliers worldwide. One wall of his office is covered with a map of the world speckled with red pinheads identifying places of significance. Six or so small digital clocks are mounted at certain longitudes and set to local times.

Quoting on some commissions can be difficult. Some pieces virtually require the development of new technologies or, in many cases reinvention of the wheel of techniques long forgotten. 'We didn't know these things couldn't be done any more, so we just went and did them', comments Boucher. Estimates of hours needed are made and timesheets are strictly kept, but people can only work so fast when they are charting unknown and tricky territories of expertise.

There is a pig-headed attitude to quality in the place—even if that means losing out on profit, which has happened to the tune of as high as $30,000 on one particular commission. With fairly heavy mortgage commitments and sizeable outlays to suppliers and external contractors, the company relies on monthly progress payments from its patrons.

For David Boucher the last seven years have been the realisation of a working life that has seen him search for the means to express his creativity. At this point it all seems to be coming together, even if there is now a new point of departure from a familiar place, 'we're just starting to get to the point where we are realising what we don't know'.

Workshop manager Nick Edgar engineers fibre optical lighting in a torsion box of labyrinthine construction.

In The Workrooms

At first glance this is a small workshop like any other. A pitched galvanised iron roof shelters clean, well-organised workstations and areas for machining, assembly, sanding and finishing. On closer inspection the diversity of materials and equipment appears. Woodworking machinery includes a Magic MSW 45 panel saw, Ripley bandsaw, Woodman tilting spindle moulder, wide belt, oscillating and dise sanders. The company boasts the only 3.2 metre between centres Symtec lathe in Queensland, supplied for them by Gregory Machinery in West End. With its electronic control the lathe is capable of infinite speed variance and can switch from three to single phase through a special electric unit.

A small room devoted to metalworking is dominated by a large metal lathe which is used to cut and shape tools. Here specialised hardware and other metal parts are forged. Upstairs on a mezzanine are stacked some of the many veneers and fine timbers used from day to day.

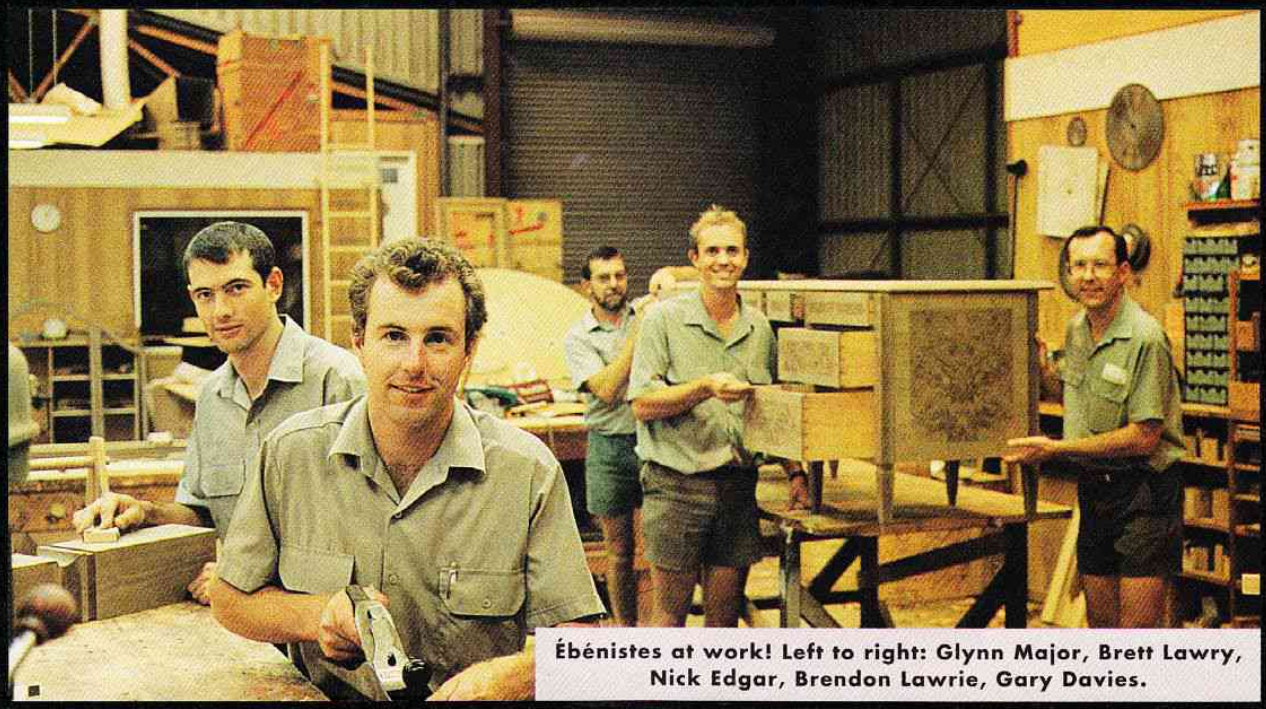
Workshop manager Nick Edgar is, at 46 years of age, both mentor and team worker. On the day I visited he was engineering the placement of fibre optical lighting from 1mm diameter holes in the moulded solid mahogany edge of a large circular table whose core is a torsion box of labyrinthine construction. A special cutter was made in the engineering shop to cut the 120mm thick edging. Before it could be used a massive jig had to be constructed to hold the table at a tilt during the machining operation. Edgar, originally from England, studied engineering for two years before going to work at his uncle's ecclesiastical joinery. He has worked for David Boucher since 1991.

Despite the cloistered atmosphere of the workrooms, the crew are not slaves to tradition but rather all for harnessing modern technology. A 12 x 8' veneer press was specially built for them to accommodate large commissions such as the 2.2 x 3.6 metre inlaid oval table which was pressed in a single, smooth (but frenzied) operation.

A twin ram hydraulic press was constructed on site for pressing smaller panels and resides in a room where humidity is closely monitored and adjusted by means of a periodic squirt of a hose on the concrete floor. Premium hoop ply from Brims Distributors is the preferred substrate for the extensive veneering work which is undertaken there. The precise creation of layons with their stringings (some of which are supplied by NSW's Marquetry Craft Co) and mitred corners is greatly facilitated by attention to the moisture content of the atmosphere. A variation in humidity can cause rapid shrinkage of veneer by 3mm or more, which is much more than enough to ruin a fine piece. The operator here is Brendon Lawrie, a third year apprentice who apparently has the attitude it takes to rise to the Boucher challenge.

René Rimé was formally trained as an ébéniste in Friebourg, Switzerland, and is the talented watercolourist who renders many of the Boucher inspirations. Like Mario Armenti, an engraver, carver and jeweller of exceptional talent, Rimé lives interstate and works on contract or is flown up for periods of time as work demands.

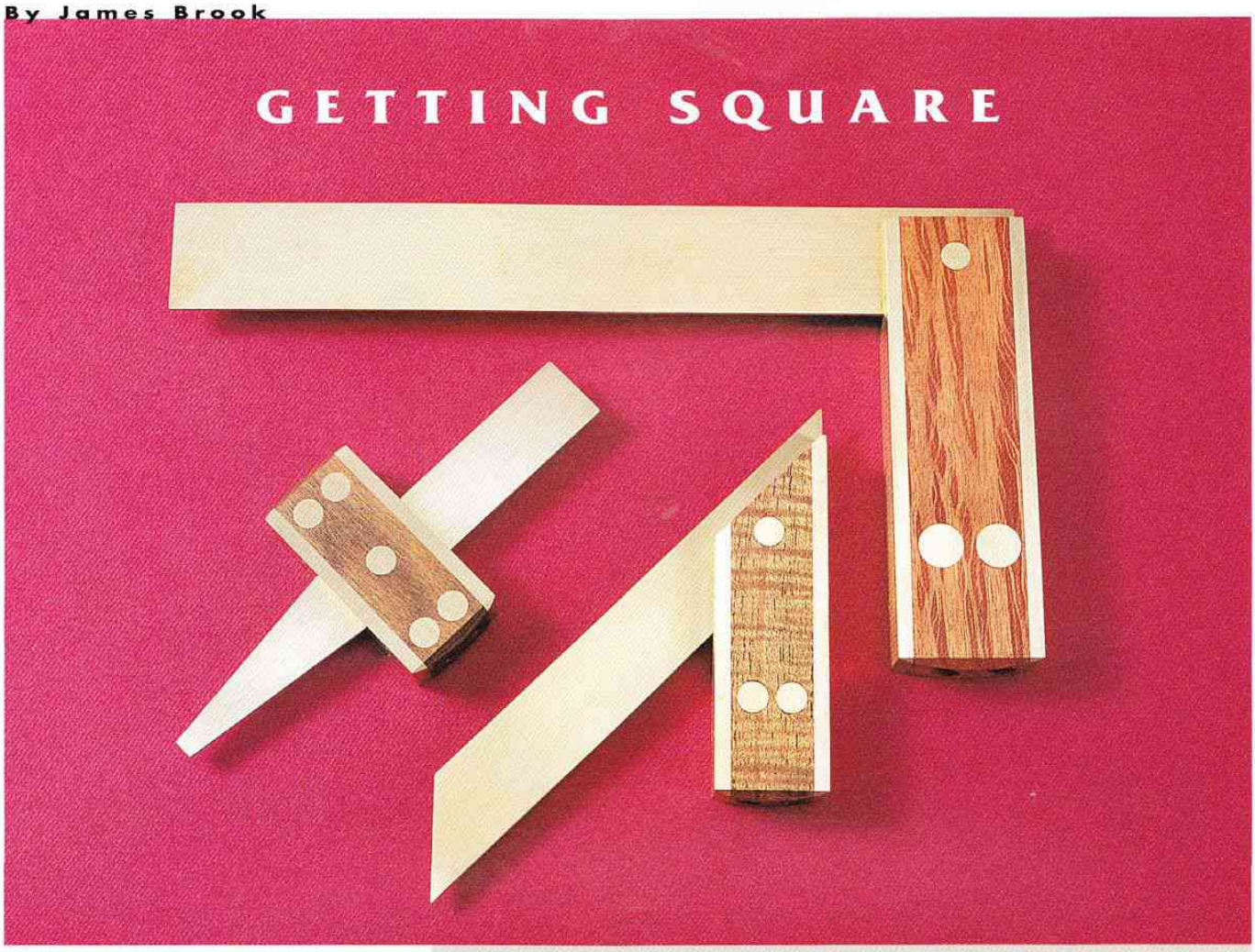
Other team members include Brett Lawry, Glynn Major and Gary Davies who between them bring a formidable amount of skill to bear to the work at hand. Davies, 35 years, has worked for Boucher for 10 years and specialises in lighting and electronics. An amateur radio operator, his hobby has proved very useful. Davies likes a challenge and likes working with the others. 'In some places everyone keeps what they have learnt to themselves. Here we all work together and rely on one another. You have to share your knowledge—you might teach something to someone and then learn from them in return.'



Ébénistes at work! Left to right: Glynn Major, Brett Lawry, Nick Edgar, Brendon Lawrie, Gary Davies.

By James Brook

GETTING SQUARE



***Colen Clenton* squares, 155mm brass blade with brass face $92, with plain timber face $42. Mitre marker $88, dovetail square $92 all with she-oak stock. Blade is pinned with brass. These are hand made tools and the attention to detail is obvious even to the extent of lining up screw heads. All tools can be easily re-set. These are tools for the user or collector.**

The world we live in aims, on the surface at least, to be pretty straight and square. It's much the same with woodwork, virtually every wood joint is at 90°, most of the other joints are 45°, the diagonal of a square. If you're going to be at right angles you obviously need to have an accurate measuring device.

A square is made up of two parts; the stock, usually a decorative hardwood which sometimes has a brass face, and a steel or brass blade, which is pinned to the stock.

When you use the square the stock is pressed flat against the edge of the material to be marked, while the blade is held flat on the material's face. It is important that the full length of the stock bears against the material.

The most accurate mark comes from a knife, but a sharp, hard pencil will

Photo 1

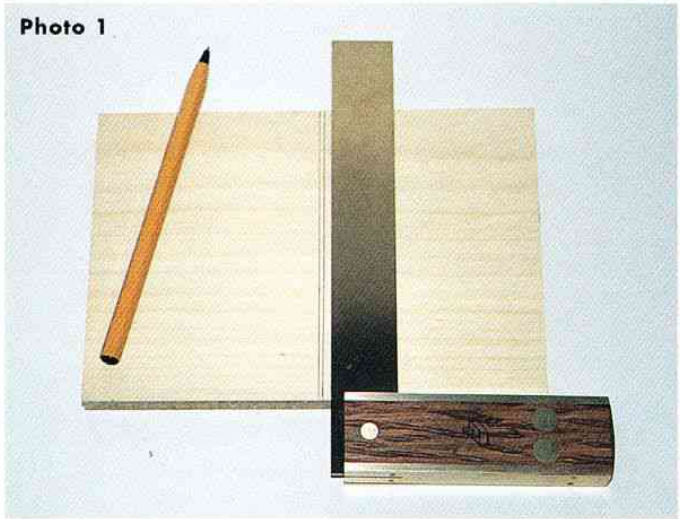
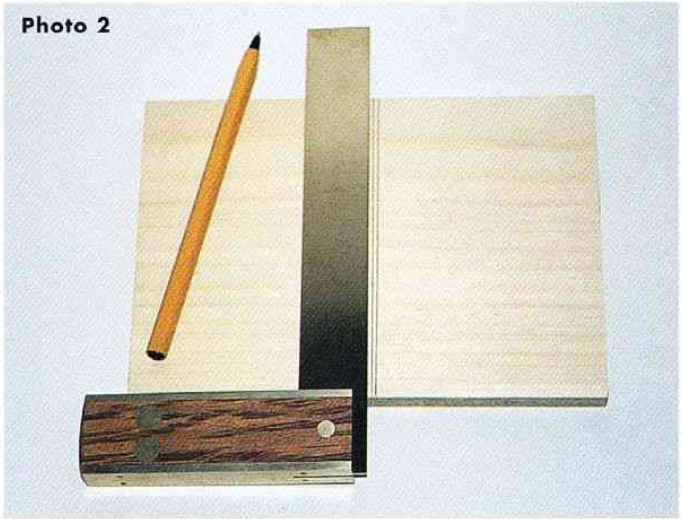


Photo 2



also give good results. It goes without saying (but I'm saying it anyway) that your timber needs to be straight to obtain good lines from the square. Place the point of the knife where you want it and slide the square along to meet it.

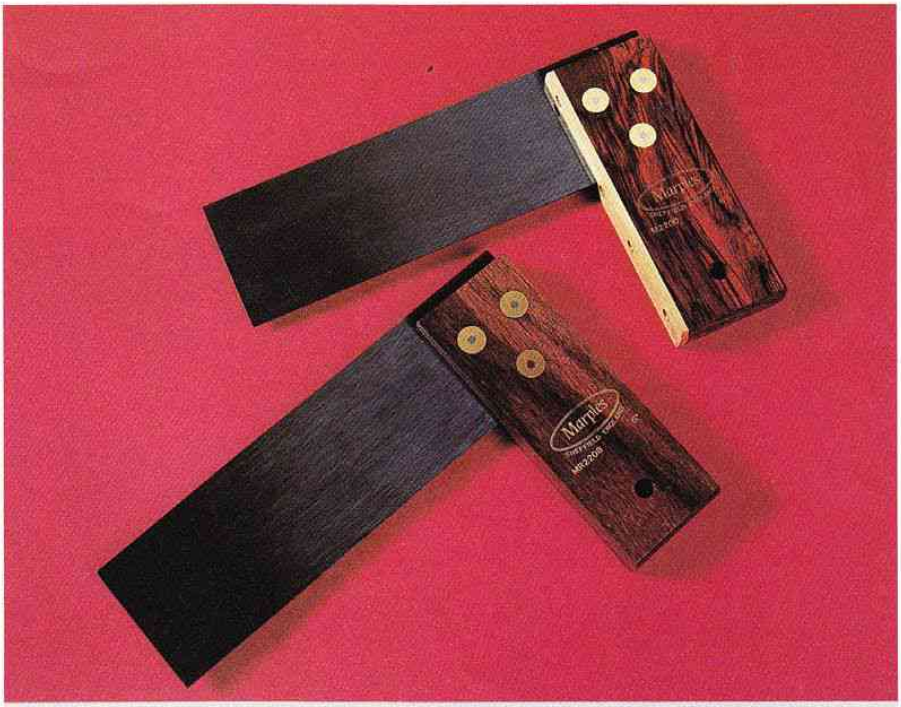
Apart from marking out, use your square to check internal and external joins for square and also when setting up machinery such as blades and fences. Check your square regularly for flecks of glue or dirt on the stock and blade—these will throw out the measurement.

The greatest danger to a square is being dropped (although we all do it). To check a square, mark a line across a straight piece of board, flip the square and make another mark. Are the lines parallel? See photos 1 and 2.

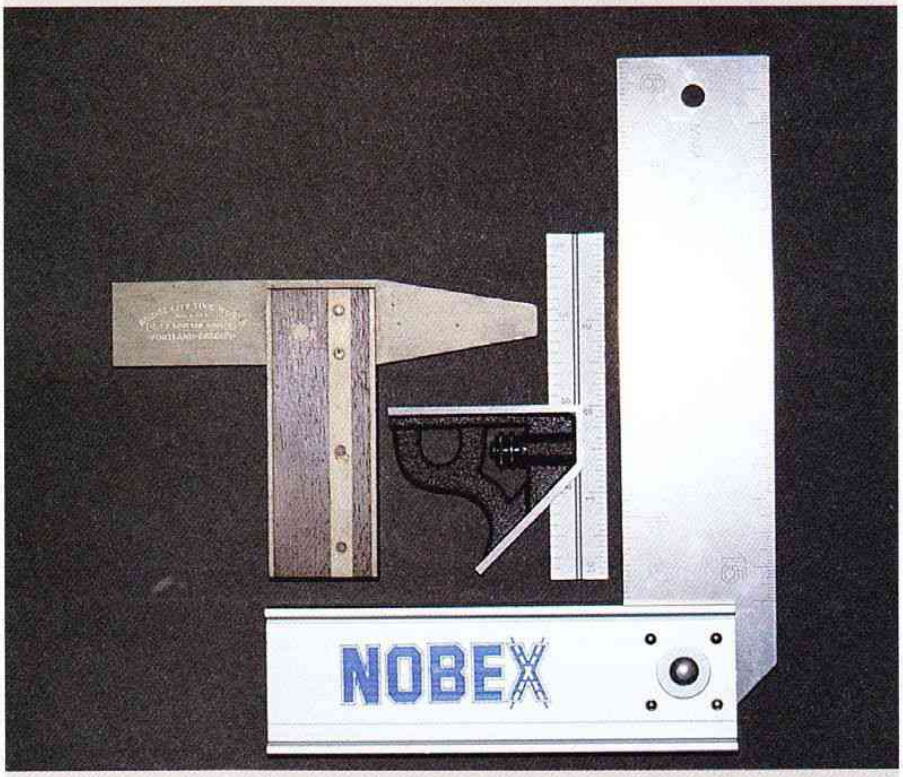
Some squares can be re-set. The Australian-made *Colen Clenton* range uses a two screw system whilst combination style squares like the *Starrett* use adjustment for blade length as well. Fixed squares like the *Marples* or an engineers square are rigidly factory set at 90° and re-setting may require some very light file work on the blade. Very cheap squares may well be set at 88°—be prepared to file a night away to get them right. For the person working on a small scale, take a look at Sanderson tools. They have miniature tools made of rosewood, steel and brass.

A good square is essential and will outlive you, so it's worth getting something of quality, but you don't need to spend the earth if you just want an accurate no-frills tool. A brass face looks and wears better but is not essential. I personally have three regulars, my grandfather's old all-steel engineers square for general use, a good carpenters framing square for setting up my saw and for marking across panels, and a small brass and timber dovetail square which I really bought only as an indulgence, but now use daily.

Suppliers
Colen Clenton tools from **Colen Clenton** (049) 90 7956, **The Woodworks Book & Tool Co** (02) 9484 1183 and **MIK International** (08) 8333 2977



Marples **squares from Record, 150mm blades (6") of tough blued steel, with plain timber stock $26, brass faced stock $34. The stock is rosewood. The brass face on the stock is screwed whilst the blade is pinned with steel and brass. Very nice feel and look.**



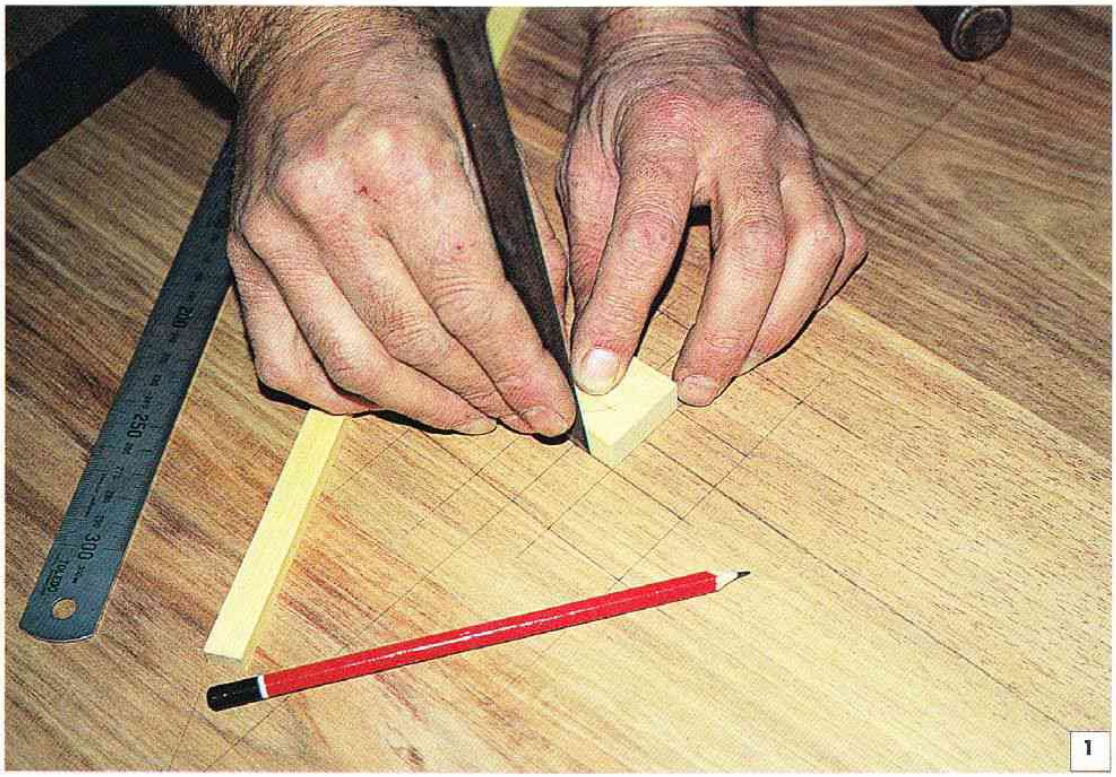
Left to right: *Bridge City* dovetail marker, $74, brass blade and face, very nicely made. This company makes a range of other squares. *Starrett* combination square, cast and ground stock, steel blade, very well finished. This style of square is made by a number of manufacturers in various sizes. *Nobex Quattro* square, aluminium stock, steel blade. Blade locks at 45°, 90° and 135°, around $30. Prices quoted were current at time of writing, check with individual suppliers.

Marples tools from tool specialists such as:
Power Tool Specialists *(06) 280 4966*
MacDonnell Road Hardware *(07) 3283 1558*
The Woodworks Book & Tool Co
Carba-Tec *1800 653 777, 1800 658 111*
Record Hand & Power Tools *(02) 9748 6800.*

Starrett and Bridge City tools available from **MIK International** and **The Woodworks Book & Tool Co.**
Nobex from **Promac** (07) 3279 4811.
Sanderson tools from **Carba-Tec**

By Rod Nathan

SIMPLE DECORATIVE INLAY

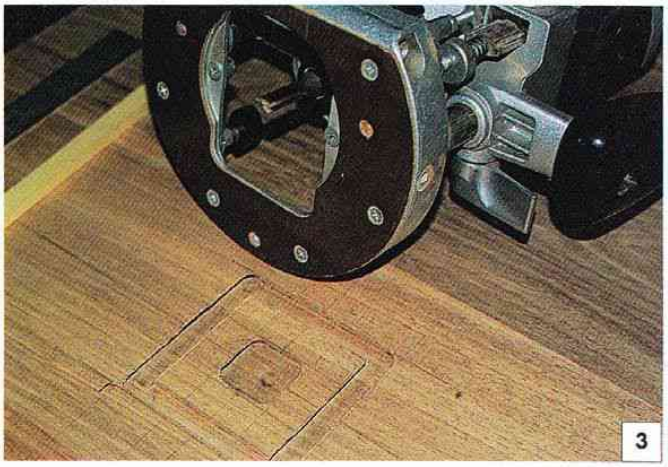


1

Sometimes the addition of a decorative detail can be just the thing which elevates a table or cabinet from being good woodwork to fine woodwork. I started off setting in squares or rectangles of contrasting timber to table and cabinet tops but I now enjoy creating simple motifs.

The traditional method of creating inlay motifs is to set in pieces of thin veneer. The method outlined here involves the use of thicker pieces of timber which are planed down to near veneer thickness after having been set in place. The advantage with this method is that workshop offcuts can be used instead of sourcing particular veneers, and some of us, like me, feel more comfortable with thicker pieces of wood.


2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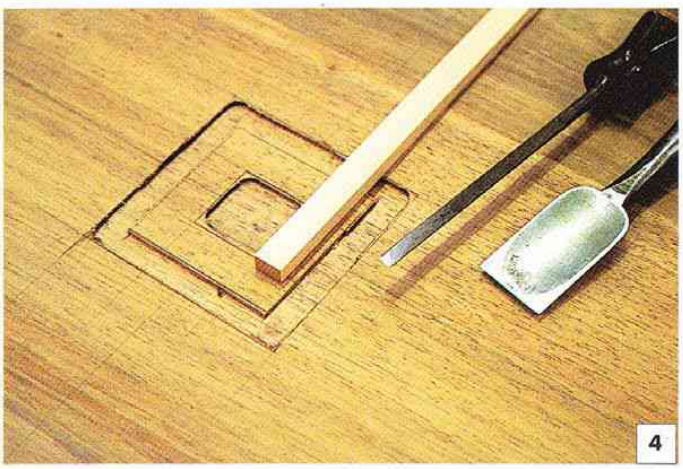

4

Once I decide on a design I prepare the timber. For this design I used one square 30mm x 30mm x 10mm thick and four straight sections 10mm x 10mm x 100mm long. In this case Huon pine was chosen to contrast with the blackwood table top.

1 Carefully mark out the design in pencil on the timber surface. Place the square in its exact position and with a sharp knife cut in the outline of the square. Repeat the process with the straight pieces of wood.

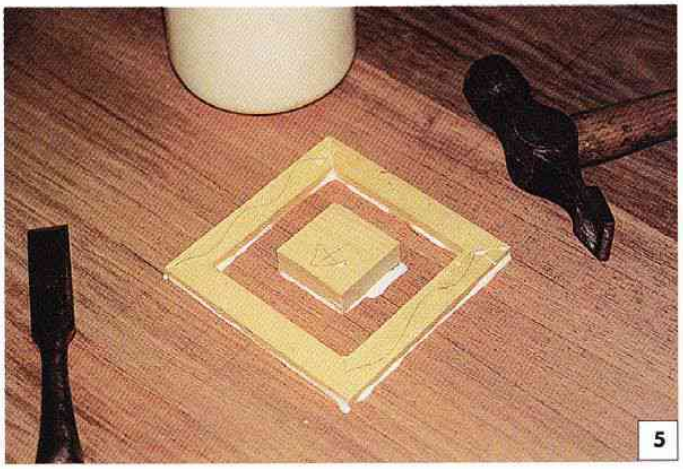
2 Deepen the knife marks a little with a chisel taking care not to alter the position or the accuracy of the original knife cuts.

3 Very carefully rout out the spaces for the inlay going as close to the line as possible without risking a slip. I rout to a depth of about 3-4mm. A laminate trimmer is ideal for this task.

4 With a sharp chisel pare back accurately to the knife line only. The pieces of wood to be inlaid must be a tight fit.

5 Cut the long pieces to length and gently dry fit everything, but don't drive the pieces of wood all the way in. When you are satisfied with the fit apply glue and tap in the inlay. The combination of a tight fit and glue should be enough to hold the inlay in place while the glue dries, although leaving some weights on the inlay overnight is recommended.

