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Wood

REVIEW

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Dressing table project, p.16

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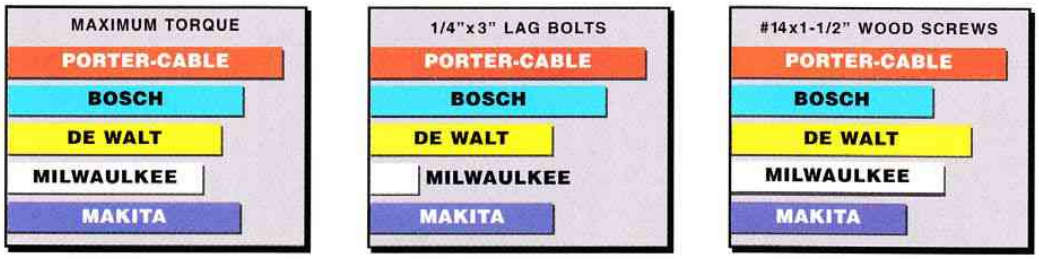

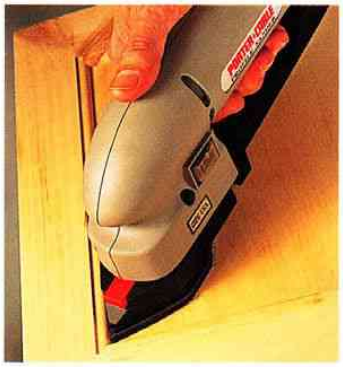

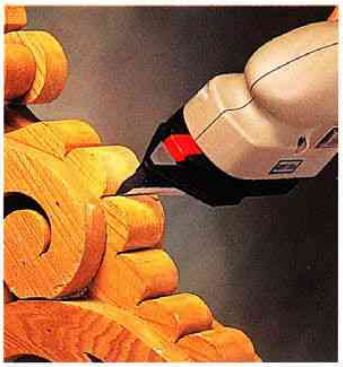

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AUSTRALIAN WOOD REVIEW

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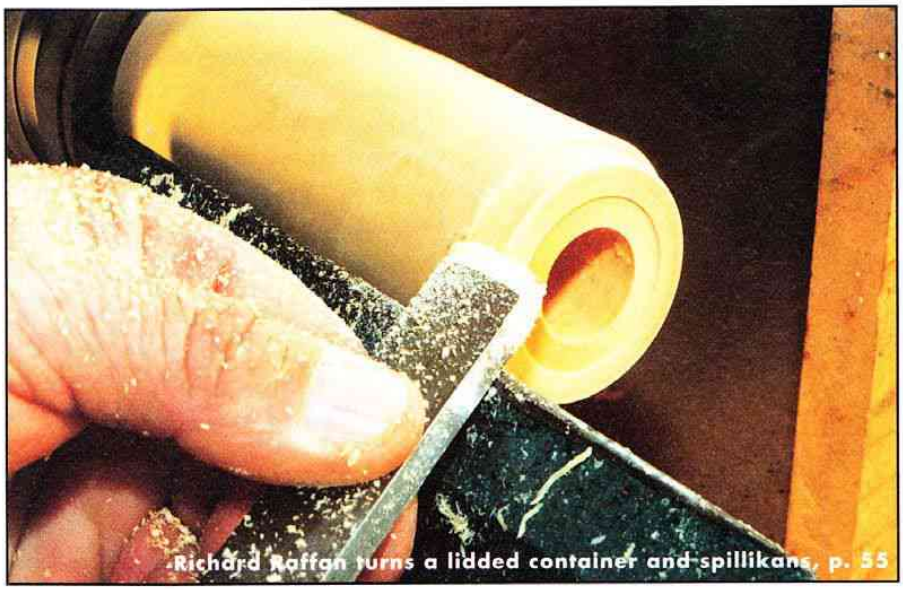

Richard Raffan turns a lidded container and spillikans, p. 55

EDITORIAL

New products and ideas are the constant catch-cries of our ever-more commercial world. The ethical cornerstones of the religion of profit are quality and service, but we also need to be smart about how we work as well.

A visit to the *Tessa* furniture factory in Melbourne reaffirmed my faith in the fruits of hard labour. Tessa is a 'small' Australian business with a big profile. Factory Manager David Keane puts their success down to achieving an awareness throughout the company of the total manufacturing picture. Careful management coupled with product research and development allows this company to succeed where others in the industry are clearly not.

Chris Jones's *rasen design* company is also turning a profit. *rasen design* combs and other crafted timber items have become a staple, albeit small scale, seller around Australia. Designing an object is all very well but finding a market and then moulding your product to it takes effort. Chris Jones magic formula for success is design nous, business savvy and hard work!

Being smarter in your workplace or workshop means getting more out of the material and human resources you have to start with. In 'Meaner and Leaner' Philip Ashley tackles the issues which the smallest and largest businesses come up against every day. Better work and organisational practices can enhance profits and keep cash flowing.

For your ideas department we offer even more images from recent exhibitions than usual. Looking at other people's work can be inspiring. At the very least it can help you establish what you do and don't like. Andrzej Kosmider writes about the 'demystification' of design—it's just another part of the process of making things, after all. Design falls down, Andrzej writes, when enough work hasn't gone into that part of the process.

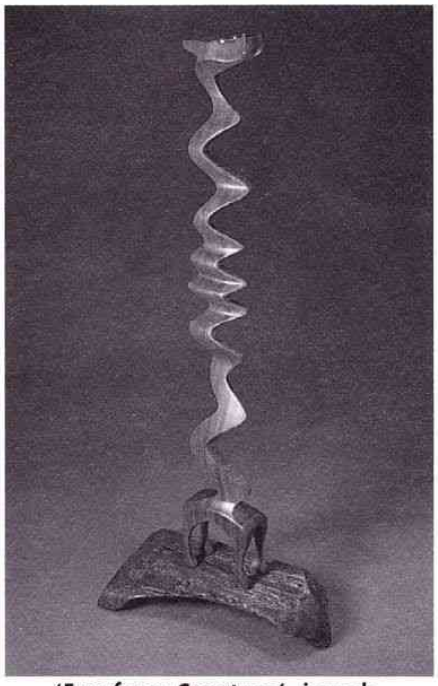
The last two instalments of 'Seven Equal Pieces' (starting p.55) are a carry-over from last issue. Seven woodturners were given a same-sized piece of Huon pine and asked to be creative. This issue Richard Raffan and Andrew Potocnik describe how they proceeded.

In this issue we take a look at the fascinating century and a half old history of sandalwood in Australia. Linked with the religions and traditions of the East and the Indian subcontinent, sandalwood has played a major part in the economy of West Australia. The trade continues and, with the establishment of plantations in the north of that state, some efforts are being made to increase the local market for this timber, 99% of which is presently exported.

Approaching the end of another year as we do I take this opportunity to wish all our readers a happy festive season and a fulfilling new year.

Linda Nathan, Editor

EXHIBITIONS



'Freeform Creature', jarrah, Gerald Young (530mm high)

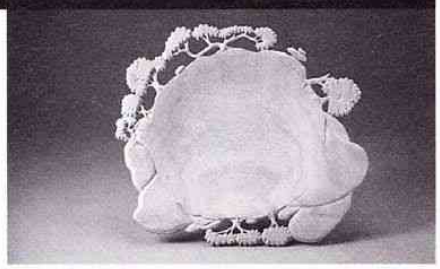
'Prospector Tableau', Beauchamp Paine

Out of the Woods

WA Wood Show, Perth, August, 1997

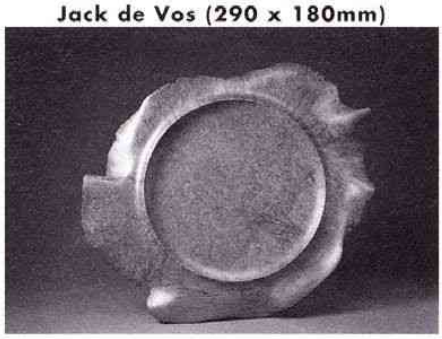
Out of the Woods is an annual event organised by the Fine Woodwork Association of WA. This year the exhibition was curated by association member Ron Hilton. The fifty five entries ranged from a massive solid teak armoire by Alan Noon to a delicate set of life size jarrah, karri, marri and yarri leaves carved by Warwick Backhouse from their namesake timbers.

Other eye-catching entries were 'Lungs of the Earth' in jacaranda by Peter Lowe (winner—*Woodturning*), Jack de Vos's hollow form in higly figured coastal jarrah, Stan Samulkiewicz's wandoo coffee table made from salvaged telephone pole crossarms, Peter Smith's dining suite in jarrah and blackbutt (winner—*Furniture Commercial*), Beauchamp Paine's carvings 'Ready for the Ceremony' in jarrah with inlay and 'Prospector Tableau' (winner—*Woodcarving*), Gerald Young's 'Freeform creature' and jewellery box (winner—*Miscellaneous*), and Paul Hennebury's hall table in jarrah with sheoak inlay (winner—*Furniture Individual* and the *Woodstock People's Choice Award*).

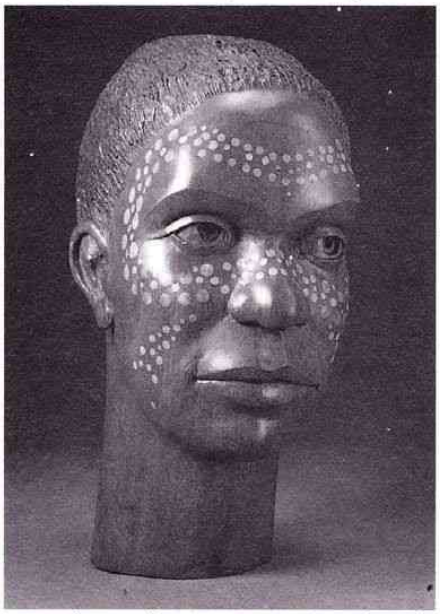


Platter, banksia, Warwick Backhouse

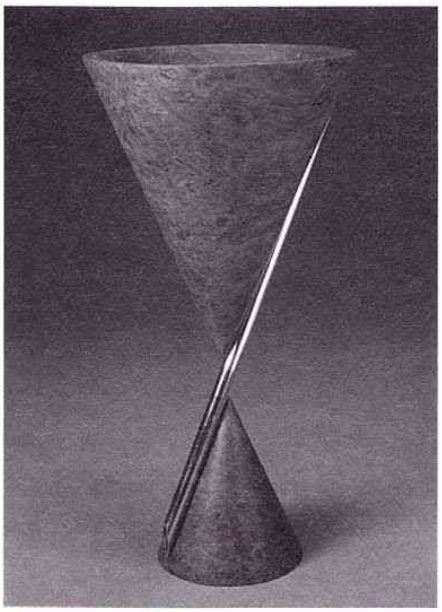
Hollow form, coastal jarrah, Jack de Vos (290 x 180mm)



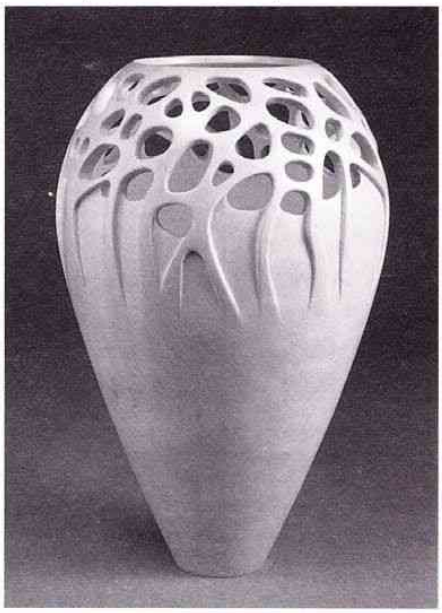
Platter, Indonesian burl, Gordon Ward



'Ready For The Ceremony', jarrah with inlay, Beauchamp Paine (250mm high)



'Geometrica II', jarrah burl, stainless steel, Ron Hilton (320 x 150mm)



'Lungs of the Earth', jacaranda, Peter Lowe (310 x 190mm).

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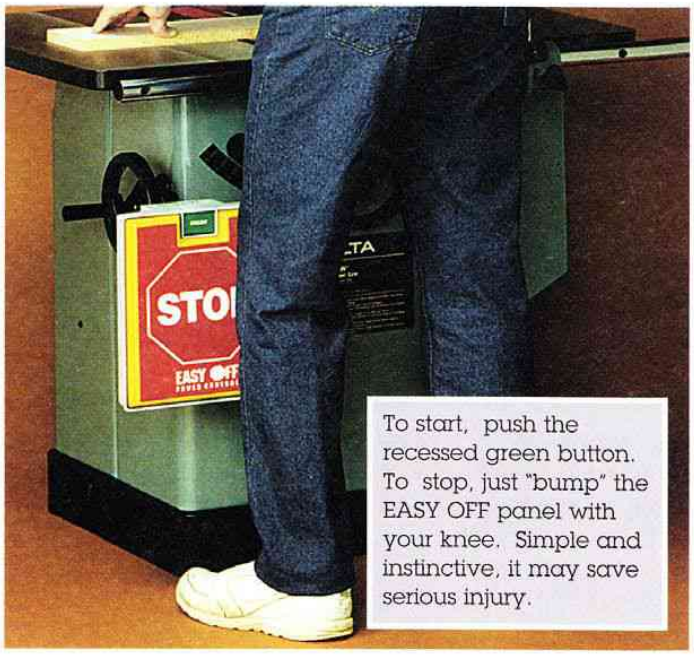

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EXHIBITIONS

Final year Bachelor of Fine Arts students at the Centre for Furniture Design, University of Tas., Hobart. Back l-r: Nick Lancaster, Julian Bugg, Chris Letch. Centre, l-r: Shane Rodrigues, Jean Smith, Kim Neave. Front, l-r: David Humphries, Alanna Forrest.

3rd Year Furniture Design Students' Exhibition

At Forestry Tasmania's new headquarters at 79 Melville Street, Hobart, November 28-January 7, 1998.

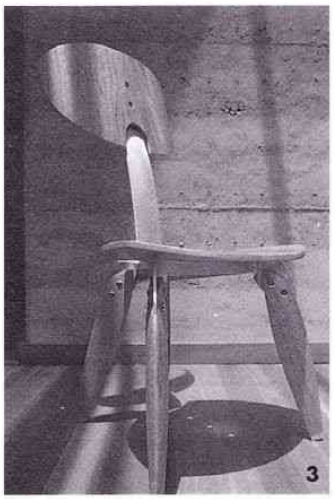
In the third and final year of their Bachelor of Fine Arts course the students majoring in furniture design at the University of Tasmania's Centre for Furniture Design have to stage and promote an exhibition of their work at a public venue.

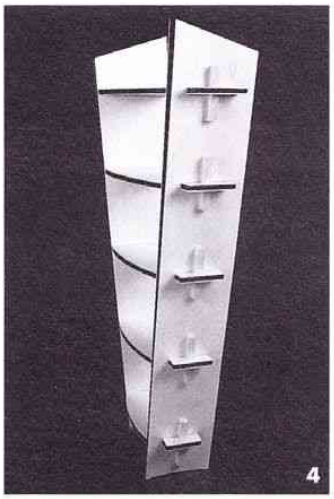
The School of Arts at the University has been offering studies in 3-D and industrial design since the early 70s, however in 1990 the Centre for Furniture Design was established with funding from the Helsham package of initiatives, which was directed towards forest industry related training and education programs.

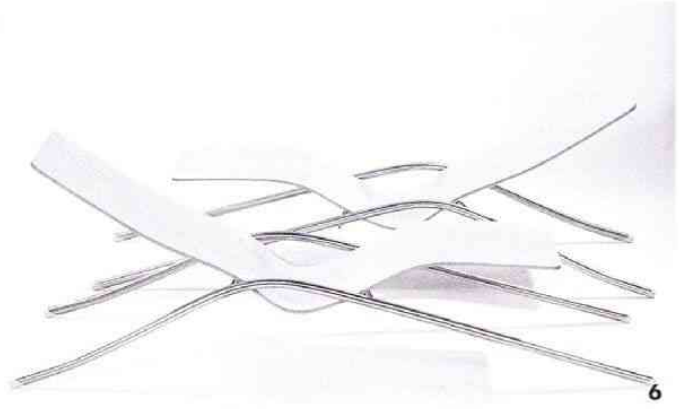
Under- and postgraduate courses focus primarily on contemporary design in wood and other media. According to final year student Kim Neave it is a taxing course which requires a lot of commitment, but he feels it has given him the skills and confidence required to set up on his own next year as a furniture designer/maker.

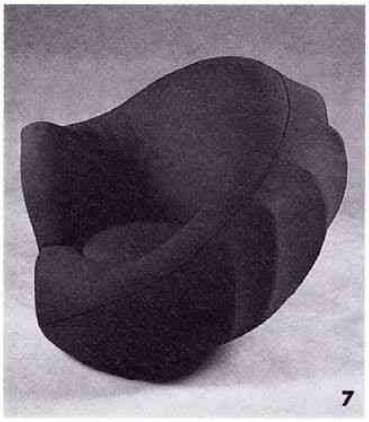
Shane Rodrigues came from Victoria to undertake the course and, like Neave, feels positive about his experience. He describes how the first year of the course provided the necessary theoretical framework by covering the history of design, as well as looking at the work of leading world and Australian designers.

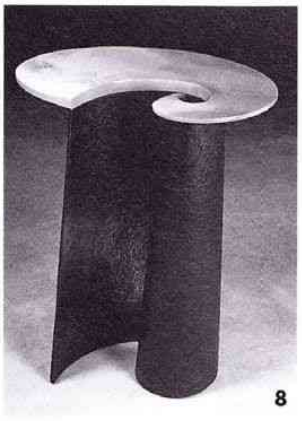
'In the second year', Rodrigues explains, 'students are encouraged to develop their own themes and personal philosophies. In the third year you work on developing pieces which relate to whatever you're interested in, for example it could be technology or the environment.' Rodrigues is planning to return to Victoria next year to complete a Diploma of Educa-

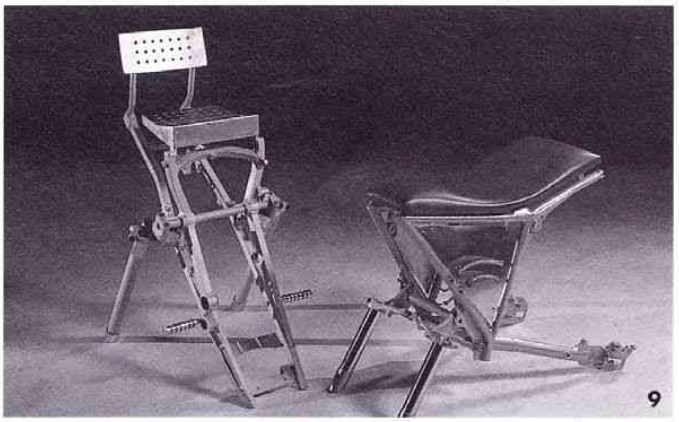












tion to enable him to teach for a few years before starting his own furniture design business.

'Every semester we are given a specific brief to work to', continues Jean Smith, another final year student. 'This year we had to develop designs for folding, stacking and demountable chairs, and then make two of the design which worked best'.

In their third year students undertake a two week 'internship' in industry during which there is also a set brief to work on. Smith worked at Cotech, a cot manufacturer, and had the task of finding a way to utilise the large numbers of offcuts produced in the manufacturing process. She came up with a design for sets of large 'domino' style baby's building blocks which would be marketed to the cot retailers.

Now 46 years of age, Smith comments that enrolling in the course was a major change of direction, but also a return to something she had wanted to do early on in life. 'When I went to school girls did needlework and cookery, but I wanted to do woodwork and technical drawing. The course has been great, and there is no gender barrier here.'

1 Chest, Huon pine, black granite, ebonised oak by Kim Neave.

2 Dining Chair, Sassafras veneer, wool fabric, aluminium, chromed steel by Dave Humphries.

3 Cafe chair, Tasmanian blackwood, aluminium by Janice Mak.

4 Shelving unit in Qld silver ash veneer, opaque lacquer, Chris Letch.

5 Dining chairs, myrtle, stainless steel, fabric, Kim Neave.

6 'Sun Lounges', sassafras veneer, stainless steel by Nick Lancaster.

7 'Nautilus Chair', Nick Lancaster

8 Hall table with light by Jean Smith. Top, Huon pine, base, steel, MDF, paper.

9 Folding chairs, stainless steel, Shane Rodrigues.

EXHIBITIONS

Out Of The Cold

Queensland Arts Council
Gallery, Brisbane, July, 1997
Reviewed by Terry Martin

Usually woodworkers begin with the basics and gradually expand to more ambitious ideas. Those who find themselves becoming more creative often have to redefine their work and, by association, themselves. Some are able to work their way past the tired debate about art versus craft and eventually feel comfortable describing themselves as artists.

More rarely a newcomer works from the opposite end and aims to be an artist right from the start. With two recent exhibitions in south-west Queensland at the Stanthorpe Art Gallery and the Queensland Arts Council in Brisbane, Herb Mayer showed he is one of these. He explains: 'When I got into woodwork, I knew I had the option of doing craft or really commercial stuff, but I wanted to start from the top. I knew I could compromise later if necessary.'

'Winds of Change', camphor laurel, marble.

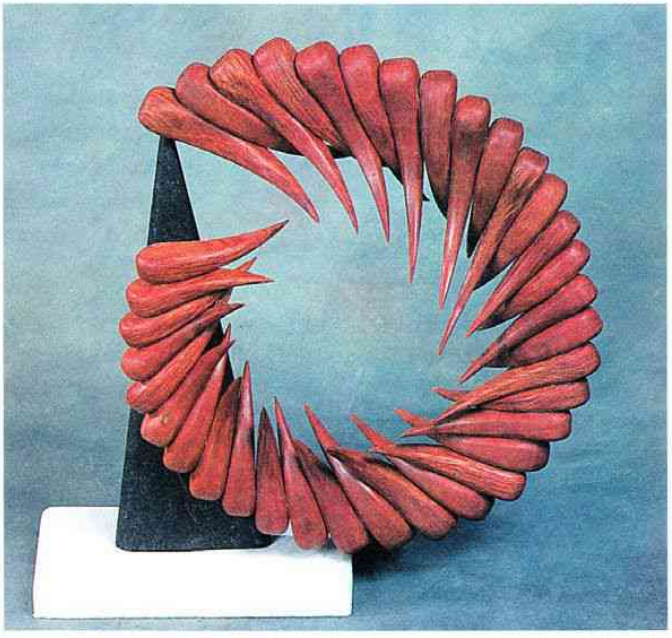
After starting an apprenticeship in cabinetmaking, German-born Mayer came to Australia in 1980. He describes how his life changed after he arrived: 'When I came to Australia and saw the timber, I freaked. I knew it was what I wanted to do, but it's all been trial and error—a bit painful, but I've learnt discipline. The amazing thing is the ideas keep flowing with the discipline. Since I went full time, I've had four exhibitions.'

Mayer suspends his pieces on frames and stone needles that lift them off the surface and allow them to swirl lightly through the air with a wonderful dynamic quality.

'Winds of Change' is about the way his life altered when he made the move to full time sculpting. Suspended within a bamboo frame, the assembled segments could be seen to be spiralling inwards to an introspective eye, or swirling outwards to a new view of his world. 'Crown of Thorns' combines his love of stone and wood. The marble stand was sculpted using a diamond disc mounted on an angle grinder and the soft rosewood thorns were shaped with a drawknife, belt sander and drum sander.

In 'Distortion' he attains a fluidity of line that is deceptive, because all of the pieces are joined with steel pins—a method which must require a lot of planning and preparation. 'I'm just being myself. I don't really care where I fit in', explains Mayer. But his work does fit in and is a welcome addition to the repertoire. □

'Crown of Thorns', marble, granite and rosewood.



'Distortion', marble, granite and rosewood.

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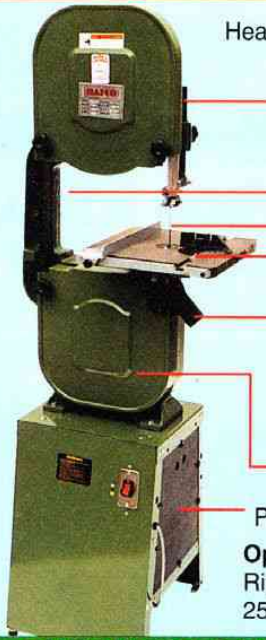

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EXHIBITIONS

Designing in Wood

Meat Market Craft Centre, Melbourne
September, 1997
Reviewed by Tony Geeves

The popularity of woodcraft as both a personal and vocational pursuit was again demonstrated by the quality of work, and the record attendance, at this September exhibition at Melbourne's Meat Market State Craft Centre. Eleven hundred people visited the twelve day event, showcasing work by students of the Coles School of Woodcraft.

These new designers and makers bring refreshing verve to the design of contemporary timber furniture. The 35 pieces on show ranged from the restrained to the humorous, the funky to the sculptural. If one or two pieces strove a bit hard for design effect, they were more than redeemed by the confidence of their makers in vigorously exploring techniques and materials. The students' uptake of the required skills says as much for them as for the flexibility and calibre of the tuition being provided by Richard Coles and his fellow instructors.

The display benefited both by the two-level gallery space, which concentrated attention and invited close study of details, and the elegantly simple platforms and backgrounds by designers Giota Vass and Malcolm Thomas. Suspended panels featured engravings of classic hand tools, with typeset statements by many of the designers.

Personal revelations can sometimes sit in awkward contrast with our own responses to makers' work. Here, they often crystallised for us the insight, integrity and aspirations of thoughtful and committed individuals. Some extracts:

'I am working towards being a full-time furniture maker, be sure to look out, for there is a lot more to come.'

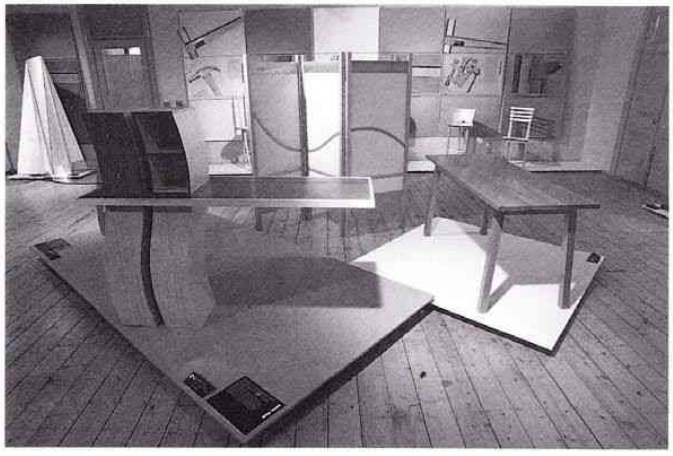
'My creative expression is an attempt at simplifying and interpreting my existence within society.'