6 Carefully hand plane the protruding wood down flush and final sand the area.



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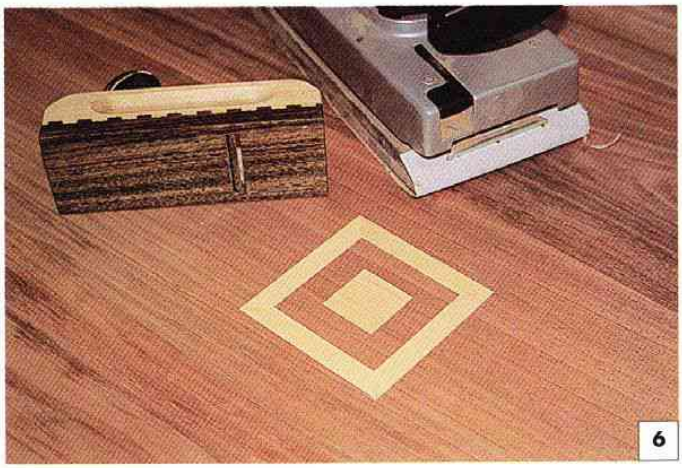
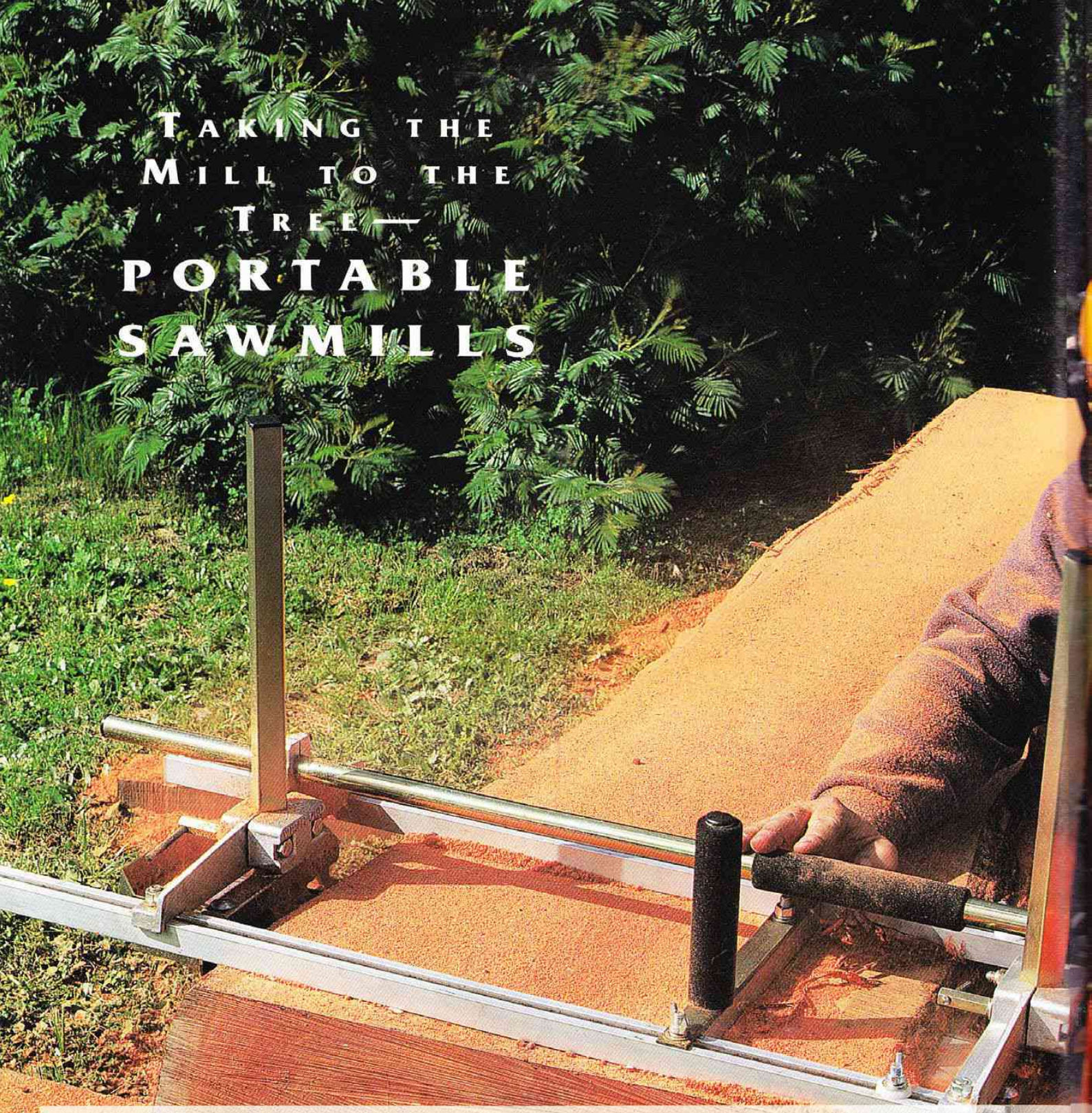


6

Taking the Mill to the Tree— Portable Sawmills

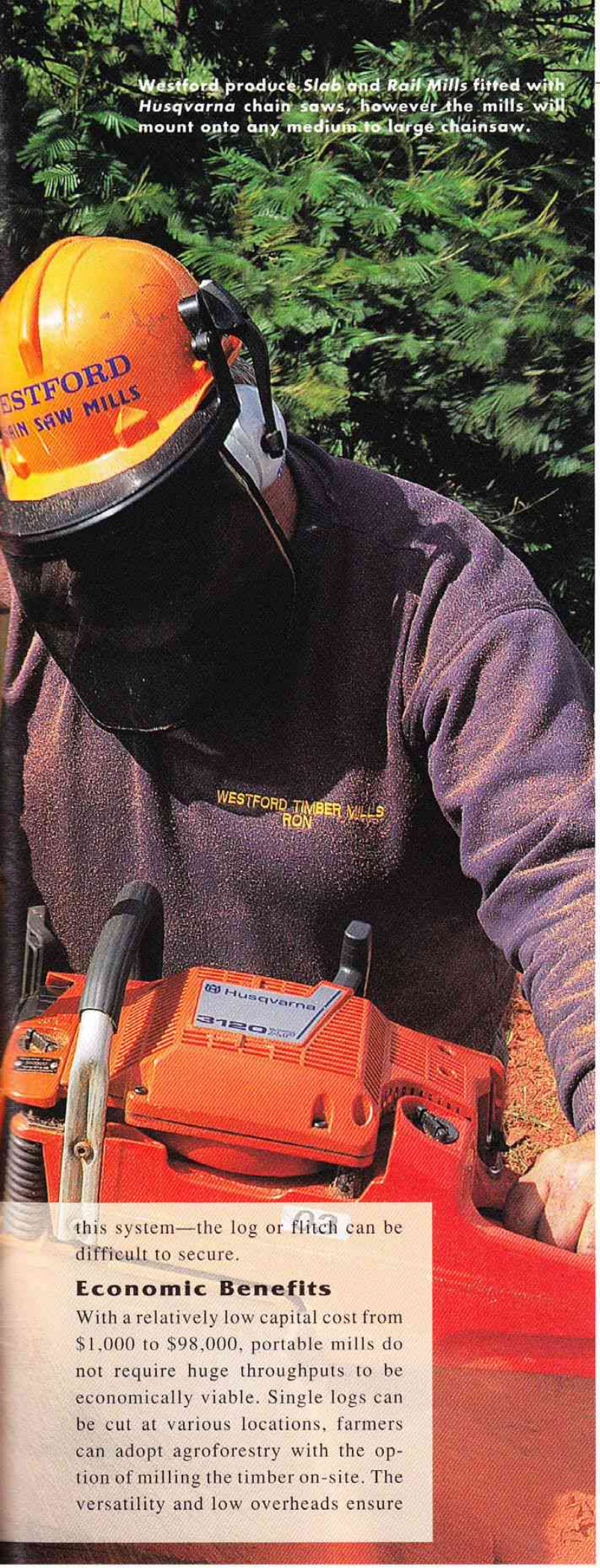


A sawmill isn't always a giant shed with large scale log handling equipment. A sawmill can also be in the bush, a farm or on a street, milling timber where the tree was felled. The scale of the operation is very different, but the end product is sawn timber.

The concept of taking the mill to the trees is of course not new, but modern technology has now opened up milling to more people. The use of a portable sawmilling system is a viable option for everyone from the individual in search of their own supply of timber to the professional sawmiller.

The Mill

There are basically three types of mill that come under the portable category: those using circular sawblades, those using a bandsaw and those that use a chainsaw. The benefits of bandsaws over circular saws are constantly debated. Bandsaws have a thinner kerf and thus produce less waste for a higher return, however circular blades are tougher—a distinct advantage with Australian hardwoods. Chainsaw mills offer entry level prices but are not as efficient. In a conventional sawmill the log is moved through the saw. A portable mill, in contrast, travels along the log, and herein lies the only disadvantage with



Westford produce *Slab and Rail Mills* fitted with *Husqvarna* chain saws, however the mills will mount onto any medium to large chainsaw.

this system—the log or flitch can be difficult to secure.

Economic Benefits

With a relatively low capital cost from $1,000 to $98,000, portable mills do not require huge throughputs to be economically viable. Single logs can be cut at various locations, farmers can adopt agroforestry with the option of milling the timber on-site. The versatility and low overheads ensure a wider range of timber species are available whilst pro moting the growth of fine wood industries and value-addin

One or two operators are enough to produce timber, an minimal training is required to operate most of the mill Cartage costs, a big factor in conventional milling, ar limited to the actual sawn timber. In places where con ventional milling is not practical, such as the highlands o Papua New Guinea and other nations where village lif will continue if the forests are not cleared, portable mil have been highly successful. In these cases mills promis much because they eliminate the need for permanent buildin and amenities, involve low capital costs and can operat in previously inaccessible areas.

Environmental Benefits

On-site milling can minimise environmental and ecolo ical impact. Portable mills only need light duty trac networks and offer minor disturbance of the forest canop They also allow old logging areas to b re-harvested for mill reject logs while waste is left behin in the forest to decompose. Portable mills provide th opportunity for people in developing countries to in crease employment and earn from their own forest resourc they also ensure the forest is harvested in a manner appro priate to the continuation of local life.

To Buy or Not To Buy

Chainsaw mills are the lower cost portable sawmillin option, but do remember you will need a really goo chainsaw. The work itself is physically demanding, how ever a good volume of timber can certainly result from day's labour. A rail type of system should be considere for ease of use.

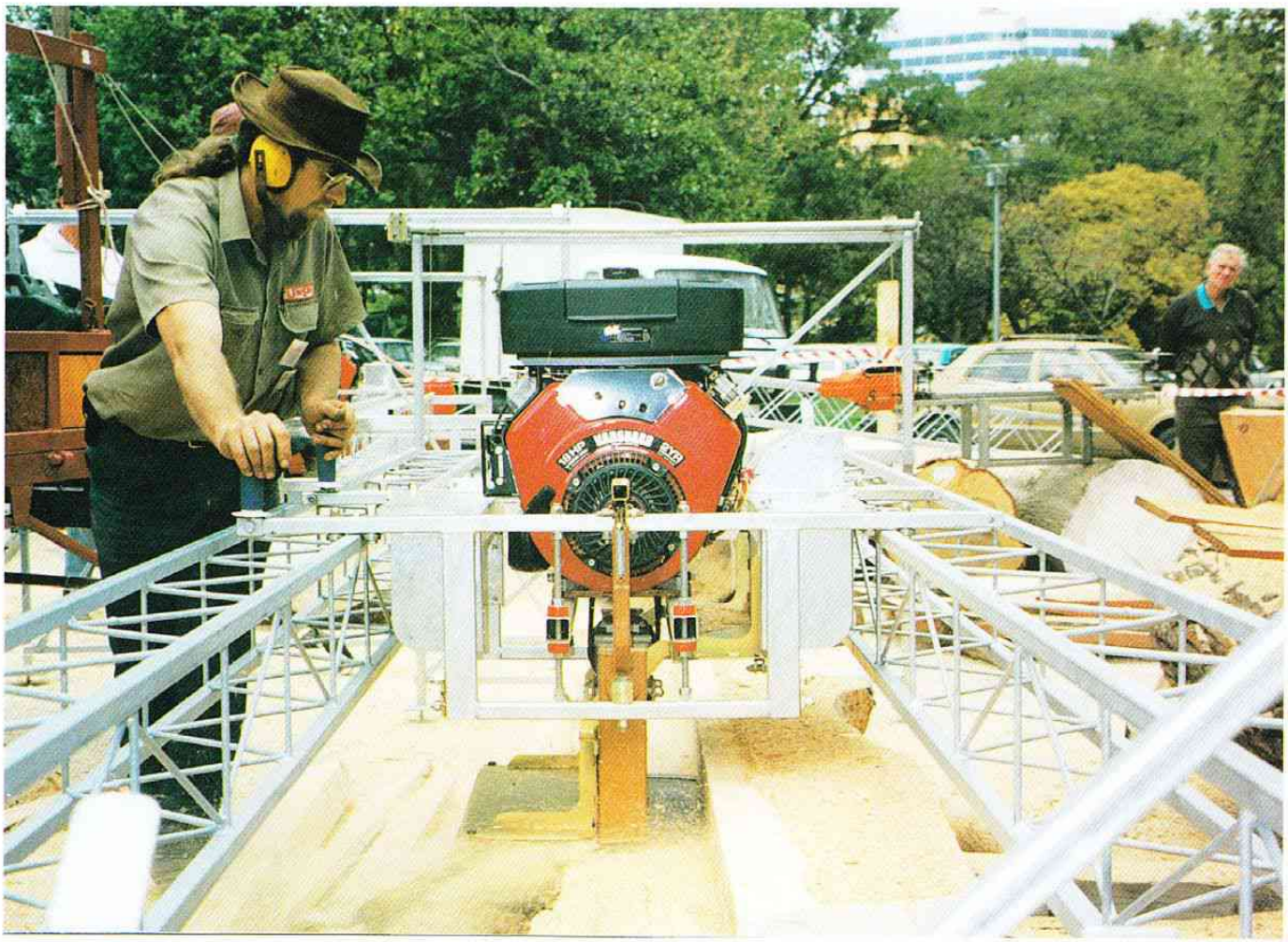
The choice of a band or circular portable mill will ult mately come down to money and the volume of timb you can expect to cut. Top end machines cost a lot but ca produce cubic metres of timber daily, paying their wa easily.

Milling is a dirty, dangerous business but the sheer cha lenge of the work, coupled with the 'gold' which may li at the core of an outwardly undistinguished looking lo seems to inspire devotion from its proponents.

Circular Sawblade Portable Mills

Eco Saw (formerly Lewisaw)

The mill weighs 325kg and can be broken down into fiv parts which are carried to the tree. Powered by an 18h petrol engine, the outfit features blade rotation throug 180° allowing any angle cut thus eliminating the need t roll the log. The independent leg levelling *Eco Saw* sy tem means the saw can be set up in minutes without an ground preparation, an especially useful feature in roug terrain. The mill is priced from $15,000.



The Eco Saw can be set up in minutes on any terrain and cuts at any angle.

Lucas Mill by GW Lucas and Sons

The 160mm/6" cut *Lucas Mill* and the 215mm/8" cut are powered by 16hp and 20hp motors respectively. A portable mill 'shoot out' in New Zealand last year showed the *Lucas Mill* to be a winner. The 6" model sells for $8,800 and the 8" model is $11,800. An optional slabbing bar allows the 6" model to cut slabs 4'2" wide and the 8" model to cut 5' wide.

The Minimill by Macquarrie

This mill is suited to plantations, agroforestry, value-adding and specialty timbers. A single circular sawblade running at a 45° angle to the log ensures no clamping is required. Logs up to 35cm diameter and 3.7m can be completely sawn. A 20hp engine power feeds the sawblade along the frame the logs sits in, with timber sizing being power fed with an electric winch. It travels on a single axle trailer with set-up time of around fifteen minutes. With trailer, sawblade, electric log raiser, log loaders, log turner and power feed it comes in at $11,700

Forest King, by Mahoe Sawmills

Designed for rugged low maintenance sawmilling. Powered by a 25hp motor the blades can be applied to logs up to 1.5m in diameter and 6m in length. With set up time 15 minutes for two men, it can produce 4-5 cubic metres in an eight hour day. Priced at $29,500.

Bandsaw Portable Mills

Woodmizer LT25

The *LT25* is 'ideal for the occasional sawmiller and the jungle missionary alike' incorporating industrial features into a single operator mill. With optional log deck package the lone operator can handle very large logs. Optional trailer package is available. *Woodmizer* claim that their high production mill, the *LT40 HD* can produce as much timber per person per day as many of the largest production mills around and with the thin band saw blades use a third less log in the process. From $19,000 to $46,000 including blades, automatic sharpening equipment, hydraulic lifting and clamping on larger models, and mill training and maintenance.

Larger Circular Saw Models

The larger portable mills can only be delivered to the trees on tray-back or trailers and cater for larger logs only. Macquarrie's *Forestmill* is powered by a four cylinder diesel engine (two *Forestmill* models are powered with electric motors) driving the two 9 gauge sawblades complete with stellite replaceable teeth.

Chainsaw Portable Mills

These mills bolt to a chainsaw. Some mount the chain blade parallel to two bars (all held horizontally) which are slid along the timber, for the first cut you use some dressed timber for a guide and thereafter the previously sawn face is your guide. Other chain-

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Cat No.	Capacity	Cat No.	Capacity
132/10	4"/100mm	132/50	20"/500mm
132/15	6"/150mm	132/60	24"/600mm
132/20	8"/200mm	132/80	32"/800mm
132/25	10"/250mm	132/100	40"/1000mm
132/30	12"/300mm	132/150	60"/1500mm
132/40	16"/400mm		

132 SPEED CLAMPS

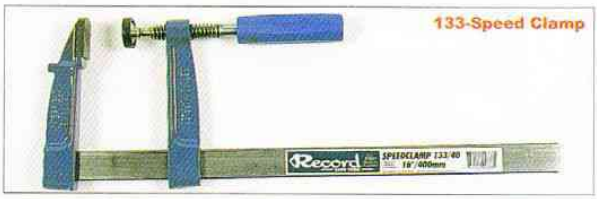
These medium duty clamps have a **bright drawn steel bar**, serrated top and bottom. As clamping pressure is applied, these serrations lock and secure the sliding head. The **hinged handle gives extra leverage** when you really want to put the pressure on, while the swivel shoe will sit firmly on off-square or uneven surfaces. Fast and easy to use, speed clamps have the additional advantage of a 4¾" (120mm) throat depth.

132-Speed Clamp

Cat No.	Capacity	Cat No.	Capacity
133/20	8"/200mm	133/50	20"/500mm
133/25	10"/250mm	133/60	24"/600mm
133/30	12"/300mm	133/80	32"/800mm
133/40	16"/400mm	133/100	40"/1000mm

133 SPEED CLAMPS

The new 133 Speed Clamps are ideal for the workshop and home use, being fast acting and easy to use, even single handed. The **solid steel** bar is serrated top and bottom so that the sliding head locks firmly into position as soon as any pressure is applied and, with a throat depth of 4¾" / 120mm, you can clamp well in from the edge of the work. The large octagonal handle gives you the grip to put plenty of pressure exactly where you need it and, to protect delicate surfaces, plastic covers are supplied as standard for the fixed head and swivel shoe.

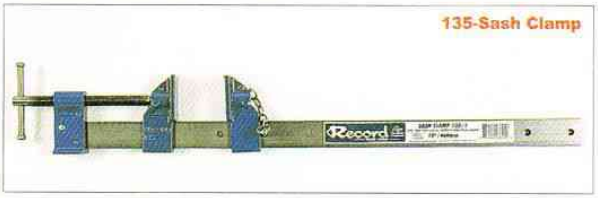


133-Speed Clamp

Cat No.	Capacity	Cat No.	Capacity
135/1	18"/460mm	135/6	48"/1220mm
135/2	24"/610mm	135/7	54"/1370mm
135/3	30"/760mm	135/9	66"/1680mm
135/4	36"/915mm	L135/4	36"/915mm (Lengthening Bar)
135/5	42"/1070mm		

135 SASH CLAMPS

Heavy duty clamps with a **steel bar** section of 1¼"x¼ (32mmx6mm). The tail slide is secured by a solid steel pin passing through one of the locating holes spaced along the bar. A two start acme thread puts the pressure on quickly and smoothly. The slides and heads are flat bottomed so that the clamp will stand without support.

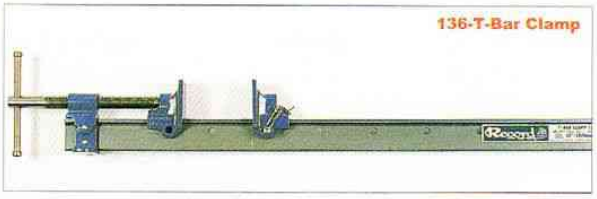


135-Sash Clamp

Cat No.	Capacity
136/5	42"/1070mm
136/6	48"/1220mm
136/7	54"/1370mm
136/9	66"/1680mm
136/11	78"/1980mm
L136/6	48"/1220mm (Lengthening Bar)

136 T-BAR CLAMPS

This **extra heavy duty** clamp with a T section bar gives great resilience and resistance to bending. Bars are made from **bright drawn steel** and the main screws and handles are made from high grade steel. The 136 is suitable for any type of general clamping but, it specifically suited for larger projects wher full use can be made of the 1.9 tons clamping pressure they can generate. The fixed head is fitted square to the bar with a 1½-2° taper for a true, parallel clamping action and is furnished with drilled feet for bench mounting.



136-T-Bar Clamp

M130 CLAMP HEADS

Clamp Heads are a low cost alternative to the full size bar clamps. The **cast grey iron head and slide** with steel mainscrew can be fitted to a wooden batten 1"/25mm thick by 1½"/38mm wide, and of any desired length.

M130-Clamp Head

G-WHAT A CLAMP!

119 MEDIUM DUTY G CLAMPS

Medium Duty 119 G Clamps are also made from **drop forged steel** with a very slim section frame. This allows them to be slipped into confined spaces that a conventional clamp would not reach.

120 HEAVY DUTY G CLAMPS

The 120 series Heavy Duty G Clamps are the most popular and widely used for both wood and metalworking. **Cast from SG Ductile Iron**, even the smallest 3" size will safely apply 1000lbs/455kgs of pressure.

121 EXTRA HEAVY DUTY G CLAMPS

121 Extra Heavy Duty G Clamps are made of **drop forged steel**. Even stronger than SG iron, these range of clamps, will apply up to 15000lbs/6800kgs of pressure and are frequently used in metal fabrication work.

122 DEEP THROAT G CLAMP

The 122 is a specialist medium duty clamp with an extra deep 4" (100mm) throat for clamping well in from the edge of the work. **Cast from SG Ductile Iron**.

129 EDGING CLAMP

The 129 Edging Clamp is similar to the 119 with a **drop forged steel** frame and two mainscrews and is used to fix edging strips to straight or curved surfaces.

Cat No.	Capacity
119/1	1"/25mm
119/2	2"/50mm
119/2½	2½"/65mm
119/3	3"/75mm
119/4	4"/100mm

Cat No.	Capacity
120/3	3"/75mm
120/4	4"/100mm
120/6	6"/150mm
120/8	8"/200mm
120/10	10"/250mm
120/12	12"/300mm

Cat No.	Capacity
121/3	3"/75mm
121/4	4"/100mm
121/6	6"/150mm
121/8	8"/200mm
121/10	10"/250mm
121/12	12"/300mm

Cat No.	Capacity
122/4	4"/100mm

Cat No.	Capacity
C129	2½"/65mm

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Lucas Mill portable sawmills are available in two models powered with 16 and 20hp motors.

saw mills use a rail as a guide with the blade running vertical, this system is slightly easier for the operator.

Ripper MK.IV

With its heavy duty construction the *Ripper MK.IV* fits any size chainsaw and cuts any size timber accurately. It can be adjusted to be operated by one or two people.

Westford Slab and Rail Mills

Westford produce *Slab* and *Rail Mills* fitted with *Husqvarna* chainsaws. However, the mills will mount onto any medium to large chainsaw. Bar lengths vary from 20" through to 70" for the *Slab mills* and from 40"-60" on the *Rail Mill*. Prices for the *Slab Mill* are 36"—$384, 48"—$470 and 66"—$512. The *Rail Mill* with the 20 bearing running carriage, graduated cutting gauge, and 3 metre rail sells for $1500.

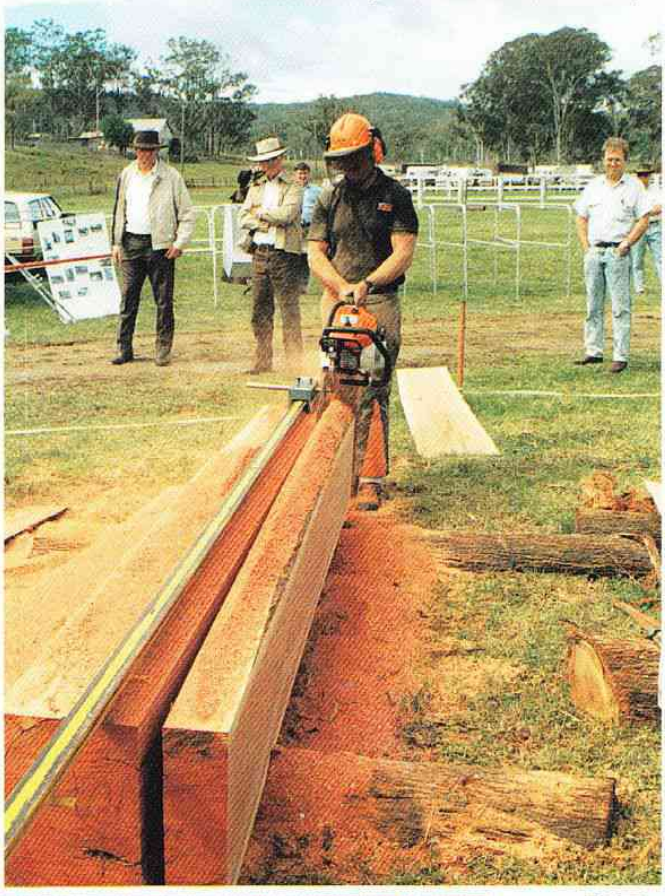
Macquarrie Chainmills

The Macquarrie *Chainmills* (models 36 and 46) operate with the log to be sawn sitting in a V-frame (eliminating the need for clamping), with the chainsaw mounted at a 45° angle. Designed for smaller diameter logs up to 36cm and 3m long (model 36) or 46cm and 6m long (model 46) the mill adapts to any chainsaw with a 50cm length bar.

Suppliers of portable sawmilling systems:
Ecosaw from Ecological Sawmill Systems (formerly Lewisaw),(097) 254 446
Lucas Mill from G.W.Lucas (057) 287 283
Ripper from Ripper Industries Ltd (0754) 94 0704
Westford Chainsaw Mills from R & H Mowers (046) 26 1908
Woodmizer from Millwood Forest Products (097) 256 226

The following companies provide mobile milling services:
Rare Woods: (03) 9419 0969
Custom Cut Timber (059) 66 9535, 015 512 233
The Woodage (048) 721 618
Mullumbimby Timber (066) 840166
Rosebank Timber Traders (066) 882215

The Ripper fits any size chainsaw and cuts any size timber accurately.



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By Linda Nathan

TERRY BAKER: ON THE SURFACE

Arranging by telephone to meet someone you have never met before really brings you to the tin-tacks of self-description: 'I'm a big lump of a man. I look about fifty, which is what I am', said Terry Baker, woodturner and 1995 Churchill Fellowship recipient. Baker recently took the southern bound two hour train trip from Pretty Beach to meet me in Sydney to talk about his work and recent travels.

A self-described full time artist/craftsman, Baker's multi-paged CV is chock-a-block with qualifications, commissions, collections, exhibitions, awards and items of publication. In 1996 alone Baker took part in a group exhibition at Sydney's now defunct Craftspace Gallery ('Souvenir Greetings

Ceremonial series, river red gum burl, carved and burnt.

***Rockpool* bowl, 1990, rosewood, silver & gold leaf, lacquer.**

***Celtic* series bowls, 1993, 350mm dia, river red gum.**

Jarrah burl, 1989, rosewood bowls, gold leaf detail.

***Mandala* bowl, 1996, 750mm dia, red gum, brass pins.**

***Rockpool* series, 1992, rosewood.**

From Sydney'), exhibited with Craft Australia at the San Francisco International Gift Fair, taught in Hawaii, and then rounded off the year with back to back exhibitions (the first with Richard Raffan, the second a group exhibition entitled 'Small Treasures') at Bungendore Woodworks Gallery in New South Wales.