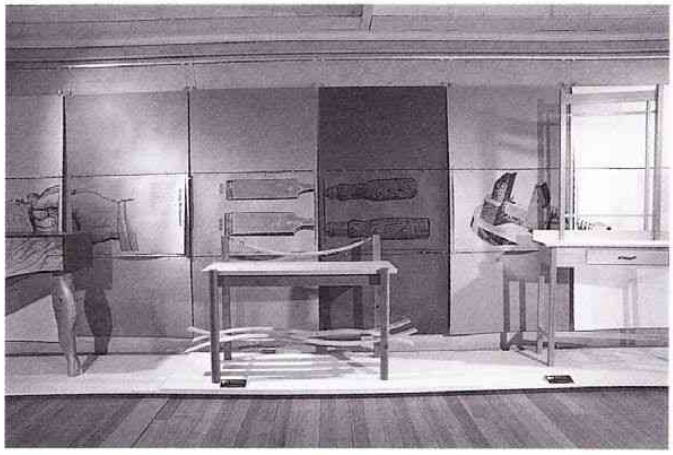
'I worked as a mathematics and physics teacher before deciding to pursue a career in creating fine quality furniture.'

'Many parallels can be drawn between woodwork and music. For both, the first ten years are the hardest...'

The future of serious woodcraft seems to be in good hands!

Above: Cheval mirror by Adam Zampelis
Below left: Back, l-r, screens by Jenny Walker, Gerard Banner. Front, l-r, hall table 'Horizons' by Jamie Hunt, table by Gayle Osborne
Below: L-r, Hall table 'Sea of Dunes' by Craig McDonald, hall table 'Pier One' by Craig Lenaine, hall stand by Gerard Banner.





EXHIBITIONS

Conviviality

An Exploration of Contemporary Chair Design at Craft ACT Gallery, Canberra, Oct-Nov, 1997.
Curated by Ian Guthridge.
Reviewed by Michael Gill

They park their odd little old station wagon in the Canberra Spring sun out the front of the Crafts Council Gallery. They are not young, not old. Dressed by St. Vincent de Gucci, there is a dagginess about them, a sparkle in the eye that says—'artist, designer/maker'. They are not here to buy. They stand at the mouth of the long, soft grey room that is full of hand-made chairs on plinths and lick their lips.

They have only just started forward when Mark Woolston's *Conversation Chairs* call them over. These two beautiful bundles of white sticks are being very intimate. They lean into one another in a sort of spiralling, free-fall tête-à-tête, whispering sweet everythings. They don't touch, but Gravity and Magnetism and Dynamic Tension and other invisible Forces of Good draw them into a Siamese union.

'Good God', says he. 'Bloody hell', says she. They are entranced by the visual and structural eccentricity, the courage of these two confronting chairs. 'Look at all those compound angles!', screams the woodworker in them. 'Just think of the maths, imagine the jigs, the glue-up!'

'Damned woodies', says the more impatient of the two chairs. 'Always treating us as mere objects. Take a seat and feel the skin on my arms and behind my legs...' They sit. The skin is like silk but they slide on the seats and the low back-bows argue with their kidneys. 'Don't be so picky', says C.C.1 'and don't slump. Perch and chat, that's it—be convivial'.

'Now try swapping us over', says C.C.2, changing the subject with nice tact. 'We're complex personalities. We have our moods'. The compliant couple switches the chairs around on their plinth and the transformation is staggering. They now stand toe-to-toe, squaring-off, gloves up, a shadowy referee shoving them apart.

The deep purring of a large motorcycle heralds the arrival of two black leather people who walk straight to Adrian Potter's *B-Type Chairs*, peeling themselves as they go. One has dropped into *MK5* and, her arms hanging, is exploring and enjoying the heavy roll of smooth wood along the edges of the seat.

'Don't sit in it', says her mate, glancing around nervously. 'You're not allowed'. 'Course you are. What's a chair for? Anyway, what about those two dull blokes in the grey suits over there on the white stick chairs? Sit down'.

'Beautiful chrome tubes', says her mate, settling herself into *MK2*. 'This is much more comfortable than that saddle of ours. You'd think these straight boards would hurt, but they don't at all'.

'That's because they're coopered—you know how they make wine barrels? They've been shaped to hug your bot and your back. I think these must come apart for shipping—I can feel screws and things under this seat.Those steel pipes must be structural as well as gorgeous. Look, these back legs are laminated...'

'How do you know all this technical stuff?'

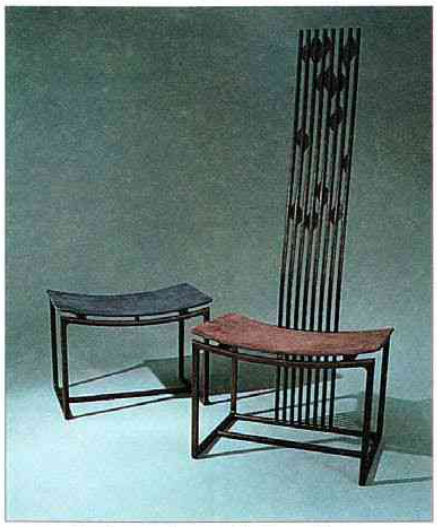
'I did a year at the School of Art Wood Workshop in a previous life'.

Both women stop and gape admiringly at something that has just caught their eye—a very shiny, very black chair.

Pru Shaw's supremely elegant chair stands beside its companion stool, both of gleaming black wenge ribboned with dark chocolate stripes. A dark, elegant man is on one knee beside the high-backed chair, running the slender, curving seat-frame between a sensitive thumb and forefinger. There is an architecty feel about the man. He is quite short—the chair is very tall. He is rather stocky—the chair is fine and willowy. His hands are infinitely knowing—they see the figure in the wood and his eyes can feel the soft, dusty purple of the leather seats. He has found the softly sculpted grafts on the bottom rail from which the spindles sprout.

He seats himself carefully and the chair is alive all around him. The dark spindles spring away above his head and the broad seat sweeps away to either side of him. Hands resting on the suede, he surrenders his weight to strong, black, sinewy fingers that cradle his back, shoulders and head. He is relieved to find that neither the thin wafers of glass that unite the spindles, nor the delicate stone

Work Chair, Tony Stirton



Chair and Stool, Pru Shaw

Café Chairs, Jonathon Everett

Measuring Chair, Tony Stirton

Chair, George Ingham

Conversation Piece, David Upfill-Brown

marbles beneath the seat have shattered under his weight. He wonders if this lovely chair and its attendant stool are for sale...

Over in the corner, a woman is sitting in the lotus position on Mathew Harding's *Elipse*, a sleek silky oak sculpture strung with clear nylon line. Every plane, every line is a springing curve. At first, *Elipse* had tried to throw her out, but, quickly warming to her, had suggested she sit cross-legged. Together, they look like a long, sleepy eye—she is the pupil. Iris had imagined this to be a sideways rocking-chair, but the movement was more alarming than soothing, so she sat calmly attempting to drive ridiculous thoughts of tennis and shark-fishing from her mind.

She is an engineer, and this side of her is worrying about the wobbly distortions in the nylon weave: 'I want it to be neat and square and exactly even'. 'Don't be so constipated', pleads the yoga-student side of her—'Those beautiful organic ripples are a perfect foil to the geometric purity of the whole. They're vital, not wobbly. They're variations on a theme, not distortions'.

'Well anyway, the thing needs lifting at the front', says the engineer undaunted—'we'd settle into it more easily then. Is it sacrilege to want it to actually work better?'

'Certainly not, but Mr Harding wouldn't shove a brick under the front like you would, he'd float it in space somehow, the way a fine statue rises on a pedestal...it's such an exquisite form...'

A white-haired gentleman is standing before George Ingham's blackwood and ebony chair, slowly shaking his head and murmuring to his two young friends in a heavy European accent: 'What can I tell you? This is very fine. Almost perfect'. The young ones are mentally fidgety—they know he expects intelligent comment, honesty.

'I sort of find it a bit old-fashioned, like?', volunteers the young bloke, tentatively.

'Are you asking me or telling me?', snaps the old man.

'No, well, it seems too kind of conservative, traditional, you know? It looks sort of like it belongs in a museum'.

The young woman is running her hands along the ebony arms, pausing to dwell on the flared elbows (or are they shoulders?). She senses the old man's impatience. 'It's incredibly well-made', she begins—'that kind of skill scares me stiff. I don't know whether to be admiring or jealous or just annoyed. But the design... I think I'm looking for something more eye-catching. Something a bit wild. Something Philippe Starck or Marc Newson. Something more stylish'.

The ancient gent nods thoughtfully. 'I see', he says. 'You recognise no style here? Nothing of the Chinese? The European? The Modernist?' 'I think what she means', chimes in the young bloke, ever the protector, 'is that we want more flair, more spark'.

The old man caresses the shimmering wood. 'Have you looked deeply into this fiddleback blackwood? Have you seen the light glowing in these stone inlays? Does this rich arc of ebony not warm your spirit? He gives you Cognac and you want Ecstasy! He makes you fireworks and you look for Maralinga!' He is enjoying himself—his eyes are flashing. 'Have you ever seen arms more welcoming? Sit! Go on, sit! This chair is not a trap, but a harbour. This chair does not confine you, it becomes you, yes?'

'You're right, but how did you know?', asks the young man, the chair moulding itself to him. 'You haven't sat in it yet'.

EXHIBITIONS

'I can see it, my boy. I can sense it. Old Rietveld was once forced to leave one arm off a chair in order that his sitter would not feel imprisoned. No! Not a good idea at all! A psychological gimmick that avoids emotional involvement'.

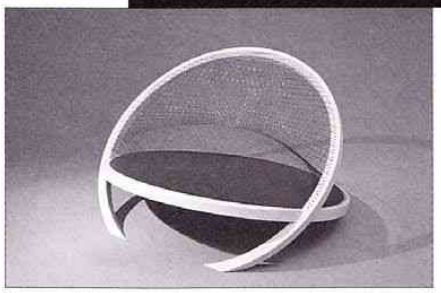
The young woman seats herself in Tony Stirton's *Work Chair*—flat seat, flat back, flat arms. She grimaces, squirms. The old chap smiles. 'This chair opens its arms, welcomes you in and then hurts you, yes? But you will forgive it—you have a woman's thighs and not the chook's legs of an old man. And this chair is charming, witty—another building—in homage to Ettore Sottsass—factory castors of plastic beneath polished wood—silly but good. It is like a toy verandah on wheels.'

The young man has been drawn over to Michelle Glover's *Single Stool*. He squats down low, excited. 'This is what I mean—elegant, clean, fresh kind of stuff. It's got a dynamic sort of vibe to it—bold like, don't you think? The black steel, the white wood—it's sharp, powerful—light and open but strong...'

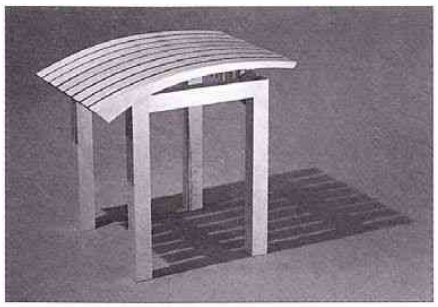
The old man sighs. He is caught. His friend's perceptive enthusiasm is invigorating. 'Yes, indeed the lines are lovely. This leaping curve is beautiful. Sweet rhythms, fine contrasts'. A lifetime of collecting understandings and of nurturing insights is making him feel like a wise old crab as he continues: 'This is a delicious drawing we are looking at, but is it a chair? If it were a house, I could live in it. If it were a bridge, I could walk across it. But, can I sit on it?'

The young man is exasperated. 'Look, it works, already!' He tries the stool from each of the four sides. 'I'm sitting!' His bum-bones find the hard-edged slats as he tries to manoeuvre some flesh between himself and the domed seat. 'What more do you want?'

Over in another corner, two gallery owners are being seduced by Jonathon Everett's *Café Chairs*—by the sweeping double curve in the seat, their refreshing, good-natured novelty. But their backsides find the going hard, and, after three or four minutes of sitting, they rise regretfully and discover Jono's *Stab* chair. 'Just feel the fabulous springiness as you lean back in this. I love it. I think these folded stainless steel legs make it, though'. They are opening a café in the courtyard and need 40 chairs. 'It looks tough to me for such a light chair—I reckon it'll cop a good bit of punishment. What do you think of these exposed screws?' 'They're great. Not exactly decorative, but I like their honesty. The silver ash is lovely and bright, too—very "up", isn't it? It's a winner. Let's go and screw his price down, whatever it is...'



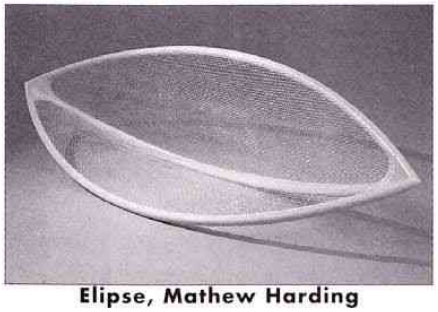
Eclipse, Mathew Harding



Single Stool, Michelle Glover

B-Type Chair MK5, Adrian Potter

Conversation Chairs, Mark Woolston



Elipse, Mathew Harding

On their way to the office they pass a noisy group of Industrial Design students having a heated discussion around Tony Stirton's *Measuring Chair*, a structure which is adjustable over a vast range of body shapes. 'This is the ugliest, most uncomfortable bloody chair in the world' says the boy in black.

'How many chairs have you made, genius?', says another boy in black. 'It's meant to be a measuring jig, an apparatus, a chair-making tool, for goodness' sake. It's all straight lines—it doesn't *have* to be beautiful *or* comfortable in this particular configuration'. 'Who said tools can't be beautiful?', retorts the first boy in black.

'There is beauty here if you have eyes to see it', interrupts the girl in black. 'This spotted gum is magnificent—nicely joined and finished as well. And I don't agree that it's just a tool. This is a chair that is capable of fitting everybody without discrimination. That seems a pretty fair democratic principle to me'.

'It's a camel designed by a committee trying to come up with a horse, when they should have been setting their sights on a gazelle in the first place', says b. in b. no. 1. He doesn't like it.

They all laugh, but b. in b. no. 2 is adamant: 'It's a work-implement, I tell you—a mechanism, pure and simple. The maker is telling us as much by his use of construction-grade hoop pine. And spotted gum is traditional axe-handle stuff—tool timber. It's bleeding obvious'.

'I think you've all missed the point entirely', says a girl in deep charcoal grey. 'This is Post-Modernism and more—over the top and down the other side. It's all screws and knock-down fixings with everything moveable, right? This is De-Constructionalism. There are thousands of holes for adjustment—it's *Meccano*, it's *Leggo*!' She is inspired, winding herself up: 'Why a flat seat? Flat back? It's talking about the concept of anti-body, anti-ergonomics! It fits all of us and yet fits none of us. It's exploring the notion of anti-aesthetics, anti-chair! This piece is an essay on Fin-de-Millenium reactionary non-functionalism. It's a Statement'.

The long, breathless silence that follows is broken at last by the click of switches that extinguish the gallery lights one by one. It is well after 4 o'clock and, as the long room empties and the big doors close on the darkened space, a strangely rich and mellifluous spotted gum voice pronounces with mock gravity: 'I am exploring the notion of Anti-Chair!' Gales of laughter roll around the room. Ian Guthridge's *Ocke '97* chair has put on some party music (Sofa Tucker) and is at the head of the Conga Line. David Upfill-Brown's *Conversation Piece* chair has popped a bottle of wood alcohol. They will have their chance of a chat tomorrow when the people return with their warm bodies and their sharp tongues. □

By Rod Nathan

DESKTOP WOODWORKING: A LADY'S DRESSING TABLE

I have been designing furniture with the aid of a computer for some time now, even though I don't have software which is specifically for computer aided design. Even basic drawing tools such as boxes, circles, rectangles and lines can give considerable scope. The drawing opposite was created in *Adobe PageMaker* but there are many software programs on the market today with similar and more extensive drawing tools. The power to draw a square, move it, colour it or stretch it allows the cabinetmaker to get some exciting things happening very quickly on the screen. I find the best way is to put the design idea in the back of my mind for a few days, then sit down at the computer and do it. But, there can be a catch...

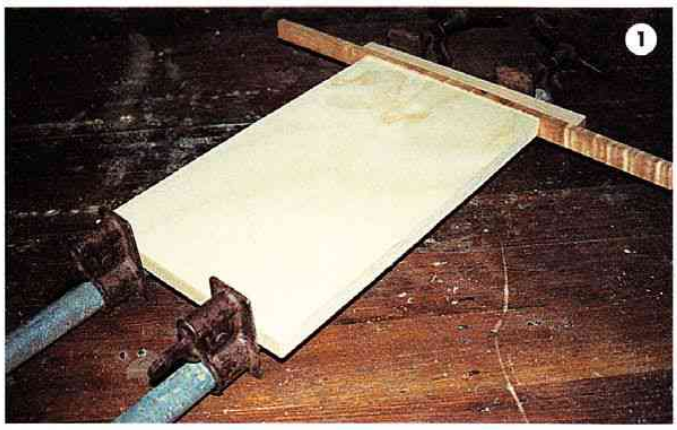
I was asked to design a dressing table for the daughter of a client. Huon pine was on hand which was perfect, given its feminine feel. To beef up the look a bit I also used blackwood, dark and strong, for the legs and details.

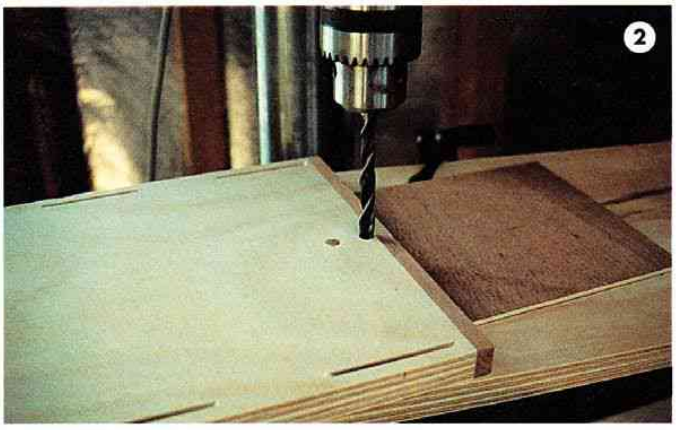
Working with a scale of 1:10, I started on the computer by drawing a rectangle for the top 19mm thick and the required length, in this case 1400mm. A table has to be 740mm high so I drew some 712mm long rectangles for the legs. I like an overhang of about 140mm over the legs, so these were positioned accordingly.

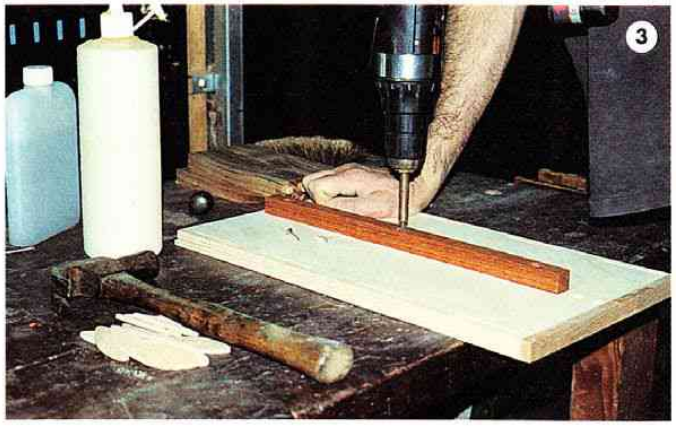
A leg width of 70mm worked best, by this I mean I drew a rectangle and dragged the corner back and forth until I found the width which was the most pleasing to view. To add contrast, 'sox' of Huon pine were added to the legs.

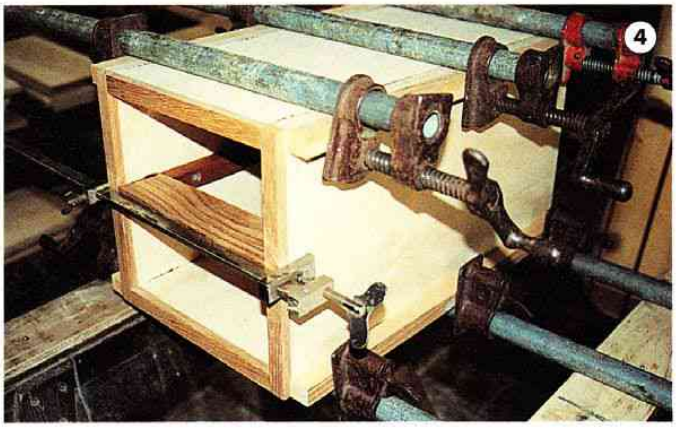
To accommodate a chair a 550mm width space was defined by a rectangle 550 x 80mm—this became a drawer.

More drawers were required (I hate making drawers), and after a few experiments with rectangles a square was happening. By quickly trying out horizontal and vertical lines for drawer divisions the end result was two drawers, upper and lower. The two drawers on each side were supposed to have a 19mm strip of veneer inlaid into them to create the effect of four squares.









As you can see from the photo I decided against this during the making process.

Moving right along—a dressing table needs a mirror. By playing around with rectangles and circles I ended up with an oval which I liked the look of. I put in a couple of supports for the mirror, a few more black lines, saved it, hit print, and faxed it through. Not only that, I decided to make another, colour contrasting table. You could adapt this design to a hall table by leaving out the mirror and back rail if you wish.

1 Begin with the drawer carcases which are boxes, made from interior grade hoop plywood, 19mm thick. Cut all the panels to size, allowing for solid lippings glued to the ply edges along the front.

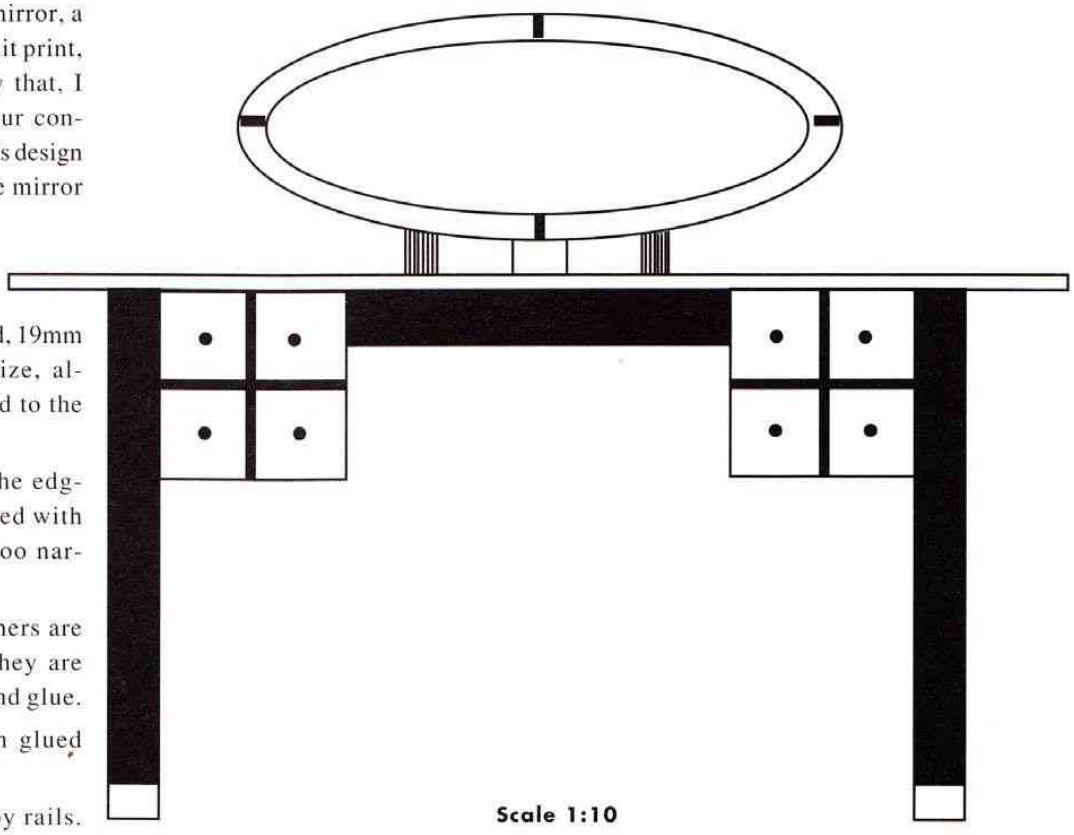
2 The joins are biscuits on the edges, the centre drawer rail is fixed with dowels (at 50mm this rail is too narrow to use biscuits).

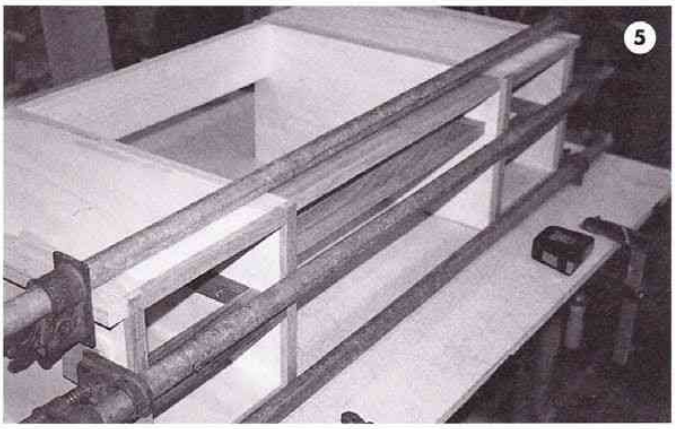
3 Important! The drawer runners are fitted before assembly, here they are 19 x 19mm fixed with screws and glue.

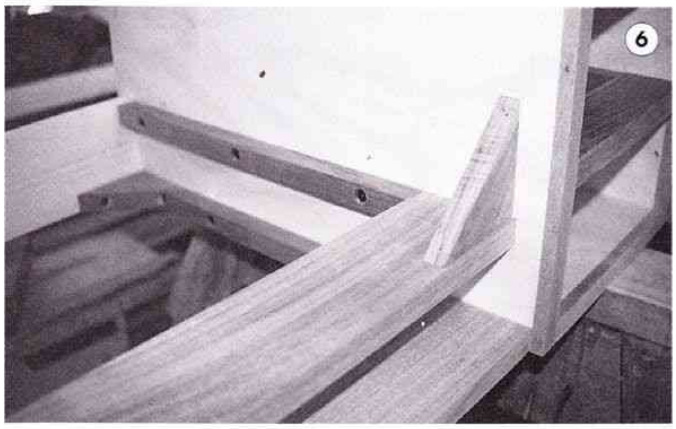
4 Everything is sanded, then glued up. Check for square.

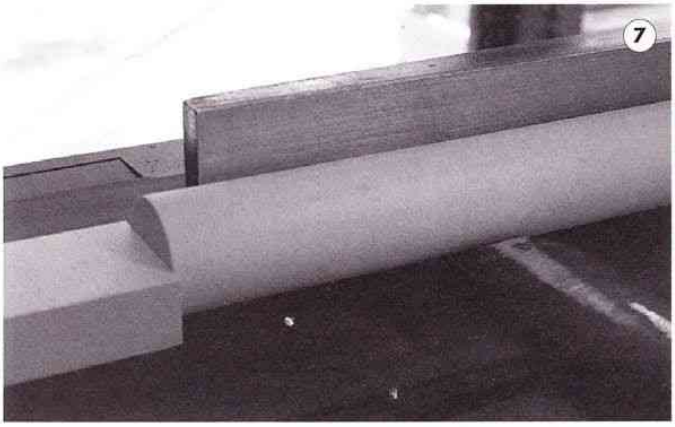
5 The two boxes are joined by rails. A middle drawer needs three rails, the front ones running on the flat to house the drawer. I think in retrospect, that the back rail should have been one long piece, set in and running the whole length of the unit. It would have been stronger.

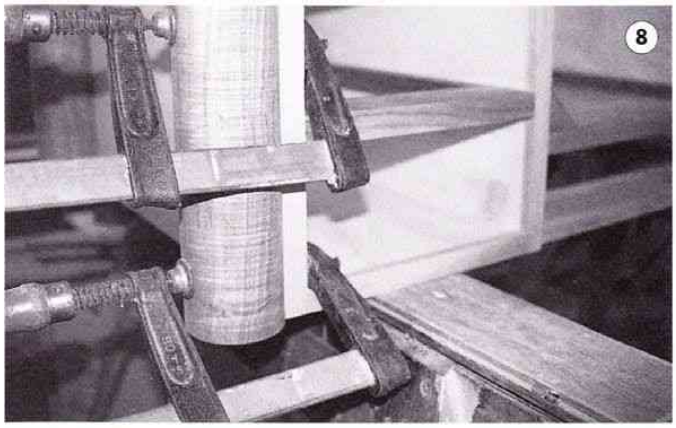
6 Drawers need top runners to prevent them tipping forward when pulled out. These are screwed and glued. I found some very figured blackwood to make some corner braces for extra strength. There are also corner blocks at the back.

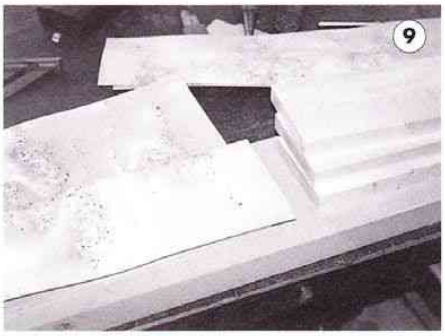


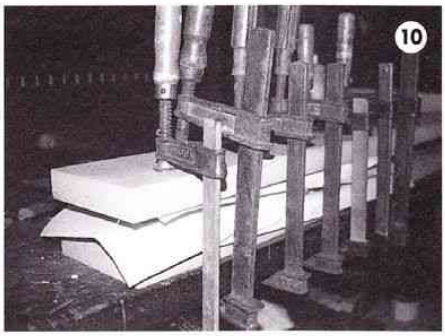


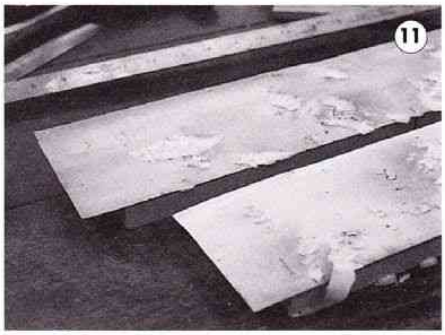












7 I made two tables, one with Huon pine legs, the other has blackwood legs with contrasting sox of Huon. The blackwood is dressed square and a 25mm hole bored in one end. The sox are made from Huon pine squares with a turned 25mm spigot which is glued and cramped to the blackwood. The legs were turned and needed a flat area to mate with the box, accomplished by passing the leg over the planer using a stop.

8 The legs are screwed and glued to the boxes. The top is glued up from Huon pine, one top has a blackwood strip glued in the middle, for effect and to add some width. Both tops have an extra edging applied at the back.

9 Now the drawers. These have Huon fronts and blackwood sides and backs. The drawer fronts have an amazing-looking birdseye Huon veneered on them. The veneer leaves were cut for a bookmatch. The drawer fronts were dimensioned to size and they and the veneer leaves marked and checked to ensure that the veneer pattern will be correct after gluing.

10 The glue up is done in pairs with paper between the faces. MDF boards were used as cauls with as many clamps as I could find.

11 The overhanging veneer needs to be trimmed back to the solid and the whole sanded.

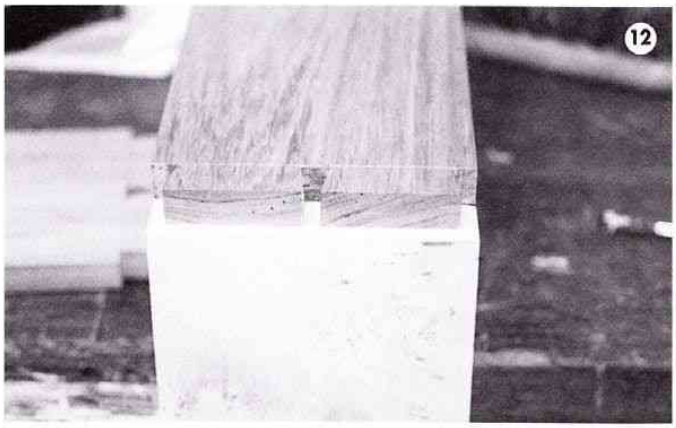
12 For a piece like this the drawers have to be dovetailed, it's part of the performance. The sides are marked and sawn, clean up the cuts with a chisel. Make a mark on the side and front so that you can always put them together the same way. Transfer the dovetail to the edge of the front.

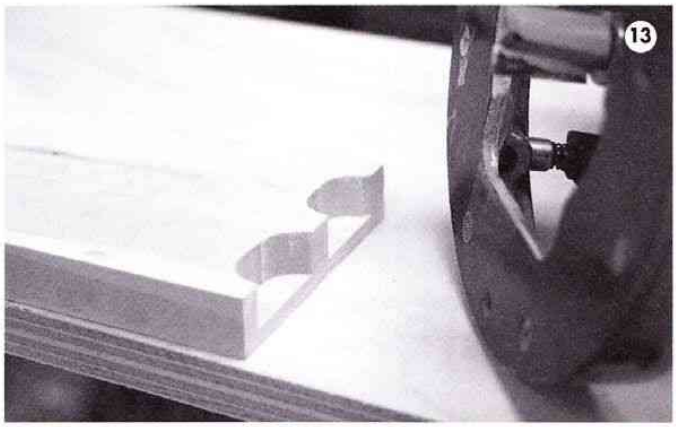
13 To speed things up try routing out part of the dovetail.

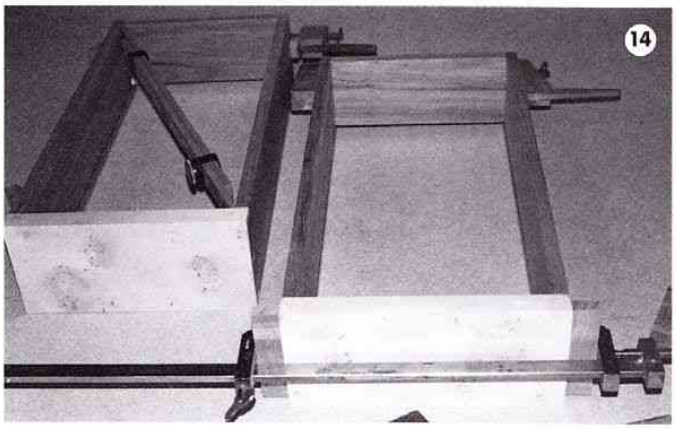
14 The drawer dovetails are cut and checked, the drawer backs are joined to the sides with biscuits. Sand the insides before assembly. Glue up is straightforward, check for square.

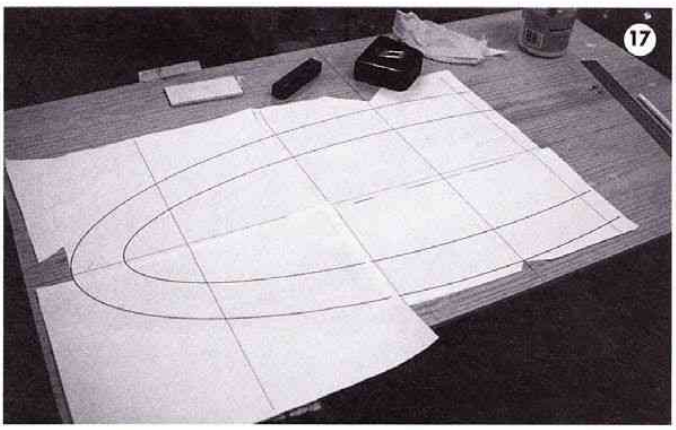
15 The drawer openings are cleaned up and the drawers can now be fitted. They can be supported by panels clamped to the bench for planing. Each drawer must appear to have the same gap all the way around.

16 Watch out for timber movement, making a drawer fit superbly with the slenderest gaps may end in trouble. If, for example, you fit the drawers









during a very dry spell, the drawers may expand and stick in prolonged humid weather. Stops also need to be made for the drawers.

17 Next, the mirror—there had to be a catch. How do you make an oval that is strong without weak, short grain. That quick click of the mouse on the computer is so easy. What looked great on the screen will still look good in real life providing I can make it, and the supports for the mirror were never figured out at all—you can see the dangers of 2D computer screen design.

An oval is often built up with four or more pieces cut for the grain to be as straight as possible, the weakness with this can be at the joins where there is part endgrain. I decided though to have all the grain running horizontal. For strength I set in a piece of timber 6mm thick on the back at the ends of the oval, with the grain running vertically.

I printed out a full size image of the mirror from the computer and glued it to some veneered MDF. The shape was cut with jig- and bandsaw and refined with spokeshaves and sand paper.

The oval was traced with pencil onto a glued-up and planed panel. The shape was cut with band- and jigsaw and then refined with the router following the template. The strengthening pieces of timber on the back were glued in before any shaping was carried out. A rebate for the glass was run with a router and thin plywood also cut to oval to cover the glass on the back.

The stand for the mirror is made with one piece of blackwood 60 x 20mm running horizontal, this has smaller pieces attached to the end which hold the brass mirror supports. The horizontal piece is carried by three pieces of blackwood. This stand is fixed to the table top with screws and a rebate. Both dressing tables had a coat of shellac and were sprayed with four coats of lacquer.

Small brass knobs which accept a timber (here blackwood) inlay were fitted to complete the tables.

By Linda Nathan

COMBED FOR SUCCESS

From the looks of his squeaky clean dreadlocks, it's hard to believe that Chris Jones is such an ardent advocate of wooden hair combs: 'I am convinced that if you are a sensitive person,' he says, 'you will be converted. I use one daily, and there is definite pleasure in wood massaging the scalp.' Jones has spent much of the last five years developing and marketing a range of personal and domestic use products under his *rasen design* brand name.

Wooden combs have, according to Jones, a long and honourable history. They are still manufactured by the millions in China, and Japan even has comb makers who are counted as living treasures, preservers of a 300 year tradition. The Japanese believe that a comb absorbs something of the aura of the user and there is a superstition that such a comb cannot be given away.

The evolved form of the comb; plastic, multi-coloured and almost throw-away, is now another wonder of mass production, produced for cents. Plastic is cheap but it's not good for hair, says Jones, who claims it actually ionises and damages hair. The wooden combs don't impart a static charge and have been ergonomically refined. Hair will pass smoothly through the teeth, the bases of which are rounded to prevent 'grab'. The combs are made from Huon pine, myrtle, celery top pine and teak, and develop, over time, a patina from the natural oil of the hair.

Chris Jones is a long-time member of the twenty-strong *Designer Makers Co-operative of Tasmania*, and his studio-cum-'factory' is located within the co-op building situated on the Hobart waterfront. Here combs and other items are mass produced, but only on the limited scale achievable by himself and one other person.

The method of production has evolved: 'All my combs were once hand cut and hand sanded, very labour intensive; although that now seems like a bad dream. I woke from it quick smart, but still pride myself on absolute quality control.'

On an average working day Jones is the one to break the wood down, cutting the shapes with a seven tooth gangsaw and rough sanding them. Cutting the teeth was initially a one at a time process, however an *Incra Jig* now permits fifty to sixty combs to be cut at once.

Sanding, a crucial element of the quality control Jones is neurotic about, is accomplished in successive operations. The path to a 240 grit surface is via a soft disc sander on a lathe, then a soft backed belt sander, then another lathe-powered sander, and finally, for all the nooks and crannies, a *Porter Cable* profile sander. The latter has reduced the time taken for sanding of teeth and breaking edges from twenty to two minutes, another task previously accomplished by hand with the aid of jigs and paper.

The finishing process is simple. The combs are dipped into tung oil and suspended to drip dry, for up to five days if necessary. Pure tung oil is used as this contains no toxic lead dryers. A rub with steel wool gives the desired moisture resistant and natural look finish. A small pewter *rasen*

design spiral logo, a decorative detail in its own right, is inset into each comb. Eight different kinds of combs are produced.

Brisbane-born, Jones studied at the Sturt School of Wood in Mittagong in 1988. After moving to Hobart he spent the next 12 years working as a signwriter. He then undertook a degree in printmaking and studied furniture design at the School of Arts, University of Tasmania, graduating in 1994.

Necessity is the mother of income earning, and during the years at art school the production and sale of small items put food on the table. Jones still sells his wares at the weekly Salamanca market, and values the feedback gained from contact with the public.

He has had a steady-as-she-goes attitude to marketing. He has tested the product, tested the market and tested the retailers. Initially he researched the comb market in person, travelling up the eastern mainland coast on two occasions. Visits were made to outlets which had been previously targeted and sent one of a limited number of brochures produced on a low-cost budget. Lots of follow up calls and listening to the feedback have resulted in standing orders from the nineteen outlets he now supplies. He always made sure he was happy with one product and that it was selling well before introducing another.

Comb output has, over the three years they have supplied the bulk of his income, gone from 400 to 1,000 to 2,000 a year. Pricing a product is a fine art and Jones has discovered that his products will retail best in the $10-$30 price bracket. Over $50 there is buyer resistance, below $10 the competition is on a completely different scale of production for a buyer who doesn't really care whether the comb will retain his aura or not.

For a manufacturer, Jones works on a fairly high profit margin: around a third of the sale price buys the materials, another third the labour, leaving a profit of, on average, 20-30%. Despite his carefully charted success, ever-increasing growth is not his goal. Right now Jones wants to consolidate his interests by selling off the rights for another of his limited production lines. This range consists of a hotmat, a soap holder, a wine bottle stand and a bath mat all made from water-resistant, rot-proof Huon pine. The hotmat is a top seller with 5,000 a year going to tabletops Australia-wide. Thirty outlets around the country carry this range, including the *Geographic Shop* outlets.

Other lines include a new camphor laurel and steel coathanger. This had a lengthy two year gestation period, but was immediately adopted by nine outlets when finally released. In the future Jones sees himself concentrating more on furniture design. Coming up with the ideas, being primarily a designer rather than maker, is the direction he wants to head.

Myrtle combs and teak purse mirror.

Coaster, bath mat, hot mat and soap rack range in Huon pine.

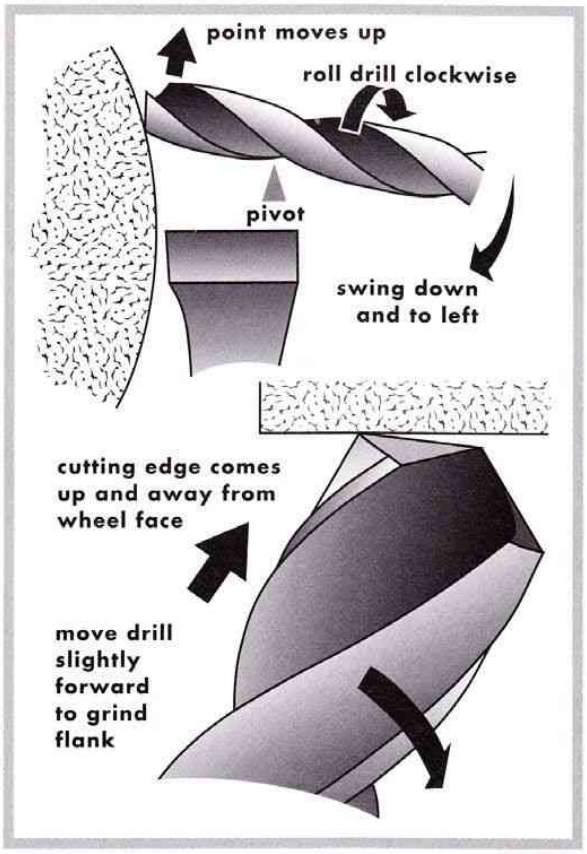
rasen design camphor laurel coathangers

By Philip Ashley

SHARPENING DRILL BITS

Drill bits are often mistreated, even to the point of abuse. Are yours lying around the bottom of your tool chest, or stacked in a tin can? They are of no lesser importance than your expensive router cutters, and should be treated with the same amount of care. Philip Ashley demonstrates how to sharpen a drill bit.

There are two main types of woodworking drills in common use. The *twist drill* has a pointed tip and is similar to a metalworking drill, except for the cutting angle. This bit is used to bore holes in the face or edge of solid wood. The *dowel boring bit* has a point in the centre and has spurs on its outer edges to give a clean cut when boring end grain.



SHARPENING TWIST DRILLS

Standard twist drills are generally sharpened by grinding the two cutting lips, each to an angle of about 42° to the axis of the bit. Metal bits are ground to an angle of 59° and are not normally suitable for wood. In order for the bit to cut, a clearance angle of 12-15° must be ground behind each lip.

A bench grinder fitted with a medium to fine aluminium oxide abrasive wheel is suitable, although a finer 60 grit is suitable for finish grinding and touch ups. Make sure that the wheel is dressed clean and square and the tool rests are adjusted as close as possible to the abrasive wheel. Always wear safety glasses and never remove the safety glass from the grinder.

Stand with your feet apart and in a comfortable position, slightly to the left of the abrasive wheel. Hold the drill bit with your right hand about a quarter of the length from the point, and your left hand on the shank. Your right hand should grip the bit between the thumb and index finger, which should be resting on the toolrest.

Swing the bit so that it is 42° from the axis of the abrasive wheel, and twist the drill until the cutting edge is parallel to the wheel face. You are now ready to begin grinding.

Lightly touching the abrasive wheel with the bit, swing the shank slightly downwards and to the left with the left hand, while rolling the drill to the right between the thumb and first finger of your right hand. As you do this, you will notice the cutting lip of the bit coming up and away from the face of the wheel. You should practise this several times before actually touching the wheel, and always try and be as relaxed as possible. These movements are only slight and if the drill is rolled too far to the right the other lip will touch the wheel. Practise the movement on a stationary wheel with a brand new bit before you try the real thing.

Now for the other lip. To get the two cutting edges at the same angle, don't change your position or put the drill bit down. Roll the drill around to the other lip and perform the same operation exactly as before, using the same amount of pressure and the same movements. You should, with practice, get a bit that has equal cutting and clearance angles, and will cut properly. You can set a bevel gauge to the angle to check that both lips are ground correctly, and if you can check the angle without moving the position of your right hand on the drill, you will be able to return to grinding in almost the same position as before, needing to make only a minor adjustment to achieve the correct angle.

The procedure for sharpening a dowel bit is exactly the same as for a twist drill. You'll need a wheel with a radius matching the shape of the drill.

and you must make sure that the point remains in the centre of the bit. The spurs must be of equal heights, lower than the centre point but higher than the heel of the grind.

Take care not to overheat the drill, or to use too much pressure. You should only remove as much as necessary to sharpen the bit. Don't quench a high speed steel bit in water as this may crack the cutting edge, and take more care on smaller drills as they are very hard to control, needing only minor movements and not giving you any 'feel' for the bit.

Testing The Bit

Drill a hole to test the newly sharpened bit. If the bit has been properly sharpened it will produce a chip from each lip and will require only a light pressure to feed it into the wood. Stop the machine, remove the bit and place it into the freshly drilled hole. Any play in the hole indicates that the cutting lips are unequal and will need to be resharpened. You may also notice that the drill bit chatters when you start the hole, and the hole itself may be out of round.

You can always go out and purchase a drill bit sharpener from a hardware store, but there is nothing like doing the job yourself. Sharpening a drill does take some practice, but if the correct procedures are followed, you will find yourself turning out clean cutting drill bits in no time at all.

Suppliers of Drill Bits
Carba-Tec 1-800-658 111
B.J.R.Australia (02) 4396 6112

AEG BS2E 9.6T BBPB

Atlas Copco PES 12T

Bosch PSR 12VES-2

CORDLESS DRILLS: POWER AND PORTABILITY PLUS

For screwing together a cabinet, making a jig or working on-site, the cordless drill is a now an indispensable tool that has become a workshop mainstay. Anton Gerner roadtests thirteen top brand cordless drills.

The market for the cordless drill is now one of the fastest growing segments of the hand power tool industry. The reason for this is surely because of its two greatest virtues: power and portability.

For this review we asked manufacturers to send us one of their most popular current models, the question many asked in reply was 'popular for what type of work?' Each manufacturer has a large range of drills which are all designed for different work, our review is only a guide to some of the options.

Chucks

Keyless chucks are now the industry standard and all of the drills featured use well made keyless chucks (mostly Jacobs). A good quality chuck will close tightly down to 1mm, lock well and always run true. The absence of a locking screw for securing the chuck in reverse rotation is, in my opinion, a design ommission.

Torque

Some people assume that a 12 volt machine will have more torque than a 9.6 volt. This is not the case, as the torque of a machine is dependent on the wattage of the motor and the rpm of the spindle, not the battery voltage. Higher battery voltage results in increased running times for a higher wattage motor compared to running a motor of the same wattage on a lower voltage. When choosing a cordless drill it is therefore necessary to decide if working time or torque is the more important issue for you.

Batteries

Although research is continuing into alternative types of batteries with higher

Hitachi DS 13DV2

Metabo BEAT 212/2R+L

Fein ASB 12-2EVQ

DW914

Porter Cable 872 14.4V

Makita 6213D

Panasonic EY6100 FQKW

capacities and lower weight, most cordless drills on the market today use Ni-cad batteries. New Ni-cad battery packs require several charging and recharging cycles before they reach full capacity—in some cases a brand new battery can have 50% less capacity than expected. Ni-cad batteries suffer from 'the memory effect', which can best be explained as a partial availability of the battery's full capacity. If a new battery is only partially charged initially, it will not accept a full charge later on. To avoid battery memory problems the battery must learn to accept its capacity from the initial charges. Hence it will pay with a brand new machine to be aware of running the battery down and undertaking a full charge cycle a few times to achieve optimum performance.

Battery voltage has increased in recent years from 7.2 volts to 9.6, 12, 14.4 and now 18. The most popular cordless drills now have 12 volts as standard. Higher voltage batteries use more cells than lower voltage packs. For 12 volts 10 cells are used, for 14.4 there are 12 cells. The downside here is that higher voltage batteries naturally weigh more. Because higher voltage batteries cost more it is often more economical to buy two battery packs of a lower voltage which may achieve the same capacity as a larger one. Also get a fast charger; it's better for the batteries.

Battery quality varies and is reflected in the number of recharges a battery will take. The number of recharges possible can be as low as 300 for cheaper brands or as high as 1200 for higher quality brands.

Exactly how many times a Ni-cad battery can be recharged also depends not only on the quality of the actual battery cells, but on the charger and the charging method used. Quality batteries contain a sensor which shuts the charger down when the battery is too hot—if a battery is charged when hot it will start to lose its capacity. The capacity of the battery is also very important. The higher quality brands now use 1.7 or 2.0 ampere/hours batteries. Many cordless drills today come packaged with two battery packs, definitely an option worth considering as a point of comparison between brands.

Care of Batteries

- Do not charge when hot.
- Charging should take place, if possible, immediately after use.
- Batteries should not be stored in the charger, as the battery will be subject to a self-discharge rate which can vary betwwen 10-50% depending on the length of time stored.
- Extremes in temperatures, both low and high should be avoided.
- Worn out batteries should be treated with care. Some manufacturers ac-

Einhell ITS 18

Festo CDD 12ES

Ryobi M14212VR

Make	AEG	Atlas Copco	Bosch	DeWalt	Einhell	Fein
Model	BS2E 9.6T BBPB	PES 12T	PSR 12VES-2	DW914	ITS 18	ASB 12-2EVQ
Origin	Germany	Germany	Switzerland	England	China	Germany
Chuck	10mm Jacobs keyless	1.5—13mm Röhm keyless	10mm Jacobs keyless	1-13mm Jacobs keyless	1-10mm Jacobs keyless	1.5-13mm Röhm keyless
No. Batteries	2	2	1	2	1	2
Battery Volts	9.6	12	12	14.4	18	12
Amps	1.4	1.4	1.4	1.7	1.3	1.3
Charger	Lightweight, one light	Lightweight, one light	Sleek design, one light	Lightweight, one light	Very lightweight	Quality look/feel, two lights
Charge time	1 hour	1 hour	1 hour	1 hour	3 hour	40 mins
Torque	Great on small screws	Good range	Good range for all jobs	Heaps	Ample	Too much for light work
Speeds rpm	0-370/0-1000	0-360/0-1100	0-400/0-1150	0-600/0-1800	0-1200	0-350/0-1200
Clutch Settings	7 plus drill	19 plus drill	5 plus drill	5 plus drill	23	12 plus drill
Carry Case	Black plastic	Black plastic	Carboard box	Steel	Black, quality plastic	Steel, very strong
Weight	1.5 kgs	1.5 kgs	1.6kgs	2.1kg	1.25kg	1.95kgs
Ergonomics	Excellent feel and balance	Well balanced	Excellent, well balanced	Good grip, a bit front heavy	Comfortable to use, balanced	A little front heavy
Grip	T-handle	T-handle	T-handle	T-handle	T-handle	T-handle
Ease of Use	Excellent	Switches okay, except sliding F&R switch	Easy to use trigger and direction switch, speed switch tight	Great trigger but F & R hard to reach	Worked well	Well placed, efficient, F&R hard to reach
Comments	Exceptionally quiet & smooth, a bit slow on high speed, comes with torch	Power good, battery can be reversed in position	Lightweight but quality, smooth-running. Great for smaller gauge screws, has power for tougher jobs	Runs very smoothly, ample power, impact feature	A gutsy drill well suited to building, two battery positions, 2 yr replace-ment warranty	Long drill with two battery positions which shorten drill and alter balance, good impact action
Price (RRP)	$292	$425	$249	$499	$250	$475

cept their batteries back for recycling or disposal.