All this in addition to producing an affordable range of turnings which provide Baker with a steady income. We all need to earn a living, but many craftspeople and artists are led to believe that their rewards may not necessarily be fiscal. Terry Baker is not interested in being part of a 'suffering artist' set: 'I like a decent drink and I like good cars. I like to live well and I need an income. I like having a flexible lifestyle'.

The Churchill Fellowship provided Baker with time out in 1995 to travel to his wish-list of woodturning and design influences. In the US he met with leading craftspeople such as Dale Nish, Mark Sfirri, Toshiko Takaezu and Michael Hurwitz. In between times he visited numerous galleries, museums, and collections. Similar experiences followed throughout Sweden, England and Wales. Three months of concentrated exposure to ideas and influences have now been distilled into Baker's own creative vocabulary, at the centre of which lies an almost devotional approach to his craft.

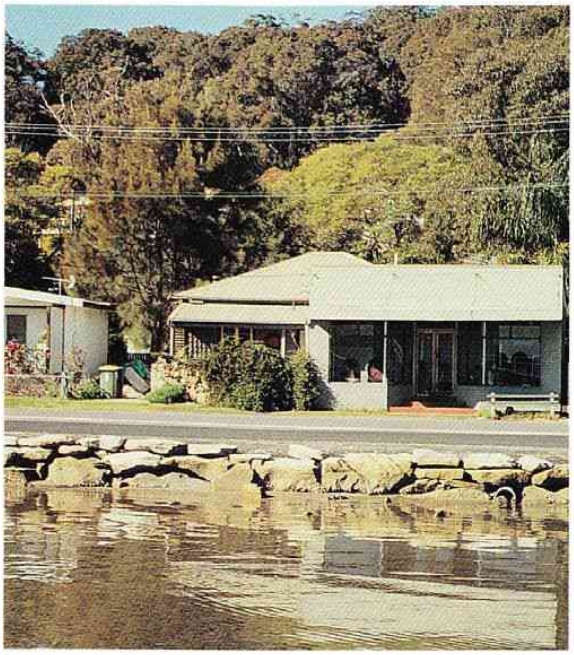
The material world aside, Baker's focus is very much on the work itself. His idea of what makes a piece of craft work is tied up with his belief in Zen Buddhism. 'After you have built up the skills there is intent. Some people get too involved with technique and get scared. I think it was Einstein who said "imagination is more important than knowledge"'. He also talks about the importance of 'centering oneself', of having 'mindfulness' (a translation from a Sanskrit word meaning 'being aware').

Whilst the maker's attitude determines the success of his work, he should not deny the viewer a role in the process. By limiting the actual forms he uses Baker feels he allows the 'user' to imagine and 'add' to the form. 'If the form is too complex the user gets lost and confused'. The theory *is* important—'the difference between a craft object and a piece of 'Ikea' is the soul or energy of the piece. It's all about expressing the medium.' The distinction between art and craft is also clear in his mind. 'Art should bring a reaction, it's not necessarily part of life. Craft is more accessible, you can live with it.'

Baker's study tour had an immediate effect on his creative output in 1996 and also reaffirmed ideas relating to woodturning as a craft. Visits by overseas turners would provide cross-pollination whilst collaboration between craftworkers in other media would also benefit turners. He looks forard to an elevation of the craft of woodturning which may be brought about by promoting the craft to the general public.

Conservation of the woodturner's resource is also on Baker's mind. Saving the centres of blanks, using salvaged or recycled timber, and even man-made fibreboard and plywoods or constructing blanks through techniques of lamination, and incorporating or tolerating natural features such as cracks and splits can all lead to better use of a finite resource.

Baker taught industrial arts, 3D studies and ceramics for some 15 years until he simply 'didn't have any more to say' and also suffered a certain disillusionment with the process of trying to get people 'passed' through an exam system. Now, when he takes workshops or give lectures, he chooses to concentrate less on technique and more on 'why we make what we make'. He talks about what he feels others leave out: 'No one talks about what they're going to make, everyone's pre-occupied with tools and techniques, with cheap tricks.'



Baker's studio in Pretty Beach, NSW

In 1982 Baker decided to leave teaching and become a full time potter with Ian McKay at the Sturt Pottery workshop for two months. As a dinner guest at McKay's house at the start of his stay he ate from wooden plates and bowls made by Richard Raffan. The lure of wood won out over clay and Baker went to work for Raffan shortly after: 'Richard let me rough his bowls out'. This was no small favour, Baker explains, as you wouldn't let someone you didn't trust at your woodpile.

The Baker trademark forms are platters, bowls and other faceplate turned items: 'that's all I'm good at, too often people spread themselves too thin'. If it were possible to see a reflection of the maker in his or her work the viewer can surely see one in the surface of Baker's works which are a complex layering of effect and stylised meanings. The forms are substantial and fluid, and provide a recognisable canvas for the ideas in surface ornamentation which Baker explores.

His *Landscape*, *Rockpool*, *Celtic*, *Ceremonial* and most recent *Mandala* series have developed side by side over the last ten years. Each has identified itself by particular surface treatments which have encompassed the application of paint, lacquer, silver and gold leaf. Surfaces have been carved, burnt, pierced and studded with steel, copper and brass.

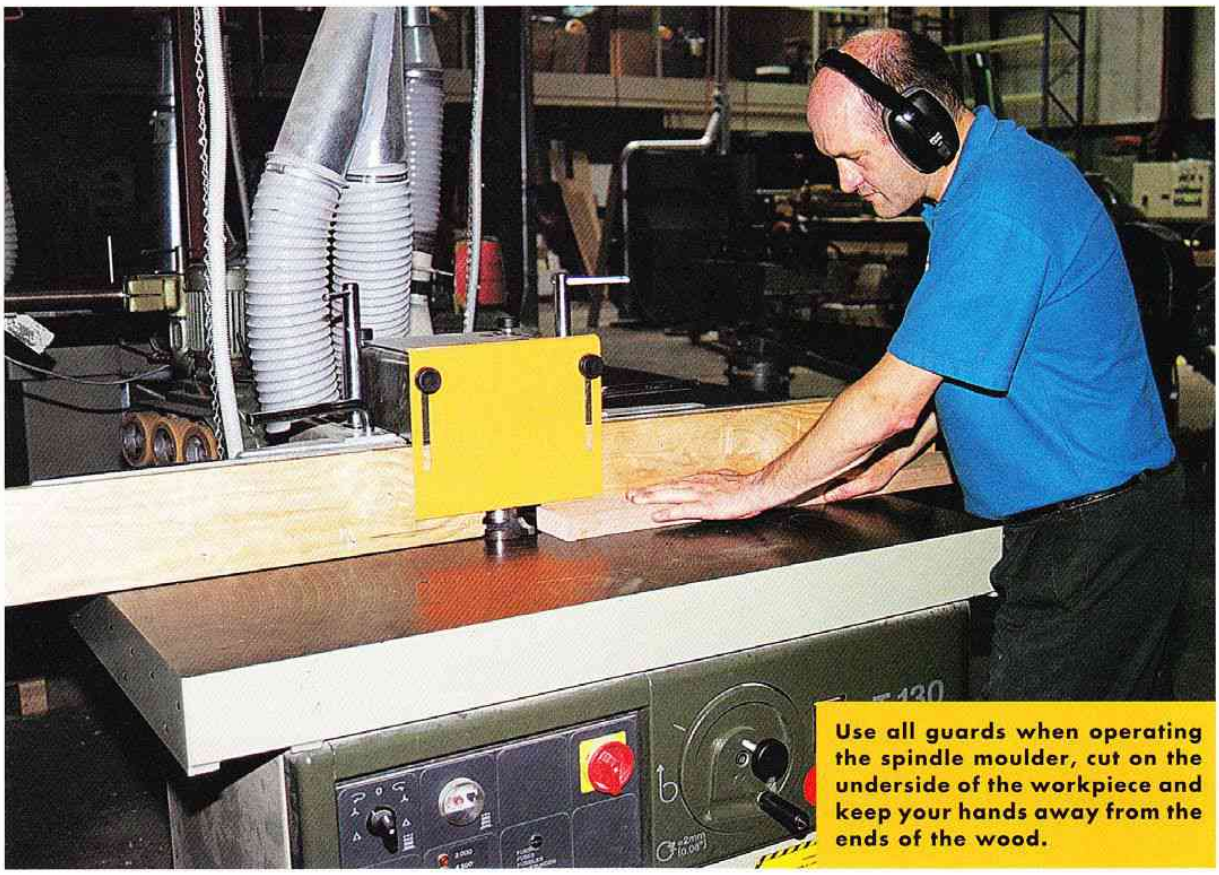
Baker maintains the same attitude to surfaces even in his 'bread and butter' output. 'Turning is only 10% of the piece, the finish is more important—and the smell. Ninety per cent of the work is selecting the right timber, designing to the timber and the shape.' Chosen timbers are often redgum, coolibah and yellow box burls. An artist/craftsman who is also a businessman, Baker is very mindful of what buyers are drawn to. Apart from timber that is visually captivating, the feel of a piece is very important. 'It must feel perfect, it must smell good, it must be instantly saleable. Packaging is important. Craft must be accessible—cash and carry.'

The 90% of effort spent on the finish is taken up with fine sanding and polishing. Generally he uses *Adheze* 2-pack polyurethane. When dry the piece is remounted on the lathe and cut back with 240 grit through the grades to 320 grit. The surface is buffed through 400, 600 and 800 wet and dry grits and then finally annointed with his own special mix of pure gum turps, boiled linseed oil, beeswax and carnauba.

Baker's unique and recognizable style has evolved from his steady focus on developing his own ideas. A steadfast attitude to the process of making has enabled Baker to resist the temptation of becoming lost in the stylistic innovations of other turners.

By Philip Ashley

SPINDLE MOULDERS: MACHINES THAT VALUE ADD



Use all guards when operating the spindle moulder, cut on the underside of the workpiece and keep your hands away from the ends of the wood.

The vertical spindle moulder, or shaper, is an essential piece of equipment in most woodworking shops. Invented in 1853 by Andrew Gear from Ohio, USA the shaper works on a simple principle which demands more skill and ingenuity from its operator than most other woodworking machines do.

The spindle moulder in action is visually exciting, but it can be dangerous and frightens many woodworkers. When the operating principles are understood however, the machine becomes much more friendly and versatile. The spindle moulder offers profitability as you value add to your timber by producing shaped mouldings and componentry. Many jobs, such as mortice and tenoning and dovetailing, performed on purpose built machinery can be done on the shaper. A good shaper operator can be the key to the workshop, and unfortunately in some companies this person hardly ever gets to work anywhere else, the job is so important.

YOUR MACHINE

The shaper today still looks pretty much the same as it did in 1853. A typical machine has a steel table mounted onto a solid machine base. The table has a number of tapped holes in its surface which accommodate the fence arrangement and a number of attachments.

The cutter spindle is adjusted manually in a vertical slide by handwheel and lock, or electronically. V-belts and a motor mounted in the machine base offer a variety of speeds through a pulley system or electronic control.

Adjustable fences will give flexibility in production. Both fences should preferably be adjustable, but you can get away with just the lead-in fence at a pinch. The fence arrangement has fittings for safety devices (such as hold down springs, pressures, spindle guards and false fences) which should always be used. If they are insufficient, make your own. The protruding top of the spindle should also be guarded. *Never forget safety on this machine.*

Modern shapers can now be fitted with numerical controls, with the tool data of the cutters entered into the CNC unit. These guarantee the same mould every time, and enable the manufacturer to more closely monitor the effectiveness of the equipment.

Spindle moulders come in many sizes, and with many options. A machine with a small table and a 19-20mm spindle for the home or small workshop will cost you from $1,000 to $3,000. An industrial machine can cost anything from $5,000 to about $15,000 depending on extras, and these machines take standard bore (32mm) industrial tools. Shapers are now available with sliding tables, power feed units, and tilting spindles.

A selection of tooling for the spindle moulder:
A Whitehill block with panel raising cutters.
B Whitehill block, no cutters.
C 'Drunk' or 'wobble' saw, edge-on to show blade tilt.
D Slotted collar cutters and collars.
E Solid profile cutterhead (bullnose).
F Rebating cutterhead, circular design.
G Solid profile cutterset door profile (3 parts).
H Circular sawblade, carbide tipped.
I Universal safety profile cutterhead.
J Cutters for I.

TOOLING

Tools used on this machine have traditionally been French spindles, square heads, Whitehill cutterblocks, saws, slotted collars (with or without bearings) and circular manufactured cutterheads, which are the safest. French spindles are no longer used due to associated danger. Certain types of tools are now available where the cutting tips can be used on the shaper one day and the through-feed moulder, or perhaps CNC router the next.

Square Heads

Square heads were once used on most machinery, and were easy to manufacture, but they can no longer be legally used on hand-fed machinery. Square heads may be permissible on power-fed machinery where the hands do not come into close contact with the tool, however circular design tools are preferable. They are much less likely to pull you into the machine if you do happen to touch the cutters—which is what a square head will tend to do.

Whitehill Cutterheads

The Whitehill cutterhead is a circular design tool with two slots into which are mounted thin knives which you grind yourself. The cutters are held in place by bolts and a wedge. The cutters can project a lot on a deep mould and again I would only use this tool with a power feed or a guard which prevented any tool contact. The Whitehill block is an inexpensive way of moulding wood, as the knives can be quite short in comparison to other tools. The modern version is called a universal safety profile cutterhead, and will cost around $500 but comes with twelve different shaped cutters. Additional tools can be purchased starting at around $30 a set, and you also get chip limiters, making the tool very safe to use.

Sawblades

Sawblades are used extensively on the spindle moulder for small rebates, grooves and joints. A modestly priced grooving tool can be used to produce grooves of its own size and larger, but the wood will have to be passed over the machine a number of times. An alternative is to buy an adjustable tool where the saw is tilted in the saw housing to produce a groove of varying sizes, such as 4-7.5mm, or 10-19mm. The groove can never be more than twice the original saw size.

Slotted Collars

Slotted collars are two circular steel collars with slots, into which are placed two cutters ground by the operator. The cutters are held in place by the pressure of the two collars and securing bolt, and if the setting is not done properly the cutter can move. The cutters must be a matching pair and mounted cleanly.

The cutter should have a small cutout which fits over a pin in the slot. This

prevents the cutter from dislodging, but there is still the possibility of an accident due to the large projection of the tooling which is possible.

In a perfect world we would no doubt all agree to ban the use of slotted collars, but few companies are going to disadvantage themselves in the marketplace by being the first to do so. Slotted collars are available with bearings to machine curved components off a jig or ring fence, and while being the most interesting, these are often the most demanding and dangerous operations performed on the shaper.

General and Specific Tooling

There are multi-purpose circular design tools or specific tools for specific jobs. Many tools come in sets, where you may get two or three parts and a number of spacers. Door manufacturers, for example, may repeat the same mould on doors of varying thicknesses. Cutterheads for finger joints, lock mitres, profiling, tongue and grooves, panel raising and counter profiling are available from many companies. The price of these tools is high—I have personally used cuttersets which have cost as much as $3,000 each.

Tool Maintenance

Whichever tools you use on the spindle moulder, make sure they are sharp and balanced. Use safety tools wherever possible, and store them in the original packaging, or a custom made box, away from dirt and damage. Remember that the tool does the work; the shaper is only a means of holding the tool and guiding the wood. Good maintenance of tooling is essential.

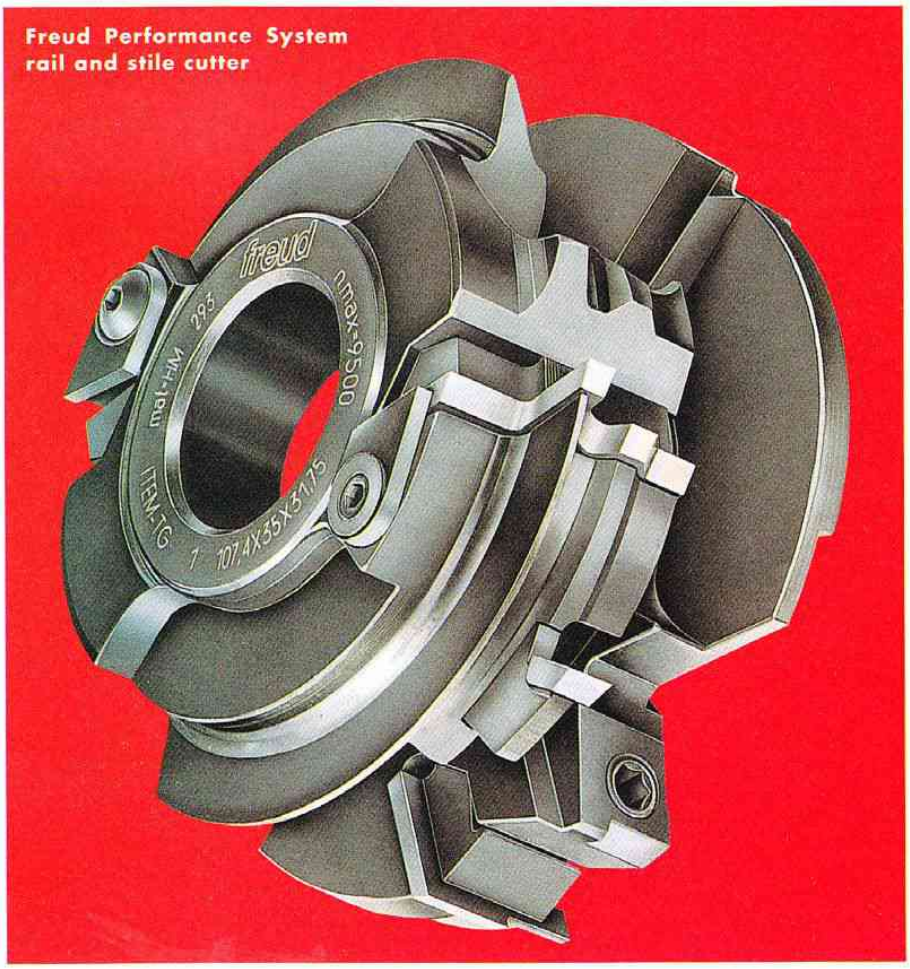
Basic Setup

For any setup, the following procedure is relevant. Place the tool on the spindle as low as possible, especially the larger cutterheads. This will help reduce unsafe vibration which can ruin your bearings and produce a poor finish.

- Adjust the spindle speed for the size of the cutterhead you are using.
- Make sure that the spacing collars cover at least two of the threads. This will prevent tightening the lock nut onto the bottom of the thread, and not actually fastening the tool.
- Always machine the mould on the underside of the wood, in this way the tool will be mostly under the table, and the wood will be between the knives and your hands. You may need to redesign the cutters to do this, but the possibility of an accident will be considerably reduced. If this is not possible, such as when bullnosing, always use a guard to cover the protruding knife.
- Use a power feed if possible, take light cuts, remain alert at all times, get help for long or difficult to hold pieces, and use every guard you can lay your hands on.
- Make sure the table rings (and the gap in the fences) are set as close to the tool as possible.
- On many operations it is possible to mount a thin 10mm piece of wood to the fence, and then to break through this 'false fence' with the cutter. This gives maximum support for your work.
- When machining stopped mouldings, where the mould stops before the end of the wood, always use a stop block clamped to the machine with a G-clamp. Don't use quick release clamps, they vibrate loose.
- Watch out for the effects of the grain, or knots.
- When moulding the entire edge of a piece, the outfeed fence will have to be set in line with the part of the knife that produces the actual edge, and if the wood drops into the cutter at the end of the piece, you will need to adjust the fence.

Maintaining Your Machine

Keep your shaper in good condition. Clean it down after use and store all the parts in a safe place. Never drop



Freud Performance System rail and stile cutter

spanners and hammers on the machine table, and avoid placing cutters there as well. Many cutters have protruding parts which can leave marks in the table, and damage the cutterhead. Grease your machine as per the manufacturer's recommendations, and keep the drive belts in good order. If you don't intend to use the machine for a while, a light film of oil on the table will prevent rust forming.

Safety

Almost half (45%) of all the accidents on the shaper happen whilst actually cutting the wood, and almost all of these are to the hands. In other words, the operator did not know where his hands were, or you would presume that if he did, he would not willingly continue to push his own hands into the cutter.

The wood catching the tool or jumping back causes another 30% of all accidents on this machine, and this can be prevented by always using hold down springs, and always feeding the wood in the opposite direction to that of the cutters. In other words, if the spindle rotates anti-clockwise, the wood must be fed from right to left. On machines with spindle rotation in both directions, double check the feed direction before you start, and *never feed the wood in the same direction as the tool rotation*, the piece will be ripped out of your hands in a second, leaving your hands nowhere to go but into the knives.

If you intend to do any more than the most basic operations on the spindle moulder, I urge you to seek some training. You will learn how to operate the machine safely, and how to get the maximum satisfaction and performance which is obtainable from this very useful machine.

Suppliers of spindle moulders and/or tooling:
Woodman Group (02) 9708 3233, (03) 9885 6104, (07) 3844 4433, (08) 8346 4561, (09) 272 3844
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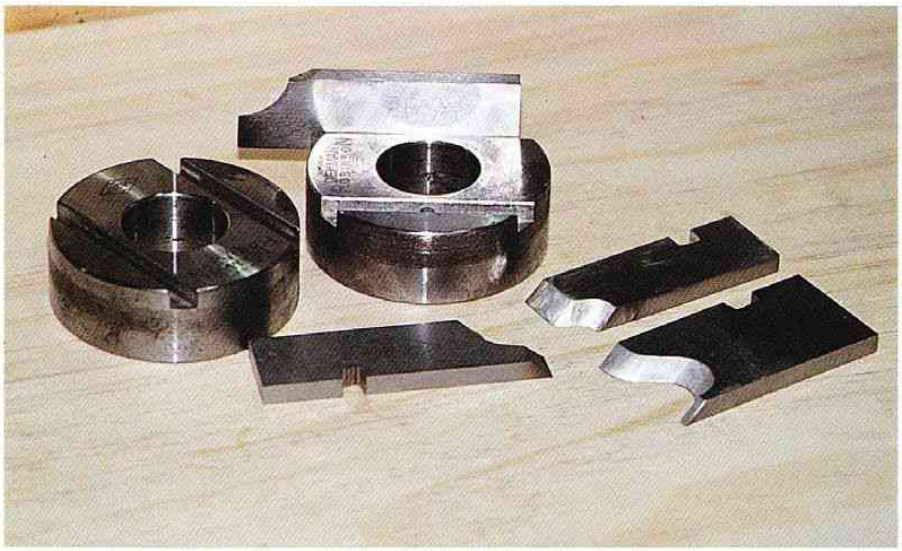
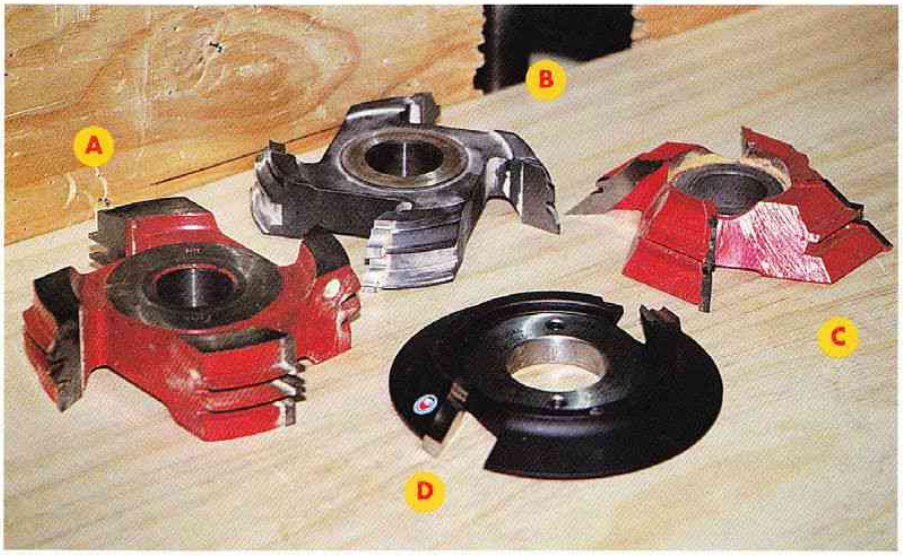
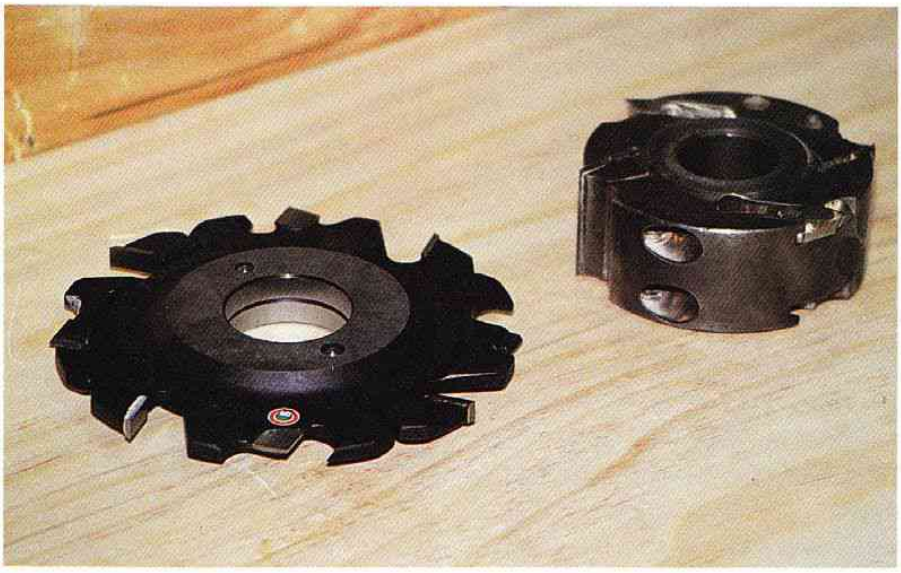


Slotted collars and cutters (2 pairs). Slots in cutters are located on pins in the collar slots. All parts need to be spotlessly clean when using this type of tool. Low cost way of producing small amounts of material.



Solid profile cutterheads: A Fingerjoint cutter, B Kitchen door mould, C Corner lock mitre cutter, D Front entry door mould cutter



Adjustable sawblade (with spacers). This is a safety tool, hence the elaborate construction. Second tool is a rebating cutterhead.