- Always keep the contacts of the battery and charger clean to provide the least resistance and best contact during charging.

Driving Bits

I used several of the screwdriver bits supplied with the drills. In general I found these to be very poor quality (in fact one actually burred over after about 15 screws). High quality screwdriver bits make a big difference when driving screws as they are easier to use, put less strain on the drill and don't damage the screw head, buy yourself a few.

Conclusion

I thought all of the cordless drills I tested were well made. Some, such as the *Panasonic*, *Festo*, *Porter Cable* and *DeWalt* used superior quality plastic in their casings. Other brands used slightly lighter weight plastic, but were still well put together.

All tools except the *Bosch* arrived with carry cases. I found there was not much difference between any of the carry cases and all seemed to be quite strong and well made. The *Fein* and *DeWalt* came in metal cases and the *Festo* came in their unique *Systainer* storage system.

All of the cordless drills had electronic switches with variable speed. This is an essential feature and allows the drill to perform a wider range of screwdriving and drilling tasks. Some of the drills used an electric brake which engages when the trigger is released. Although this is not absolutely necessary for most drilling applications, it is a nice feature to have when driving screws, particularly in softer timbers.

Most of the chargers supplied with the drills tested had diagrams on the front. I found most of these rather confusing, and had to refer to the instruction manuals to fully understand them. The weight of the chargers also varied enormously, although I wasn't able to establish if this affected the actual charging.

The *DeWalt* and *Fein* also came with an impact setting. I tested the *DeWalt* by drilling into brick and concrete

Festo	Hitachi	Makita	Metabo	Panasonic	Porter Cable	Ryobi
CDD 12ES	**DS 13DV2**	**6213D**	**BEAT 212/2R+L**	**EY6100 FQKW**	**872 14.4V**	**M14212VR**
Germany	Ireland	USA	Germany	USA (assembled)	USA	China
1-10mm Röhm keyless	1.5-13mm keyless/locking	0.8-10mm Jacobs keyless	1.5-13mm Metabo keyless	0.5-10mm Matsushita keyless/locking	10mm Jacobs keyless	2-13mm Jacobs keyless
2	2	2	2	2	2	2
12	12	12	12	12	14.4	14.4
1.7	2.0	2.0	2.0	2.0	20.8	1.3
Hi-tech look	Heavy, quality feel, one light	Lightweight, one light	Biggest of all, six lights!	Easy diagrams, two lights	V. heavy, diagnoses battery condition, two lights	Quite heavy, two lights
1 hour/15mins	1 hour	1 hour	1 hour	25 minutes	1 hour	1 hour
Good range for all jobs	O.K. range	Ample for all jobs	More than required	More than required	Excellent range	Good
0-380/0-1100	0-350/0-1200	0-450/0-1400	0-400/0-1400	50-350/180-1300	0-400/0-1450	0-400/0-1400
9 plus drill	22 plus drill	5 plus drill	9 plus drill	21 plus drill	20 plus drill	23 plus drill
Systainer system,quality	Plastic	Plastic	Plastic	Plastic	Quality plastic	Plastic
1.85kgs	1.9kgs	1.9kgs	2.2kgs	1.74kgs	2kg	2.1kgs
Unique styling, well balanced	Well balanced	Well balanced though bottom heavy	Large grip weighted towards back	Excellent balance and weight	Well balanced, large grip	Large grip, good weight despite size
Pistol grip	T-handle	T-handle	T-handle	T-handle	T-handle	T-handle
Middle finger works trigger. F & R not easy to reach	Ribbed trigger tires finger, speed switch hard to slide	Good positions, ribbed trigger tires finger	Easy to use trigger, F & R hard to reach	Very easy to use	Speed switch hard to slide, others work well	Easy to use
Shortest of all tested, great for corners. Ample power for all jobs, fast brake	Good range of speeds, solid	No fuss tool for all jobs, good all-rounder	Very large and long, loads of power	More than enough power, very fast brake	Good grip, industrial, heavy duty	Heavy after prolonged use, has level gauge
$495	$450	$415	$508	$429	$558	$389

with a 1/4" masonry bit, and was very pleased with the results.

What To Buy?

Deciding on which cordless drill to buy is a very confusing process. The easiest way to make your choice is to first decide exactly what your needs and working style are, then with the help of a good dealer select the tool that best fits these needs. You should consider factors such as weight, balance and how comfortable the tool feels to you, the torque you require and the capacity of the chuck.

I also ran a few tests on all the drills. All drills coped well with drilling a 12mm hole in hardwood, however when I got out a 35mm spade bit some had no problem whilst some coughed and spluttered. When testing the ability of the clutch to seat delicate screws in pine I found some were just too powerful to comfortably perform this job. What all this means is that manufacturers have different models for different applications, drilling holes in hardwood and seating 4-gauge screws in softwood may not be achievable with the one drill—seek the advice of your dealer regarding the sort of work you perform. If you needed to pull a caravan you wouldn't buy a small four cylinder car, you'd get a V8. It's the same with power tools but don't forget V8's are heavier to hold all day.

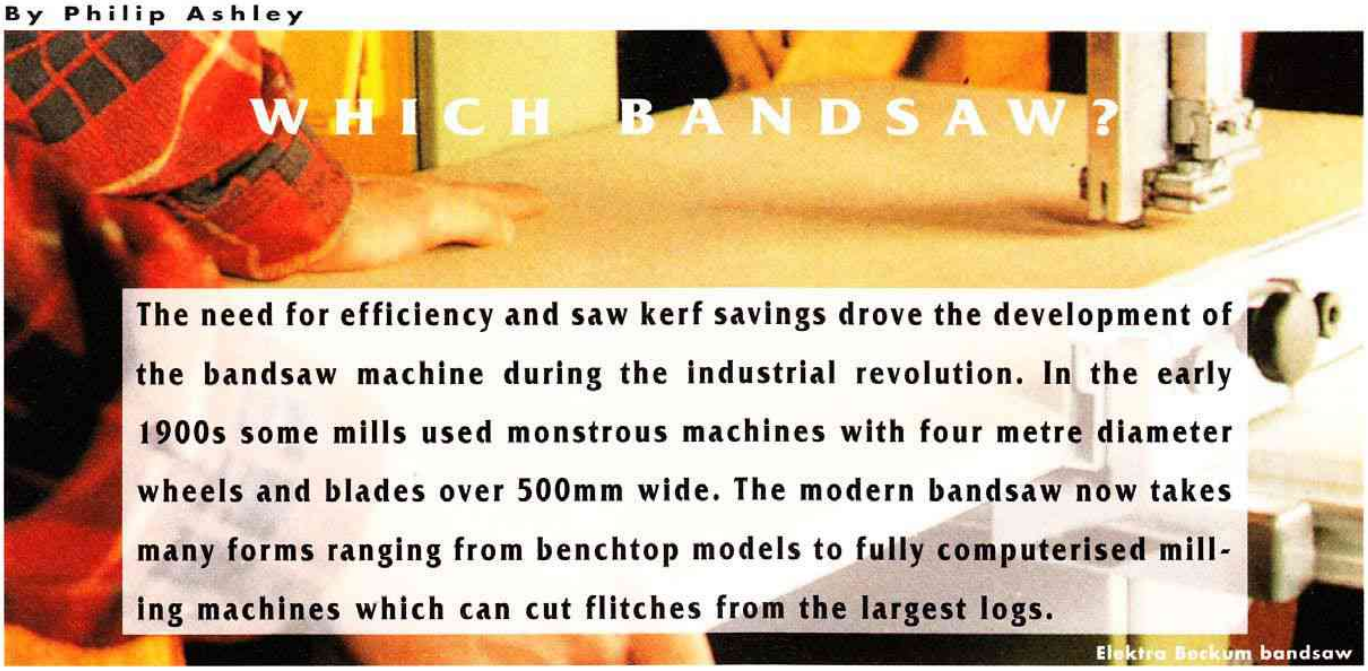
Certainly price will be a major consideration, for light duty occasional usage a lower cost drill will do the job, full-on heavy duty trade work is going to require a trade quality tool with a higher price. With power tools you have to shop around a bit for price, the prices listed in the table are therefore only indicative.

Thanks to Jeff Faig of Metabo for assistance with this article.

Suppliers of Cordless Drills:
Carba-Tec Qld 1 800 658 111, Vic 1 800 653 777, Nsw 1 800 683 583
McDonnell Road Hardware 07 3283 1558
Panasonic Customer Care Centre 13 26 00
Power Tool Specialists 02 6280 4966
The Wood Works Book & Tool Co 02 9807 7244
Woodman Group 03 9555 5199, 02 9708 3233, 07 3844 4433, 08 8346 4561, 08 9272 3844, 02 6280 4966
Hare & Forbes 02 9633 4099, 07 3849 1888, 08 8346 5522, 08 9356 1811
Hitachi 02 9647 2022
Makita 02 9748 3944
Atlas Copco 02 9621 9482
Metabo 03 9764 1933

By Philip Ashley

WHICH BANDSAW?



The need for efficiency and saw kerf savings drove the development of the bandsaw machine during the industrial revolution. In the early 1900s some mills used monstrous machines with four metre diameter wheels and blades over 500mm wide. The modern bandsaw now takes many forms ranging from benchtop models to fully computerised milling machines which can cut flitches from the largest logs.

Elektra Beckum bandsaw

A near century of refinement has resulted in bandsaws with excellent guides, tensioning systems and guarding. The universal question today for the would-be bandsaw buyer is the same as that for the buyer of all other kinds of machinery and tooling: 'which brand and model should I buy?' By checking the following features you may be able to considerably narrow your search.

Column

The column is probably the most important feature. If the support for the upper parts of the machine is not rigid enough the alignment of the wheels will be affected and you will have difficulty in tracking the blade. This will only get worse when you apply tension to the blade.

Wheels

The modern bandsaw has cast wheels which have to be strong enough to support the blade while it is cutting. Too light a wheel, or a wheel with poor tolerances will not give a good cut. The lighter, spoked wheels are not as common as heavier, solid wheels which give a flywheel effect and better drive to the blade.

If you are buying a secondhand machine, check for wheels with a cork surface coating. Cork wheel surfaces have been replaced with longer lasting vulcanised rubber, and this is designed to be replaceable, fixed with a form of contact adhesive. A decent wheel brush will keep the rubber in good condition.

Table

The table will normally be cast, and if it is ribbed or strengthened this will be an advantage. Look for a machine with a tiltable table and an easy locking mechanism.

Guides

Bandsaw guides are made by only half a dozen manufacturers worldwide, and are fitted to the machine after manufacture. They should be easy to adjust, and give good support to the blade. I prefer the bearing type guides, as they are very easy to set up. Other types can be fiddly and require some time to adjust.

Construction

The construction of the machine is very important. I recently read on the web someone's advice to a colleague to put lots of sand in the base of the bandsaw. If the machine is built properly this should not be necessary. Filling your machine with sand or buying a machine with concrete poured into the base is only a way of stabilising a machine which is lightly made, and probably not very well engineered.

Motor

You will need a decent motor to power your bandsaw. Even if you don't intend to cut thick timber now, it won't be long before you'll need to. Any thick wood requires a fair amount of power to drive the blade through it. and wet timber will require even more.

Brake

A wheel brake used to be a good option on a new machine, but any machine built in Europe to CE regulations will now have an electronic brake on the motor.

Finally...

Look for a machine that is easy to assemble (if it comes in a box) and has good sized components. Obviously the stronger machines work better. All the adjustments should work smoothly, and be easy to move and lock in place. Be particularly aware of the blade guides under the table (if supplied) as some of them can be awkward to reach. Rip and mitre fences are good options to have, and a tensioning scale, although handy, is only a guide.

BANDSAW BLADES

The bandsaw is named after the continuous metal band which the blade is made from. This band gives an unrestricted cutting ability, and the downward cutting action holds the work firmly to the table, resulting in a safer machine. The thin metal blade requires less horsepower to drive, and results in less waste. Bandsaw blades are now made in hundreds of different varia-

Italian Socomec bandsaws come in four wheel sizes: 390, 450, 550, 670mm. with table tilt 0-45°. Cutting heights 280, 370, 430mm, motor 1.5hp, 2hp and 4hp.

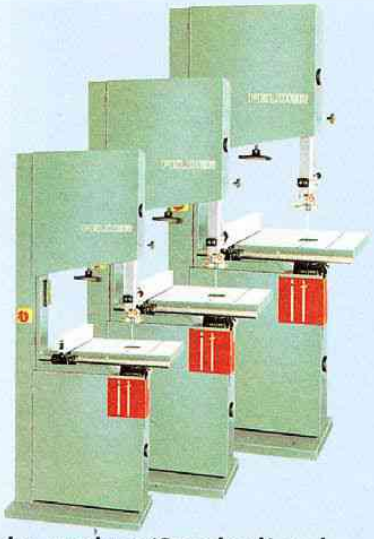
Delta 12" bandsaw DE-28-190, table 355 x 355mm, 0.75hp motor, standard 65mm dust outlet, large footprint stand for stability. Bench bandsaw also available.

Elektra Beckum BAS 350 has 688 x 550mm table and 170mm cut height. BAS 500 table is 772 x 550mm, cut height 300mm. 45° tilt on both.

Jet bandsaws JWBS14CS (1hp) and JWBS140S (0.75hp). 15" square tables, 45° x 10° tilt, 6" cut height, heavy duty cast alloy wheels, 2 year warranty.

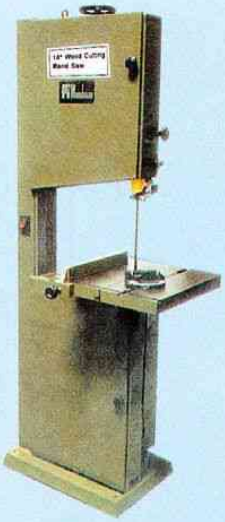
The Hafco range have tables 14", 16" and 18" square and 22.5x28.5", 24" x 28.5". Cutting height capacity from 5.5" up to 12".

Scheppach, table size 640 x 640mm, four speeds, cut height max. 300mm, tilt -20°—+45°, overall height 1850, width of cut max. 440mm.



Felder produce 'Standard' and 'Industrial' bandsaws. Table sizes start at 400 x 500mm and go up to 1150 x 800mm. Depth of cut from 250, 280, 340, 400, 470, 560.

Record BK3 bandsaw. Three wheels allow 300mm width of cut, 70mm depth of cut. Table size 304 x 355mm. Bench mounts.



Woodman BA218W bandsaw. Features 1.5hp motor, 458 x 483mm tilting table (45°), mitre fence, rack & pinion top guide assembly, cut height 11".

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tions to cut all types of modern materials, and it is useful for the woodworker to understand a few of the basic principles of the modern bandsaw blade to get the most out of the machine.

The bandsaw blade undergoes cutting stresses which are different to those endured by the tooling of other machines. It must remain straight in the cut, yet be flexible enough to bend around the wheel. The teeth must be able to cut the hardest wood while the body of the blade twists through slight curves. While all this is happening, the weld must be able to stand up to the continuous stresses that are being generated.

Blade Selection

There are two main types of blade for woodworking and these are the regular and skip tooth varieties. The regular blade is designed like a ripsaw blade where the whole point cuts the wood. For thin and hard materials and at the high bandsaw speeds this type of tooth is most efficient, but it does have limitations.

When cutting thick or wet wood, a larger gullet is required to remove the extra waste, which can take up to four times the amount of space of the solid wood it came from. The gullets of a regular blade cutting a piece of timber 100mm thick may not be able to hold all the waste which is generated. The saw will overheat and become inefficient, while the sawblade will chatter and may even break.

A skip-toothed blade is required for thick materials. This blade has less teeth per inch (tpi) than a regular blade, and looks, at first glance, as though every second tooth had been removed. This blade will cut more efficiently, but give a coarser finish. A coarse pitch is required when ripping with the grain as this operation produces much more dust, which the gullet has to hold until it is clear of the wood.

You will need a selection of blades for your new machine. Wide blades are best for resawing, skip tooth blades are best for thick wood and ripping operations, and thin blades are good for shapes and harder timbers.

At least two teeth should be in contact with the work at all times so cutting wood of 25mm will require a blade with at least 2tpi. Generally, blades with between 2-6tpi are used for cutting wood, and you should have a selection of different widths and tooth spacings for the type of work you will be doing. You should also be aware that the size of your machine will dictate the thickness of the blade you must use, smaller diameter wheels requiring thinner blades.

Blade Setting

If the blade wanders in the saw cut this can be reduced by tightening the tension, but the wheel bearings and tensioning spring may be damaged if you go too far. I once read a suggestion that the blade tension should be cranked up to a 'C' but I haven't an ear for music so this technique wouldn't work for me.

The blade will naturally take the path of least resistance and so it needs to be tight enough to cut accurately and must be properly supported by the guides. Only crank up the tension if you really need to—as with all things, experience is the best teacher.

Bandsaw Suppliers

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F W Hercus (***Hafco***) 08 8346 5522
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Southern Woodturning Supplies 02 6280 0620
Thatcher Machinery (***Stenner***) (03)9785 3222
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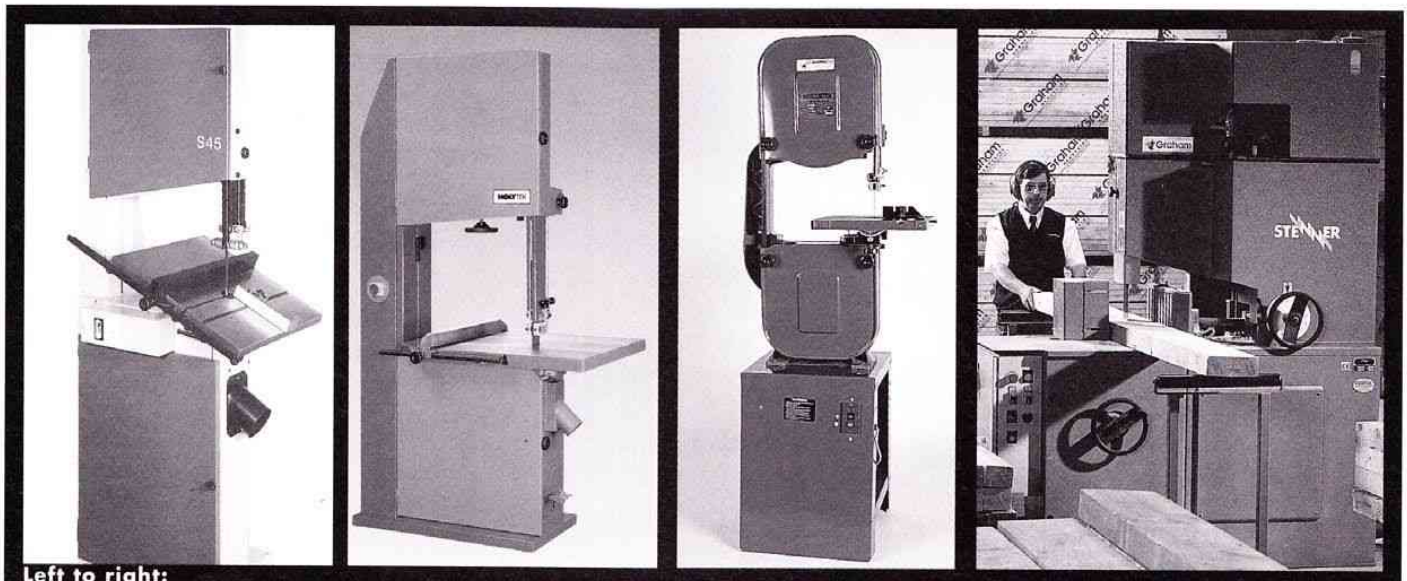
New Zealand

EuroTech W/working MachineryNZ 07 866 2188
WR Jack Ltd 06 43 546 7479

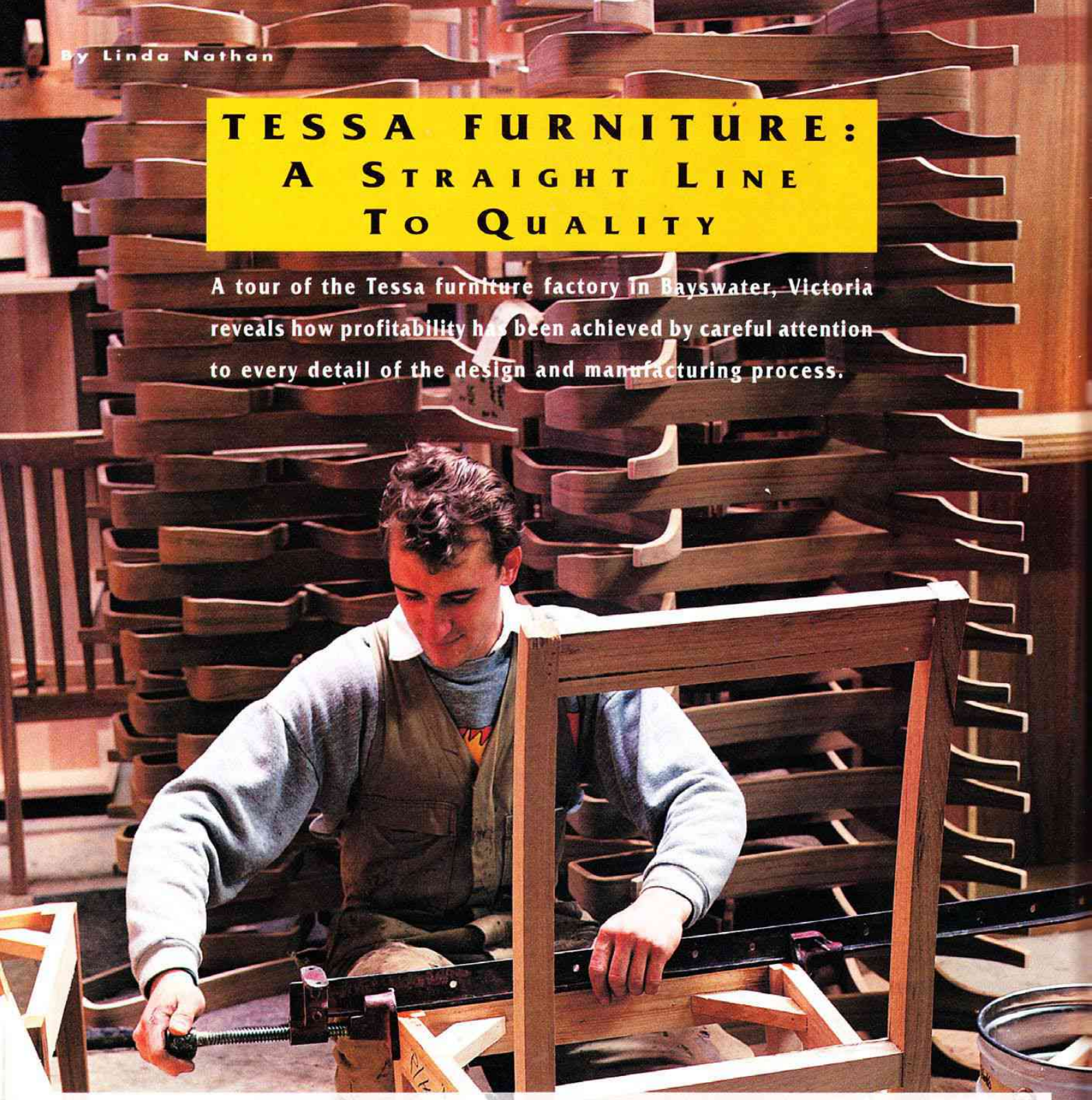


Left to right:
MiniMax S45, 490 x 490mm table, cut height 265mm, 1.5hp motor, upper and lower blade guides, cast iron/rubber flywheels. Holytek bandsaws have blade tension indicator, top and bottom roller guides, tilt table, foot or electric brake, dust chute. Carba-Tec 14" single speed bandsaw, 150mm depth of cut, 0.75hp motor, table tilt 10° up, 45° down, 350mm throat. UK-made Stenner offer nine band resaws for resawing square edged timber in planing and joinery mills.

By Linda Nathan

TESSA FURNITURE: A STRAIGHT LINE TO QUALITY

A tour of the Tessa furniture factory in Bayswater, Victoria reveals how profitability has been achieved by careful attention to every detail of the design and manufacturing process.



An Australian furniture manufacturing business in its third decade which in recent years has been able to maintain a growing bank of orders deserves respectful examination. *Tessa* is a household name for furniture and it is a name which undoubtedly stands for quality.

The company was founded in 1968 by Fred Lowen and Sigi Danielzik who combined their design flair and know-how to produce a distinctive range of lounge furniture. Initially it was called *Twen*, a reflection of the twenty-something market which was targeted early on. The strength of Tessa design has been publicly acknowledged by the acquisition of five of its early pieces by the National Gallery of Victoria. There are very few mainstream furniture manufacturers in Australia who have received such an honour.

Sculpted, moulded and laminated forms in the rich tones of teak and blackwood are the Tessa hallmark. The look is 'classic' and enduring; furniture made decades ago still looks modern and derivative of the Scandinavian legacy of styling which was very much of the sixties and seventies in Australia.

There are around twenty eight lines of lounge, dining and occasional furniture. Tessa is now known as much for leather and fabric upholstery and soft furnishings, as for its work in solid and veneered timber. About 14 years ago the company changed direction somewhat, becoming more conscious of the need to respond to

market trends, while maintaining the Tessa tradition. Three or four years ago Tessa started producing loose-covered and fully upholstered lounge furnishings. Furniture is sold Australia-wide through retailers such as Guests, Andersons, David Jones and Myer with exports to Hong Kong and, to a smaller degree, to New Zealand.

The factory floor is a hive of activity. Behind the scenes day to day management of the factory is effected by a team of three: David Keane—Factory Manager, Ron Slasic—Sales and Marketing Manager and Justin Blaha—Administration Manager.

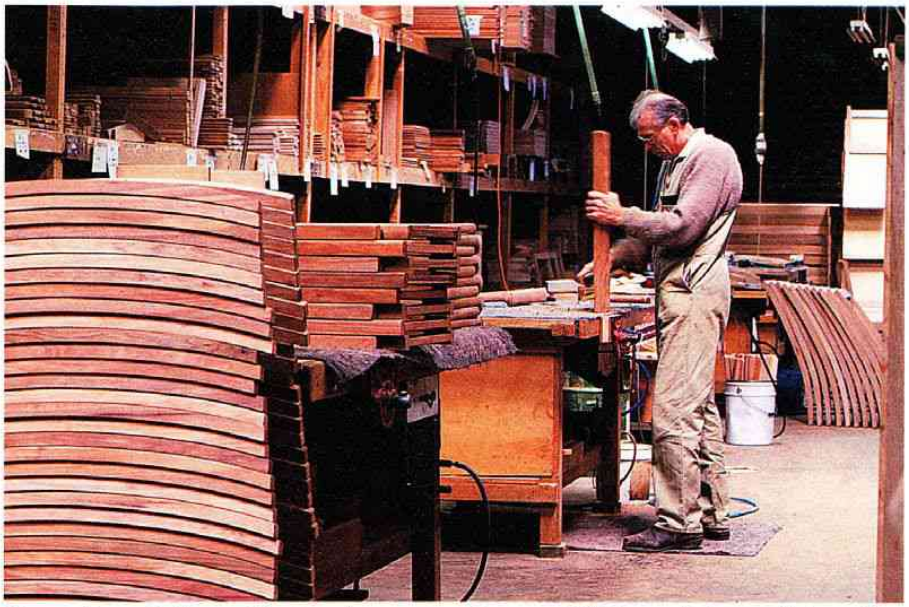
Developing new products and staying in touch with the market is what gives the company an edge. David Keane, late of Ireland, who has been with Tessa for around 18 months explains 'We have to keep up with research and development on a regular basis. We have to turn out one to two new products a month. If we don't keep up with what the market wants, we'll become a dinosaur very, very quickly. Look at all the companies that have their back against the wall. We have a fairly hefty order bank. Why? Because we keep on the move, we keep changing our products.'