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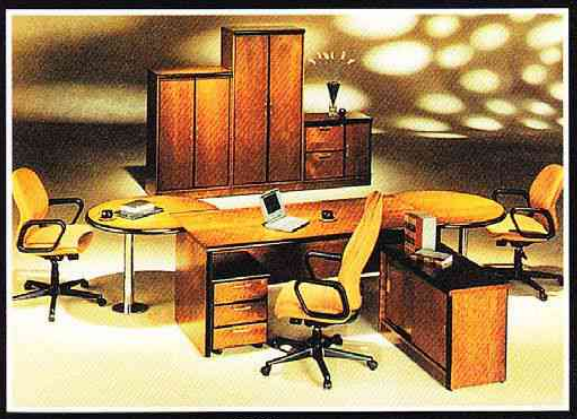

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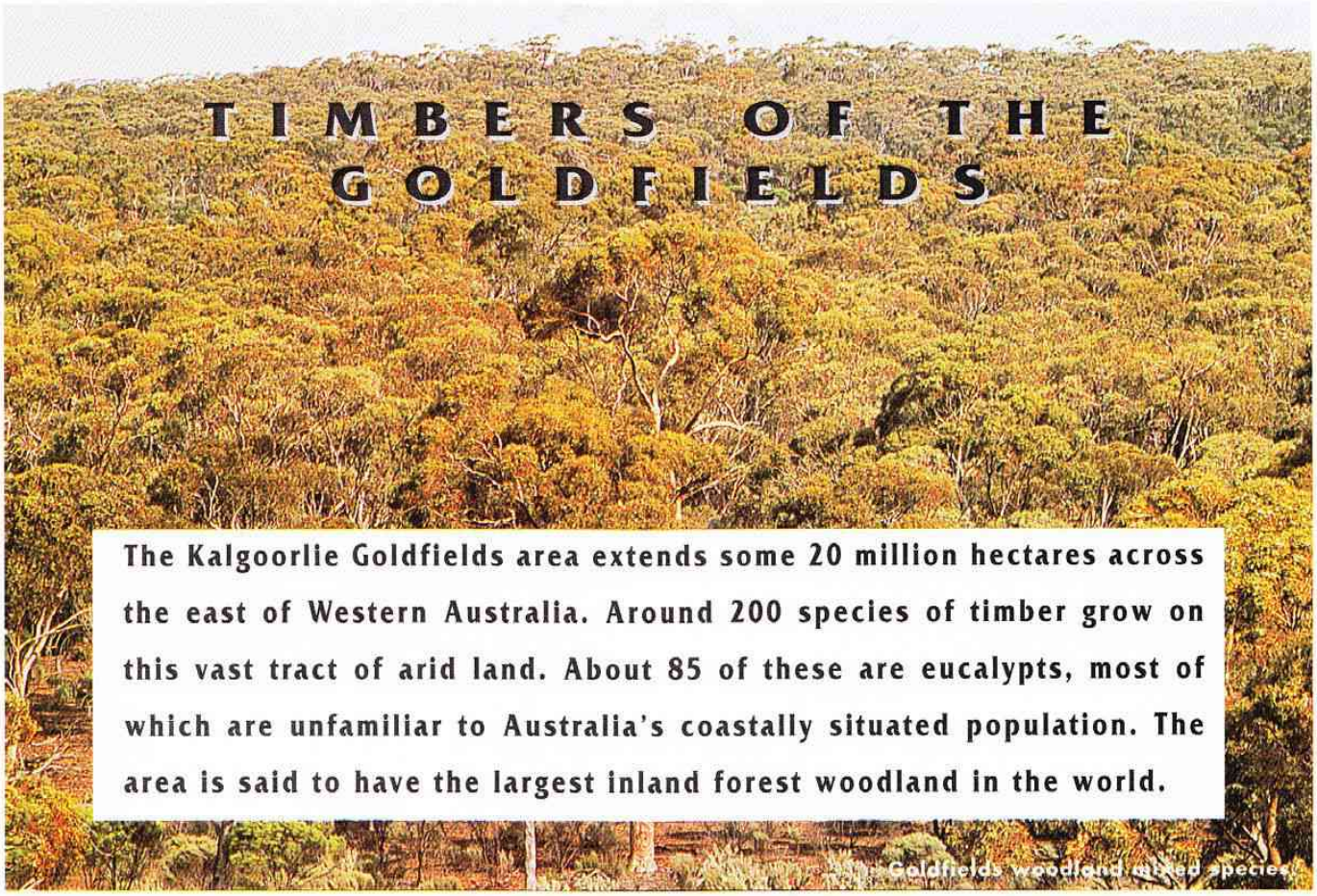
TIMBERS OF THE GOLDFIELDS



The Kalgoorlie Goldfields area extends some 20 million hectares across the east of Western Australia. Around 200 species of timber grow on this vast tract of arid land. About 85 of these are eucalypts, most of which are unfamiliar to Australia's coastally situated population. The area is said to have the largest inland forest woodland in the world.

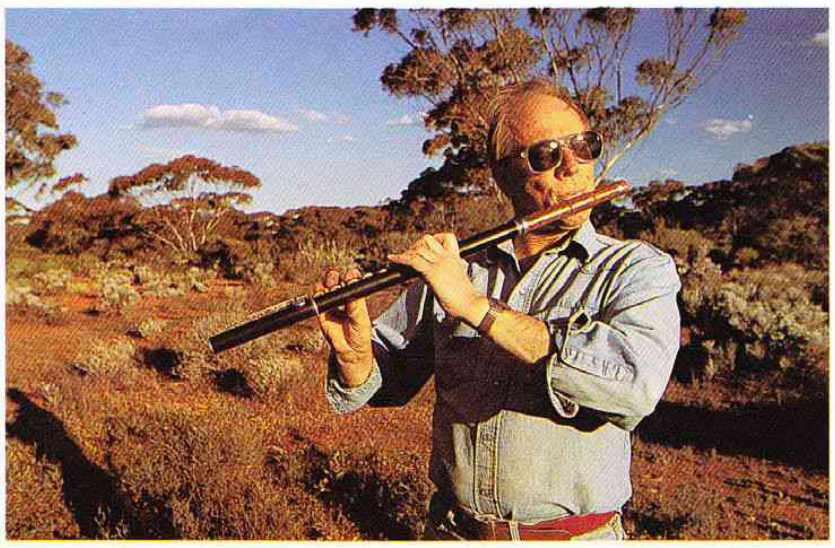
Goldfields woodland mixed species

From the time of the first gold rushes in the 1890s up till 1965, about 30 million tonnes of timber were clearfelled or cut over from 3.5 million hectares of eucalypt and acacia woodland to build and fuel the mushrooming mines, railways, houses and industries in the Kalgoorlie Goldfields area. As a result there are now extensive areas of 40-100 year old regrowth which are providing a source of diverse and unique timbers.

With an average annual rainfall of 150-300mm per annum across the region, the timber produced by many of these species is slow-growing, very dense, hard and often quite beautiful. Timber with a density (the ratio of weight to volume) above 1000kg per cubic metre will sink in water. The air dry density of softwoods generally ranges in the 400-600kg/m3, whilst that of other eucalypts generally lies about the 700-800kg/m3 mark. Goldfields timbers, however, approach the 1100-1200kg/m3 level, making them some of the most dense in the world. Drying these timbers is notoriously difficult although the low green moisture content that they typically have makes most of them quite stable unseasoned.

The fine quality of Goldfields timbers were recognised quite early on, and they are now seen to hold great potential for value-adding by industry, as well as being suitable for woodturning, furniture and musical instrument making. A combination of these interests and events has led to the development of what is now a specialty timber industry represented by the Goldfields Specialty Timber Industry Group (GSTIG) which was formally incorporated in 1993.

In 1994 a co-operative research program involving the Department of Conservation and Land Management (CALM), GSTIG, Kalgoorlie College, the Goldfields Esperance Development Commission (GEDC) and a local company, Desert Timber Products (*see story over*), commenced to research logging, sawing, drying, processing and basic timber properties.



Professor Felix Skowronek playing a flute made from Goldfields timber.

For Making Music

The suitability of Goldfields timber for musical instrument making was pioneered by Felix Skowronek, a flautist and professor of music at the University of Washington in Seattle, who first visited the area in 1988 after contact with Ian Kealley of CALM in Kalgoorlie.

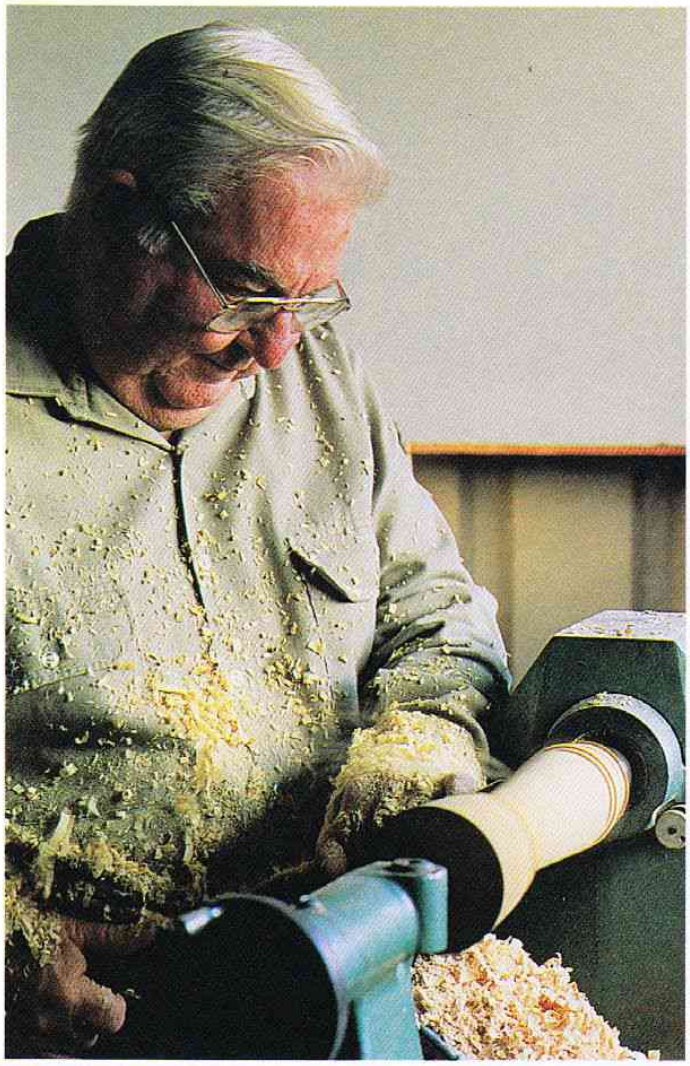
Up until the 1920s flutes made of wood were the norm. The tonal qualities of wooden and metal Boehm system flutes are distinctly different and there is still a strong demand for the former. The traditional timbers for this purpose are African blackwood and West Indian ebony—both of which are becoming harder to obtain.

Felix Skowronek has successfully used Goldfields timbers to produce 'head-joints' or mouthpieces which sit on modern metal flutes and produce a sound akin to that of the baroque flute. The latter is preferred for 'authentic' rendering of music of that period.

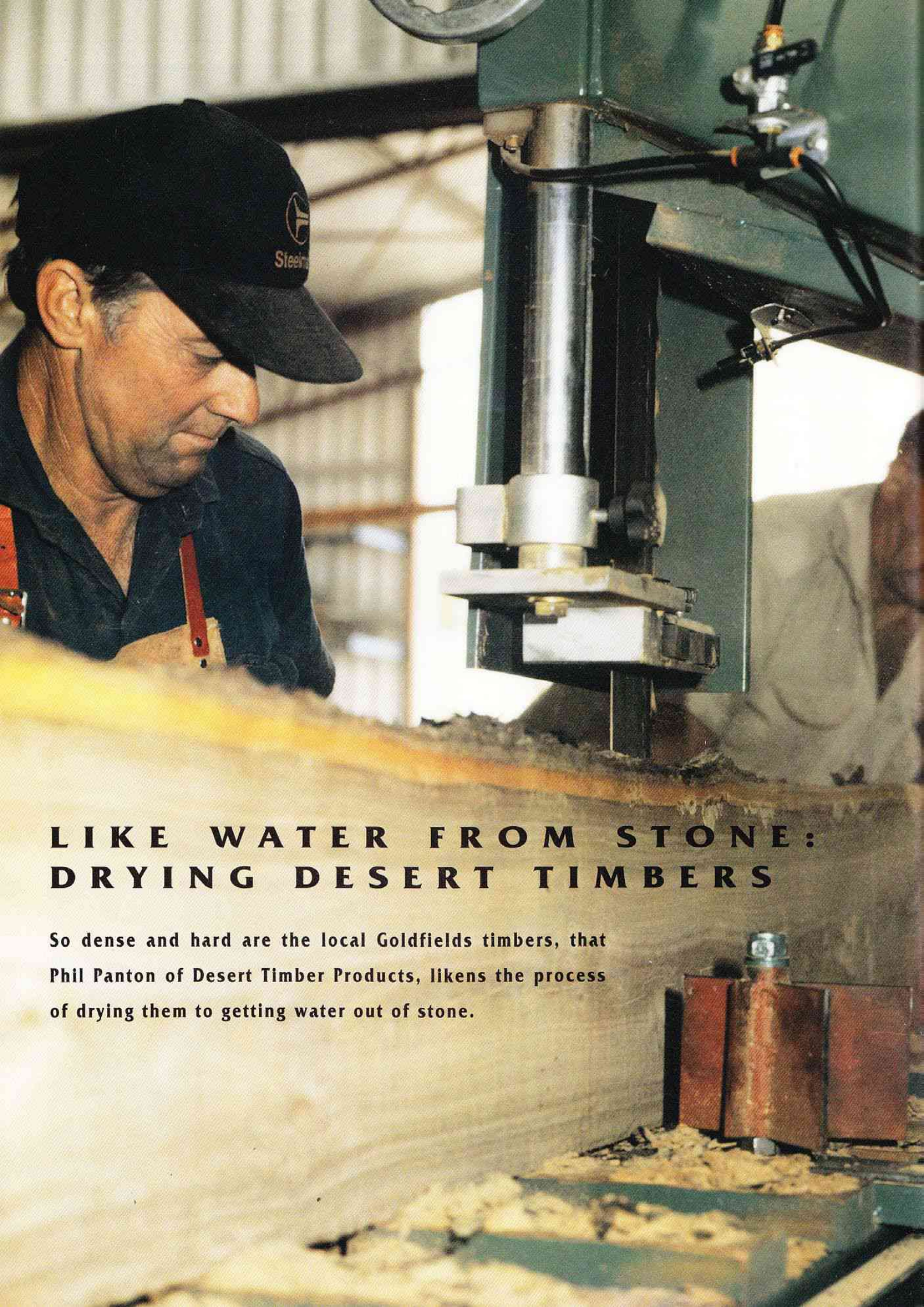
Like gold, silver and platinum, different timber species produce different qualities of sound. The densest timbers (amongst which are included red morrel, salmon gum and redwood) seem to produce the best sound. Of the acacias, mulga, western myall, and black oak are also being used with success.

Further information on Goldfields timbers may be obtained from CALM in Kalgoorlie, (090) 21 2677.

Right: Peter McGinty of Kalgoorlie, turning western myall. Photos: J. Lochman/CALM, except opposite below: Steve Sadlier/CALM.



Turnings in Goldfields timbers b y Peter McGinty and Alan Carmichael.



LIKE WATER FROM STONE: DRYING DESERT TIMBERS

So dense and hard are the local Goldfields timbers, that Phil Panton of Desert Timber Products, likens the process of drying them to getting water out of stone.

Drying timber is no problem if you have time on your side. Sawn, stripped, sealed and sticked out, timber will naturally lose its moisture content. If however, the timber has commercial application, be it large or small, the need to speed up this drying process is essential.

Desert Timber Products of Kalgoorlie have spent the best part of five years logging, transporting, milling and marketing these timbers, but it is only in the last few years that the company has come to grips with the technology required to season these hardwoods.

Initial drying technology was based on CALM's (the Department of Conservation and Land Management) efforts in south-west WA where ten years of experience had developed the award winning solar kiln drying technology that coped efficiently with the local jarrah, marri and karri.

Phil Panton purchased a solar kiln from the Harvey Timber Technology Centre and then spent four fruitless years attempting to adapt it for the drying of Goldfields timbers. With the experience gained in the process however, Panton designed his own patented kiln and drying schedules which can take up to four months to implement.

The timbers themselves were also researched and micro-photography revealed a very dense cell structure. 'The cells of the Goldfields species were much smaller with very few pores and made', Panton says, 'jarrah look like balsa wood by comparison.'

The initial stumbling block to drying these species was understanding the dynamics of the timber itself. In arid areas trees grow very slowly. Due to case-hardening when drying, inner moisture either cannot escape or leaves the timber very slowly. The timber has a low green moisture content which is generally less than 30% compared with say, jarrah, whose green moisture content is around 70%. Because there is little 'free' water, the dynamics of drying are thus very difficult. Phil Panton has cut timber from trees that have been standing dead for 80-90 years and found them to still have a higher moisture content in the centre.

The key to drying these species is to maintain a drying schedule to prevent case-hardening so that moisture can continue to escape. Heat is not the activator in Panton's kiln, but rather a precisely controlled atmosphere which is totally sealed.

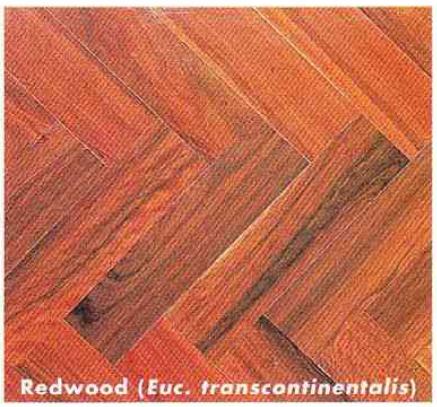
The day I spoke to Phil Panton the early morning relative humidity reading in Kalgoorlie was 81%. By mid-afternoon this had dropped to 5%. Such extremes of variation in humidity result in a low equilibrium moisture content (around 6%) for timber in the Goldfields region. This explains why many family furniture heirlooms brought to the Goldfields have suffered dire consequences due to moisture loss and subsequent shrinkage.

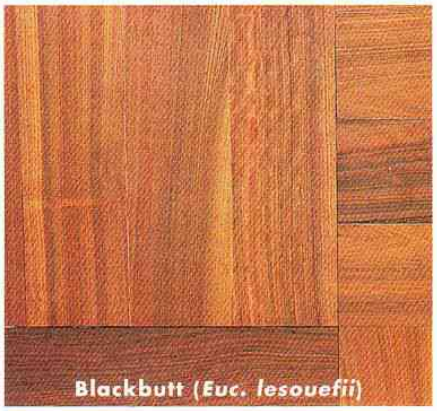
Panton has also found that the time taken from felling to cutting and stacking in the driers is critical. If the timber loses more than 1.5%mc the surface dries and case-hardens resulting in retarded moisture loss. The timber must be loaded into the driers before this happens. Logs are kept in cold storage en route to the drier and milled in cooler temperatures.

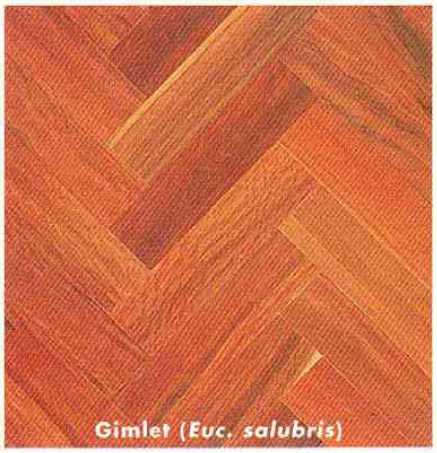
When jarrah and many other species are kiln dried the timber is steamed prior to drying. This opens the timber pores to expedite moisture loss. Panton's preliminary trials on steaming Goldfields timbers had inconclusive results and in fact one failed attempt cost the company around $40,000.

Precision is paramount to the whole procedure. From a loaded drier of 12 cubic metres of timber 12 litres of water exactly will be extracted and this is measured to the gram. Different species require different handling conditions and drying schedules.

The five employees of Desert Timber Products certainly have their hands full with the processes of timber felling, transporting, handling, milling, drying, marketing and administrating.


Redwood (*Euc. transcontinentalis*)


Blackbutt (*Euc. lesouefii*)


Gimlet (*Euc. salubris*)

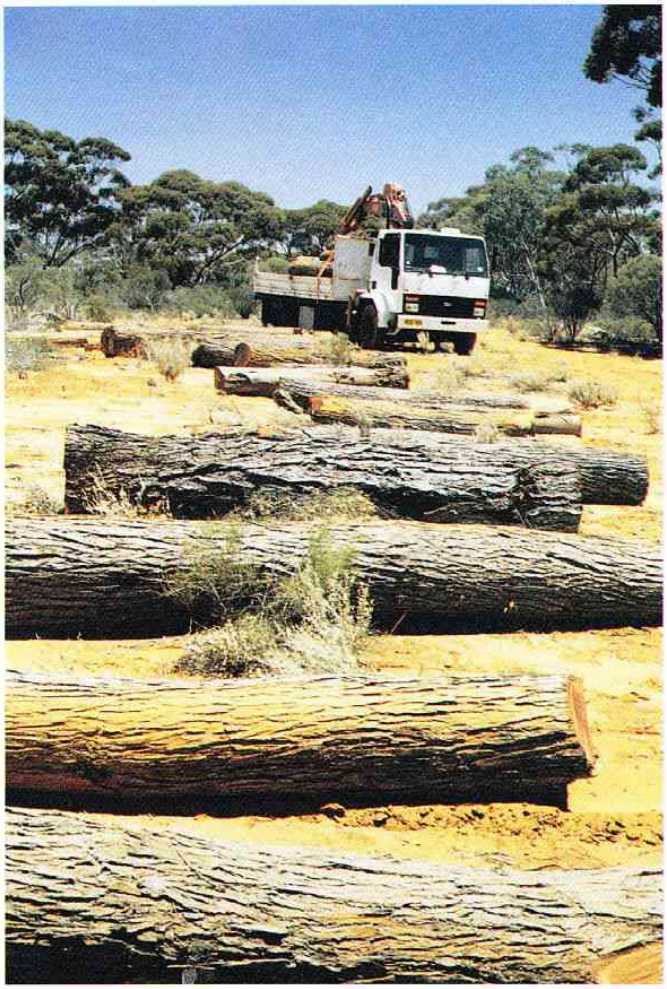

Goldfields blackbutt

Whilst most logging of regrowth eucalypt woodland takes place within 50km of Kalgoorlie-Boulder, it's not atypical for special species logging expeditions to take place up to 700km from home.

The Australian equilibrium moisture content (EMC) standard which has been set on the coastal strips of Australia is 14% and timber is generally kiln dried to 12%. The EMC of the Kalgoorlie Goldfields environment is a much lower 7%; Desert Timber Products' timbers are dried to a stable 5%. Efforts of the company to date have centred on developing logging, sawing and drying technology for the six most common eucalypt species that can sustain an industry. These are readily available from regrowth stands under CALM contract.

Of the six species the company currently offers, three are red-toned and three are brown. Of the former, there is salmon gum (*Eucalyptus salmonophloia)* which grows up to 15-20 metres in height and has a girth of around a metre as well as red morrel (*E. longicornis*) and boongal or redwood (*E. transcontinentalis*). Gimlet (*E. salubris*), silvertop gimlet (*E. ravida*) and Goldfields blackbutt (*E. lesouefii)* yield timber of brownish tones.

The timber is being used for specialty furniture and flooring, notably parquetry. Panton is sawing 2mm veneer at the mill which is thicknessed to 1mm. Bunnings mill at Yarloop is currently investigating the veneer slicing potential of these species. In addition, the possible suitability of desert eucalypts for musical instrument making holds promise.

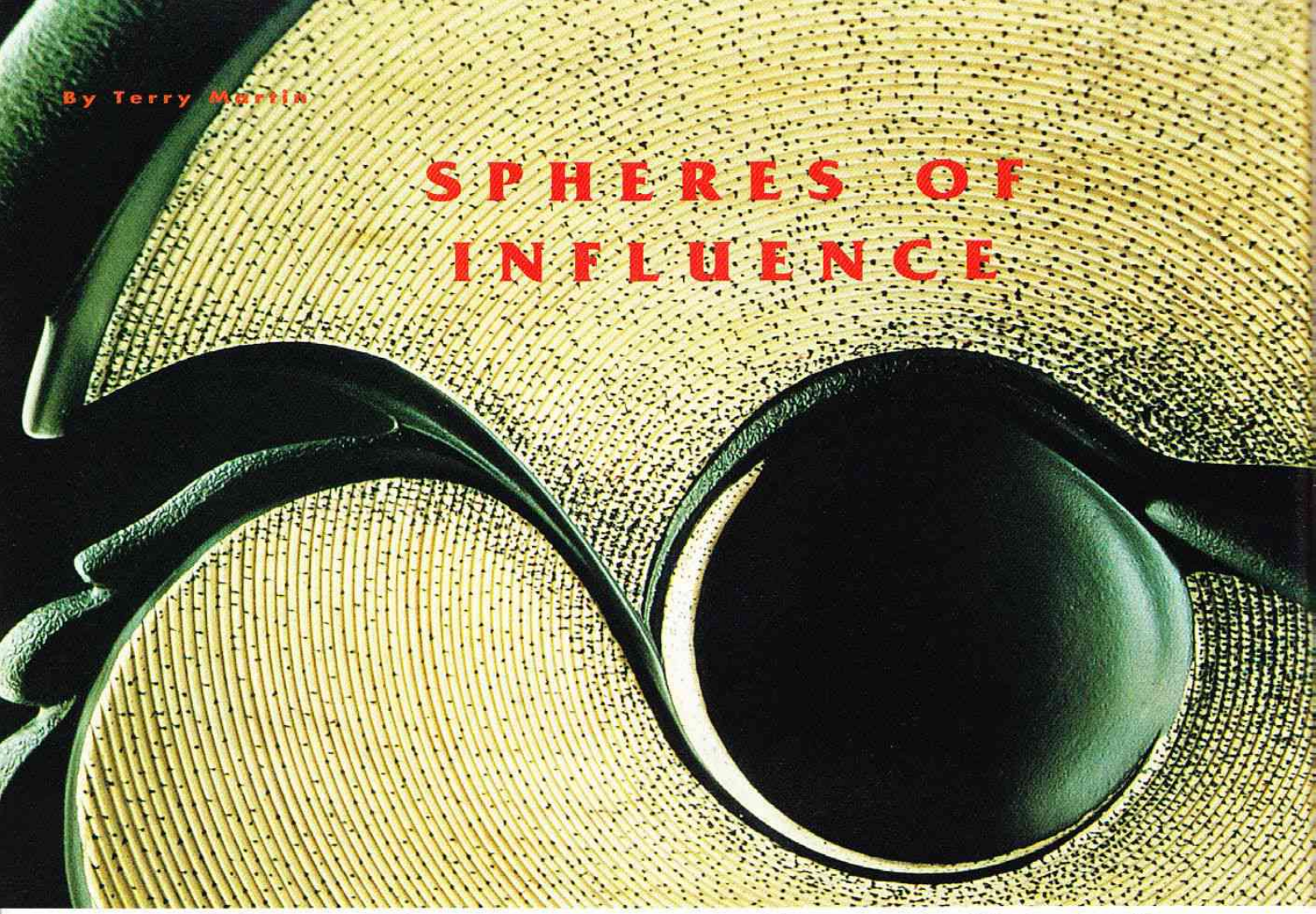


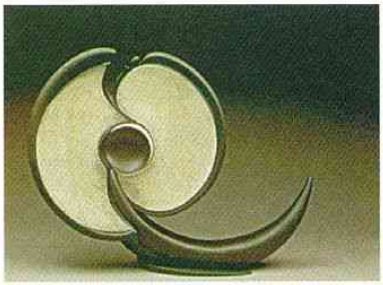
Desert Timber Products loading red morrel logs.

The potential of the industry is substantial with Desert Timber Products the recipient of a contract for 5,000 tonnes of sawlog. Panton's financial investment in the whole operation has amounted to some $600,000 over the last five years, and having now arrived at the point where he is able to offer unique and stable stock of timber, he is currently looking for more outside capital investment. Desert Timber Products can be contacted on (090) 913585.

By Terry Martin

SPHERES OF INFLUENCE





Left and above: *Stepping Out Of Line*, Betty Scarpino 1996. Photo: Judy Dittmer

Woodturning is so popular in Australia today that it easy to forget how recent the revival has been. The contemporary Australian woodturning movement was largely triggered by North American developments of the 1970s. Australian turning was still mired in traditionalism and functionalism when exciting and innovative pieces in woodworking publications really caught the imagination of Australian turners, or perhaps more appropriately, would-be turners.

This was partly because turners such as Ellsworth and Lindquist actually celebrated the use of imperfect timbers, particularly burls, and incorporated natural faults in a way traditional turners never did. Many Australian timbers are among the most quirky in the world and had been largely ignored until then.

Perhaps the most influential North American was Canadian artist Stephen Hogbin. He came to Australia in the 1970s and left a lasting legacy, especially his conviction that local timbers should be both material and inspiration. During the 80s visitors from overseas continued to play an important role. The guru of the hollow form, David Ellsworth, came and demonstrated. Del Stubbs also came and literally changed the lives of many with his open-handed joy in sharing ideas and developing new techniques.

These turners left a legacy of natural-edged bowls, hollow forms and wet turning which formed the basis of much of the work of the 80s. As local talent emerged it was not long before the better turners started to realise that most visitors had little more to teach them. Then, in the early 90s, Michael Hosaluk arrived from Canada and toured extensively on the East coast. His techniques included painting, re-cutting, assemblage, burning and carving. After the emphasis on wood features of the 80s, Australian turners were ready for his novel approach. Michael's influence is still being felt and it is hard to look at a three-legged bowl without guessing that the maker attended a Hosaluk workshop.

The contemporary turning phenomenon has grown to an international movement and it is no longer possible to point to any one influence. We now have a body of artists in Australia who produce work as good as any in the world. Australian work has now reversed the flow, travelled to America and left its mark. No one there is unaware of the work of such Australians as John Wooller. As the home-grown product has matured we have seen less of the American turners and, as our own turners can demonstrate and teach with the best, there is less need.