Other new directions include a range of natural feature grade timber furniture. There is growing acceptance and appreciation for the natural look of wood with a percentage of gum vein, borer and other figure present. Retailers have to explain to the customer, however, that the product delivered on the day may vary in the amount and nature of feature present.

From the manufacturing side, it is important to guarantee structural integrity by carefully selecting timber with its end use in mind. Internal checking is the bugbear and moisture content, always critical, is even more so where 'features' are included.

Judicious placement of natural feature is also crucial. Feature is generally avoided in chairs where components such as rails, legs and sides are smaller. Tables are another matter as the presence of feature in a leg made from

Tessa's new 'Hamilton' range of solid timber furniture.



Opposite and above: Stacks of componentry await fitting, gluing and clamping in the assembly area of the factory.

90 x 90mm stock is not so critical; a tabletop, on the other hand, will only be enhanced. The selection of stock by the wood machinist sets the standard for the finished piece.

The fact the company undertake 'recoveries' of their furniture on a regular basis is a testament to the enduring properties of Tessa design and manufacture. These items are generally 15-20 years old and are taken back into the machine shop and stripped back to the old 'buckets' or carcases. The joints are taken apart and the components are resanded, reglued and reassembled for a 'brand new look' result.

A company imperative for efficiency and shorter manufacturing turnaround times has led to the purchase of a CNC router (*see sidebar, p.36*). New products have been developed to take advantage of this technological wonder which, with its carousel of ten tools, can convert a docked and dimensioned piece of timber to a shaped, planed, mortised or tenoned component in a matter of minutes. 'The machine shop is the heartbeat of the company and the CNC router is giving us a much faster turnaround', David Keane explains.

Following the 'just-in-time' principle the company orders timber and stocks only for the month ahead. At the start of each month the factory and sales managers meet to discuss

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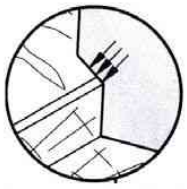
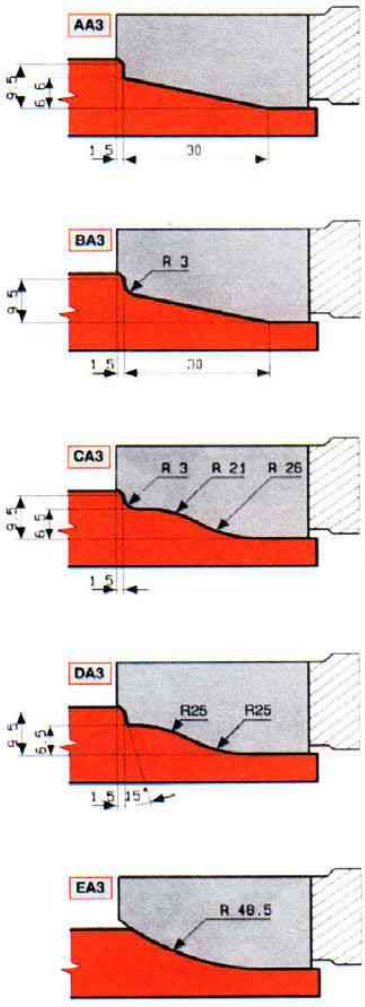
Profile knives AA3 to EA3 **$70** per pair. Diameter 140mm 1-1/4" bore



Splinter Free Cuts

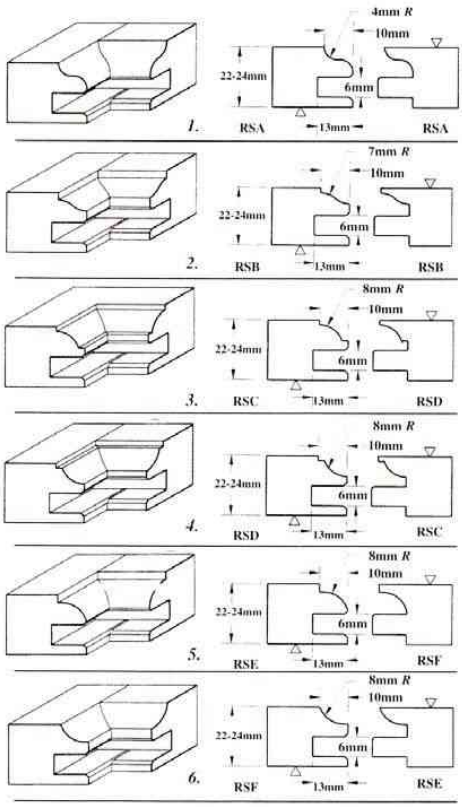


RS1000 Rail & Stile Door System

Set comes in plastic carry case with grooving cutter and rebate knives. Does not include profile knives. Please select from the diagram.

Prices **$695** without profile knives $63 per pair. Please note profile RSA and RSB require only one pair profile e,d,e,f, require ***two pairs***.

115mm diameter 1-1/4" bore

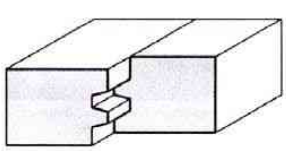


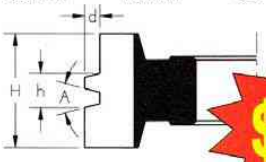
complementary tools

REVERSIBLE GLUE JOINT CUTTERS

will produce a strong joint by increasing the surface area for the glue. Boards should be planed to a uniform thickness. Cutter should be aligned to the centre of the board. Then reverse each board for a perfect glue joint.

Item Number	Overall Diam	Cut Depth (d)	Carbide Height (H)	Minor Height (H)	Angle (A)	Bor Diam
UP31	90mm	4mm	30mm	10mm	30	1 1/4"





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COD	D	B	d	Z
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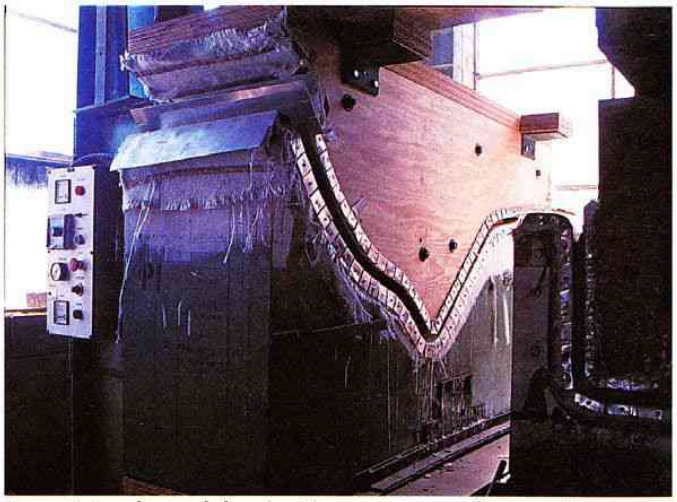
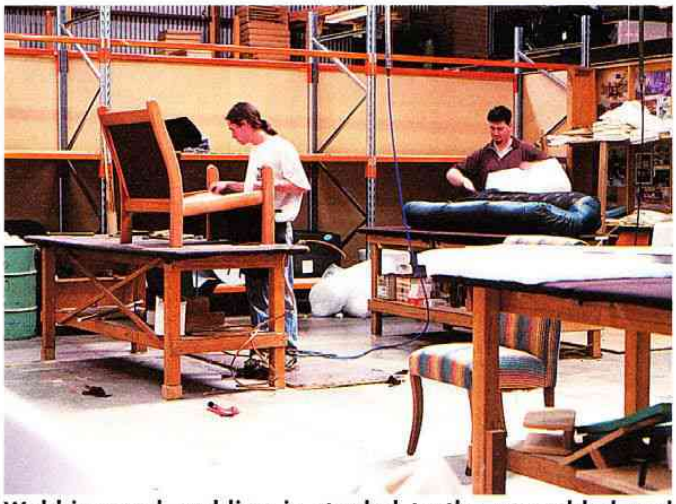
WA	**Power Tools & Machinery Sales**	13 Beachboro St, Bayswater	**(08) 9272 3844**



Tessa's trademark laminations are manufactured in-house using a purpose built machine which 'bakes' the shells.

After baking, the laminated plyformed shells are cut and shaped into the required components.

The spray booth is kept in constant use.



Webbing and padding is stapled to the assembled and polished chair and lounge frames.

Pre-fabricating frames for soft furnishings.

Sewing the leather and fabric chair and lounge coverings.

the month's orders and production. Budgets are set and production schedules for the machine shop are made up. When David Keane came to the company turnaround was nine weeks, but that has now been reduced to five. Two weeks would be ideal, he claims, and would allow even less stock to be carried. By virtually making to order in this way the company can control waste, that is, stockpiles of timber and finished product, in order to maintain profitability.

Every second Monday he meets with his five 'leading hands' in the factory canteen to discuss stock figures, quality control, health and safety, new products, upcoming orders and any problems which may have arisen. Open conversation is encouraged in order to share ideas and promote effective communication and teamwork.

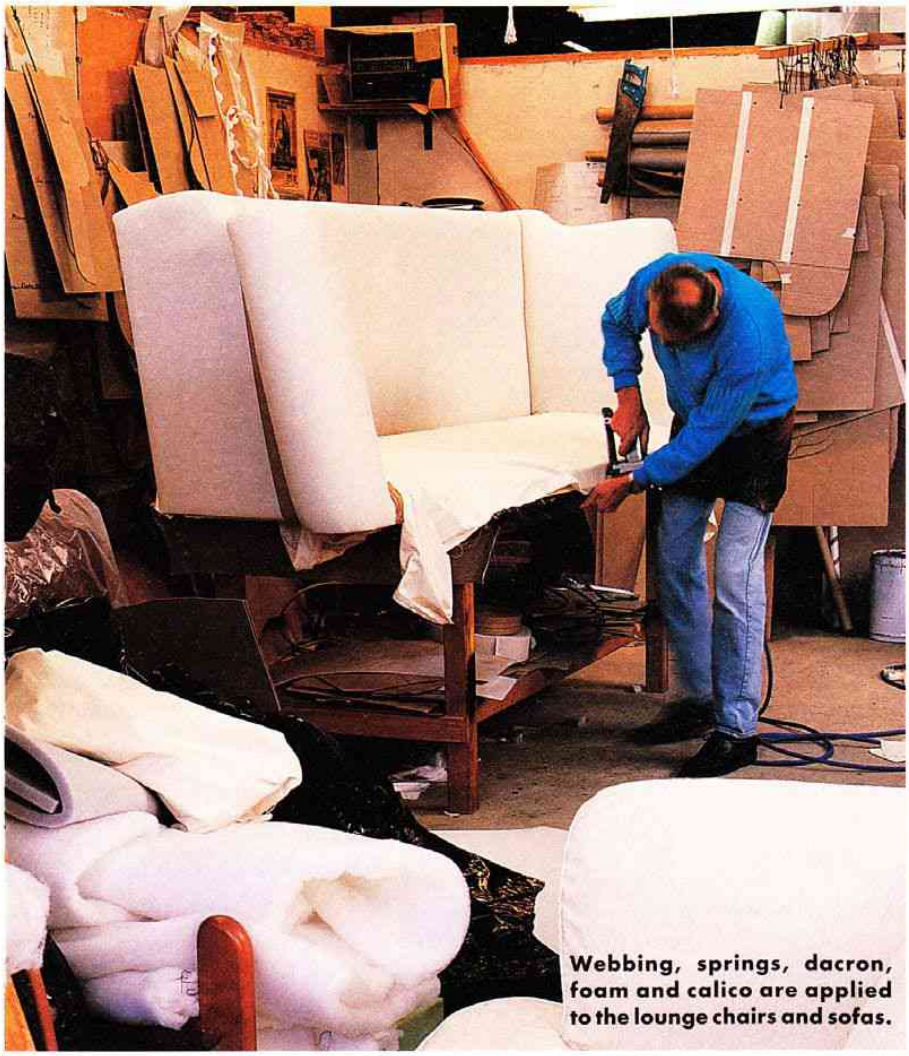
Keane works the factory as a 'group affair'. 'I expect the people to do a terrible lot for Tessa, but we give it back to them tenfold, and that's the way it should be. There are people

out there that I would do anything for, and that's because they back me up.' When he first started with the company he stationed himself in each of the main processing areas of the factory for a month, in order to observe and get a feel for what was going on and how things could be improved.

Health and safety is a major concern, brought to the fore by some bitter past experience. Four company health and safety officers hold an official meeting once a month which is chaired and tabled. 'The last thing I need and want is for someone to hurt themselves. It's called awareness, and if everyone's aware of what the next person is doing and themselves we should be able to take care of each other. Sure I don't want downtime and big insurance claims but it's more than that. If people are aware, this state of mind translates into issues of quality. Quality is an awareness from everybody's point of view, whether it be a leading hand or a qualified machinist. It's a straight line right through the factory' comments Keane.

The pressures on the manufacturing industry today, especially where furniture is concerned, are manifest. The Tessa furniture factory is an illustration of how one company is staying on top by attempting to leave no stone unturned throughout the entire design, manufacturing and management process. David Keane's words should offer some encouragement to other players in the industry: 'I don't want you to think it's a big glossy world out there because it's not—it's absolutely as hard as be damned. But we are turning it around to our advantage, to the workers' and Tessa's advantage. I honestly believe that with the imports hitting this country, the only way we can be much smarter in our working environment is if we work as a team.'

Photos: Peter Greenwood Brown



Webbing, springs, dacron, foam and calico are applied to the lounge chairs and sofas.

Tessa Technology

By Philip Ashley, Machinery Technology Editor

Tessa is one of the last major furniture companies to make the change to high technology manufacturing, but the decision was not taken lightly. It took almost twelve months of investigation before the final choice of an CNC router was made. A visit to *AWISA* in 1996 to see what was on offer, and visits to other companies to look at machines in working conditions resulted in a three month decision making process, culminating in the current purchase.

Impressed with the setup at Maton guitars (see story AWR#6), factory manager David Keane could see that the *Routomat* was capable of processing small, difficult to hold parts, which account for a large percentage of furniture components. 'I suppose we were fairly computer illiterate before we purchased the CNC machine, and that was a concern, but we've had the drive and commitment to change, and now 80% of the processing is done on the new equipment', says David Keane.

Edgecam software was purchased to prepare the CNC programs and this has paid off handsomely. 'We could never have achieved what we have without it', says David, 'we had a steep learning curve at first, but once it is mastered we wonder how other companies get by without it. You have to take some chances and be creative. You have to have a top notch maintenance program, and be prepared to buy some good tools, but we have found that the delivery time of some product lines would not have been possible without the new equipment. We now have a guaranteed product quality from the machine shop, with reduced problems in the assembly area. You really can produce a better product.'

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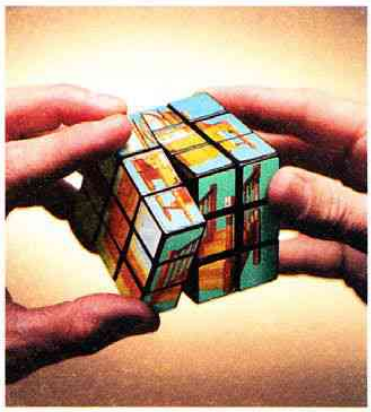

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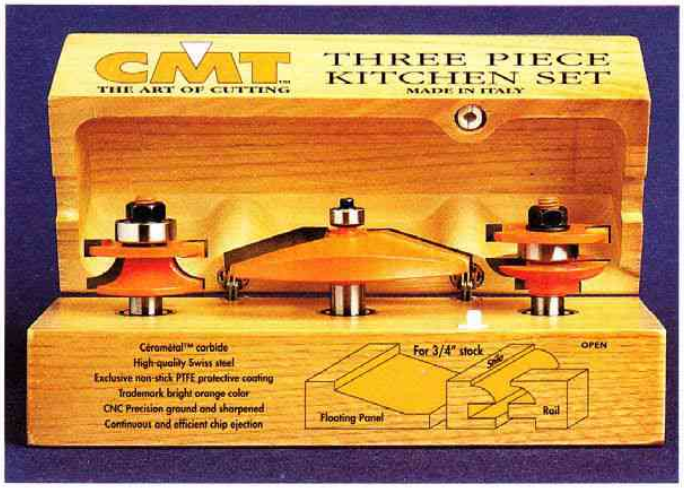


THREE PIECE KITCHEN SET (WITH 1/2" SHANKS)

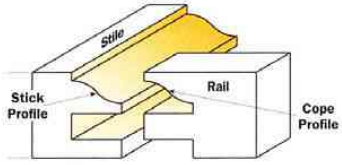
This set includes a Rail and Style couple, and a Raised Panel bit, to make cabinet door construction easy. Suitable for stock from 18-22mm. Each bit is made from the finest tungsten carbide, and will produce the highest quality doors. The set comes in a hardwood presentation case.

Cat. No. 800-512-11.....$249.00

ONE PIECE STILE AND RAIL SET (WITH 1/2" SHANK)

This new one piece bit represents the union of two cutters in one bit. By simply adjusting the height of the bit, you can cut two perfectly joining profiles for kitchen and cabinet door construction in stock from 18-22mm. Saves set-up time and money.

No.891-521-11...$129.00



RABBETING SET (WITH 1/2" SHANK)

This carbide tipped Rabbeting set is fast and accurate, for producing rabbets, rebates, tongue and groove joints, and can also be used for flush trimming and pattern following. The rabbeting set allows you to make a limitless number of cuts with two simple adjustments. The set comes with one bit and six interchangeable ball-bearing guides.

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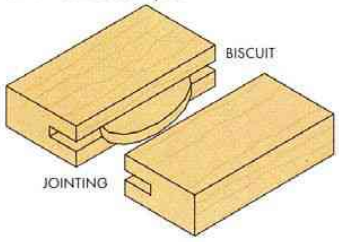
THREE WING SLOT CUTTER (WITH 1/2" SHANK)

This slot cutter has an infinite number of uses. It will easily cut 4mm slots and grooves for splines, biscuits or tongue and groove joints, and this bit features an anti-kickback design and carbide tips.



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SUPER-DUTY FLUSH TRIM BIT (WITH 1/2" SHANK)

These new, super-duty bits are the highest quality flush trim cutters you will ever use. With a 19mm cutting diameter, a 50mm cutting length and a negative shear angle, this bit works quickly and safely for flush trimming and pattern following. The finished result is superior to any other bit we've ever tested.

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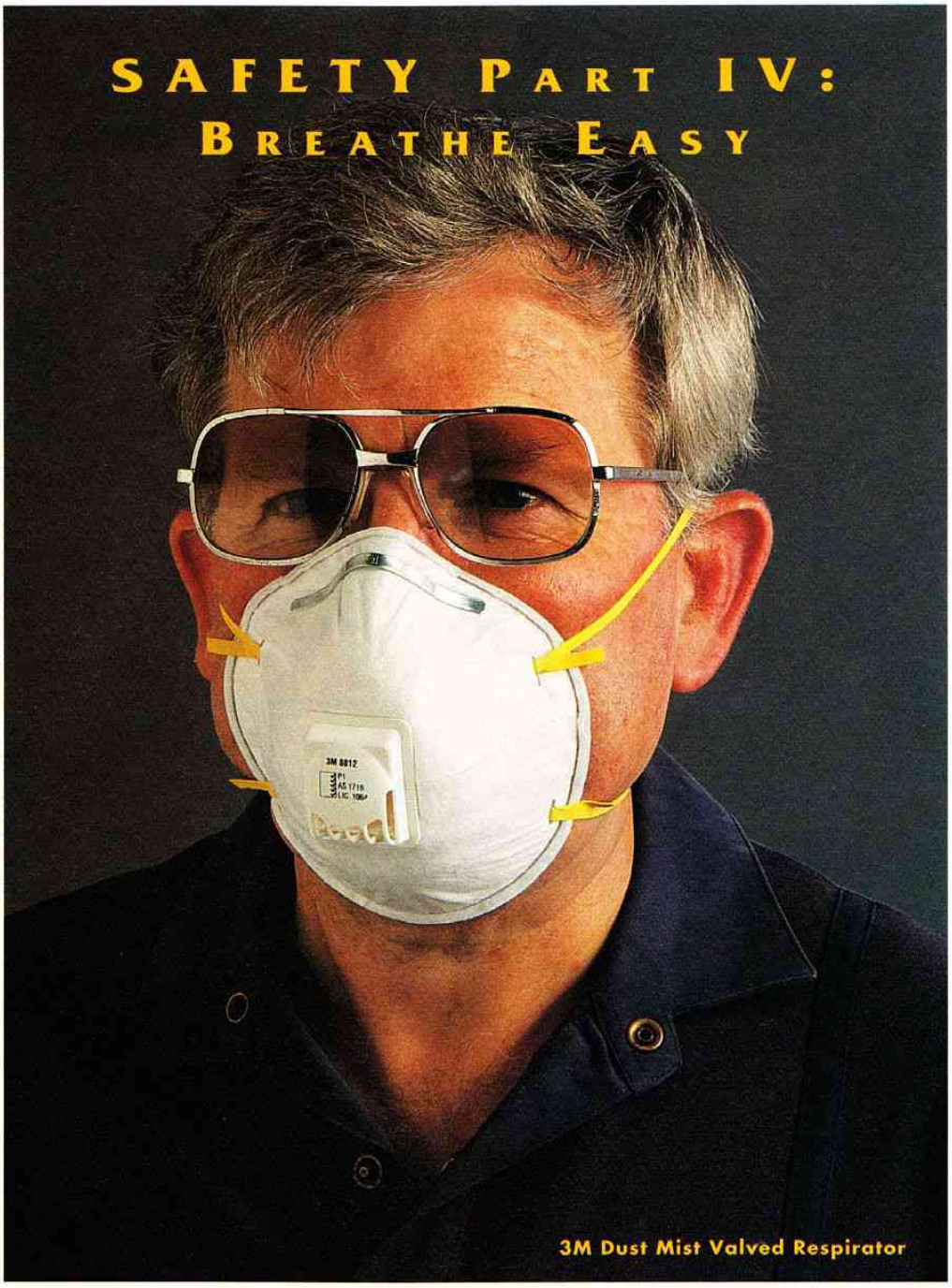
*BUY ANY OF THE THREE ITEMS AT THE TOP OF THE PAGE, AND YOU CAN BUY EITHER OF THE TWO ITEMS AT THE BOTTOM OF THE PAGE FOR ONLY HALF PRICE. OFFER ENDS DECEMBER 31,1997.

By Dinah Hall

SAFETY PART IV: BREATHE EASY



3M Dust Mist Valved Respirator

Most people know the dangers associated with wood dust and chemical exposure: eye, skin, nose and throat irritations, through to life-threatening asthma, and nasal and lung cancer. Vulnerable people, however, have the most casual approach to safety and often don't wear personal protection.

Unseen Dangers

Machined wood gives off dust which may be so fine it can penetrate the tiny alveoli of the lungs or coarse enough to get stuck in the bronchial tubes. The dust itself may be toxic or carcinogenic as it may carry bacteria, fungus or moss spores causing allergies, irritation or disease of the skin and respiratory tracts.

Panel products are made of wood fibres or chips bonded with urea-formaldehyde resin. Before sealing, formaldehyde is released in vapour causing irritation to eyes, nose, throat and skin. Formaldehyde is a known carcinogen, banned for this reason in many industrialised nations, but not in Australia.

Further, the sanding or machining of timber that may have been previously stained, lacquered or treated with a preservative or adhesive creates heat which can release toxic vapours.

Dust Standards

In 1994 WorkSafe Australia established the *Exposure Standard for atmospheric contaminants in the occupational environment*, which states 1mg/cubic metre of hardwood dust is the upper safe limit of exposure while 5mg per cubic metre of softwood is the safe upper limit of exposure. These levels are the safest adopted in the world alongside Belgium, Canada and France.

Both measurements are based on Time Weighted Average, that is, exposure during an eight hour working day in a forty hour week over a lifetime. Such exacting standards may require the advice and monitoring skills of an industrial hygienist. Surely it is more realistic to simply don respiratory safeguards.

Symptoms of Dust Contamination

Each individual will, of course have an individual response to the chemical composition and size of dust particles of any particular dust at any one time. Adverse effects may not be immediate but develop over time. For instance, the latent period for the onset of adenocarcinoma is 28-45 years.

While skin and respiratory tract allergies may be the more obvious reactions to a certain wood dust there are other debilitating symptoms that may not be immediately associated with an occupational reaction. These include dizziness, headaches, sneezing, nose bleeds, vomiting, stomach cramp, paralysis, impaired vision—all symptoms of central nervous system depression caused by poisoning.

Toxic Timbers

Some Australian timbers have been valued in the past for their toxic effect, mulga for example was used for spear heads. Others less known for their toxicity include alpine ash, blackwood, boxwood, coolibah, brigalow, poison walnut, blackbean, grey gum, jarrah, silky oak, mulga, miva mahogany, myrtle beech, white cypress, white handlewood, eucalypts and acacias. Other wood dusts may be toxic or cause an allergic reaction in subsequent exposures to sensitised people.

Non-native species said to have an adverse affect on the health of workers include: wawa, mahogany, meranti, oak, jacaranda and western red cedar. Often it is a combination of dusts that produce an adverse affect.

With this in mind it is worth noting the very strongly toxic timbers, include the tropical timbers: avodire (*Turraeanthus africanus*), iroko (*Chlorophora excelsa*), cherry mahogany (*Dumoria heckelii*), mansonia (*Mansonia altissima*), yellow peroba (*Paratexoma peroba*), teak (*Tectona grandis*), indigbo (*Terminalia ivorensis*) and citron wood (*Chloroxylon*).

While research into the possible carcinogens contained in wood dust is still in its infancy, German research has identified oak and beech wood dust as having cancer causing substances. Tanins and lignin compounds, abundant in Australian hardwoods are also believed to be carcinogenic.

The dust of Australian cedars are also notoriously toxic as are eucalypts, especially when worked under the lathe. The heat actually modifies the vapours emitted from the wood—hence the difficulty in protecting firefighters in bush fire situations.