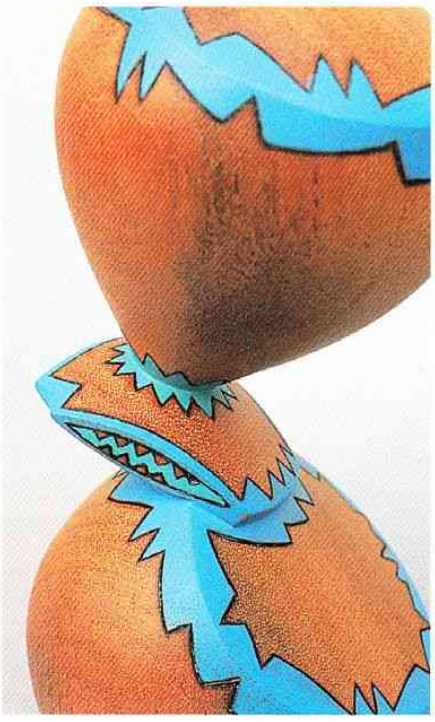
But America is still the land of innovation on an unmatched scale. This is partly due to the sheer size of their market. There are serious collectors

in the US who number their pieces in the hundreds and pay well for innovative and challenging work. Contemporary turning in the US is featured in major public museums and travelling exhibitions, and it has a credibility in the arts community that we still have to match in Australia. So what kinds of turning are being produced now in the USA and will they further influence Australian turning?

At the 10th Conference of the American Association of Woodturners in 1996 I saw two exhibitions showcasing nearly 1,000 pieces of excellent contemporary turning. In the face of so much good work, becoming well known and respected in the US is very difficult. Still, good work speaks for itself and it is not hard to pick those who are breaking new ground.

In a land where passion is in oversupply, Betty Scarpino's commitment is in no doubt. She tirelessly travels to demonstrate, teach and inspire, but still finds time to turn some of America's most interesting work. Her recent piece, *Stepping Out of Line*, has been much acclaimed. It is not immediately obvious how clever the piece is, but close examination reveals that it was turned, carved, textured, bleached, stained and painted. It has a tangible depth to its finish that is due to a subtle juxtaposition of carved form and finely applied shading, which she calls 'stippling'. Betty also produces some of the most humorous pieces I have seen and her 'exploded bowls', vessels crazily reassembled from cut up originals, strike a sympathetic note with any turner who has ever blown up a promising piece.

In a land of original turners, it would be hard to find anyone more original than Michael Brolly. If I had not seen Michael turning with my own eyes, I would have thought his work could not be the product of a lathe. By constantly devising complicated and original



Top: *Rejects From The Bat Factory*, Mark Sfirri.
Centre: Untitled, Clay Foster, 1995
Right: Untitled, Clay Foster, 1996
Far right: Detail from candlestick turned by Mark Sfirri painted by Mike Hosaluk.

jigs and accessories, Michael seems to invent new ways to produce every piece. Lathe-based sculpture is the trend in contemporary turning, and clearly Michael is the most extraordinary exponent. *Thinking of my Mother-in-Law Marianne and Those Magnificent Mahogany Breasts*, is one of the most talked about pieces in America. The title alone is enough to guarantee this and speculation about Michael's relationship with his mother-in-law and her anatomy is rife. Disappointingly, I can report that the name came from a comment by Marianne on a photograph she saw of the bosoms of some West Indian women!

The piece itself is huge. Standing as tall as Michael, it is a functional jewellery cabinet. The wings open to reveal brass ribs which can be used to hang jewellery. The multiple breasts revolve to reveal plushly lined drawers. When spun back into place each drawer is centred by a hidden magnet, satisfyingly and gently oscillating until it lines up with its sister breasts. The eyes revolve to reveal a further secret drawer and the rotating head unexpectedly flips up to expose a small mirror for adjusting jewellery. It is not only the most expensive piece of turned art around (A$40,000), but it is also the most confrontational, witty and technically astonishing. It points the way to a considered, painstaking approach that is still rare in Australia.

Clay Foster is another turner producing work of remarkable originality. As is often the case nowadays, this is due more to his design skills than his turning technique. His untitled, egg-like vessels include pattern and texture which set up a kind of visual flutter, rather like the op art pieces of the 70s. The patterns he uses are inspired by traditional quilts and are incised into the painted surface. His vessels are made in two parts and then joined, so sometimes they have a tiny hole in the top and sometimes have no hole at all. For bold use of colour and pattern, Clay is an unchallenged leader.

Any show featuring the best lathe artists would have to include Michael Hosaluk. He is known all over the world as the most innovative of turners who frequently throws the plot out the window. His recent teapot series is his most confronting work yet. It would have been easy to make these turned pots cute, but Michael has chosen to produce demonic little creatures with their spouts turned up in arrogant and challenging postures. They are sharp-toothed little monsters and when they are in a group they really look like they are plotting some nasty scheme—the antithesis of a tea party. Is it woodturning? Who cares!

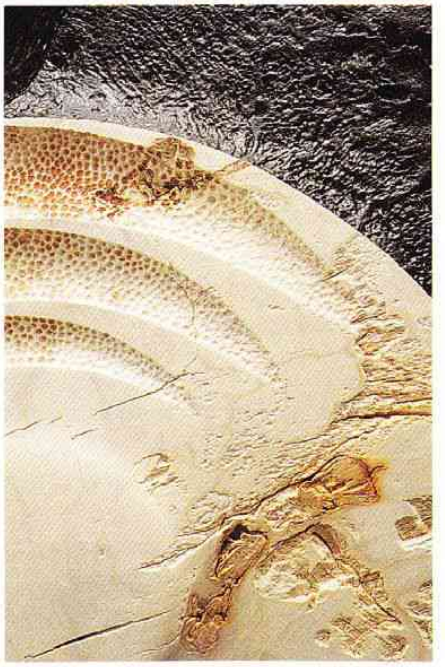
Mark Sfirri's usual work is too complex for normal demonstration rotations of an hour, so he devised his crazy baseball bats to fill the gap. The idea first came to him when he was asked by his son to turn a bat. Once the wood was on the lathe he immediately saw the potential and his *Rejects from the Bat Factory* series resulted. Eminently collectible, these pieces are hugely popular and Mark has even won awards from sports magazines. These bats also thumb their noses at tradition and challenge convention in an inoffensive and entertaining way.

Collaboration is one of the latest trends in US turning and Mark combines his love of eccentric turning with the collaborative process. He and Michael Hosaluk send each other work to be carved, painted or otherwise altered, and the result is some of the most unusual work to come out of the US.

***Teapots* by Michael Hosaluk**

Probably the turner most likely to intellectualise his work is Steve Loar. His written commentaries on woodturning are among the best and a conversation with Steve can quickly turn into an intense discussion about art. A good example of Steve's recent work is *Blade Runner; Homage to Stephen Hogbin*. The legs of the piece refer to Hogbin's *Walking Bowls*, which were landmark pieces in the development of the turning vocabulary. The 'blade' comes from the fact that the legs are made from the shoulder blades of a cow. A hint of how seriously Steve takes his own work is found in his description of this piece: 'The animated vessel sweeps across the surface, gathering up pearls and turning them into beguiling dangerous forms...'. He then defuses this dark image by admitting that it as much a kind-hearted spoof as a homage. Under this intellectual umbrella, Steve's technique is impeccable, as a detailed look reveals. The blades of this piece are mounted in the most carefully crafted sockets and his use of colour, texture and other materials is superb.

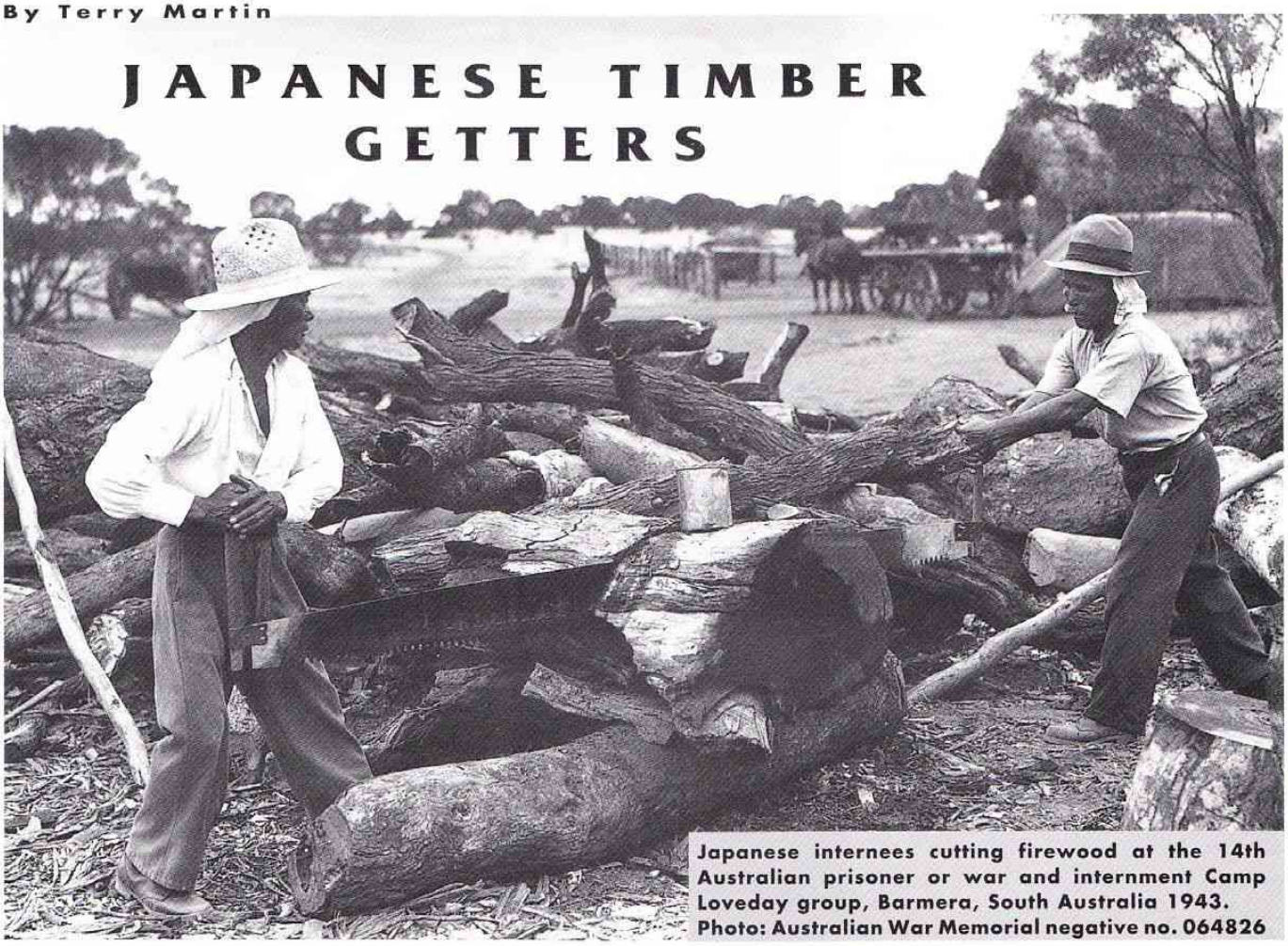
Many of these American turners express a strong interest in visiting Australia, but nowadays they are often motivated by a desire to see how we do things. There are few countries where turning is so healthy and so interesting as in Australia, so they often see us as partners in the world movement. Most of them have unformed ideas about what Australia really is, but if we can continue to grow as turners and not regress to boring and stagnant functionalism, they will look to our work for inspiration as much as we look to theirs. Certainly woodturning is in the process of being redefined in a way that has little precedent and it is the Americans, yet again, who seem to be taking the lead. If we can overcome our inhibitions we have the chance to share this lead.



Top: Michael Brolly's *Thinking of my Mother-In-Law Marianne and those Magnificent Mahogany Breasts*
Right: The Geisha (detail) Steve Loar
Far right: Blade Runner (detail) Steve Loar

By Terry Martin

JAPANESE TIMBER GETTERS



Japanese internees cutting firewood at the 14th Australian prisoner or war and internment Camp Loveday group, Barmera, South Australia 1943. Photo: Australian War Memorial negative no. 064826

From the start of European settlement the clearing of native bushland was a priority and the history and legends of the Australian bush often feature timber-getters. However, there is one episode in the history of Australian timber getting which is almost unknown. During World War II the government established various internment camps around Australia to hold German, Italian and Japanese civilians of enemy origin. They were frequently put to work for the war effort—farming, labouring or manufacturing.

The Japanese were not easy to place in employment. Easily identifiable and targets of particular resentment, it was felt they should not be permitted to have contact with the general population. One way they could be usefully employed was to cut wood at special camps along the Murray River.

In 1942 three camps named Katarapko, Woolenook and Moorook West were established on the river near Loveday in South Australia to supply river red gum and mallee for fuel and fencing material. Not all Japanese internees wanted to work in the camps as they thought it was aiding the enemy, but many saw it as a relief from the tedium and shame of being imprisoned.

Under the supervision of guards they used crosscut saws to cut trunks into four-foot lengths. Even the stumps were blasted out and cut up. At the peak of production, 135 men cut around 300 tonnes of timber per week. This timber was transported by wagon, truck or barge to irrigation pumps and used to fire the boilers. Fuel for the main internment camps was also supplied and fencing material was cut and sold to the general public.

There was some local resentment towards the cutting of timber on this scale, but the government decreed the indispensability of the pumps to the war effort and military policy forthwith overrode any local recalcitrance. Undoubtedly there are even now some governments who wish they had resource to such measures!

From April, 1942 until April, 1945 the camps produced 87,080 tonnes—57,276 tonnes of firewood, 25,154 tonnes of fenceposts and 4,649 tonnes of sawn timber. The total value was 40,169 pounds—a considerable contribution to the wartime economy.

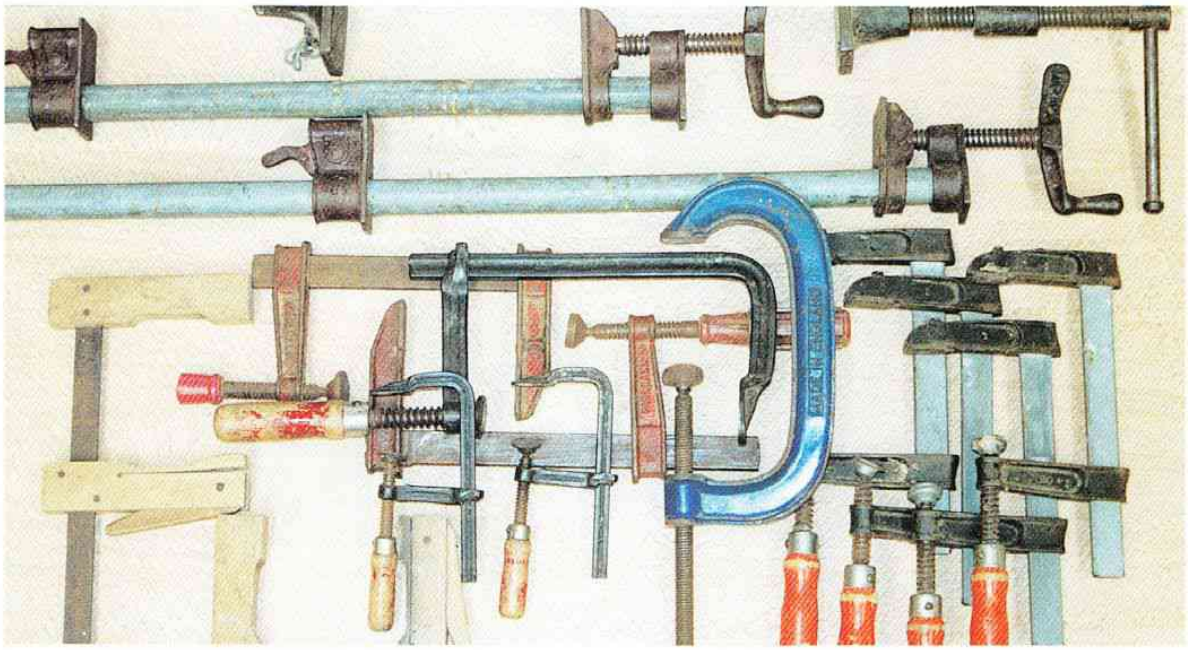
After the war the camps were dismantled, but it is still possible to see the effects of this logging. In many areas there has been no regrowth at all, while in others stumps have coppiced in the ugly, leggy way that red gum regrows. Scattered through the bush are remnants of rough latrines and concrete ablutions drains.

After the war some of the Australian-born internees were allowed to remain in Australia, while the others were shipped back to Japan. There are still elderly men living in Japanese suburbs who can tell stories of how they spent three years of the war cutting wood in the Australian bush.

Reference: Unwanted Aliens. Japanese Internment in Australia during WW II. *Y. Nagata, Uni. of Qld. Press, 1996*

By Anton Gerner

ALL ABOUT CLAMPS



'A woodworker can never have too many clamps' is an adage I would agree with, but I would also add 'and never have the right number of the right type of clamps for the job'.

And this is in spite of the seemingly limitless range of special purpose clamps now available. There are edge clamps, spring clamps, bar clamps, mitre clamps, wooden clamps, single purpose clamps, 4-way clamps not to mention larger scale options on the market as well. Clamps are an essential tool in any workshop and it would be nice to have them all, but few of us can justify the expense.

Most clamps have two jaws, which may together or singly be tightened by a screw thread attached to a handle. Choosing the right clamp is often a matter of what length of depth of clamp you have, but in general the bigger the job, the bigger, longer or deeper the clamp required.

Types

Bar or Sash Clamps

Bar clamps are essential for everything from clamping panels and table tops to chair frames and laminations. They are available in standard lengths with either a flat bar or a heavier 'T' bar. 'T' bars are much stronger especially when clamping lengths over 1200mm as they will resist flexing and bending.

Record sash clamps are top quality—the bars are rolled dead straight, the clamping heads are always square and their well-machined threads run smoothly.

G Clamps

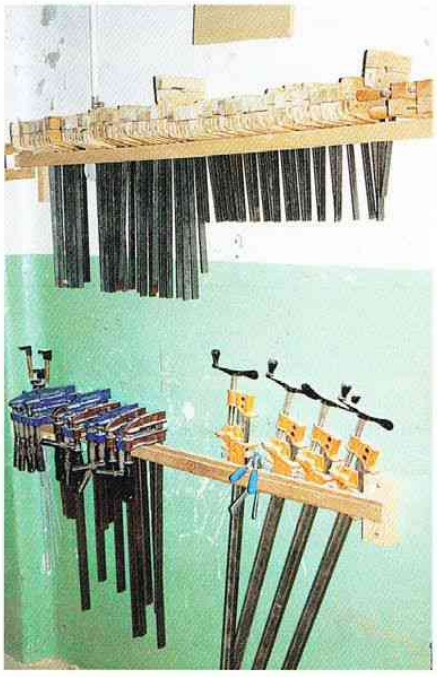
G-shaped clamps are fairly slow to use as you often have to wind the screw a long way by hand. A more popular version is the F or speed-clamp, which is quicker and much easier to use. F-clamps are basically a G-clamp with a fixed jaw at one end and a sliding head running along a bar carrying a steel screw. The bars often have a serrated top and bottom edge. When clamping pressure is applied the serrations lock and secure the sliding head. They come in a range of lengths and depths of jaws with wooden or plastic handles.

Hold Down Or Toggle Clamps

Designed for use with jigs (see AWR#13), these clamps vary in size and style for different applications. These clamps will provide quick and accurate clamping when you need to hold components throughout repetitive machining operations.

Band Clamps

Band or web clamps are made from



Storage systems can be as simple as a few nails on the wall, or extend to purpose built racks or trolleys.

heavy duty canvas webbing or cloth and are useful when you need to exert radial pressure. Band clamps are a useful addition to any workshop.

Mitre Clamps

These clamps are used to bring 45° faces (such as mitred picture frames) together to a right angle. I have a *Veritas* frame clamp which I find very easy to use and adjust on picture frames, small boxes and trays.

Larger Systems

Vertical presses save on floor space. The *Plano* glue press is a wall-mounted vertical clamping system which can take panels up to 1100mm wide and is worth considering for both small and larger volumes. You can add extra clamps and rails as needed. *Veritas* stackable panel clamps kits are another option. The buyer supplies wooden posts to the length required.

Taylor's *Redi-Clamp* vertical steel system is both carriage and frame for its six clamps. The system permits multiple (up to three) panel glue-ups at the one time while economizing on floor space and back strain. Panels up to 1500mm long x 800mm wide x 50mm deep can be accommodated.

Taylor also make a range of larger systems (such as the 2.5 metre wide, 20 section semi-automatic clamp carrier pictured overleaf) for high volume panel glue-ups. There are semi- and fully automatic systems which come in varying widths, and have different numbers of sections and clamp openings.

Wooden Hand Screw Clamps

Very popular in the USA, handscrew clamps have until now been very expensive. Jorgensen & Pony handscrew clamps come with rustproof plated screw threads. They are quick to adjust, and can be used in a variety of clamping situations, including angled work.

Spring Clamps

Spring clamps are ideal for one-handed operation and for clamping small components such as beadings, or for restoration work when you need to hold small bits and pieces. They are available in a range of sizes with plastic jaws to protect your work.

Clamp Kits

There are a number of 'make-your-own' clamp kits available where you supply your own wooden rails or standard 19mm water pipe. The kits are quite cost effective if you only use a few clamps every so often, but for professional everyday use something heavier may be required.

Record make durable metal clamp heads, which take a timber bar which the buyer supplies. In my experience these are very good for light clamping, but the timber bars do bend under heavy pressure.

Clamping blocks

You should always use timber clamping blocks to protect your work from the hard steel jaws of clamps. I like to keep small square offcuts of soft clean timber in a range of sizes, thicknesses and angles in a large box ready for use as clamping blocks. Non-standard angles or clamping jigs may require custom made blocks. You may find it useful when working on your own to use masking tape to attach clamping blocks to your job before you start gluing—then you only have to hold the clamp and tighten it.

Storage & Care

Clamps can take up a fair amount of space in any workshop, so efficient storage is a must. Wall-mounted clamp racks can be as simple as a few nails in the wall or may be specially constructed timber racks with a slot for each clamp. Other alternatives include under-bench storage, drawers or trolleys. The main thing is to be able to find and replace them easily. Always wind back the threads after use so they are ready to go next time. Glue drips or spills should be scraped off after each use. Metal clamps should be given a light coat of oil every so often to prevent rust.

Dry Assembly

Always allow time for dry clamping to check that your joins go together correctly. In this way you'll discover any likely problems (including whether your clamping blocks are suitable) well in advance. Dry clamping is particularly important when working on complicated carcases where you don't have much time to work or where the gluing up is done in stages.

Record G-clamps

Taylor 2.5metre x 20 section clamp carrier with 1100mm opening clamps.

The vertically mounted *Plano* system saves on floor space while streamlining glue-ups.

Clamping Up

The secret for a successful glue-up is good preparation and having a flat clean surface to work on. I have one bench that is made to a comfortable working height and is used for gluing up only. Coated with lacquer, the sur-

face allows easy removal of glue drips.

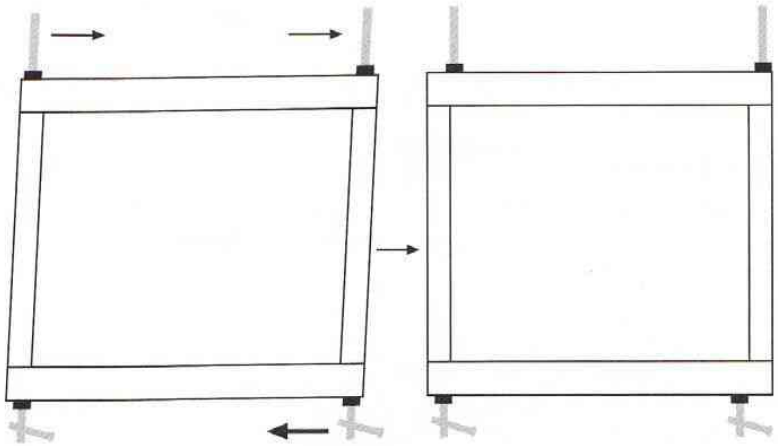
Have everything ready to go before you even consider applying any glue to your work. After a successful dry clamp, have all clamps set to length and clamping blocks ready to go—only then reach for the glue bottle. Once the glue is applied, work quickly (especially in hotter weather), but don't rush. Remember clamps may stain timber if they come into contact with wet glue, so keep them off the surface slightly or use old sandpaper scraps under them.

Try to align your clamps so the clamping pressure runs through the centre of the clamp pad and screw thread into the centre of the joint being clamped. Try to line up the centre of the clamp jaw or head with the centre of the joint being clamped.

Take your time, ensure clamps are square to the work and apply even pressure. If clamps are not aligned square, stress may be placed on your joints or worse still, the work may be clamped out of square, or with a twist. Usually I find it is best to have the minimum of screw thread wound out, as this helps to keep the jaws square. Remember there is no need to overtighten clamps. Just apply enough pressure to close the joint up till the glue squeezes out.

Squaring Up

By measuring the diagonals on a frame you can easily determine whether or not it is square. Correcting an out of square frame may appear confusing, but it really is quite simple. To square up an out of square frame move your clamps toward the direction of the longest diagonal until both diagonal measurements are equal (see diagram). This can take time as you'll probably need to overcorrect and correct by turns. Time spent accurately squaring up is never wasted, and properly accomplished, will save hours later when fitting components such as doors and drawers.



To square up a frame that is out of square, clamps should be moved in the direction of the arrows in the upper diagram. Clamps moved in the direction of the correction will then pull the frame back square. The clamps should then be religned square to the frame.

Buying Clamps

Clamps get a lot of use over the years (often under excessive pressure) and in the long term quality does pay. The more expensive brands have quality machined threads, more comfortable to use handles and have higher quality steel bars. Before buying consider your needs and also the following points:

- Clamp heads should run smoothly; jaws should align correctly.
- Buy clamps in multiples of two, as gluing up usually requires equal pressure in pairs.
- Choose clamps that are comfortable to lift with one hand.
- Handles should be comfortable and turn easily.
- Clamps that have longer bars can do a wider range of tasks.

Suppliers of Clamps

Carba Tec stock a large range of clamps of all varieties in the following brands: *Record, Veritas, Good Hand, Carba-Tec.* Tel 1-800-658-111, 1-800-653-777

Record Hand & Power Tools stockists of *Record* clamps and clamp kits (02) 9748 6800

Mik International supply *Jorgensen/Pony/Adjustable* clamps and the *Plano* system. Tel (08) 8333 2977

Woodstock Timber Tools and Hardware stock *Record, Veritas, Good Hand, Dawn, Bevel* (09) 377 0277, (09) 345 4522.

The Woodworks Book & Tool Co stock *Dawn, Record, Jorgensen & Pony* clamps, (02) 9484 1183

E. J. Groth Pty Ltd are stockists of *Taylor Redi-clamp* and *Taylor* larger volume systems. Call (08) 8346 8211

By Richard Raffan

SCROLL CHUCKS: A GOOD GRIP ON TURNING

Woodturner's scroll chucks offer flexibility, some margin for error and ease of use. Are you getting the most out of yours? Richard Raffan writes.

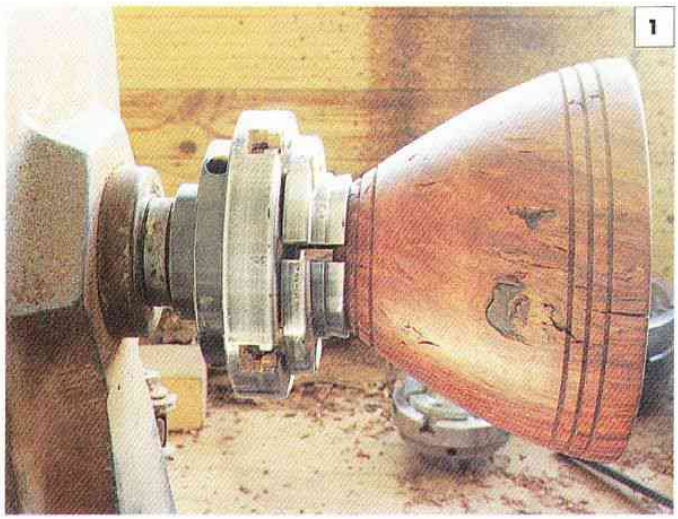
When I started to turn wood, back in 1970, wood lathes came with a faceplate or two for mounting wood on the lathe: usually one big and one huge. For working endgrain, some manufacturers offered a cup chuck for small centre work jobs and that was it. If you wanted a chuck you got an engineers scroll chuck, and, after a few bloody and painful encounters, learned to keep your knuckles out of the way of the jaws.

The huge woodturning revival got under way in the early seventies, and by the end of that decade a few highly specialised retailers and manufacturers were beginning to churn out goodies for the burgeoning market. Since then collet chucks designed specifically for woodturning have appeared regularly, and some sold very well, but just about all severely restricted design options. They demanded an accuracy tedious to hobby and professional turners alike, were fiddly to use and often inaccurate.

Then, about 10 years ago in New Zealand, Teknatool revamped the standard engineering scroll chuck to develop the Nova self-centering 4 jaw chuck. This blitzed the opposition and spawned a load of similar chucks in Canada, Britain and, most notably, Australia where Vicmarc produced a more engineered and heavier version. Competition between the various manufacturers has ensured that all the chucks are well machined and now refined to a point where most of the faults have been eliminated. The Teknatool Nova, the Vicmarc and the Bonham chuck are now readily available locally.

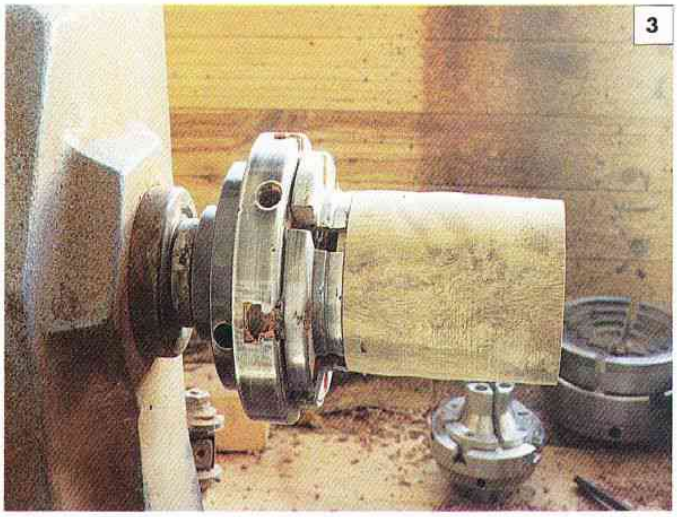
These days I use self-centering 4 jaw scroll chucks constantly and, like most turners I know, cannot imagine working without these wonderful tools. I have both 100m and 140mm chuck bodies with standard accessory jaws attached except for a 210mm set I had made specifically for making large bowls. The chucks have a wide range of adjustment, offering exceptional flexibility combined with ease of use and margin for error.

Scroll chucks are supplied with two levers, one for the body and one for the scroll ring. Work is mounted when the chuck is on the lathe with the lathe spindle locked. If you are unable to lock the spindle these chucks are very awkward to use, because you need a hand free to hold the work in the chuck whilst you use the other on the scroll ring lever to tighten the jaws. On lathes without a spindle lock—and there are a few—you will need to find some way of fixing the chuck body to free up one hand, or purchase one of Vicmarc's new VM120 keyed scroll chucks which can be adjusted using a single Allen key.

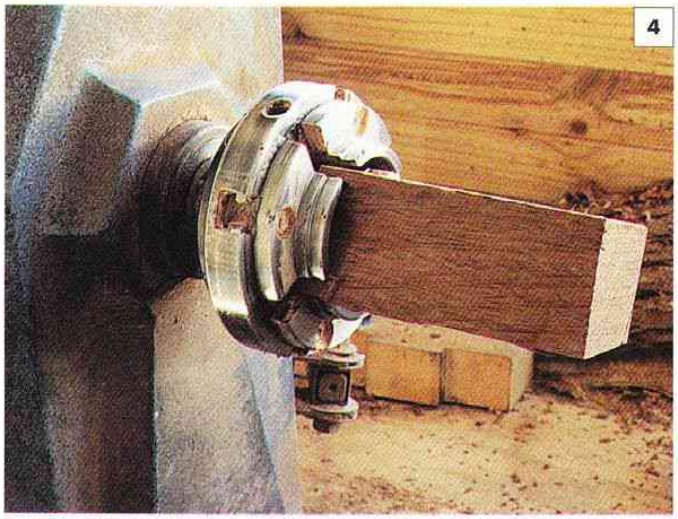


To hold this 135mm dia. bowl I tightened the 50mm jaws into a groove which serves to locate the jaws whilst being decorative. The extra grooves help disguise the fixing point and balance the design.

140mm step jaws expand within a groove in the base of a large platter. These chucks easily handle up to 20kg (although the wood might not).



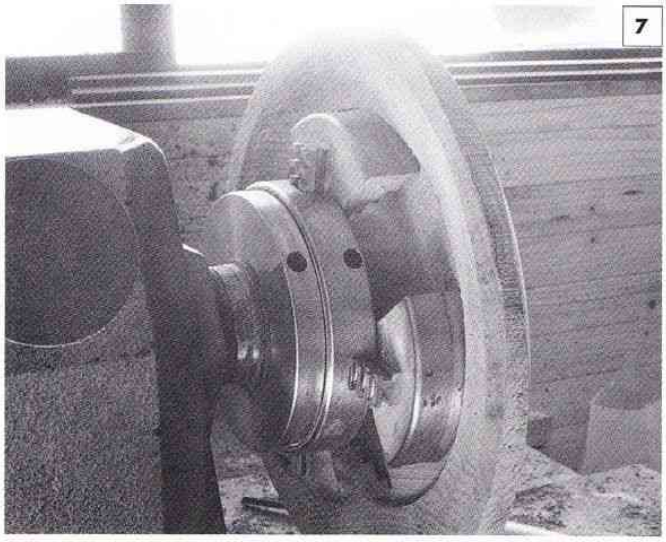
A rough turned box base remounted for final turning. Note the short 4mm tenon. This is all you need, provided you turn a shoulder for the jaws to abut.



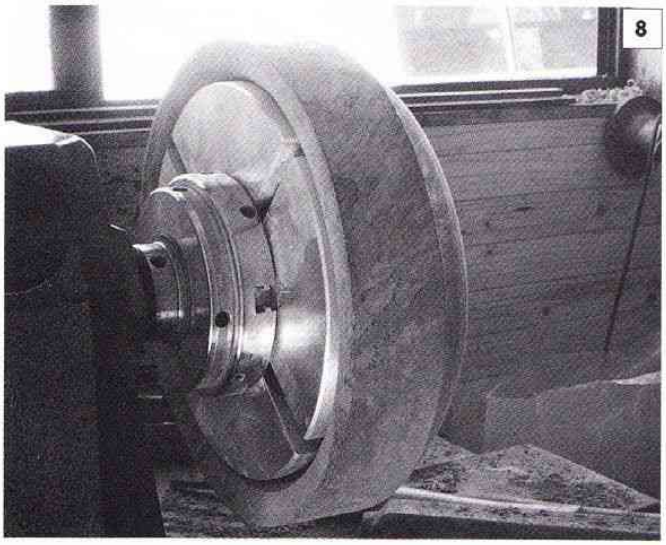
Square or round blanks should be seated right into the chuck, ideally with a squared end which can sit firmly against the base of the jaws. Serrated or grooved jaws offer more grip for projects such as long stemmed goblets.

I frequently use the 50mm jaw shoulders to expand into a groove when remounting small roughed out bowls for final turning. This leaves the whole of the outside exposed, allowing completion of the profile.

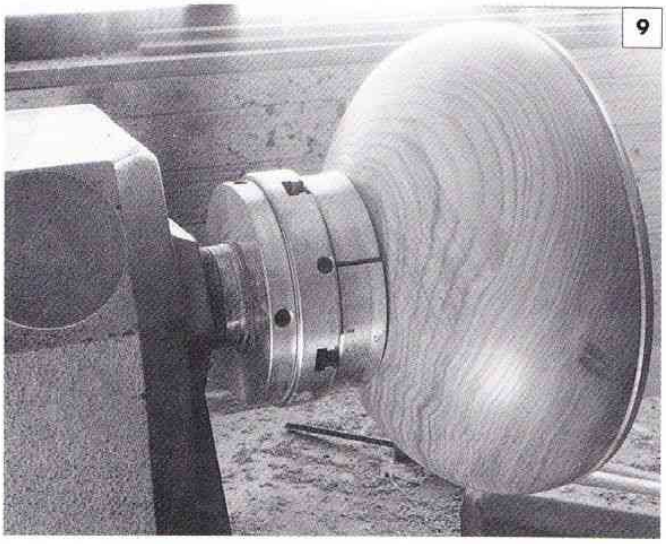
A wide groove slightly dovetailed on the outer rim will provide an adequate rebate for expanding jaws. I rarely cut the recess deeper than 3mm unless the wood is particularly heavy or I've used the 50mm jaws on a diameter above 200mm. I decorate the centre, partly for looks and partly to maintain even thickness and weight in the base.



The 140mm step jaws used near their maximum expansion to grip a platter remounted for final turning. I've turned an internal shoulder into the warped surface for the jaws to grip.



I use my 210mm step jaws (not a standard accessory) to remount my larger rough turned bowls so I can finish the outside, complete with foot. There's a step in one of my chucks to grip just about any sized foot I care to make.



The step jaws on this 140mm chuck grip a 110mm diameter foot. The other steps on this Vicmarc accessory are 90mm, 70mm, 50mm.

Each manufacturer offers a 100mm diameter chuck with standard jaws around 50mm in diameter which can grip the wood by contracting around a foot, cylinder or square, or expanding into a recess. In addition a wide range of accessories is available, some of which enable you to customise chucks to your precise needs.

To extract maximum value from these chucks there are a few points you need to remember, first about the jaws, and secondly about the structure of wood.

The chuck jaws are machined as a cylinder then cut into four. It is immediately apparent that whilst the jaws can grip a wide range of diameters, they do so *without* leaving a mark only when adjusted to their original machined diameter. On larger diameters the jaw corners bite into the wood, leaving eight indentations (often considered decorative by those who don't know what they are). But on cylinders smaller than the machined diameter, the centre of the jaw contacts the wood leaving barely a mark. There will always be some compression of the fibres, but this is usually difficult to see when obscured by a turned detail (photo 1).

The other major point to consider is how the grain is aligned in relation to the chuck jaws. When a job flies out of the chuck we tend to blame the chuck, when chances are that too much is being asked of the wood.

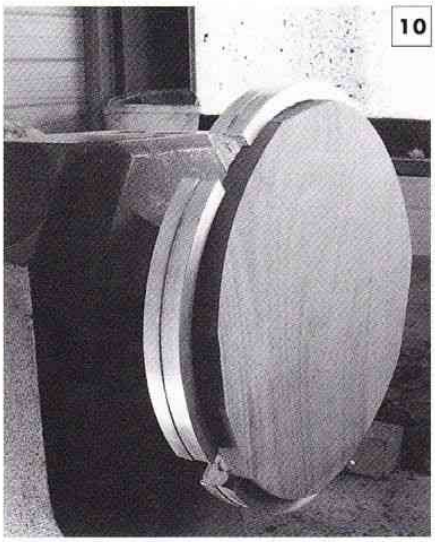
The situation is different for facework when the grain lies at 90° to the lathe axis. As the jaws are tightened they act as little wedges against the endgrain causing the wood to split if the jaws are over-tightened. A catch, especially on the outer diameter of the bowl, will cause the wood to split where the jaws contact. Thus extreme care has to be exercised when using woods known to split easily. You gain very little by having a deeper foot or flange because the inherent weakness is in the structure of the timber and having the jaws biting into the endgrain.

If you expand the jaws into a recess on facework—typically a bowl—the chances of the foot splitting are greatly increased. I *never* use the expanding mode if I can possibly avoid doing so, other than on very large platters (photo 2), where there will be a good rim of material for the jaws to expand against. It is better to clamp around a foot for hollowing a bowl, then eliminate the foot if it's not required using larger jaws such as the Cole or customised jaws as in photo 11.

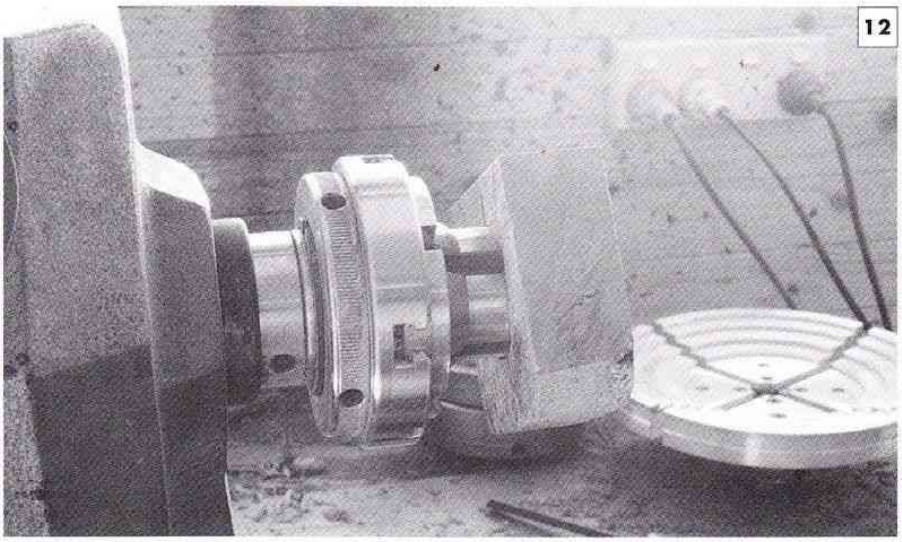
To ensure a secure grip, the blank or job should have a trued face in contact with the base of the jaw, or a turned shoulder to abut the jaws. I tend to push the holding capacity to the limit, and I soon learnt that the jaws will grip on the hint of a groove on the foot of an outflowing bowl as in photo 1. Keep the basic rules in mind as you look at a few of the ways these chucks can be used.

Buying A Scroll Chuck

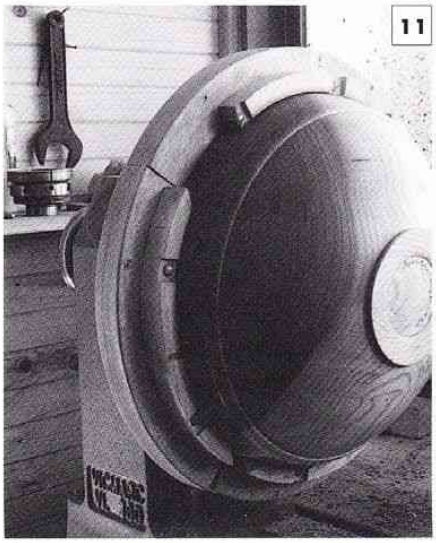
If you are considering buying a scroll chuck, there are



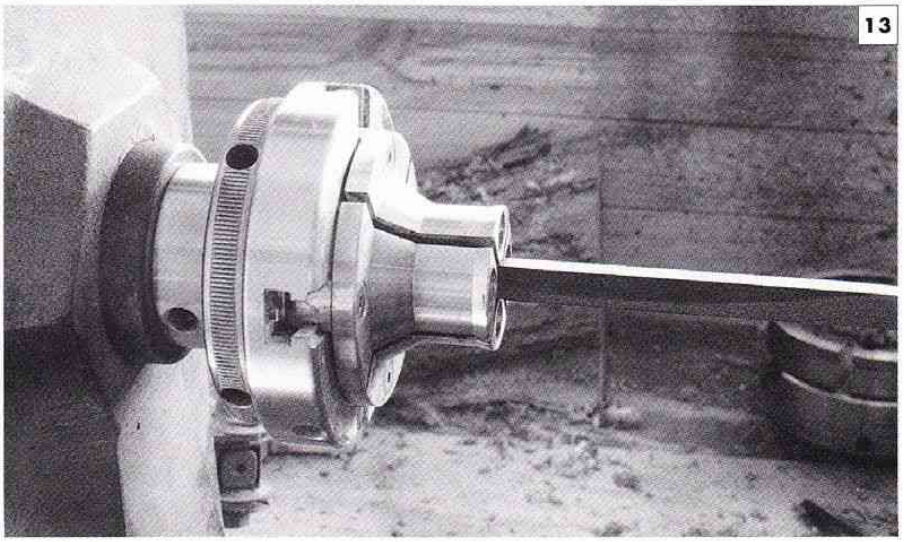
The 210mm jaws used to grip a 250mm bread board blank eliminates the need for screws or centre screw faceplates.



Long nose jaws used to expand into a 42mm hole pre-drilled in a square of jarrah burl. This is my preferred mounting for very small or shallow bowls.



A set of jaws attached to Nova Cole jaw plates. Shown is a 370mm diameter elm bowl.



Long nose jaws can be used to hold a small disk sander or for turning spindle sections as shown.

only two major things to check, each of which is essential for your long term safety.

First, check for an action adjustment grub screw on the chuck body which can be tightened against the scroll ring. With some early and current versions there's a problem with the jaws loosening as the lathe starts or stops suddenly, depending on whether the jaws are expanding or contracting. The job doesn't necessarily come out of the chuck, but is loose and therefore potentially dangerous. Ideally this screw should be tightened to secure the jaws each time you fix a blank in the chuck, but the more usual practice is to keep the grub screw adjusted so that the scroll ring is stiff to rotate by hand.

Secondly, check for a jaws travel stop. This prevents the jaws being expanded so far that they might fly out as you start the lathe.

Many of the accessories offered are more to do with a manufacturer promoting products than providing essential gadgets for woodturners. Sure if you turn exclusively long stemmed goblets you might prefer the internally ribbed spigot jaws to the standard jaw set, but I find the latter will hang on to just about anything anyway. And why buy, say, an expanding 100mm jaw set when for a few dollars more you could buy a step set offering much the same capacity plus a couple of other gripping diameters.

Scroll chucks are here to stay and should be in your woodturning kit.

Suppliers of Chucks

Carba-Tec 1800-658-111, 1800 653 777

Vicmarc Machinery (07) 3284 3103

The Woodturning Centre (02) 9938 6699

The Woodturning Centre/Gregory Machinery (07) 3844 4433

Record Hand & Power Tools (02) 9748 6800

Power Tools & Machinery Sales (09) 272 3844

Malvern Machinery (03) 9885 6104

Major Woodworking Equipment (02) 9708 3233

David Trembath Agencies (08) 8346 4561

McDonnell Road Hardware (07) 3283 1558

The Turnery (088) 389 7886

Trend Timbers (045) 775 277

By Terry Martin

Turning a Handled Bowl or Platter

There is nothing new about handled wooden vessels. They have been around for centuries; the Scandinavian turners in particular created handles on their bowls by the simple expedient of leaving a rim proud on the outside of the bowl and then cutting away sections of that rim.

This project follows on from my project, 'A Winged Vessel' (AWR#11) where I showed how to optimise the amount of timber you can use from a square block, while adding value to the finished piece. This project is similar as it requires some intermittent cutting. The unwanted timber was bandsawn away and the rough area finished with a hand-held rotary cutter. Now I want to take that process a step further by showing how to make a simple system for cutting work still mounted on the lathe.

Safety First

It is important here to restate a few of the rules for intermittent cutting:

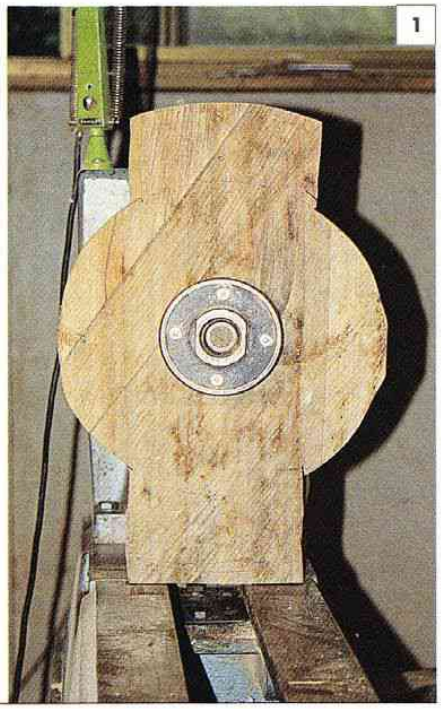
1 Select the fastest speed you can without vibration. Cutting will be intermittent when the handles are passing the tool.

2 Position the toolrest as close to the work as possible. Before switching on, always rotate the work through 360° by hand to be sure no part of the work contacts the toolrest (this applies no matter what you are turning).

3 When cutting, you should draw an imaginary line parallel with the toolrest and extending far longer than its length. No part of your hand or body should cross that line.

Method

1 For the handled bowl in this project I have chosen a long billet of cam-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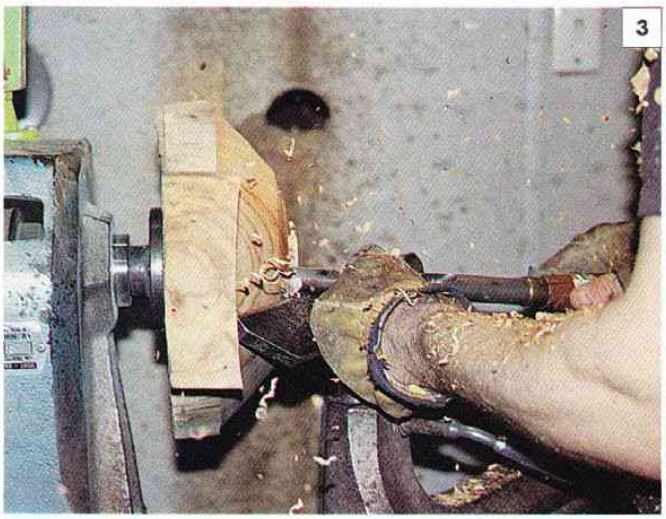


phor laurel with a width roughly the same as the diameter of the bowl I want to make. I have scribed the bowl rim with the compass then drawn the 'wings' from which I will later carve the handles. The shape is cut on the bandsaw and the piece is mounted on a faceplate. It is possible to turn the piece in one go with the faceplate screwed to the bottom of the bowl, but for greater clarity I have chosen here to turn the bottom first with a spigot for rechucking.

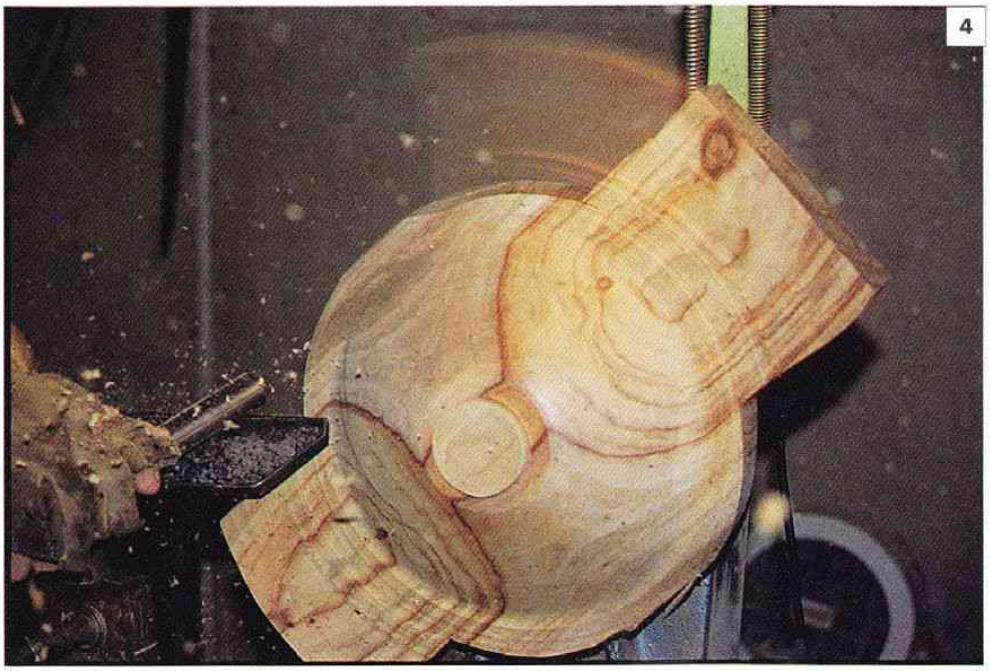
2 Cut away and true enough of the handles and base to clear the way for the spigot. The safest cut at this stage is to firmly hold the tool with downward pressure on the toolrest, handle well down, then lift the handle and roll the tool into the work in a series of 'bites' until the rough shape is attained. Next mark the spigot size with dividers and then cut it using a spindle gouge with a long bevel for a clean cut. The cleaner the spigot is cut, the truer the bowl will run when it is reverse-mounted.

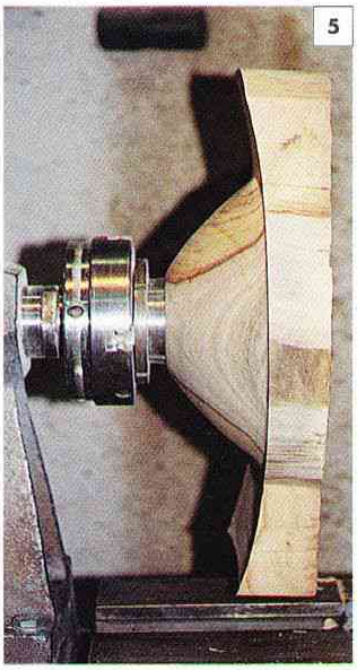
3 Now it is time to start shaping the outside of the bowl. Note that the hand is kept behind the toolrest at all times. I take a sweeping cut from the base to the handles with the gouge on its back so I get a good shearing cut from the ground-back edge. This is the same as cutting an ordinary bowl, but stop at the handles instead of proceeding all the way to the rim.

4 Next blend the shape of the handles with the curve of the bowl wall. Unlike the previous project where I used the corners of the blank for the wings, these wings are cut from the long billet and so their grain runs parallel to their own length. As a result, they are stronger and will take more robust cutting without pulling off large chunks. You can cut outward or inward with reasonable results, but as this bowl has downward-bent handles, the best cut is inward as the grain is supported in that direction. It is possible for the handles to be straight out, or upward-tilting, which will decide the best direction to cut. Other than that, handle shape is a design consideration which will have little effect on the process from here on.

5 When the bottom part of the bowl and handles are finished, the bowl is then reverse-mounted in the chuck.

6 After truing the top of the blank, cut the outside of the bowl rim. Again, the spindle gouge is used to get a





clean cut in the acute angle where the rim meets the handles.

7 The outside wall of the bowl above and below the handles needs to appear as one continuous curve. At this stage it is still possible to take a cut from behind the bowl to fine-tune this curve. At this point, you can jump to stage 11 below and finish the job off the lathe. If so, now is the time to hollow the bowl. Otherwise, leave the bowl solid for greater strength during the next two stages.

8 There is now a small bead of excess timber which needs to be cut away. Leave the chuck on for remounting and take the work to the bandsaw. By tilting the bandsaw table, a cut can be taken close to the curve of the bowl wall.

9 The cutting system I have devised is very simple and has only three components. The first is an X-Y axis vice which I obtained cheaply from CIG. The second component is a Ryobi die-grinder, a cheap and efficient model. Other suitable brands of vices and die-grinders are available on the market. The third piece is a simple clamp I made for holding the die-grinder in the vice.

To make the clamp I simply measured the diameter of the die-grinder body at two points (it is tapered) and transferred these diameters to the opposite ends of a block of hardwood. I then used the bandsaw to cut away the centre of the block. As the body of the die-grinder is tapered, the bandsaw table is inclined to cut the inside of the tapered clamp. Then I screwed a hinge to one side of the clamp so that it closes around the tool body with maximum contact all around. I left the inside of the clamp rough to reduce slippage.

By placing the clamp around the body, putting it in the vice with hinge uppermost and tightening the vice, the die-grinder is very firmly held. Don't overtighten, or you may damage the internal mechanism of the tool.

For a working surface, I clamp my normal tool table to the lathe with a packing block between it and the bed. You can devise a simple surface from ply which can be clamped to the bed, or go one step further and make a table with a spigot to fit in your banjo, which can then be slid to any point and fixed with the camlock. I measured the gap from the centre of the tool to the drive centre of the lathe and then cut wooden packing to screw to the base of the vice. This brings the tool up to cut at centre.

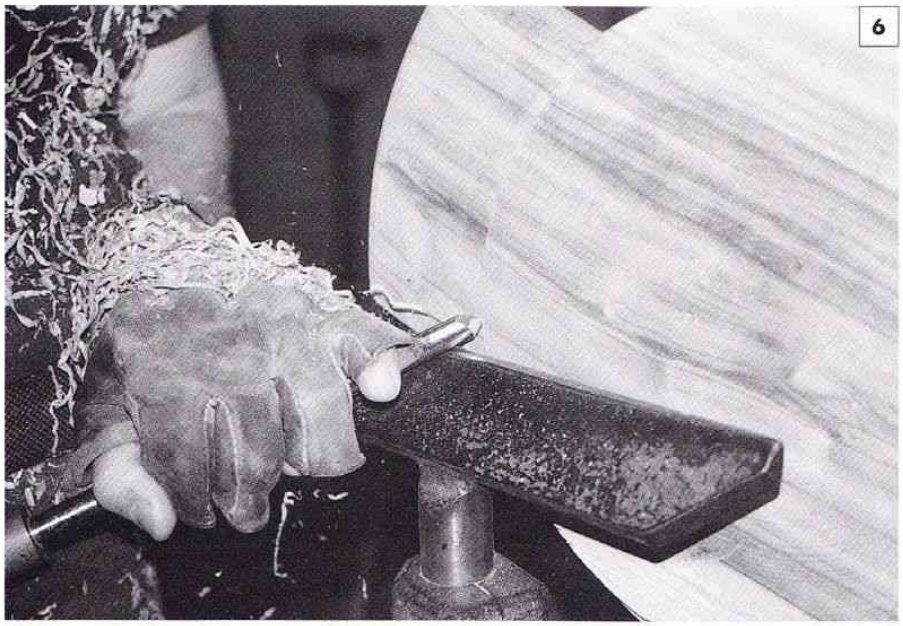
With the die-grinder turned off I position the cutter close to the rough, bandsawn area between the handles. I line up the tool so that it will cut in line with the walls of the bowl. Then I turn on the die-grinder and, while holding the brake-wheel of the lathe with my left hand, I feed the tool into the work with the feed screw on the vice. When it is cutting to a depth of about 1mm, I then rotate the work with my left hand back and forth in the arc between the handles, gradually feeding the cutter in for each pass. By repositioning the vice and carefully manipulating the feed screws, it is quite easy to blend the cut in with the previously cut walls of the bowl.