Protect Yourself From Dust

It is always better to minimise if not eliminate hazards at their source. Sharp tools generate less dust; wearing clean, snug fitting workclothes minimises dust contact with the skin as does thorough washing after work. Remember beards, facial hair and head hair are ideal dust traps. Wear a barrier cream or gloves but never wear gloves while machining.

Recreation areas should be provided away from the workshop so food, drink and cigarettes are not dust contaminated. While much wood machining equipment is now fitted with dust extraction at the source, keep in mind that only the larger particles are collected.

Where dust extraction units are not fitted (the low volume, high velocity units are recommended) measures such as air-flow baffle plates and protective hoods with extractors can be fitted to older machinery.

Smaller dust particles generated in machining are charged with a positive electrical charge, allowing them to stay airborne for hours. Factories and workshops should be cleaned after each session by vacuuming, never by blowing or sweeping. If the floor is slightly dampened first this is far more effective. Even if dust extractors are in place, excessive exposure to dust may result at the bagging process.

Chemical Hazards

There are no harmless chemicals only safe ways of using them. Each chemical toxin attacks a specific part of the body tissue. For instance, benzenes (used in paint strippers, petroleum distillates and lacquer thinners) go straight for the blood-forming elements in bone marrow. The attack to the various body parts may be acute, that is, a low level exposure that is curable, while a chronic attack will most likely cause permanent damage or even death.

Many of the solvents used by woodworkers are extremely volatile and quickly vapourise, entering the bloodstream through inhalation. Other organic solvents, such as methylene chloride (paint and varnish removers, furniture refinishers, contact cement, aerosols, urethane foam, adhesives, paint) or isopropyl alcohol (in plastic wood fillers, lacquer thinner and surface cleaners) penetrate the skin causing dermatitis which in turn exacerbates absorption, as chemicals are absorbed quickly through cuts and abrasions or inflamed areas of eczema or psoriasis.

Chemicals can also enter the digestive system through contamination of food or cigarettes in the workshop. The cilia or small hairs of the lungs constantly work to clean the lungs by moving the thin fluid layer upwards. Once these particles reach the throat they are then swallowed and enter the digestive system. If the amount of dust/chemical is in chronic amounts, the lungs do not get cleaned but react by becoming inflamed and a cough or cancerous cells may develop.

Always choose the least toxic solvent and take the manufacturer's advice seriously. Always ventilate the workplace with a fan blowing across your work towards an extraction point. Never have the fan behind you as this will create low pressure in front of you thereby drawing the toxic substances towards you.

Willson 2200

Willson 2201

UniSafe Single Cartridge Respirator

Willson Valua

Norton 7600-8A Full Face Respirator

Norton 7700-30 Half Mask Respirator

Some Market Options

The disposable, nuisance dust, dry contaminants only masks are as cheap as $3.50 for a pack of five but they do not meet Australian Standards. Up the range, similar disposable masks that do meet AS1716, retail for $32.85 for a box of 20—they offer a 20% penetration rate. At the top of the disposable range is the **Norton 1955**, which offers P2 rating (6% penetration) includes a valve and sells $59 for a box of 12.

3M Dust /Mist Respirator (8710) offers P1 rating, meets AS1716 and sells for $1.88.

3M Dust/Mist Valved Respirator (8812) offers P1 protection rating with exhalation valve system to maintain a cool atmosphere within the respirator. Not safe for use with organic vapours, $4.10. **Willson** offer particulate disposable filters with a P1 rating, 2200 for $3, or 2201 with exhalation valve, $4.

Willson Premier Series offers the comfort of a half mask of washable soft silicon for $43 with A1 cartridges $4.10 and P1 filters $36.70 for 20. The less comfortable half mask is made of rubber and uses the same cartridges and filters. The **Valuair** is $21.70. A full silicone mask for working with chemical laden wood is availabe in the **MX/GR 750-T** for $270.

Norton Half Mask Respirator (7700-30) at $36 offers P2 rating protection, washable silicon, two inhalation valves or one exhalation valve, activated charcoal cartridges ($7) and pre-filters (P2 rating), $2.60.

Norton Full Face Respirator (7600) offers P3 rated protection (.05 % penetration), same cartridges as half face, 2 inhalation, 1 exhalation valves, speaking diaphragm, eye protection with polycarbonate medium velocity impact rating, $320.

UniSafe have a single cartridge respirator (**RP461**) $18 or twin cartridge respirator (**RP462**) $24 for P2 protection against particles, gases and vapours, featuring a soft, pliable non-toxic non-irritant rubber face piece, filter retainer ring ensuring a positive gas-tight and contaminant-free seal; twin exhalation valves, double elastic headband. Three sizes: small (child size), medium and large with cartridges retailing around $5 and pre-filters at $7 per 100 pack.

Purelite Air Shield, features a dual filter system incorporating a pre-filter and a main filter for small particles. Lightweight, 660gm, quiet 68dB, self-contained rechargeable battery, high velocity and impact splash, $349.

Record RPTV20 and **RPTV100** feature a powered blower system and offer

Willson Premi

full face and brow protection against dust, fumes, water-based spray mist and flying chips. A power pack draws air through filters into the visor. Includes battery pack, UK battery charger, air flow test disc, disposable polyester visor protection sheets. **RPTV100** includes a neck cover. Weighing 600grams, the **RPTV100** can be worn with glasses and sells for $495 and has a P2 rating. The **RPTV20** sells for $385 and has a P1 rating.

Racal Airlite is a self-contained powered air unit providing P1 rated protection with a full face mask for the face and eye protection. It comes with a 4 hour rechargeable battery, $362 (inc. sales tax).

Racal **Dustmaster** offers P1, P2 or P3 protection dependent on the type of filter employed. P2 protection is the standard. The powered unit offers a filter worn at the waist with a face visor which lifts; 8 hour rechargeable battery—$545 (inc. sales tax).

Respiratory Safeguards

Respiratory protectors are rated under the Australian Standards 1715 and 1716 and conform to P1, P2 or P3 ratings. Standards were formerly based on the micron size of the particle however they are now based on the the penetration time of a contaminant.

The rating is determined by a combination of the type of head gear and the type of filter worn in the mask. The P1 rating is given to the mask that protects the wearer from particles that are mechanically generated and powders and fumes that are not wet with a maximum penetration of 20%. The P2 rating is given to the material that protects the wearer from particles that are mechanically and thermally generated (such as those generated in welding). The maximum penetration of a P2 rated mask is 6%. A P3 rating offers 0.05% penetration and applies to the full face respirators which are effective only when being worn. Take them off to answer the phone and the wearer is totally exposed to the vapours lurking in the workshop.

These ratings are applied from the disposable, single use type face masks through to the single or double activated charcoal cartridges on the half masks, through to the powered total full face respirators.

Safeguard Misconceptions

Many people buy the basic disposable masks with the single strand of elastic and believe they are protected. Mostly these disposables do not meet the Australian Standard. Secondly, many wear them when working with vaporous materials. The nylon fibres in these masks actually trap vapours and concentrate them for the wearer. Often the disposable and the activated charcoal masks are stored in the workshop alongside the vaporous substances where their effectiveness is substantially reduced. Further, the inside of the mask often collects the dusts so that when it is put on the face the dust is directly against the face and under the nose.

Another problem arises with the use of two-pack polyurethanes. Cyanide is a common by-product of two-pack products. Cyanide particles can be as small as 0.02 microns, a lot smaller than the protection offered by the highest protection on the market, a P3 rated protector. Finally it is worth noting that the Australian Standard suggests the ratings are irrelevant and inappropriate if the wearer has a beard. Even three days' growth creates air space around the face thereby negating the seal and the effectiveness of the mask.

Protect Your Safeguards

Always keep masks sealed in a plastic bag, as exposure to even clean air reduces their lifespan. Each time the mask is worn check that it is easy to breathe through. If there is a reduced ability to breathe then it is clogged and needs replacing. Try banging the open side to remove particles. Prefilters extend the life of a cartridge. If the smell of a solvent can be detected through a mask it is not giving the full protection it promises. Ditch it.

The Final Breath

The quality of one's life is surely based on the ability to breathe easily. Be aware of all wood dust and chemicals, practice safe work habits and wear protective gear. Always be aware that ill health may be associated with your occupation. Always be sure of what you are working with—free information is available from 3M's Respiratory Advisory Service 1800 024 464.

Prices quoted were current at time of writing, check with your supplier.
With thanks to Lionel Hedt of Norton Safety Products for input into this article.

Suppliers of respiratory safeguards:

Bilson (*Willson*) (02) 9450 1544
Carba-Tec (*Purelite*) 1 800 658 111
McDonnell Road Hardware 07 3283 1558
Norton Safety Products 07 3279 2271
Power Tool Specialists (*Racal, Record*) 02 6280 4966
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Record Hand & Power Tools (*Record*) 02 9748 6800
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Wood Works Book&Tool Co (*Racal* 02 9807 7244
Trend Timbers 02 4577 5277 (*Racal*)
Unisafe 07 3868 4377
Woodman Group 03 9555 5199, 02 9708 3233, 07 3844 4433, 08 8346 4561, 08 9272 3844, 02 6280 4966
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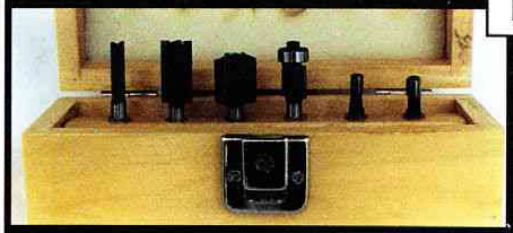

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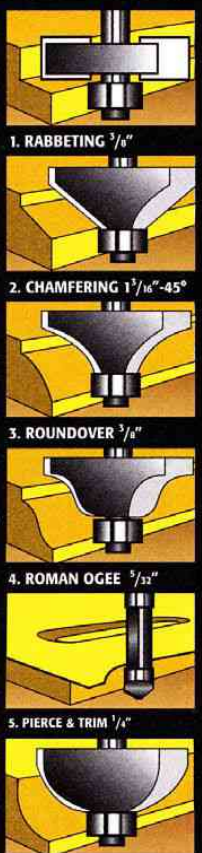

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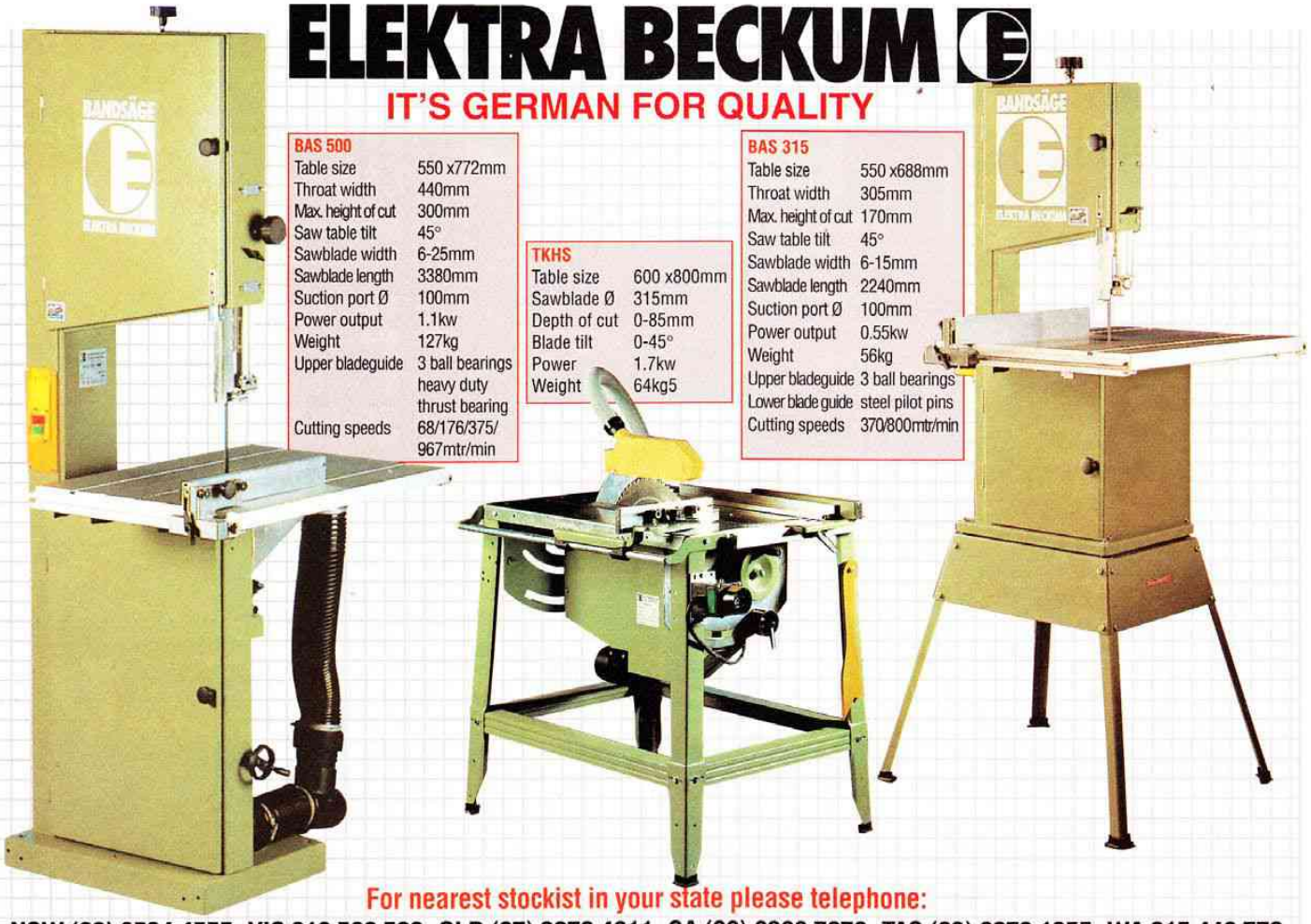

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By
Philippe
Brooks

JAPANESE TOOLS

Japanese hand tools have been familiar in the West for quite some time now, and most who have tried them have quickly become converts. Early in my career I spent some time working in Japan as a furniture maker and so became very familiar with all types of Japanese hand tools. On my return to Australia however, it soon became apparent that not all Japanese tools are ideally suited to the tough hardwoods we have in this country. I would like to talk about the Japanese tools that I use on a daily basis, and explain why others are not so well suited to my purposes.

Sashi nomi—
temple builders chisel

Nomi (chisels)

At the end of the Edo period in Japan, about 140 years ago, the government decreed it illegal to carry a sword, a common practice until this time. The highly skilled sword makers of this era made up for the reduced demand for their wares by making edge tools, bringing with them centuries of metallurgical expertise.

If you have ever held a Japanese cabinetmakers chisel you will probably have appreciated their design. They are small, about the size of a Western butt chisel, and well balanced. When cutting joints such as dovetails, I like to hold the chisel by the blade, about 25mm from the edge. In my way of working this allows me to position the blade and cut with great accuracy.

The blade of a Western chisel has always been a compromise—the steel has to be hard enough to hold a good edge but not so hard as to be brittle. Japanese edge tools mostly consist of a very high carbon steel laminated to a low carbon steel. The former gives a hard fine edge; the latter provides toughness and absorbs a certain amount of shock.

In my experience Japanese chisels hold a better edge longer than Western chisels. This, coupled with their size and balance, make them the most efficient and comfortable choice for me.

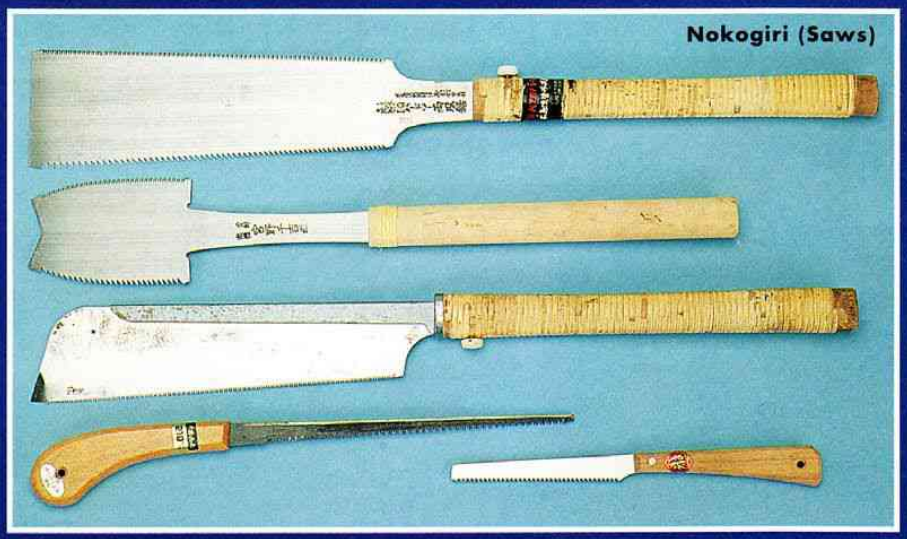
Nokogiri (Saws)

In my workshop we use two types of saws, the first being the dozuki which is similar to a tenon or dovetail saw, and the other being the ryoba which is a double edged saw with rip teeth on one side and cross-cut on the other. The ryoba is the Japanese hand-powered equivalent of the Western panel saw.

Both these saws cut on the pull stroke and have very fine kerfs. I would recommend the dozuki as a first purchase as it is the most used in furniture making. The ryoba is more akin to a carpenters saw. I use disposable blades on both types of saw.

I have a variety of the traditional type saws (those with non-disposable blades), but the dozukis range up to 28tpi, with each tooth having three facets. This means that they are extremely difficult to sharpen and in fact if my saws need touching up I have to send them back to


Nomi (chisels)


Nokogiri (Saws)

Japan. In the village that I worked in there was a saw doctor who sharpened and reset my saws by hand. All day he sat cross-legged on a tatami mat next to a saw vice and a small anvil which he used for resetting. He clicked his tongue every time I walked in with my dozukis, saying they strained his eyes too much.

I wouldn't be without my dozuki and, as a guide, I probably go through about two or three blades a year. I use the saw daily but rarely give it a heavy workout. Don't be put off by the pull stroke—it will become second nature very quickly.

If there is one thing to watch out for, it is the way which these saws may show up any flaws in your technique. If you start a line a bit off centre with a Western tenon saw it is still possible to twist the blade whilst cutting in order to bring you back to the mark. This is not so easy with a Japanese saw. If you are having problems, pay attention to your stance and make sure your wrist, elbow, shoulder and eye are in the same plane—think of the driving wheels and arms on a train

Kana (planes)

The craftsman I worked with in Japan had spent a period of time studying furniture making in England, working with Alan Peters, amongst others. As a result of his experience he was competent with both Western and Japanese type planes and aptly likened the former to a family sedan in contrast to a Formula One racer. I tend to agree, but to get the best out of a Japanese plane you must fully understand how to tune and maintain it—these are skills which take a significant amount of time to develop.

It should also be understood that most Japanese furniture and interior joinery does not receive a finish but is left as it comes off the plane, no sandpaper, just long full width translucent shavings that waft in slow motion to the floor. The plane is therefore regarded as a finishing tool, rather than one which prepares the surface for applied polishes.

In our workshop in the hills of Perth we very occasionally use a Japanese block plane, but that's about it. Most of our work is in jarrah so the low angle of the Japanese plane is not ideally suited, nor do we handplane often enough to allow us to keep a Japanese plane well tuned. Unless you are doing a lot of hand planing and use soft timber I would say that your time is probably best spent tuning up a good Western plane.

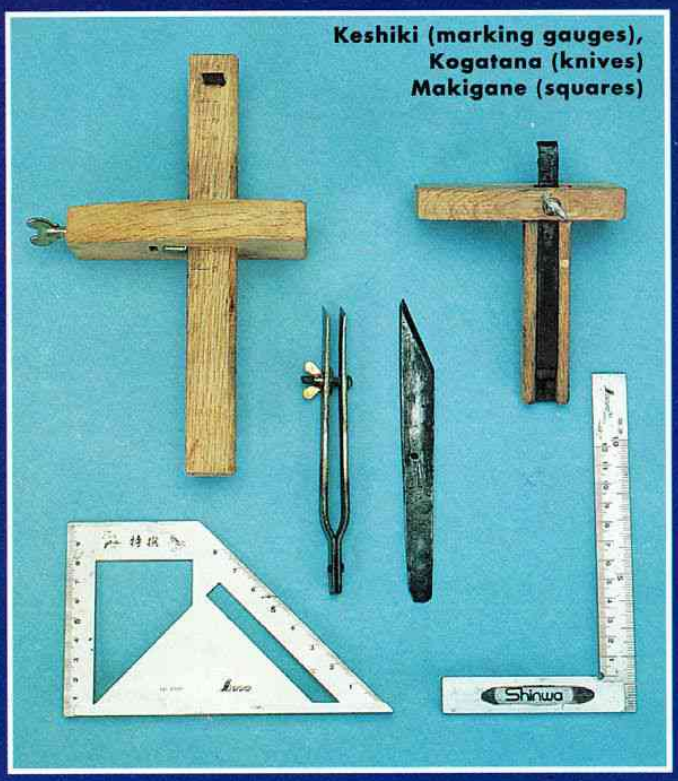
Keshiki (marking gauges)

Most of the marking out tools I use are Japanese. They appear simply made, but are well thought out and work very efficiently. The keshiki or marking gauges have blades which are approximately 10mm wide and cut a clean line. Even if the pins on a Western gauge are sharpened to a blade they still feel somewhat scratchy by comparison. Japanese gauges also have a large stock or fence which seems to make them easier to use.

Keshiki are available as single or mortise gauges and are generally not very expensive. They are also very easy to make. We have about half a dozen in our workshop and use them almost daily.

Kogatana (knives)

Two small knives, left and right bevelled, are used for everything from



marking through to sharpening pencils. Like chisels and plane blades they are made from laminated steel and consequently hold a good edge. The double knife shown above right is also very handy for marking out the latticework for shoji as well as mortises and inlay work.

Makigane (squares)

Japanese squares are not as pretty as their Western counterparts. The one I have is like a lightweight engineers square, about 150mm long. Its greatest attribute is that the blade is marked in millimetres from both the inside and outside faces of the stock. This saves a lot of time and certainly makes you wonder why all squares aren't marked this way. The other square that we use a lot is a 90/45° square. This is great for checking and measuring mitres as well as setting the cutter height on saws and routers.

Both of these tools are inexpensive and highly recommended. One note of caution; some of these tools have a Japanese scale on them (*bun*) which at first glance looks close to an inch but is actually about 28mm. There is also another scale which has gradations of approximately 13mm. Be careful and warn any people working with you because it's easy to be deceived.

Toishi (sharpening stones)

I use the man-made variety (*King* brand) in two grits. The 800 grit is classed as a 'middle' stone while the 6000 grit (*King S-1*) is regarded as a finishing or polishing stone. I do any shaping or removing of large knicks on the grinder and then go straight to the 800 stone.

There are several reasons why you should steer away from the Japanese natural stones. Firstly, they are often graded only by quarry and strata, (for example 'Kyoto North, strata 6'), secondly they are often a lucky dip, sometimes containing hidden quartz or even a crack—hence the Japanese saying: 'you never know a stone until you use it'. A top quality stone can also be amazingly expensive often costing tens of thousands of dollars. These are sought after by sword makers and collectors.

The stones I use cut fast and enable me to get a mirror finish on the bevel. These stones are relatively soft so we flatten ours frequently on a cement slab. The few scratches which result won't affect the stone's performance, and this is the way they do it in Japan too.

I keep my middle stones in a bucket of water (take them out if there is a danger of freezing). The finishing stone only gets watered when it is used. Incidentally, finishing stones should be used with a 'nagura' stone, a golf-ball size block often supplied with the stone. The nagura cleans the finishing stone, removing any glaze as well as forming a slurry which helps the subsequent sharpening.

This is by no means a definitive account of Japanese tools, but merely a guide to the ones which work well in my own situation. I often am asked for advice about which hand tools to buy. My recommendation is to firstly seek out good quality, and then, just as importantly, look for tools that you feel comfortable with, tools that are well balanced and pleasing to use. Quite honestly, if a tool fulfills these criteria its place of origin is of little importance to me.

Photo page 44 courtesy The Fine Edge.

Suppliers of Japanese Tools:
Carba-Tec Qld 1 800 658 111 , Vic 1 800 653 777, NSW 1 800 683 583
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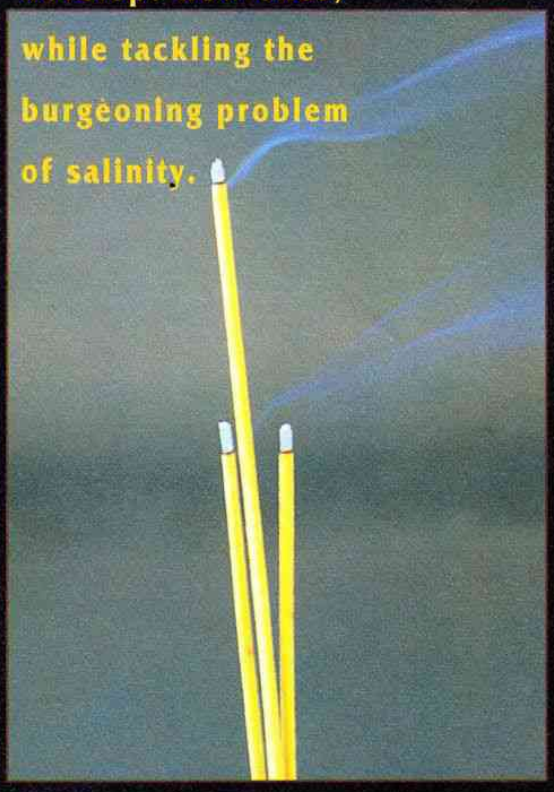
By Dinah Hall

SANDALWOOD

The ethereal suggestions of sandalwood, its incense and oil conjure images of the Far East, yet the reality is that Australia has been supplying the Asian market for over 150 years with the indigenous species. The vigour of the Australian sandalwood industry looks set to return as West Australia establishes commercial crops, revisits old markets and develops new ones, while tackling the burgeoning problem of salinity.



Sandalwood forest at Dryandra

The remoteness of the West Australian wilderness echoes down the line as I speak by satellite linkup to Peter Jones's mobile 300km north of Kalgoorlie. As head of the Department of Conservation and Land Management's (CALM) Sandalwood Business Unit he is involved in plenty of field work as *Santalum spicatum* occurs naturally from south of the Hammersley Range, east to the Flinders Ranges, west to the Wheatbelt and south to the coast (34 °S) that is, over approximately 90 million ha. CALM's 1984 resource inventory identified 110,000 tonnes of green wood and 27,000 tonnes of dead wood or 23 million sandalwood trees in the region. This year 2000 tonnes will be harvested from state-owned land with a further 200 tonnes coming from private land.