For light cuts the heavy vice does not move on the table. If you are worried about movement, it is possible to clamp the vice to the table for total rigidity.

There are several reasons for choosing a die-grinder. Firstly, at 25,000rpm, it removes material very quickly. Secondly, its long nose gives unrestricted access for deep cuts. Thirdly, its body is ideal for making such a clamping arrangement, as it is relatively straight and free of protrusions.

You can use other tools for the same result. It is possible to mount a drill to do the work, although it would be very slow. The cutter I am using is a *Karbide Kutzall* rotary burr, but a router bit with a suitable shank diameter will work just as well.

I cut to just above the depth of the bowl wall so there is wood to sand back to the final finish. To get a final finish I use an angle drill with a sanding arbor and velcro sandpaper. While the work is still held in the chuck I work through from around 240 grit to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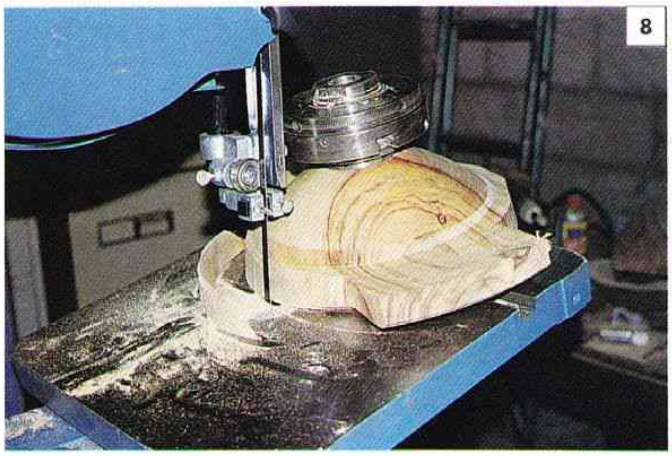
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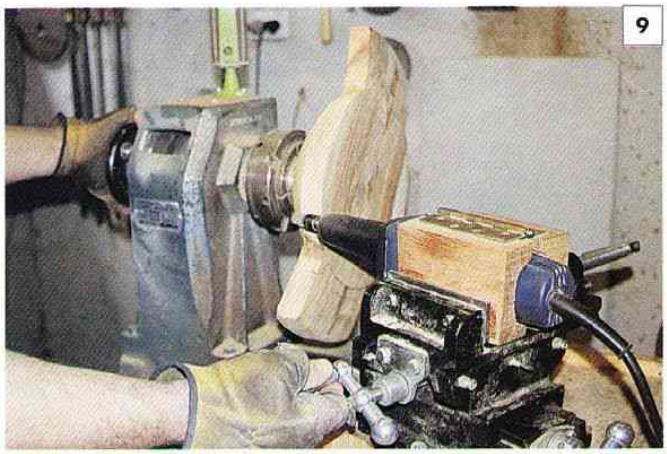
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10


11

600 grit. It's surprisingly easy to remove the rough wood as you are cutting down roughened fibres to a solid base.

10 The only lathe work which remains is to hollow the bowl just as you would for a normal bowl.

11 Take the bowl off the lathe and draw the final outline of the handles. You can have simple wings as handles, but I have chosen an open design. I use a Forstner bit to drill out the centre of the handles. The handles can be given a final rounding on the bandsaw.

12 I use a Foredom rotary cutter to give the handles their final shape. Other power systems can be used, or do it like they did in the old days with chisel, rasp and sandpaper. A final hand sanding to 600 grit will refine the shape and remove all the scratches. This is the slowest part of the job requiring the most patience as unsightly scratches will spoil an otherwise good job.

It is possible to cut very complicated shapes with this method. Such is the control with this cutting system that I have made handles requiring multiple deep cuts from different directions.

This system of using a cutter powered separately from the lathe while reciprocating the work by hand has a noble ancestry. It is worth remembering that much of the work done by the renowned *Holzapfel* and other ornamental lathes was done by separate cutters tooling the piece while it was rotated through various configurations. In fact, for most of the history of turning the work didn't spin continuously, but was operated in a reciprocating manner powered by pedal or 'pull-pull' cord.

This project demonstrates the technique at its simplest. It doesn't take much imagination to see it is ideally suited to decorative cutting. So, by all means copy this project, but see where it leads you and maybe you will free yourself from the tyranny of the circular form!

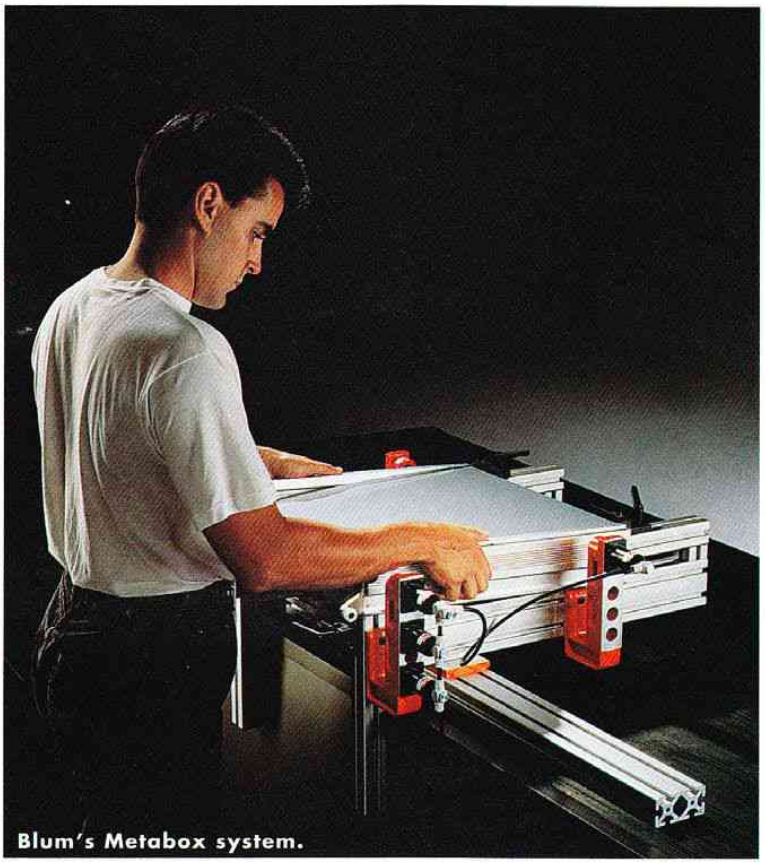

12

By Philip Ashley

READY-MADE DRAWER SYSTEMS

Traditional Drawers

For many years the hallmark of a fine cabinet has been dovetailed drawers. Technology has made the wooden dovetailed drawer more affordable, with machines capable of producing a perfect dovetailed drawer joint in less than ten seconds. Nowadays the latter are only slightly more expensive to produce than other types of wooden drawers.



Blum's Metabox system.

In spite of this, timber drawers are still time-consuming to manufacture, and are prone to swelling and shrinkage, causing jamming or sloppiness in the sliding action. They are also subject to wear over many years of continuous use. Whether dovetailed, rebated or butt joined, the wooden drawer is not necessarily the strongest pull out storage device ever made.

Ready-Made Drawers

Ready-made drawers are now becoming popular in timber cabinetry as well as more common ready-made applications such as kitchen, office or knockdown furniture. Ready made systems are in many cases a natural choice for a whole host of reasons, including their look, function, cost to manufacture and customer appeal.

Varieties

Ready-made drawers come in the following varieties: Plastic coated drawer profile which you cut and join yourself. Plastic coated pre-cut drawers which you simply fold and glue. Metal drawer sides which screw to the base and back while the front attaches with a metal fitting. Metal drawer sides and back pressed from one piece of steel, to which a front is attached with a metal fitting.

When plastic coated particleboard drawers first came onto the market they were not readily accepted. Furniture buyers were conditioned over many years by retailers to accept that anything less than a wooden drawer was simply a cheap alternative. Plastic drawers costing $6-$8 eventually received some acceptance, however more hi tech drawer construction methods are now preferred. The modern ready-made drawer costs more, but offers features and performance that plastic or wooden drawers cannot match.

With all ready-made drawers, the drawer front is normally supplied by the cabinetmaker, and can be timber, manufactured board, or any other material. A mechanical fitting is screwed to the front, to which the sides are attached. This fitting or connector will permit anywhere between 4-7mm of vertical and lateral adjustment.

The more up-market drawer kits in stainless steel and aluminium cater for the high end of the market, such as designer kitchens, executive office furniture and the catering sector.

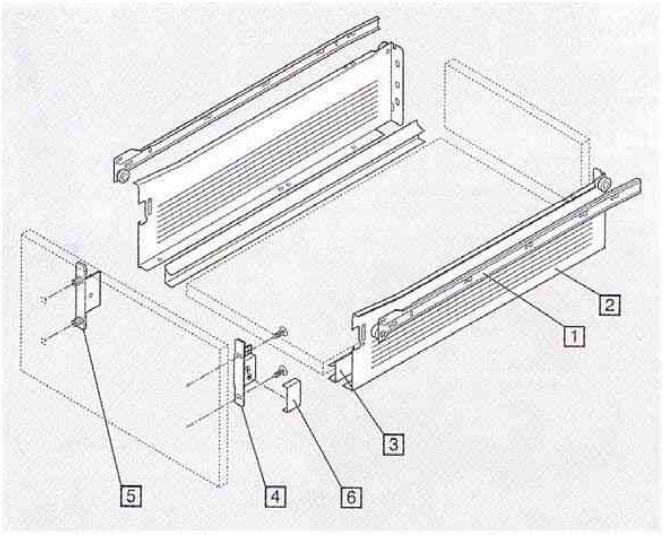
In almost all ready-made drawer systems, ply drawer bases are not common, and most manufacturers use 16mm particleboard as a base. Australian drawers are based on European standards, and the depths of a drawer do not normally exceed 550mm; American drawers by comparison are often 600mm deep.

Suppliers

Drawer kits are marketed by Alfit, Blum, Cornall, Grass, Häfele, Hettich and Howard Silvers. Wilson and Bradley in Victoria and Galvin Hardware also stock certain items from the list of manufacturers, as do many local hardware stores.

Vinyl Wrap Drawers

Vinyl wrap drawer profiles are available from Cornall, Hettich or Häfele in 2400mm lengths which you join yourself. These come in 100, 120, 140 and 200mm heights and cost $6-9 a length, depending on height. The profile has a groove for a ply base on the inside, and a 17mm groove for a drawer runner, which you can also get in plastic.



Blum's Metabox 320K drawer system
1 Runners 2 Drawer sides 3 Contoured base profile
4 Screw-on version 5 Knock-in version 6 Cover caps

There is some work involved in cutting and joining drawer profiles. A step up is to buy a ready made plastic drawer kit. Here you get a drawer which assembles in less than a minute, and looks quite smart in kitchen applications. The drawer is mounted on a metal runner which operates smoothly on a roller. The drawers are self closing and have a safety feature which prevents them from accidentally pulling out of the cabinet altogether.

Most suppliers stock a similarly designed runner system. In fact, these metal drawer runners are so good that many cabinetmakers are now using them to mount wooden drawers.

Metal Drawers

Howard Silvers markets the *Supra* drawer system. The kit has 1mm thick ribbed steel section sides which incorporate runners using ball bearing nylon wheels. A die-cast fitting attached to the drawer front with system 32 drilling allows quick attachment of drawer front and sides. The particleboard base and back are supplied by the manufacturer. Top selling sizes are the 86mm and 118mm. A typical cabinet will mount five 86mm or four 118mm drawers. Prices vary, but are generally in the region of $12-15 each.

The Alfit *Integra Eco* is a similar drawer to the *Supra*, and will take 30kg of weight, far more than any drawer is ever likely to take. The Alfit runners are interesting in that they do not rise as soon as you pull out the drawer. This allows for a very close tolerance between the drawers, and for a good clearance of counter tops. This product is recyclable, which is the way most major suppliers are going.

The *Blum Metabox* system from Richard Small features drawers of epoxy coated steel. Here the side also incorporates the runner, similar to the *Supra*, *Integra* and *Multi-tech* (from Hettich) drawers. I like their new drawer front fixing bracket called *Inserta* which can be installed and removed by hand. When the bracket is snapped into place it self-tightens, allowing speedy replacement of drawer fronts.

Hettich market two metal drawer systems, *Multi-tech* and *Profi-tech*. *Multi-tech* is similar to *Integra* and *Supra*, but the *Profi-tech* goes one step further with sides and back pressed from the same piece of steel. The drawers come pre-assembled—only the front must be mounted. With this product you'll be locked into the manufacturer's drawer sizes, which can dictate cabinet sizes, but if you make standard kitchens (450mm common width) this will not be a problem.

Profi-tech , at around $30 a unit, comes with the excellent *quadro* ball-bearing runners, the option of full extension, and is a very impressive looking drawer used in professional applications. The Grass *Nova* and Häfele *DWD*, released last year at AWISA, are other fine examples of hi tech drawers. Both models have a double sided steel construction, the *Nova* with concealed runners. At a higher unit cost they are aimed at the upper end of the market.

Your Choice

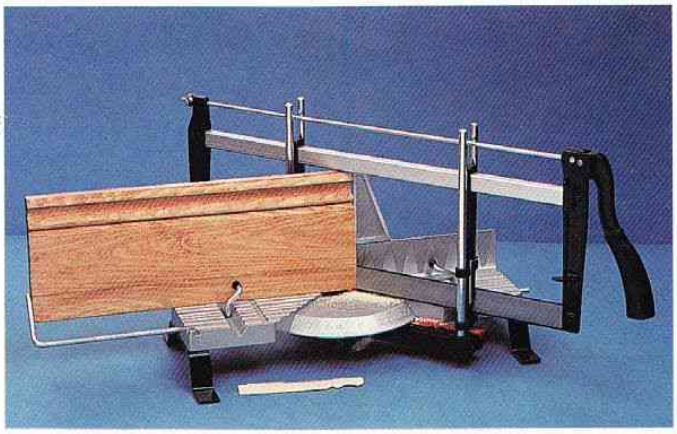
The choice of a ready-made drawer will almost always come down to price. Home and kitchen buyers generally focus more on bench tops, drawer and door fronts. If the drawer runs smoothly they will be satisfied so the drawer will normally be plastic wrap with a fairly good runner. Commercial buyers, on the other hand, look for quality and function, and will have architectural specifications to consider. Here the drawer will be easy-clean, high quality with a snappy appearance, usually in steel or aluminium.

There are some things to look for, however. Runners can cause some side movement in the drawer. The Hettich *quadro* ball bearing runner is very good, and the Howard Silvers *Fulterer* drawer slide has the only plastic roller cam adjustment for side play. Full extension runners in three sections allow the drawer to be pulled up to 40mm clear of the carcase. Other considerations are positive closing mechanisms, tool free assembly, and a good load capacity.

Ready-made drawers have a lot to offer, including low manufacturing costs, quick assembly and adjustability. The initial cost is sometimes high when compared to timber drawers, but they offer a range of features and a lifespan that guarantees acceptance, especially for the commercial sector. Although there will not be a lot of development over the next few years, except in stainless steel and 'eco' drawer systems, the ready-made drawer will certainly become more widely accepted, and should be considered as an alternative to the traditional solid timber drawer.

PRODUCT REVIEWS

NOBEX COMPOUND MITRE SAW



I recently had a complete house to fix with architraves and skirtings. At the time my electric mitre saw was out of action, but I had an offer to use a *Nobex Champion* mitre saw.

The immediate difference of course is that it is hand powered, but interestingly it wasn't that much slower on a 90° cut. I certainly appreciated the lack of a high-powered scream—this is a return to quiet slightly slower and safer work. Set up was very fast, in fact my nine year old had it going in five minutes and accuracy (with a fresh blade) was equal to a powered saw with tungsten blade (even when the kids performed some of the cuts). To tell you the truth I really don't understand how the quality of cut could be so good.

Made in Sweden from aluminium and steel, the saw is strong, rust resistant (I left it out in one storm burst) and very portable. The model I used, the *Champion*, handles timber up to 180mm thick and 180mm wide at 90° (120mm at 45°).

It's important to note that the work I undertook was on soft Baltic pine; hardwoods such as eucalypts are naturally slower to cut, however the accuracy was still good. To change angles you push a lever and rotate the saw to pre-set stops. I didn't like the fact that you can only stop at the pre-set marks.

The saw costs around $295 and is rated to cut timber, plastic, aluminium and steel with various extra blades available at a cost of $24 each. The saw is certainly worth considering for workshop or site, and remember you won't need your ear protectors. Call Promac for stockists (07) 3279 4811.

Reviewed by Rod Nathan

EUMENIA SAW

After looking around at the various crosscut and chopsaws on the market, I recently decided to purchase a *Eumenia* saw for my workshop. The *Eumenia* seemed to offer great versatility and far greater accuracy than other machines available. Operations which can be performed include: mitre cutting, cross cutting compound angles, grooving, trenching, ripping, boring, slot mortising and tenoning.

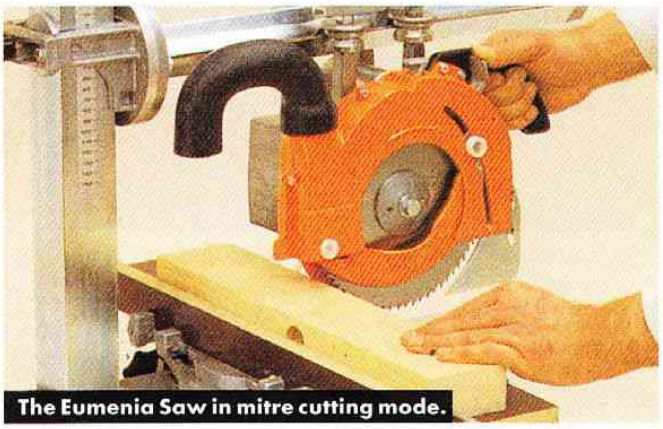
All parts of the saw are well machined and finished. A stand is available but I decided to build the saw into a bench in order to cut long lengths. I opted for the closed frame model with a cross cut width of 600mm at 90°, and for additional support when using the drill/router attachment. The machine comes with a 8 1/2" 64T carbide blade (with standard 30mm arbour hole). Optional wobble washer kits are available for cutting rebates and grooves.

I also purchased the optional drilling/routing attachment for overhead drilling or routing possibilities. With the use of the various stops precise alignment can be achieved for hole drilling (such as for adjustable shelf pins) and for the routing of rebate trenches.

So far the *Eumenia* has performed well and has been easy to set up and use. The induction motor is very quiet and runs smoothly, and has ample power for all tasks required.

Starting at $1355 the *Eumenia* is not cheap, but offers good value for money in terms of the huge range of tasks it performs. Available from Auswood Machinery (02) 9773 3035

Reviewed by Anton Gerner



The Eumenia Saw in mitre cutting mode.

Arbortech's new Mini-Carver

Abortech Mini-Carver

When I first saw this tool, my gut reaction to it was an emphatic YES! The 150mm extension arm, coupled with the small 50mm cutter, combine to give it a wonderful feel, and—as the manufacturer claims—excellent vision and manoeuvrability.

Fitting the unit to your angle grinder might be a bit of a fiddle, depending on your brand. However, the instructions for this are clear and detailed, and cover most commonly available brands.

It comes with two spare blades, and they can be resharpened with a 4mm file. It would be interesting to see how far the performance could be improved by some more sophisticated sharpening using fine stones.

As it arrives out of the box, it cuts wood smoothly and easily. Beyond this, its capabilities depend more on you. Being a freehand tool, it will always require skilled hands to produce fine work, and sensitive hands to get it to work without jamming. It is a tool you need to use for long enough to get a good feel for it and its limits.

My most immediate criticism of it is that there is absolutely no way I can take seriously the promotional claim that it is 'ideal for fine detail projects, such as relief carvings'. While some users will delight in seeing how far they can push this tool, I can't see anybody producing fine relief carvings with it. It is a preliminary shaping tool, and a good one.

Another point I find alarming is that it did not come with any instructions for use. In particular there were no wise words about safe usage. To use this type of tool, you have to not mind donning goggles, ear muffs and dust mask to do your work. If you find that a chore, then maybe you'd be better off sticking to the quiet bliss of carving gouges.

Reviewed by Bob Howard

Natural Water Stones

Planemakers HNT Gordon have recently released a natural waterstone for fine finishing cutting edges. The stone is a sedimentary rock called marl which has a uniformly fine quartz grain. I recently purchased one and have been very impressed with the results.

According to Terry Gordon, who markets the stones, they are roughly equivalent to a 6000 grit Japanese stone, but with a harder surface. I have found I can obtain an edge akin to that produced from a 6000 grit Japanese stone in half the time, and with half the effort. The surface seems to stay flat longer and doesn't clog up at all. Unlike Japanese man-made stones, it is recommended that you store the stones dry and apply water just prior to use.

The stones come with very clear and detailed instructions on use and care. Compared to the natural Japanese stones these water stones are exceptional value for money and are a must have for any woodworker who needs to sharpen to 6000 grit. There are three stones available, the X-Large Flat Stone is $45, the Large $25 and the Universal Slipstones are also $25. Call (03) 9514 33337 for details of supply or visit http://www.woodart.com.au/.

Reviewed by Anton Gerner

Bosch PHO 25-82 Electric Plane

Halfway through a job my older electric plane seized. No amount of oil or WD-40 would get it going so off we went to the power tool shop. For some reason a lot of these places operate on the notion of service being "you need this, where's the money". It seemed I had only one minute to decide between two recommended models —fortunately the tool I bought has been very good.

The Bosch has a rating of 750watts and a standard 82mm wide cut using reversible/disposable blades. This seems to be the way to go, blades are around $14 a set and very quick to change, height is pre-set at the factory. Depth of cut is up to 2.5mm. There is a chip ejection outlet which can be hooked up to an extractor and which can be changed from side to side.

The sole of the plane is ground aluminium, some planes at the tool shop had only pressed steel soles. As the depth of cut works via the aluminium sole sliding against a plastic guideway, I would expect this to wear over time—definitely a downpoint. The tool cost will vary from around $190-240 and I suppose this is why the amount of service you get from the salesperson tends to vary too.

Reviewed by Mervyn Levy

HNT Gordon *Natural Waterstone*

Bosch PHO 25-82 Electric Planer

WOOD NEWS

The Way Ahead

From Philip Ashley,
Machinery Technology Editor

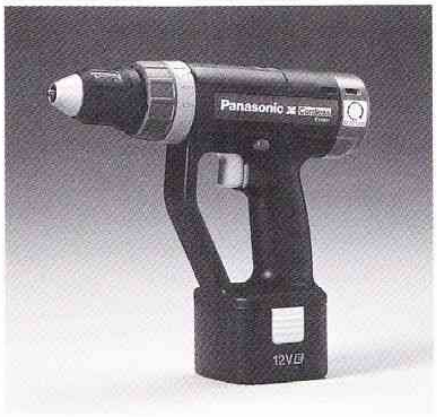
Late last year Professor Littler of the Univ. of South Queensland, said on national television that in ten years time, furniture making trades will be endangered occupations. Of all the trades, wood machinists, upholsterers and cabinet makers stand out as the jobs to avoid as Australia loses these jobs to more competitively priced labour in countries such as Indonesia and the Philippines.

In contrast however, a recent training report from the Victorian Furnishings Industry Training Board, states that the industry in Australia employs 95,000 people nationally and turns over $8.7 billion annually, and is currently going through a national skills shortage, particularly in the more technological areas of the industry. In addition, the FIAA forecast export growth of up to 15% per annum to 1999. These predictions seem to guarantee jobs in the furniture trades well beyond the year 2000.

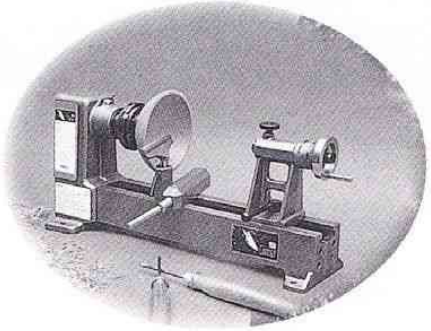
The consequence of Professor Littler's views is that many young people may avoid employment in the woodworking trades as a result of that under-researched report. There is no doubt that the industry is changing, but no more than any other trade which is becoming increasingly reliant on technology. The days of manual labour are fast disappearing, and while fine skills will always be required, more companies are embracing new technology to meet the demands of the modern furniture market. The jobs of tomorrow will be cleaner, easier, and provide a much more challenging and satisfying career option than ever before. We should be wary of strangling the supply of enthusiastic young people, which the industry needs, to compete both domestically and internationally.

New Turning Equipment

Omega, manufacturers of the highly successful *Stubby* lathe have a newer and better lathe entering the market.

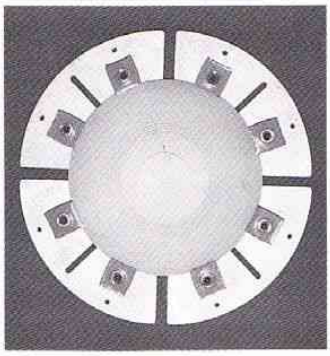


Panasonic's EY6901 Cordless Drill/ Driver



Teknatool's Nova Comet mini-lathe.

The Joey swivel head micro-lathe



The new 'Bowl Jaws' from Vicmarc.

Featuring infinitely variable speed, cast iron bed, base and tailstock the lathe handles 1000mm between centres and a swing over gap of 700mm x 300mm. This is a solid (240kg) but sophisticated lathe for the discerning woodturner, at $4660 inc tax it competes very well in price to other lathes on the market. Contact Omega on (03) 9782 5226.

The *Joey*, swivel head micro-lathe is a new release from **Durden**. It features tailstock aligning bar, single point location, indexing, six speeds (450-3400rpm), 375watt motor and tool kit. Prices start at $472, call Durden tel (08) 8346 5522, fax (08) 8340 1464

The *Nova Comet*, from **Teknatool** is another new mini-lathe offering an add-on bed system. Extra height in the headstock enables bowls up to 10" (254mm) and spindles up to 14" (355mm) to be turned between centres. With high quality, cast iron construction the *Comet* is well priced at $672 inc tax for the bare lathe. Contact: The Woodturning Centre, Sydney (02) 9938 6699, Power Tools and Machinery Sales, Perth (09) 272 3844, Gregory Machinery, Brisbane (07) 3844 4433 or Latalex in NZ on 64 9838 7663.

Vicmarc Machinery have released two new jaw systems. The *Shark Jaws* feature a long spigot and serrated internal teeth while the new *Bowl Jaws* allow for re-chucking or light clean-up work on the foot of the bowl. PVC stoppers, attached to the face of the jaws, are moulded to conform to the concave or convex face of the bowl. With two sizes for the VM90 and the VM140 chucks the maximum diameters of bowls that can be mounted in the different jaws are 285mm and 385mm (VM90 chuck) and 385mm and 485mm (VM 140 chuck) Call Vicmarc on (07) 3284 3103 for stockists.

When you're on the job think of the benefits of 20 minute charging, keyless chuck and a combined impact drill/driver. Or what about drilling 170 x 15mm holes through 20mm timber in one charge. **Panasonic** did with the EY6901.

Wood Conference

The last national event of this type was successfully held in Canberra in 1988. The 1998 **Warburton Wood Conference**, in the planning stages now, will be the perfect time and place to see where we have gone over the last ten years. Co-ordinator, Rob Zubin, is interested in proposals and can be contacted on (03) 5967 5207.