Approximately 80 million ha are in statutory reserves as CALM strives to preserve representative viable populations from grazing animals. Peter Jones's business unit manages the demand both locally and overseas and

Detail of 'Planet Sphere' in sandalwood by Stephen Hughes

believes the significance of sandalwood in Asia ensures the viability of a market for momentoes, desk items and furniture incorporating the varied colours and features of sandalwood inlay and veneers. The future success of such markets will in part be dependent on the success of both the 50 hectares of trial plantations of *spicatum* in the Wheatbelt and to a lesser extent the 20 hectares plantation of Indian sandalwood (*Santalum album*) in Kununurra.

Further, the species and its hosts are being offered to private landholders to combat salinity with the possibility of a cash crop down the track. Recent workshops on sandalwood at the Fine Wood Industry Project in Dwellingup and Busselton promoted the inland gold to the coastal furniture makers and underlined the need to increase the export earning capacity of the timber through value-adding as currently 99% of sandalwood harvested is exported. With the wood being revered in Asia, a finely worked gift item or a larger piece of furniture of sandalwood and jarrah promises the ultimate West Australian icon.

Romantic Heroes

Traditionally linked with the mysticism of Asia and the cultural imperative of joss sticks, sandalwood sourcing is steeped in its own uniquely Australian romance—the rugged individualists, often graziers and gold prospectors supplementing their incomes, who worked from remote bush camps, usually weeks away from supplies, pulling and adzing away bark and sapwood from the small logs before shipping them via bullocks to the ports of Fremantle, Bunbury, Albany or Geraldton.

The first 4 tons (4.1 tonnes) pulled for export in 1845 helped turn the tide on the colony's trade imbalance. Within three years it became the state's primary export (45% of the total) followed by wool and whale oil.

While the industry waxed and waned over the next 100 years or so the itinerant life of the sandalwood getter remained hard. Women cleaned the logs ready for carting while their husbands went bush in search of more of the 'gold'. Women bore children without assistance, and buried some. This was the price of the future of the industry.

Sandalwood was freighted by rail across the state to the ports of Fremantle, Bunbury, Albany and Geraldton for export to Asian markets.

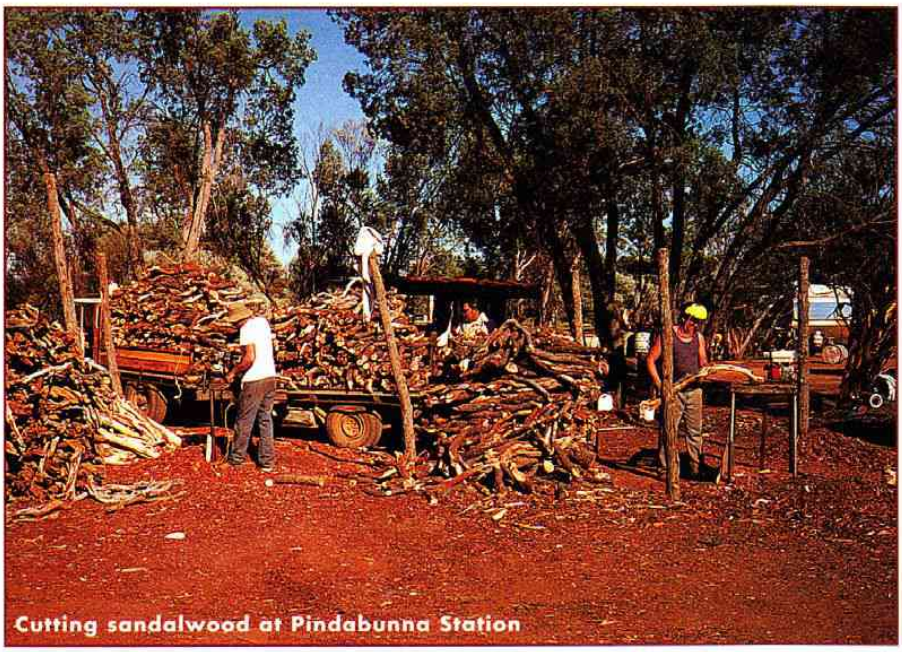
One of the rugged breed of sandalwood 'pullers' cleans the roots and branches with an adze at Metcalfe's camp at Kadji-Kadji Station, WA, 1972.

History Of An Industry

The failure of the British-owned Mysore Indian sandalwood plantation in India helped the local industry and a record 9,605 tons was exported in 1882. The pullers' need to sink wells for water meant they were largely responsible for the 'opening up' of the Wheatbelt region and ultimately the demise of the sandalwood stands in this vast area.

By the 1890s accessible sandalwood had been virtually cut out, and gold fever of another kind took over until the opening of the Eastern Goldfields railway in 1896. This ensured access to the vast areas of uncut sandalwood. Again exports boomed with four companies competing for the Chinese market throughout the 1920s and 1930s. There was no restriction on prices or quantities, and pullers were only paid a subsistence wage.

In 1920-21, record amounts were cut (14,355 tons followed by10,839 tons). At this stage WA was supplying China with 80% of its annual need. When civil war broke out between the na-



Cutting sandalwood at Pindabunna Station

tionalists and communists in China huge stockpiles of sandalwood sat on Fremantle wharves. The industry was in crisis and the pullers remained unpaid.

The Government agreed to underwrite the stocks and forced the four companies to amalgamate into the Australian Sandalwood Company in 1930. In 1932 the Sandalwood Export Committee was established to represent West Australian and South Australian interests and coordinate the industry. Reserves were established to the tune of 130,000 ha in 1929, with a further 1450 ha being sown with seed.

Since 1994 all sandalwood harvested on crown land has been managed by one company, Wescorp Holdings Ltd, and the committee was disbanded. CALM now administers all sandalwood harvesting in the state and currently has 19 contractors on its books.

Conservation and Harvesting

Pullers are so-named as the tree is pulled or pushed from the ground, not cut or felled, because the roots, butts, stems and branches all contain the valuable heartwood in which the aromatic oil is concentrated.

While the original practice often involved felling the tree, when supplies ran short cutters returned to old areas of harvest to pull the roots and other waste. Sandalwood is a root parasite on many species—two recognized common hosts are raspberry jam (*Acacia acuminata*) and mulga (*A. aneura*). Outside the reserves, however, the tree is not regenerating, grazing sheep, goats and rabbits are ensuring this. The destruction of suitable host roots such as the steel hard raspberry jam has also contributed to the decline in regeneration.

While the Wheatbelt region experiences a salinity crisis, CALM is working overtime to implement the Salinity Action Plan. Farmers are being offered a range of species, including sandalwood, if they agree to grow the maritime pine species as a commercial crop (see AWR#16).

Last year CALM introduced the host plant, raspberry jam, to 50 hectares, and next year it plans to introduce another 50-100 hectares of the same species. Planting of sandalwood is planned for next winter when the rains come over the Darling Ranges to drop most of the 400-600mm the area enjoys each year. The western Wheatbelt enjoys a higher rainfall than the Eastern Goldfields and with growth rate having a direct correlation to rainfall it is anticipated a marketable tree can be produced within 20 years.

Lifespan

No one really knows the lifespan of these trees though it is believed the tree will live for 200 years. In arid areas it takes 90 years to produce a commercial sized tree though higher rainfall areas obviously produce a faster growing tree. Harvesting contractors are obliged to ensure the trees are sustainably harvested— stem width must be greater than 127mm. This usually represents a tree of 70-100 years.

Today and Tomorrow

With an export target of up to 2,000 tonnes per year, most is sent to the South East Asian market for incense manufacture. Only a small amount is sold as carving wood as much of the wood is highly featured. The incense market alone brings $10 million into the state each year. And while China is again a viable market, an increasing amount is being marketed domestically as inlay and veneer in high quality furniture though just five tonnes were officially sold in Australia last year. CALM and organisations such as the Fine Wood Industry Project are attempting to increase this figure by promoting the timber through workshops.

As a low rainfall timber it is not surprising that the timber is limited to relatively small logs to 1.2 metres by 100-200mm, though larger logs of 300mm have been found. The fine grain, plus the relative ease of working make it an ideal timber for small scale man-

ufacturers. Technically a hardwood, sandalwood, with its fair to blonde to buttery tones is just harder than pine and just below the density of jarrah. The market value currently stands at $7,000 for the one tonne being harvested per hectare. The future is to maximise the value for the dollar through value-adding. CALM and the University of Western Australia are researching the possibilities of a return to commercial oil production for perfumery (a commercial oil distillery operated out of Perth up until the 1930s). Potential also exists for cosmetics and pharmaceuticals for the American and European markets. With initiatives such as these, the push is now to capitalise on this industry within Australia.

Other Sandalwoods

Another species West Australia boasts, better known as Indian sandalwood (*Santalum album*) is being trialled in plantations in the tropical Ord River region. CALM has 20 ha of the species already planted and private company, *All Range Tree Farm*, will begin planting with the wet. The oil content of the tropical species is much lower than that of the Goldfields species.

Queensland sandalwood *Santalum lanceolum* has been harvested since1865 in Cape York Peninsula, especially in the areas Chinese immigrants were prospecting for gold, however the industry declined by 1940. It has enjoyed a return to the marketplace when 1982 legislation repealed the *Queensland Sandalwood Act 1934* which prohibited the export of the timber other than through the WA-based Australian Sandalwood Co.

Currently earning around $1,100 per tonne in the round, the market is considered depressed as it was worth twice as much ten years ago.While it is estimated that more than 500 tonnes is harvested annually from private land mainly from the Gulf region, it is unknown how much is poached each year from the remote stands, and how much damage poachers are doing to the market with a substandard product.

The Department of Primary Industry *Forestry* group has the unenviable task of sustainably managing the annual 500 tonne harvest from Crown land, most of which is under leaseholder control. In 1992 Telegrem Pty Ltd won the only contract to harvest and this will expire by the end of 1997.

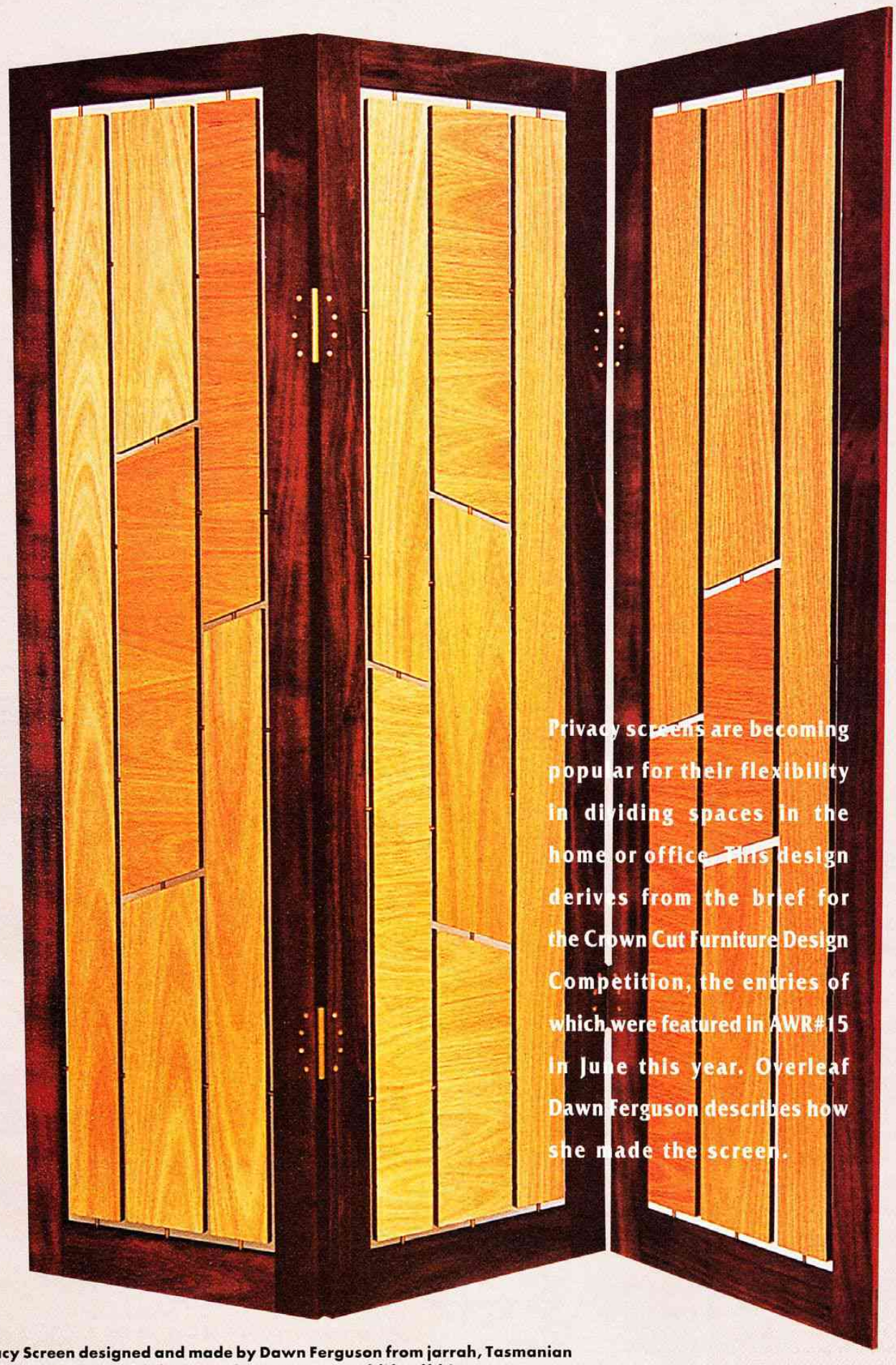
Though scattered throughout the state and often confused with the WA species, *S. lanceolum* is most notably found with gidgee on the basalt walls north of Richmond and Hughenden. *Forestry* are currently conducting small scale trials on old tobacco growing areas north of Mareeba of *Santalum lanceolum, S. album* and another pacific islands species of sandalwood, *Santalum austracaledonicum*.

Photos courtesy of CALM, Kalgoorlie.

Suppliers of Sandalwood:
Trend Timbers 02 4577 5277
Southern Trade Supplies 02 4869 1322

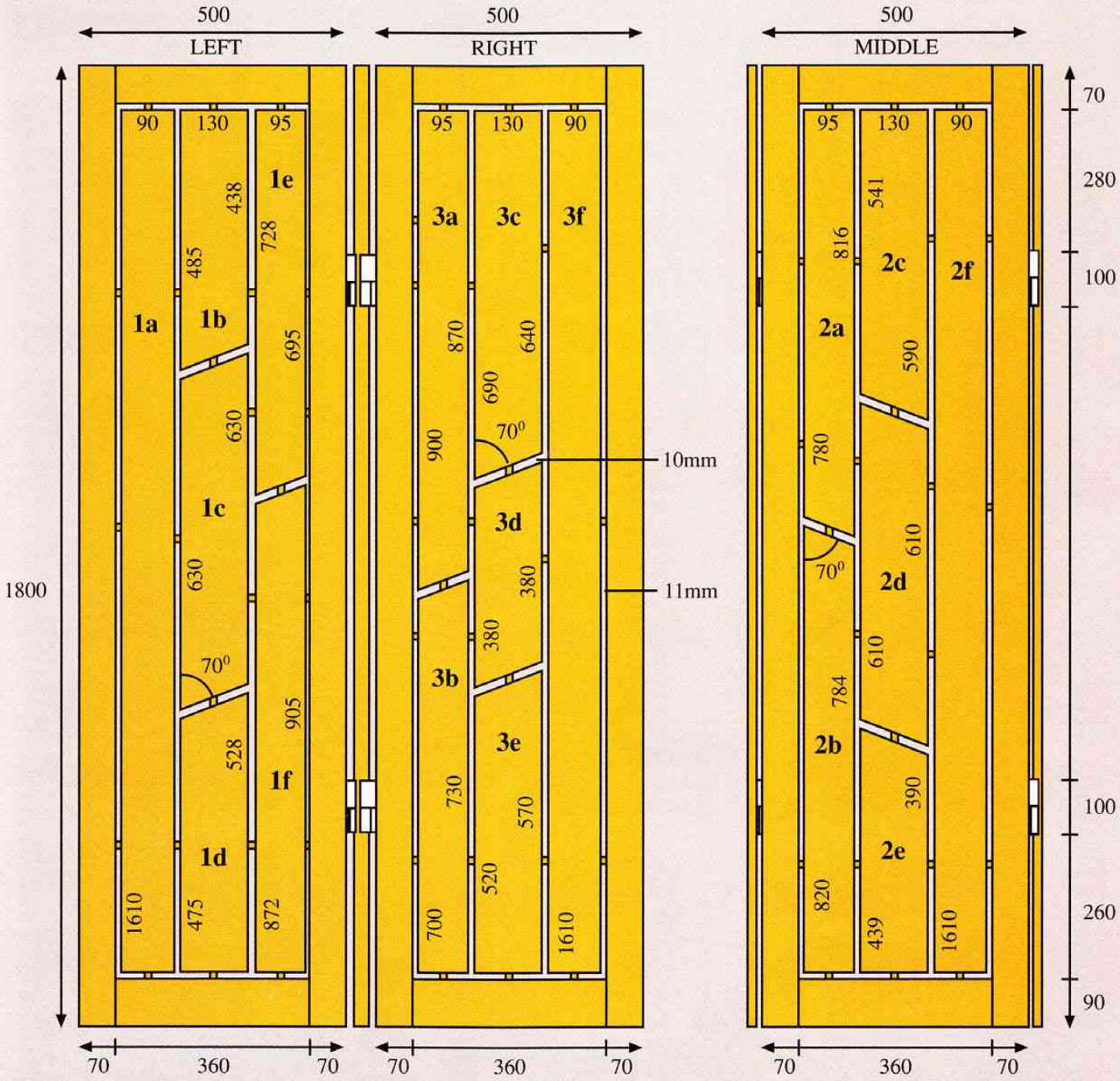
By Dawn Ferguson

A PRIVATE SCREENING



Privacy screens are becoming popular for their flexibility in dividing spaces in the home or office. This design derives from the brief for the Crown Cut Furniture Design Competition, the entries of which were featured in AWR#15 in June this year. Overleaf Dawn Ferguson describes how she made the screen.

Privacy Screen designed and made by Dawn Ferguson from jarrah, Tasmanian Crown Cut veneer with brass rod connectors and lift-off hinges.



My intention was to create a functional and aesthetically pleasing piece using very simple construction techniques. Having decided on the dimensions and design of the panels it was necessary only to work out the most efficient way of cutting the veneered MDF sheet on the panel saw (see cutting layout, p.54).

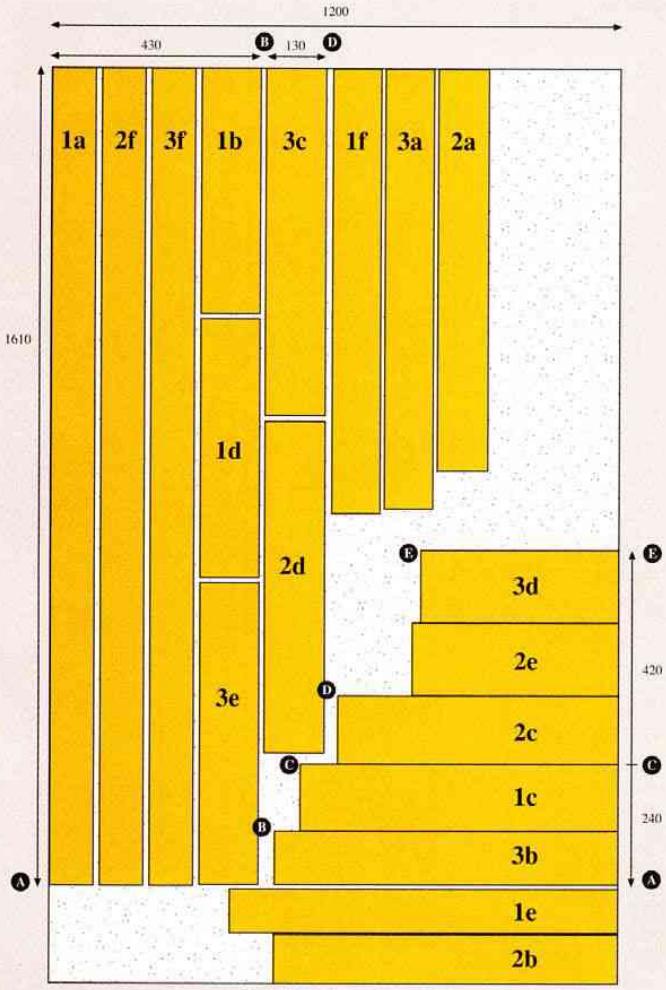
Each strip was accordingly marked to length and cut. The angled cuts are 70° and each strip was marked with a code number in chalk for easy identification. To manufacture the screen in quantity it would be easier to make the screen panels identical and simply reverse the centre panel.

The jarrah stiles have through bridle joint mortices. The rails have bridle joint tenons which were easily cut on the panel saw. The 6mm mortices were more difficult—I used a boring machine, but a morticer with the correct cutter would work better.

I wanted to edge the panel strips with black to contrast with the brass rod joiners but unfortunately I made the mistake of using black paint. This bled into the grain and took me hours to clean out. Black iron-on edging tape would achieve a similar effect more efficiently, however I intend to use laser cut strips next time, as I have successfully laser cut another product and am very pleased with the resulting neat black edge.

The actual positioning of the brass rod joiners is not written in stone, but accurate marking out is critical. I set up the boring machine to drill the holes 25mm deep centrally in the edges. Before assembly the ends of the rods were rounded over on the grinder.

Each pattern of strips was next laid out and the vertical rods were inserted first. Starting with the long strip I joined the middle sections and then moved to the other sections. The stiles were fitted to the sides and finally the top and bottom rails were attached—only the bridle joints were glued. To set the gap between each segment I used spacer strips. Vertical gaps are 11mm, central gaps are 10mm and the



Cutting Layout

gap to top and bottom rails is 15mm.

In order to ensure that the screen would look identical from both sides, I set the hinges into the edge of the stiles. Slots were routed to suit the thickness of the hinges, in this case 3mm. The panels won't fold up flat, so lift-off hinges are essential to allow for moving or storage. The hinges are held in place by inserting 6mm brass rod through the stiles. It is advisable to drill out the holes in the hinge plates a bit oversize, say 7mm.

The weight of each panel with 12mm MDF and 6mm brass rod worked out to 12kg. I intend to make future screens using 9mm MDF and 3mm brass rod—this should reduce the weight of each panel by about 30% to 8 or 9kg. I found the panels a bit heavy and the reduced weight and more delicate appearance will be an improvement.

Dawn Ferguson is a furniture designer/maker who currently holds the position of New Talent Scholar sponsored by Bunnings at the School of Wood, Forest Heritage Centre, Dwellingup, W.A. Enquiries to manufacture the screen under license should be directed to her, telephone (08) 9538 1395, or 019 991 409.

Materials:

12mm MDF/ Tas *Crown Cut* veneer: 1800 x 1200 x 12mm
Jarrah/stiles: 1800 x 70 x 17mm (6)
Jarrah/rails: 500 x 70 x 17mm (3)
Lift-off brass hinges (4)
Brass rod: 60 x 6mm (72)
Black edging
Material cost approx. $250,
Time approx. 25 hours (for a one-off)

By Richard Raffan

A BOX OF SPILLIKANS

Last issue's feature entitled 'Seven Equal Pieces' presented the work of seven leading turners, each of whom was given a same-sized piece of Huon pine to turn. Here, Richard Raffan demonstrates the making of the spillikans and box pictured below.

What couldn't I do with a block of Huon pine! Initially I thought this would be a good chance to see how many dozen small boxes I could get from one piece, cleaving the block (rather than sawing) to save valuable material and using every last scrap. The wood would need to be very dense and resinous, not to mention straight grained. But I soon remembered that I'd be pushed for time, having a lecture tour only weeks away, and so I opted for a project which would be less time-consuming.

Bowls were definitely out: too obvious, and anyway this was an opportunity to do something a bit different to my normal production. Soon enough I decided to make a set of spillikins—for the game commonly referred to as 'pick-up-sticks', and as many boxes as I could manage from the remainder of the blank.

Spillikin sets are a sort of slow production item for me (I've sold around 115 sets since 1978) so I know I need top quality straight-grained material, especially for the sticks. A set consists of 35 turned and carved sticks in a box. I used to make fifty sticks, but found the game more enjoyable with fewer. Contrary to general perception, the spillikans, usually 190mm long, are comparatively easy to make. They are a great skew chisel exercise, demanding minimal tool pressure against the wood and axis.

The box is the difficult bit. You can drill out the inside, but for a really good job the internal endgrain has to be hand-turned. And finishing the external endgrain will push your technical skills to the limit too.

Usually I make the box with a suction fit lid, which slides over a 25-30mm flange on the base. I always make the box first, then make sticks exactly the right length for that particular box. A box with an internal diameter of 40mm should accommodate 35 spillikins with ease, but with harder woods like gidgee or mulga I can make the sticks thin enough to fit within a 35mm diameter.

When the wood finally arrived only a couple of days before I was due to go overseas, I was disappointed to find the block barely large enough for what I had in mind. The block was only 200mm square and a blank for a box with a suction fit lid needs to be at least 230mm long. However there was enough of the straight-grained dense resinous material I look for in Huon pine for the sticks.