WOOD NEWS

New Machinery Arrivals

A recent arrival from the US. The *Safety Speed Cut Routing Table* (SSC TR2). This horizontal table router is a machine for jobs that require 36" or less cross-dado capacity such as cabinet dados, backs and drawers. Standard equipment includes the 3.25hp, 15 amp Porter Cable Router. It also features a self-cleaning graphite impregnated roller system (Nylatron), floating router head, adjustable rulers and 1.75 guide tubes. Optional extras include dust vacuum system, *Speedtronic* variable speed router motor and air clamps. Contact Gregory Machinery on (07) 3844 4433

After ten years absence from the home woodworking scene the *Fusso* returns, with a 250mm saw, drill press, horizontal borer, lathe (850mm between centres) 300mm disc sander and variable speed. Call Woodstock Timber Tools & Hardware (09) 345 4522

Edgebander users are becoming increasingly aware of the benefits of the fully automatic Mechwood A3 edgebander. At the top of the manual and automatic range offered by Mechwood, the A3 will apply all types of pre-glued edging up to 3mm thick. Call Gabbett Machinery (02) 9831 5538.

Expo Success

Over 18,000 people visited last year's Woodworking & Craft Expo in Newcastle. This year's show should pump just as hard from the 11-13th July, contact details from (049) 467 509

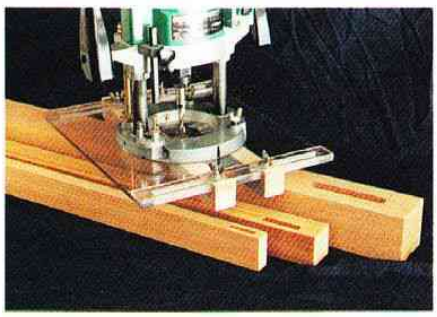
Timber Supplies

New guinea rosewood and walnut, kwila, taun and callophylum are part of a recent shipment of Forest Stewardship Council (FSC) certified timber from Papua New Guinea. The FSC certification system is the only currently operating, internationally recognised method of identifying timber from 'well managed' or sustainable yield forests. The shipment adds to the range of plantation, recycled and recovered timbers available at The Woodage (048) 721618 fax (048) 721323.

The Safety Speed Cut Routing Table

Triton woodworking adhesives

New Guinea Walnut



Mortising jig by Richard Vaughan

Regrowth Baltic

Red and white baltic pine logged from regrowth forests is now available in a selection of grades suitable for everything from picture frames to floorboards. Krasne Baltic Timber Imports are stocking both red (*Pinus sylvestris*) and white (*Picea, spruce*) in both the fine grain required for cabinetmaking and in new flooring (that will save time and money as it doesn't need de-nailing). Phone (08) 8240 1100 or freecall 1800 811 538 or fax (08) 8240 1122

Fast Growing Eucalypts

'*Furniture from young, plantation grown eucalypts*' may result from a research project of the same name to be undertaken by Dr Barbara Ozarska of the CSIRO and Philip Ashley of Holmesglen TAFE (and Machinery Technology Editor of AWR). The project will evaluate a variety of eucalypts including flooded gum, Sydney blue gum, spotted gum, river red gum, sugar gum and red ironbark, growing under short rotation planting conditions. Long term, the project aims to develop regional plantation and commercial farm forestry. Support has already come from the Furnishing Industry Association of Australia (FIAA) (Vic and Tas) and Victoria's Timber Promotion Council. For information call David Duggan at Holmesglen TAFE on (03) 9564 1501.

On the Move

Key Joining Equipment have moved to: Factory 2, 91 Paraweena Rd, Caringbah, NSW 2229, tel (02) 9526 8590 and fax (02) 9526 8591. Auswood with the Eumenia Universal Woodworking Machine share the same address, their new no's are tel (02) 9526 8490 fax (02) 9526 8491.

Central Victorian School of Woodcrafts have moved to Trudgeons Rd, Welshmans Reef, new tel/fax no's (03) 5476 2356

Woodcarver Winner!

K.Briggs of Karratha won the Arbortech Industrial Woodcarver competition (AWR#12)with the following workshop tip: 'Even though I thoroughly check measurements, occasionally a leg I have turned magically grows, or a drilled hole grows back over. The solution requires two identical squares with holes drilled in the middle that correspond to the diameter of the ends of the leg. This support allows trimming on the saw or the re-drilling of that missing hole.'

Trade Fairs

Trade fairs Ligna Hannover'97 and interHOLZ'97, 5-10 May, are set to emphasize all aspects of the forestry industry from machinery and equipment to timber while providing the venue for the 1st International Wood Congress. The Congress will provide an international forum focusing on current political and economic issues such as certification of timber and sustainable forestry management.

Go North!

The big military build-up in the North has seen the growth rate for Darwin boom, predicted growth over the next five years is put at 50% per annum. Whilst there are a number of cabinet shops servicing this business there is surprisingly only one outfit doing high quality custom furniture building. Fineline Furniture make solid timber furniture from predominantly jarrah, oak and pine with a loyal staff of seven and a full plant. Owner, Brian Lewins, wants to sell however, to enjoy more of the lifestyle opportunities the area has to offer. Call him for details on (0889) 844 040.

Australian Furniture Exhibition

This year's Australian Furniture Exhibition, organised by FIAA will run from May 22-25. The first two days will be open to trade only. A large display of over 20 Malaysian furniture companies led by the Malaysian Timber Council will participate in the event. A display of current work by Australian designers will also be on show. For information call the FIAA (02) 9580 8922. Designers interested in being part of the current work display should contact Karina Clarke, Product Design Manager of Chiswell Furniture on (02) 9602 9722

Chipping Away

Canadian chip-carving gurus, Dennis and Todd Moore, tour Australia in May and will visit Brisbane and Sydney Wood Shows and the Warburton Winterfest. With their range of carving tools, they are well known in North America for their workshops, videos and weekly TV series. Their carving talents are certainly matched by their skill in teaching. Details contact Ainslie Pyne, Australian Wood Artisan Promotions on (08) 8379 6994 or fax (08) 8379 9444 or http://www. woodart.com.au/.

News Notes

Triton Premium Woodworking Adhesive is now packed in three sizes, 250ml, 500ml and 2.5lt. Triton (03) 9584 6977

Woodcarvers will also be interested to know that Trend Timbers in Sydney stock the *Kirschen* range of carving tools. Call (045) 775 846

Hare & Forbes have a new free colour catalogue of woodworking and metalworking machinery. Tel (02) 9633 4099, (07) 3849 1888 or fax (02) 9891 2467.

Garrett Wade 202GF gap filling, high strength glue is available exclusively in Australia from Anton Gerner. Sample bottles are available for $8. Call (03) 9813 2422 for supply.

After inquiries about the mortice jig mentioned in his article on the router (AWR #13) Richard Vaughan made up a batch for sale. Simple to fix to any router they make accurate mortising a breeze. The jig can also be used for fluting and reeding and costs $105 inc p&p. For more information phone or fax (02) 9818 1688.

Chip carving by Dennis Moore

Mega Subscriber Prize Draw

Record block plane, excellent tool with low angle high quality blade, superb machining and finish. Record Hand & Power Tools, (02) 9748 6800

Festo ET2E random orbit sander, 150mm dia, 250 Watts, variable speed industrial grade tool. Festo (03) 9795 9555

Bosch PEX12AE, random orbit sander, 125mm dia, 400 watts, variable speed. Robert Bosch (03) 9541 5308

Hitachi FSU13Y random orbit sander, 125mm dia, 270 watts, variable speed. Hitachi (02) 9666 3274

Winners announced issue 16

Become a subscriber to Wood Review, save some money and be eligible for this and all future prize draws. Return the form below today to:
Australian Wood Review, 435 West Mt. Cotton Rd, Mt Cotton, Australia 4165, or fax to (07) 3287 7099, telephone: (07) 3287 7088

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Posters are $10 each inc. postage & tube (O'seas $25). Please send the following:

☐ Hand Tool Classics Poster ☐ World Timbers Poster ☐ Australian Special Timbers _____

My main interests are ❑ Furniture ❑ Woodturning ❑ Timber ❑ Projects ❑ Tools ❑ Carving ❑ Design Total $ _____

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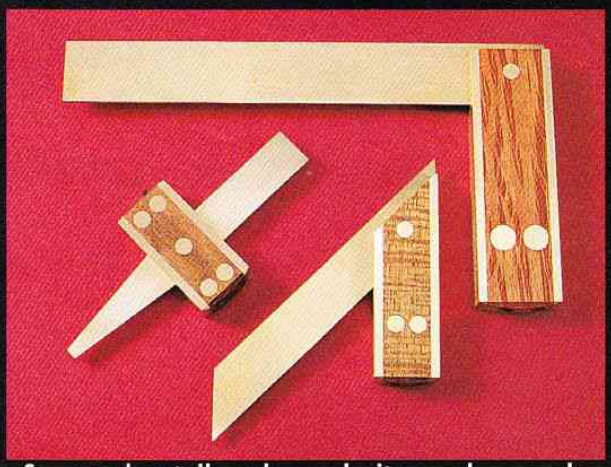
Copies of this form are acceptable.

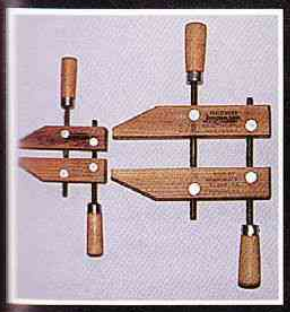
Marking gauges, beautifully crafted from jarrah and she-oak with hand machined brass. Colen Clenton Tools (049) 907 956



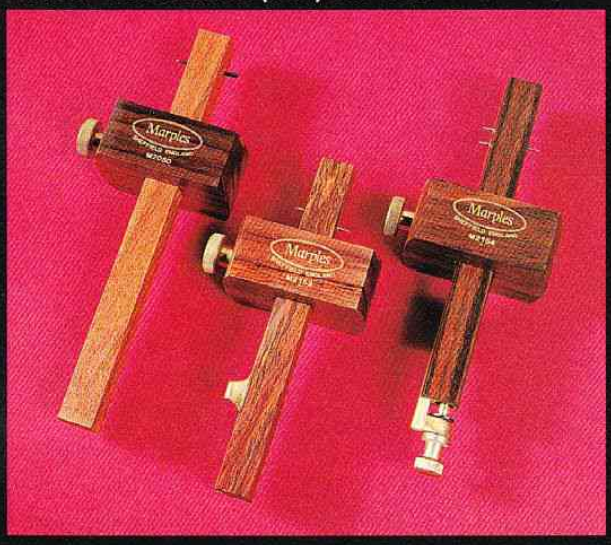
Square, dovetail marker and mitre marker, made from she-oak and brass. For the user or collector. Colen Clenton Tools (049) 907 956

Arbortech Mini-Carver, high speed shaping attachment for angle grinders. Arbortech (09) 249 1944

DeWalt DW670 XE, laminate trimmer, 670 watts, industrial grade tool. DeWalt (03) 9727 8200

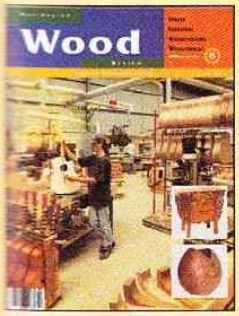


Jorgensen clamps, maple and steel, full adjustment. Mik International (08) 8333 2977



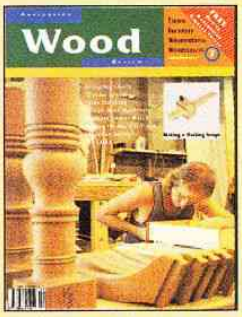
Marples marking gauges, all made of hardwood and brass, excellent finish. Record Hand & Power Tools (02) 9748 6800

Back issues available



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.

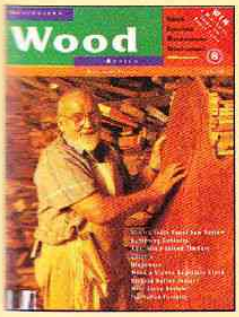


No. 7

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

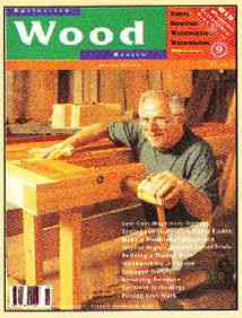
Subscription Prize Winners!

Sjöbergs Workbench from Promac:
A. B. Gunton, Bellevue Hill
Freud Saw Blade from Woodman:
P. Workman, Birdwood
Carba-Tec Mini-Lathe:
F. Di Stefano, Footscray West
Japanese Z-saws:
S. Formanek, Mont Albert



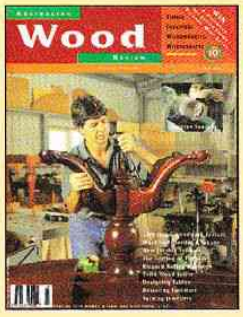
No. 8

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



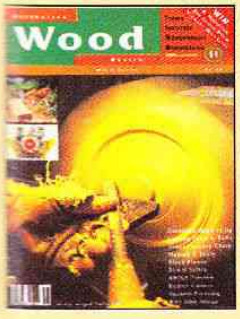
No. 9

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.



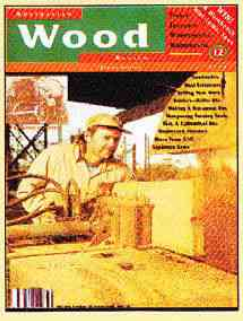
No. 10

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



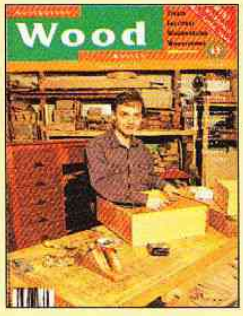
No. 11

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, a veneered table top

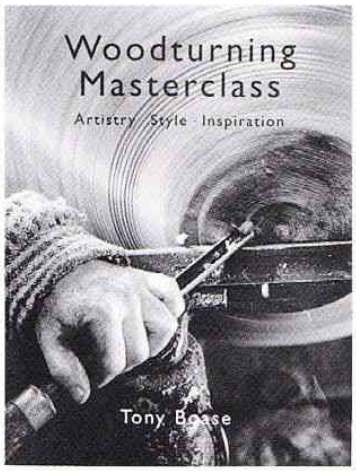


No. 13

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

Bookshelf

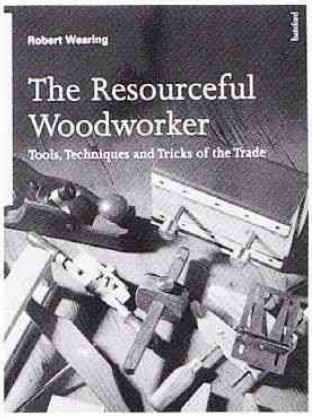
Wood Review's Mail Order Bookshop— There's nothing like a good book!



Woodturning Masterclass

By Tony Boase

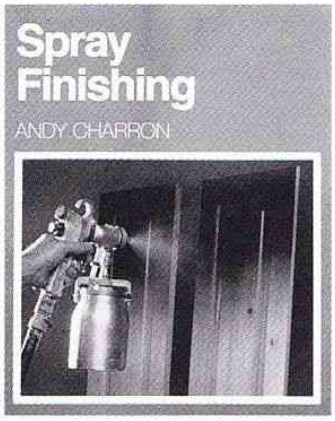
This is a great book. I am only a hobby woodturner really, but after reading this book I couldn't wait to get to the lathe. There are twelve portraits of different British woodturners which are accompanied by a project from each. The book is superbly photographed by the author Tony Boase and oozes the mystique of the woodturner's craft. Beautifully produced, guaranteed to inspire. Colour, , GMC Publications, $34.95.



The Resourceful Woodworker

By Robert Wearing

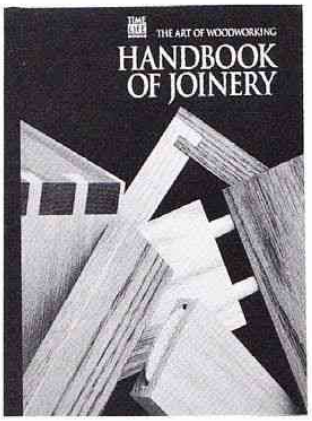
This is not a beginners book, it is for the intermediate to advanced woodworker seeking new ideas for techniques, jigs and tools. There are detailed planes for gauges, planes, holding devices, woodturners tools and clamps, to mention just a few. Rather than looking at what you make this book takes a highly detailed look at techniques of making and the tools that you use. There is enough material here to keep you busy for years. 160 pages, black & white, Batsford, $29.95



Spray Finishing

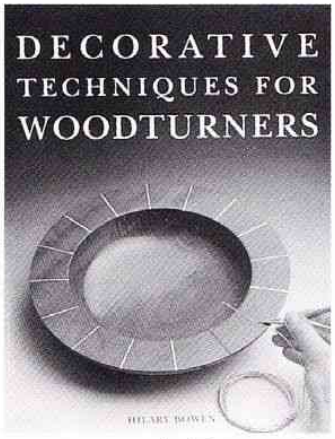
By Andy Charron

A good sprayed finish can elevate a mediocre piece of furniture, whilst a poor job can ruin a fine piece. Polishing is a trade unto itself but so many makers undertake this part of the job without any training. This book is a course on spraying, it covers system selection (conventional and HVLP), set-up, basics of spraying, colouring, types of finishes, specialist applications and clean-up. If you are a learner or spraying is an important part of your business then you won't go wrong in studying this book. 166 pages, black & white, Taunton, $45



Handbook of Joinery

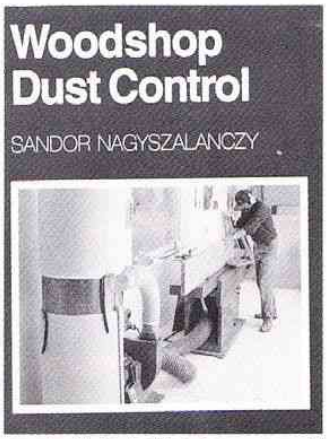
Technical facts and basic principles of joinery are well covered with high quality photos, drawings and accompanying text to explain the making and assembly of mitre, butt, mortise and tenon, dovetail, box, decorative variations and even Japanese joints. To to be used in the workshop, students will benefit greatly from it. There are also jigs to make and other tips. 144 pages, all colour, Time Life Books, The Art of Woodworking Series, $34.95



Decorative Techniques For Woodturners

By Hilary Bowen

Adding decoration opens a whole new vista to fine woodturning. Bowen goes through techniques such as adding metal, colouring, gilding, wood-composites, laminating, inlay, resins and carving. Projects (44 in all) are accompanied by step by step photographs with drawings to explain the various techniques. Some techniques are relatively simple whilst others are quite complex. This is certainly a book to inspire you to take new directions with your turning. 170 pages, colour, $34.95, GMC



Woodshop Dust Control

By Sandor Nagyszalanczy

The how, why and what of wood dust. Pictures, text and tables leave you with a broad understanding of setting up and running an efficient dust system. Each stage of dust control is explained for all timber and wood users. No matter what aspect of dust control is bothering you there is a solution here, from personal filters, portable extractors, design and installation of central systems through to connection to individual machines. Highly recommended.

200 pages, black & white, Taunton, $45

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..... American Furniture of 18th Century—Greene $98.50
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DeCristoforo NEW** $29.95
..... Workbench Book—Landis HB $80.00
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WOOD DIARY

1997

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7th Taipei Int. Furniture Show
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March-July 20
Expressions In Wood
Masterworks From The Wornick Collection
Oakland Museum of California
(510) 238-2200

4-8 March
Malaysian International Furniture Fair '97
Putra World Trade Centre,
Kuala Lumpur
Tel 0011 603 780 8275
Fax 0015 603 781 0355

22 March
Strahan Piners Festival
Strahan Woodworks
(03) 64 717017

6-20 April
Bega Woodcraft Awards
Bega Valley Regional Gallery
Tel (064) 923 994 or (064) 936 572

9-14 April
Milan Furniture Fair
Eurocucina (Kitchen)
Eimu—Biennial Exposition of Office Furniture & Office Design Competition
Accessories Furniture Exhibition
Milan, Italy
Tel +39/2/485921 Fax +39/2/4813580

11-13 April
1997 Woodcarvers 'Carve In'
Geelong College,
Newtown, Victoria
Bryan Thompson (03) 9459 4176

18-20 April
Perth Timber & Working With Wood Show
Claremont Showgrounds
(02) 9712 5623

1-10 May
D1 Furniture Exhibition
68 King St, Perth
Catriona Gregg (09) 386 7468,
(09) 221 1313

2-6 May
interzum '97
Cologne, Germany
Tel 02 21/821-2562 Fax 0221/821-3417

5-10 May
Ligna Hannover
Includes interHOLZ
Hannover, Germany
Tel (+511) 89-31632

9-12 May
TexFair—Furnishing Textile Exhibition
Milan
Tel +39/2/485921 Fax +39/2/4813580

17-20 May
International Contemporary Furniture Fair
Jacob K. Javits Convention Center,
New York, NY
Tel (914) 421 3200 Fax (914) 948 6180

22-25 May
Australian Furniture Exhibition
Sydney Showground
F.I.A.A. Tel: (02) 9580 8922
Fax (02) 9580 8999

23-25 May
Brisbane Timber & Working With Wood Show
RNA Showgrounds
(02) 9712 5623

24 May-1 June
National Woodturning Exhibition
Nunawading Arts Centre, Victoria
(03) 9874 7635

29 May-1 June
International Arts, Crafts, Hobbies Expo
Caulfield Racecourse, Melbourne
(03) 9751 1901

8-11 June
Interbuild Australia
11th Int. Building Materials
& Equipment Exhibition
Darling Harbour, Sydney
AES: (03) 9261 4500

4-12 July
Winterfest in Warburton
Demonstrations, workshops & exhibition
Tel (03) 5967 5207

11-13 July
1997 Cabot's 3D Woodwork & Craft Expo
Elders' Stockmans Woolstore
Hannell St, Wickham, Newcastle
(049) 467 509

18-20 July
Sydney Timber & Working With Wood Show
RAS Showgrounds, Paddington
(02) 9712 5623

18 July-1st August
1997 Contemporary Furniture Exhibition
Cooroy Butter Factory, Tewantin
(07) 54492 040

9-10 August
Barossa Working 'N' Wood Show
Tanunda (SA) Show Hall
Joy Day Tel: (085) 633540
or (085) 632400

Listings in Wood Diary are free.
Forward details to Wood Review

Advertiser Index

A-Class Woodworking Machinery 78
Adams Timber 83
Albart Trading Co 78
Altendorf 11
Anton Gerner 87
Atlas Copco 82
Australian Furniture Timbers 7
Australian Wood Artisans 83
Auswood Machinery 67
B J R (Aust) Pty Ltd 17
Baltic Timber Imports 90
Bookshelf Bookshop 94,95
Box Hill College of TAFE 90
Burl For Sale 87
Britton Bros 61
Business for Sale 87
Carba-tec IBC,5,23
Carson Crickmore Guitars 90
Charlie Henry Timbers Pty Ltd 87
Cockatoo Timbers 90
Colen Clenton 83
Coles School of Woodcraft 90
Cornell Group 91
Custom Cut Timber 91
De Walt 24
East Gippsland College TAFE 90
Ecological Sawmill Systems 78
Eumenia 67
F W Hercus 70
Felder 87
Fineline Furniture 87
Forestry Tasmania ..... Back cover
Freud Tooling 7
G W Lucas & Sons Pty Ltd 67
Garrett Wade Glue 87
Gregory Machinery 71
Gunns Veneers Pty Ltd 20
Hare & Forbes 61
Howard Products 91
Huon Timber Co 91
J A & J L Cullen 91
Just Timber Finishes 91
L C Henstock & Sons Pty Ltd 61
Lazarides Timber Agencies 78
Liemex Baltic Timber Imports 24
Ligna Hannover 97 3
Linbide Tools 71
M I K International 41
M & R Universal Joinery 87
MacDonnell Road Hardware 78
Makita Australia Pty Ltd ..... IFC
Malvern Machinery 90
Mathews Timber 24
Millwood Forest Products 90
Mullumbimby Timber Salvage 90
Nathaniel Chittams Adhesives 90
Omega Tool and Engineering 2
Orange Oil 91
Otto & Co 91
Panasonic 47
P M Sephton Stringed Instruments 91
Peter Scott-Young 91
Photogloss Craft Supplies 91
Power Tool Specialists 71
Processed Forest Products 2
R & H Mowers 83
Rare Woods 67
Record Hand and Power Tools 45
Riddell Exhibitions 89
Ripper Industries 71
Rupes Australia 47
Sachys Industries 87
Sturt School of Wood 90
Teknatool 22
Terrco 90
The Marquetry Craft Co 87
The Turnery 90
The Woodage 91
The Woodturning Centre 71
Timbermate Pty Ltd 60
Titebond (Nathaniel Chittams) 91
Tramex Moisture Meters 91
U Beaut Polishes 90
Veneer & Timber Products Pty Ltd 61
Vicmarc Machinery 11
Westford 83
Winterfest in Warburton 87
Woodman Group 7,9
Woodstock Timber Tools & Hardware 67

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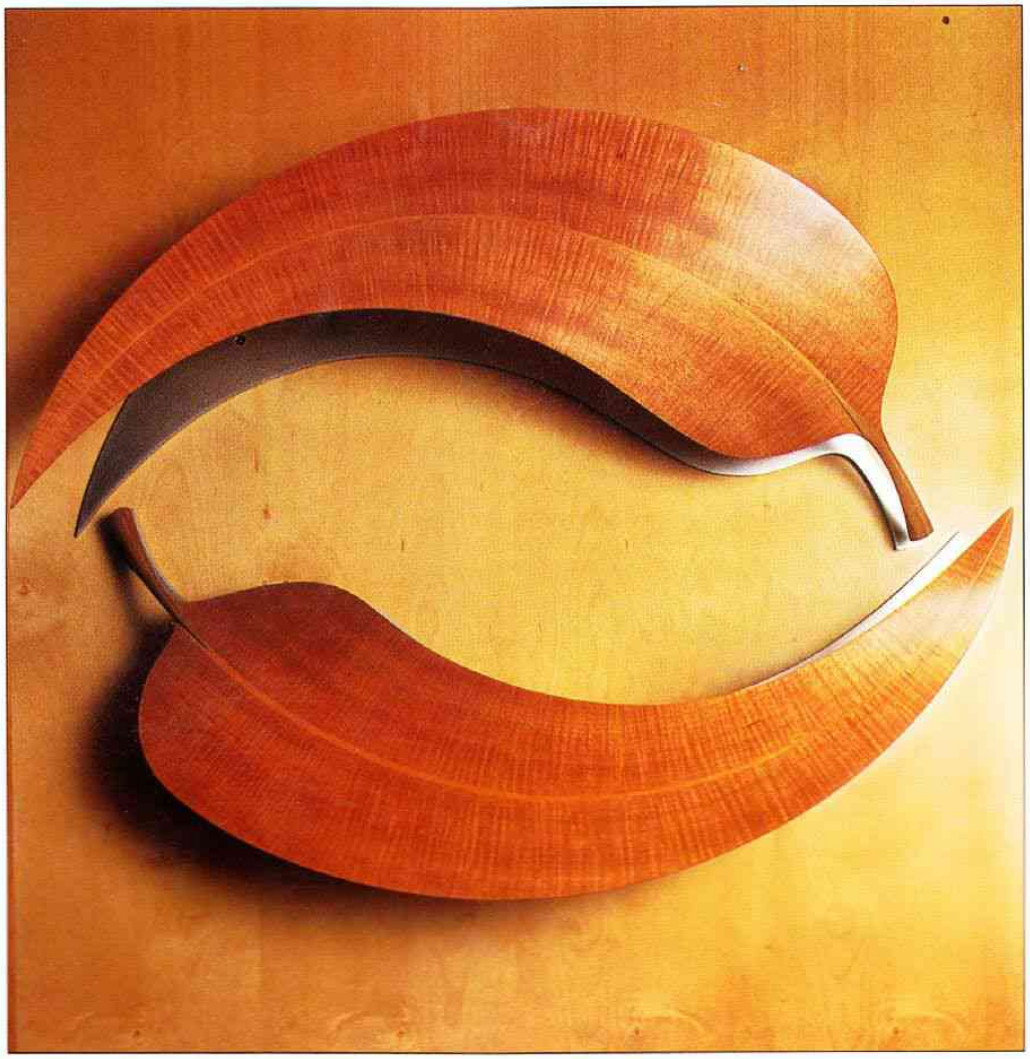

Forestry Tasmania logo by Kevin Perkins

Made in Tasmania, grown by us.

That's our logo crafted in wood by
leading Tasmanian designer, Kevin Perkins.

Regrowth eucalypt veneer across sliced pale sassafras on chipboard.
It's our challenge to all to care for the way wood is used and to add value.

After all, we wouldn't ask for something we wouldn't do ourselves.

Forestry Tasmania

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