With material limited, I opted for a threaded lid on a 10mm long flange. This 10mm added to the 5mm needed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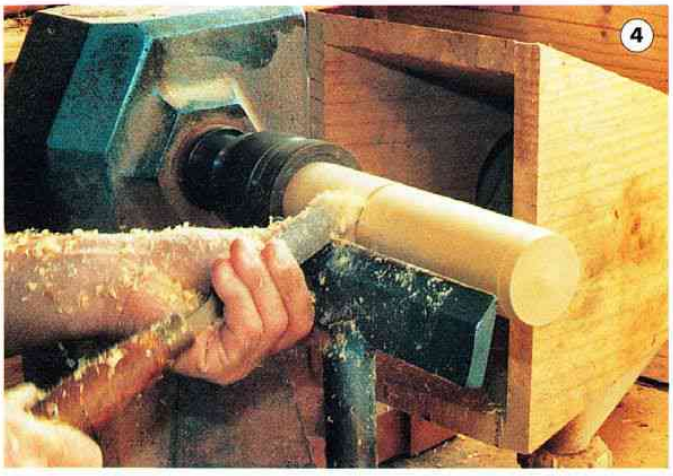
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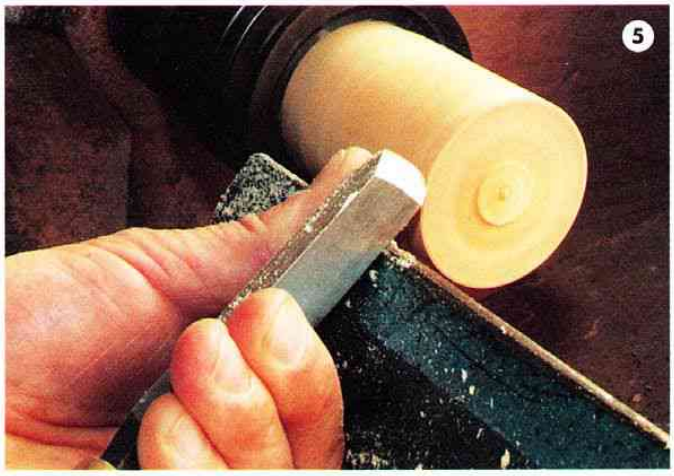
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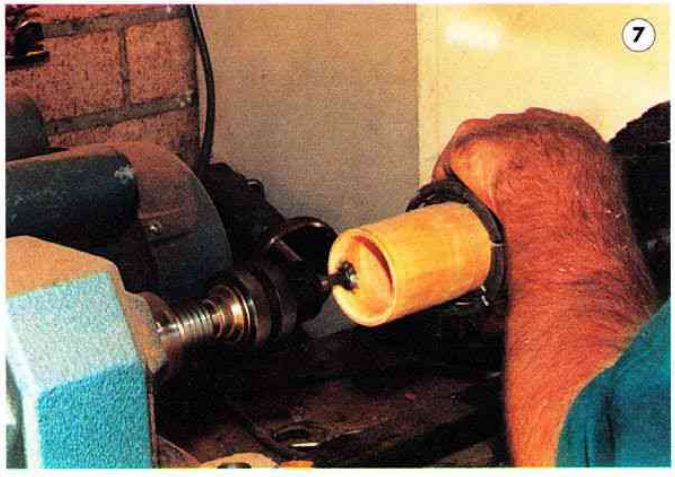
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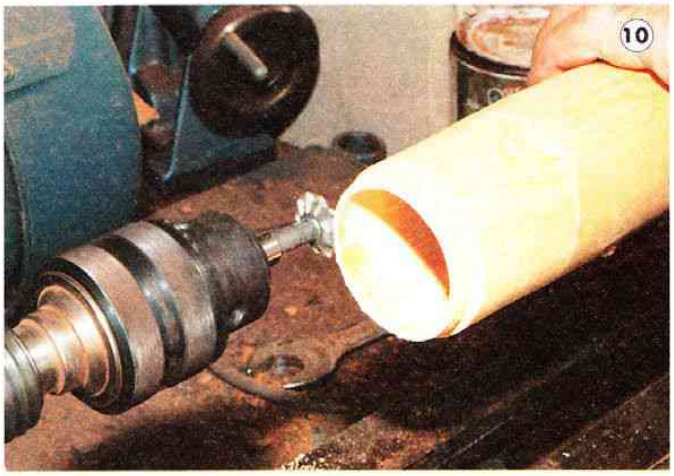
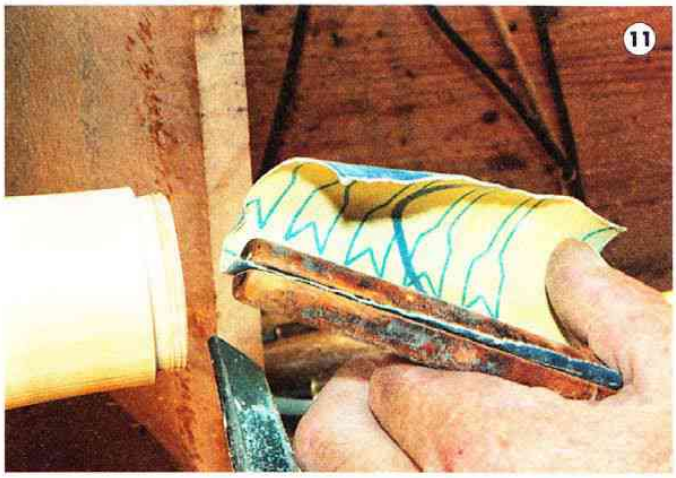




at either end of the box (the thickness of the lid and base) meant that the spillikins could only be 180mm long at most.

Making The Box

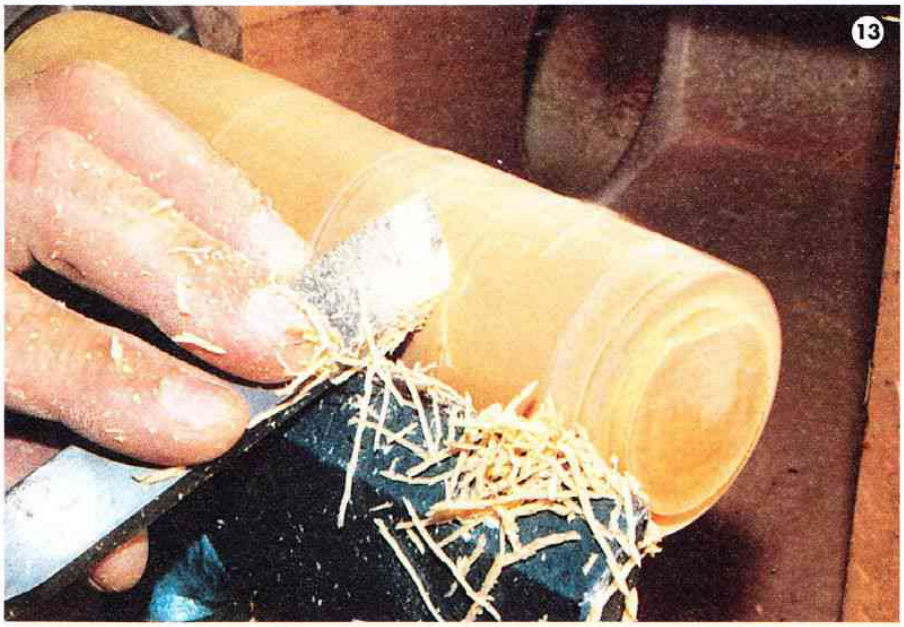
The box is best made first, following standard procedures. It is the depth to which both lid and base are hollowed that makes this a testing project. Ensuring that the grain runs the length of the blank, cut one 50mm square.

At the same time, and as near parallel to the axis as possible, cut about forty 10mm squares for the sticks (photos 1,2). (I expect some breakages due to grain defects even if I manage to get through without a major catch). The blanks were cut from the denser, more resinous and darker material seen on the upper side of the blank.

Turn a short tenon to fit your chuck and true the blank to a cylinder (photo 3). Part off the base section. Note that the shoulder will seat on the chuck jaw rim, whilst it identifies the bottom of the base, enabling you to ensure that the grain alignment in the box remains as it was in the tree (photo 4). True the lid section prior to hollowing (photo 5). Drill a depth hole leaving 5-8mm for the top of the lid.

Hollow using no more than 5mm of the left corner of a square-end scraper. The tape on the tool blade marks the depth required (photo 6). Sand and finish the inside of the lid.

Before cutting the thread on such a soft timber I flow thin cyanoacrylate adhesive (*Superglue*) over the surface to harden the wood. I use a Klein threading jig and a 60° cutter to cut the thread (photo 7).



Establish the *approximate* diameter of the base flange which will fit into the lid. The lid should just fit over the end of the flange. If you fit the lid on tight at this stage, chances are it won't fit properly when the job is finished (photo 8). Hollow the base *before* fitting the lid (photo 9). This is especially important if you are making a suction fit lid. Use your hand to dampen the vibration as the cut proceeds. Again, the tape on the blade marks the required depth.

Harden the flange with cyanoacrylate *Superglue* then cut the thread, or fit the lid on tight if you are going for a suction fit (photo 10). Sand the inside. For most of us the base is too deep to sand by hand, so use abrasive wrapped around a dowel (photo 11). With the inside of the box completed, screw the lid to the base (photo 12) and complete the outside (photo 13).

Making The Spillikans

When making the sticks be sure not to have all the beads in the same area; they won't fit into the box! I make six sets each of five picking and lifting sticks with sharp and curved ends. Spillikin blanks need to be gripped (here in a scroll chuck with long jaws) rather than mounted between centres (photo 14). Lay out the length of the spillikin. Photo 15 shows the spillikin being turned using a 15mm skew chisel. Flat sections of the spillikins are shaped on a small disk sander, see photo 16.

A set of spillikins is the stuff of heirlooms. They are not easy to make but should nevertheless be within the capabilities of any turner who proceeds with care. During hands-on workshops I have cajoled dozens of novice turners into making at least one stick and surprising themselves. If you really cannot manage to turn the inside of the box or find the external endgrain just too difficult, make up a square section box. The spillikin sticks are an ideal project to work away at, making three or four at a time until you have a set. In no time you'll be surprised at how well you can handle a 15mm skew chisel.

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'The Eagle' by Greg Duncan, Tasmania

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By Andrew Potocnik

DIVIDED AND JOINED

In the final instalment of last issue's feature Andrew Potocnik describes his unique solution to the challenge.

A piece of Huon pine arrived in the post. The instructions were simple: 'Turn anything you wish but use the maximum amount of the blank possible. You may divide it and use other techniques of sculpting or surface ornamentation, but no other materials may be incorporated. Simple!? Normally I begin a new piece by developing a design and selecting the materials best suited to it. I then experiment with the scale to establish the right proportions. This brief forced me to work in reverse.

The key to completing this piece successfully was to plan carefully, developing drawings from which to work. The enlargement and reduction function of the photocopier is an invaluable aid for scaling drawings.

I decided on a bowl which would be quartered and then reassembled with a cross-section dissecting the bowl which in turn formed a stand on which the completed piece would rest. This was an idea I had already been thinking about and I had planned to use two contrasting timbers for the major components. For this project I would have to use a different technique to contrast the parts in order to highlight the design.

I do not find Huon pine a particularly suitable material for most of my work, and didn't feel it would be the best material for this piece. I knew it would be possible to achieve the outcome I had in mind, but only with some mental effort. This is the type of challenge I enjoy, so off I went to try and solve the design problem and push its restrictions.

The assemblage that I had in mind required a fair bit of cutting, which presented me with my first moral dilemma. I felt guilty about cutting up a nice big piece of Huon pine. I even thought about working out the volume of wood available and substituting it with other pieces of smaller dimensions!

Once the planning stage was over I established how much timber would be needed for the rings that are used to make the legs—these would come from a slice of the blank. The actual bowl blank was cut with the bandsaw table tilted so as to reduce waste (photo 1). With the blank mounted on the lathe, I roughed it down to the required shape using a template as a guide (photo 2).

The outside was not sanded at this stage. Next, the shell of the bowl was separated from the faceplate using a *Stewart System* lance, which left me

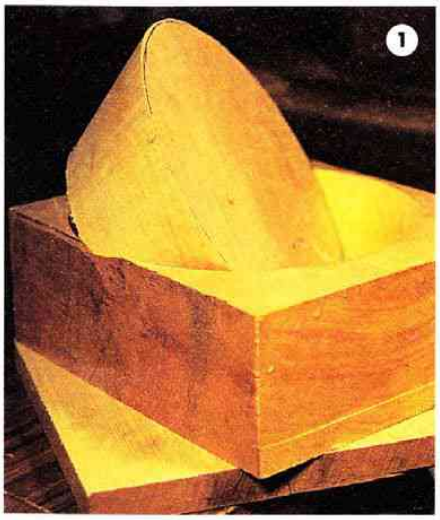
with a hollowed bowl form and a stub attached to the faceplate, which could be used later.

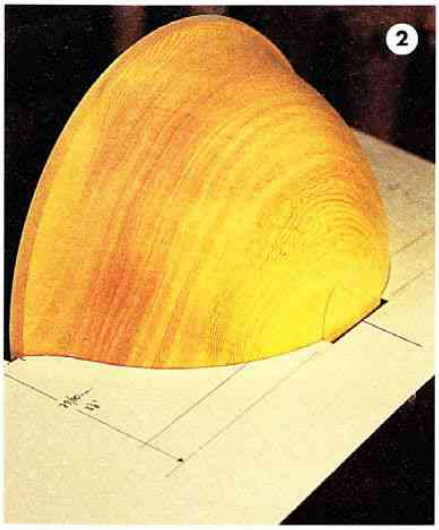
I now had to transfer the shell onto a carrier which had been turned from a scrap piece of timber. The bowl was then glued into the carrier, and its interior turned out to the required shape (photo 3) and sanded through to its completed stage. The rim was also sanded at this stage.

Using a parting tool, I separated the bowl from its carrier. Having planned ahead, I turned a step outside the holding rebate and marked it prior to gluing. Photo 4 shows the 12mm marking on the carrier. This would remind me later how far I would later need to cut to separate the two.

After this I needed to create a carrier that would allow access to the exterior portion of the bowl to complete it. A push fit carrier seemed the best choice. Progress on the shaping was monitored using the template created earlier.

Once complete, I used a straight edge and fine pencil to mark out sections



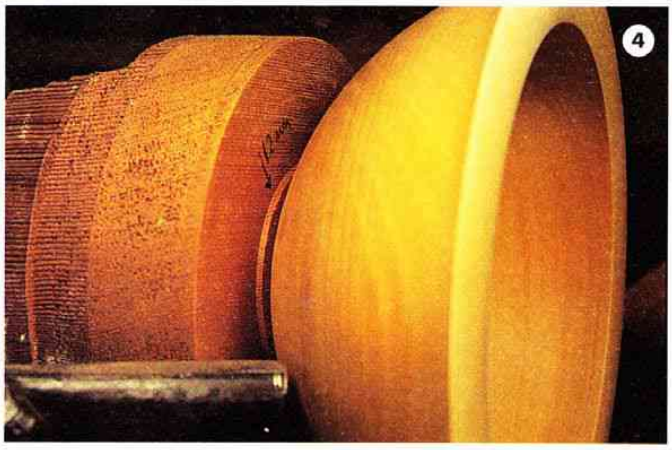


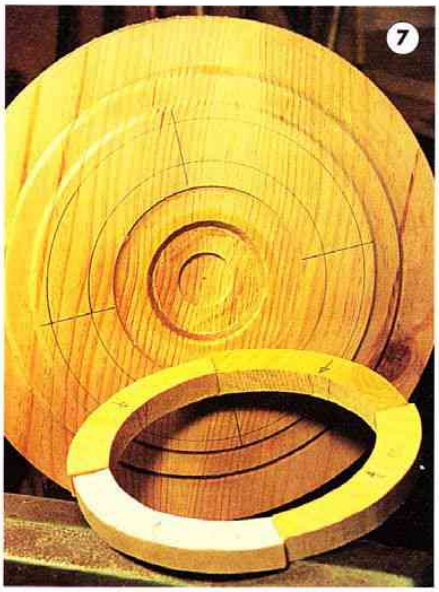
of the bowl which would be cut away on the bandsaw (photo 5). Photo 6 shows the cut bowl revealing approximately 3mm of wall thickness throughout most of the form. After some careful consideration and drawing I established the required thickness and diameter of the ring that would be cut to form the bowl's legs.

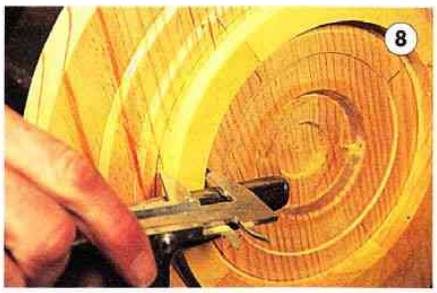
In keeping with the spirit of this exercise, I had set aside a slice from the bottom of the block to use for this ring, however, I found that it would be possible to obtain the required material from other scrap material. Careful consideration was given to the direction of growth rings, aiming to reduce problems associated with feather grain, which would make the ring too fragile.

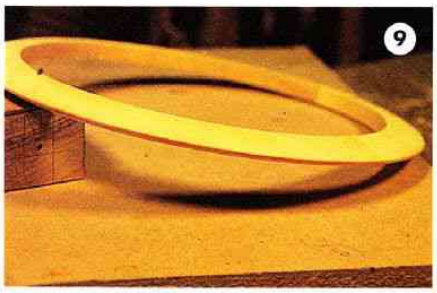
Photo 7 shows the ring glued with epoxy resin (the arrows indicate grain direction) and the carrier is marked with guide lines that indicate where the ring should be placed so that it is centred. It was then attached using heat sensitive glue.

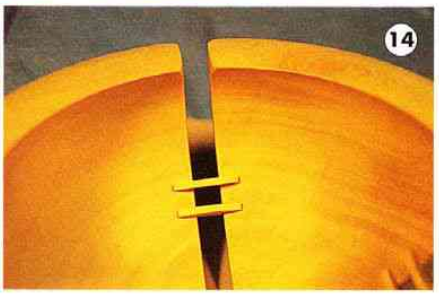
Vernier callipers were used to check if the ring had been turned to the right dimension (photo 8). This instrument

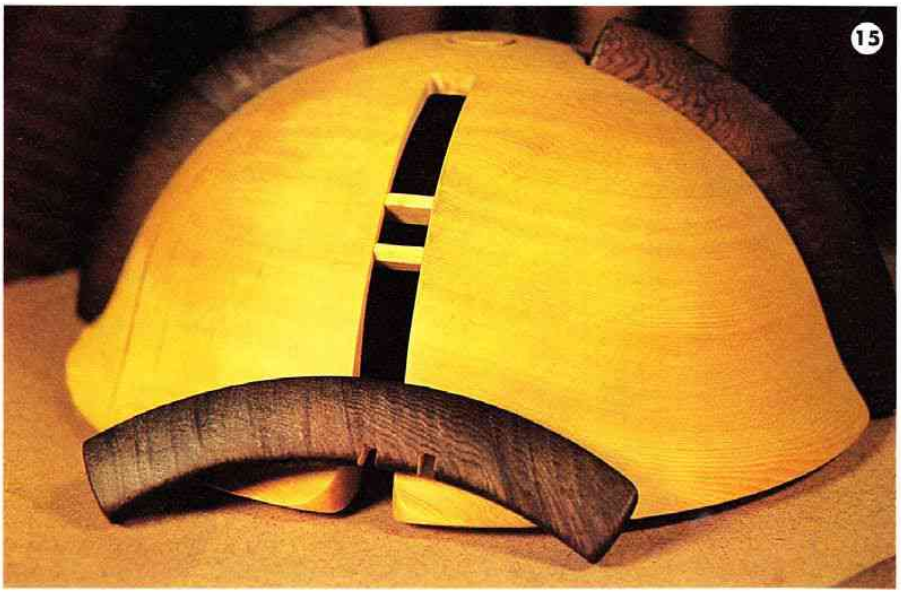












also makes it possible to see whether the inside and outside edges of the ring are parallel.

Once correctly dimensioned, the ring was shaped on one side, burnt and rubbed back. After reversing, the same was done to the other side. And what do you think happens when you get the slightest catch? You begin to search for the missing pieces and start all over again. Don't forget, it's always important to wear a face shield while using machinery. This time I could have received a serious facial injury had I not been wearing a full face shield, as I always do when turning.

Photos 9 and 10 show the ring before and after burning and cutting into four segments. Slits were filed to accept the quarter ring segments (photo 11).

Scrap blocks and the aid of a film container help to support various components so an overall idea of how things were shaping up could be gained (photo 12). This gives the chance to determine if any changes need to be made.

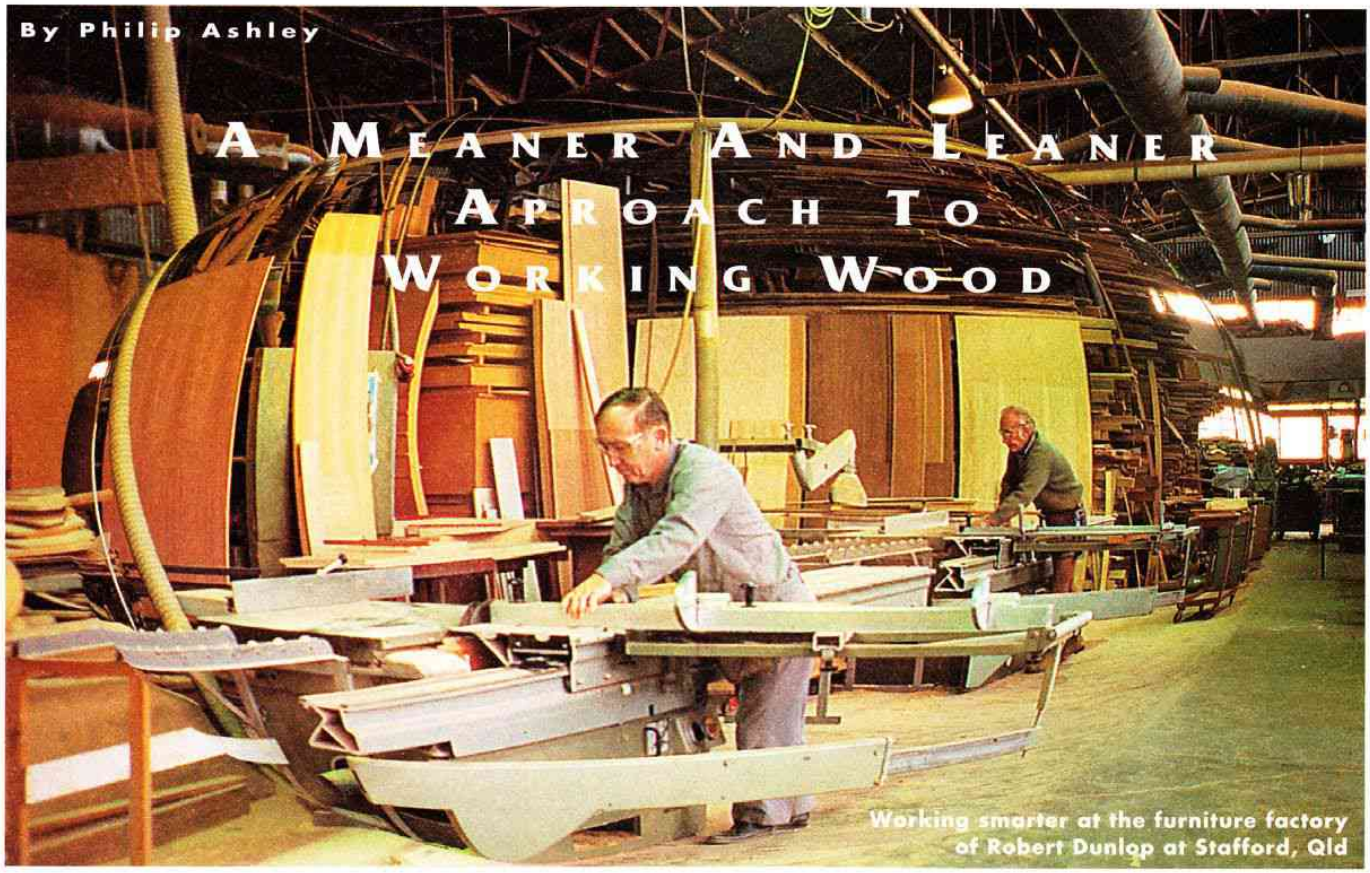
Once satisfied that things were progressing well, it was time to decide how to connect the legs and bowl. I already had ideas before I began, however ideas don't always work in reality. At this point the bowl was very fragile as there was little remaining wood holding it together. The legs were intended to bind the sections together and give the bowl strength.

After fruitlessly exploring some possibilities that would work visually and structurally, I solved the problem during an 18 kilometre run. Models were used to establish the dimensions and shape of the last components of the piece to be made.

Photo 13 shows the 'platelets' that were hand shaped and then glued into place (photo 14). Slots for the platelets were cut into the legs. The ends of the legs were then trimmed to size, burnt (photo 15), then fitted. Finally the bowl and legs were sealed before being glued together. □

By Philip Ashley

A Meaner And Leaner Approach To Working Wood



Working smarter at the furniture factory of Robert Dunlop at Stafford, Qld

An Australian guitar manufacturer can now produce a component for twenty cents where it once cost four dollars to import. A furniture manufacturer makes twice the number of lounge suites than he did ten years ago, but only uses half the labour. These are two examples of manufacturers adopting a 'leaner and meaner' approach to woodworking. Both manufacturers remain successful in times when many companies are finding the going pretty tough. Don't be fooled into thinking that your small business will survive due to the smaller overheads; big business has less staff due to CNC technology, and a larger slice of the market to support it.

To be a market leader, it is necessary to offer a unique or superior product, give better quality, offer outstanding customer service, and guarantee prompt delivery times. This should be enough to guarantee success, but sadly, price will invariably come into the equation. On a level playing field where techniques, materials and labour are equal for all manufacturers, price may be the determining factor when it comes to selling your products. This will be the case if you manufacture five hundred wardrobes a week, or turn fifty rolling pins.

The key to making sales could be how mean and lean your manufacturing process is. In order to get the competitive edge it is necessary to look very closely at the way things are made in your factory or workshop, to cut out the waste, work faster, smarter, and use your resources to the maximum potential. Let's look at a few ways in which your 'bottom line' could be improved.

The Raw Materials

First, look closely at the timber you buy and consider buying a mixture of grades. Framing or carcase timbers can be of a lower grade than seen components, and the amount of quality grade timber you need to buy could be a lot less. If you use mainly small components, you may be able to cut some quality material from a lower grade with a little extra time, and come out in front. You will need, however, to carefully consider the cost of sorting and cutting the wood.

Strike a deal with your timber supplier to provide timbers of certain lengths, which are multiples of those you need. For instance, Queen size beds use mostly 1500mm lengths, so it makes sense to buy multiples of this, say 3 and 4.5 metre lengths. Lee Kidman of Kidman furniture remarked to me once 'It's amazing how much you can save if you do your sums.'

Don't buy timber that you don't intend to use in the near future, it can be damaged in storage, and may eventually be used uneconomically just to get rid of it.

When purchasing panel materials, Ian Cook of Alexander J. Cook has this advice: 'You can be 100% accurate on square metreage, but a long way off on sheets because a square metre estimate does not take into account the small offcuts which add up.' Consider purchasing a simple sheet optimisation program for your computer, it may pay for itself in as little as a few weeks.

Bulk buying can save up to 50% on material costs, but if you have to borrow money to buy, you will be paying more than you think. A Sydney company recently bought a machine which economically produced short runs of drilled panels. As they no longer needed to run large amounts of panels to be economical, they saved $80,000 in stock costs by buying only the material needed for the orders. This principle is called 'Just in Time' and in this case the amount saved was almost the price of the machine.

A final word on materials purchasing—you should have a definite purchasing policy, regularly check the prices of your suppliers against their competitors, and always seek a better price as long as the quality is being met.

Material Preparation

The person who first selects and cuts the wood will usually set the quality standard for the whole job! This person is a key individual who needs to know exactly where the part will be used. An operator who knows the amount of permissible defect in each component will be able to economically upgrade timber components as they are cut.

Your basic machinists will need to be skilled in the recovery and maximum utilisation of your resource. Job cards should state finish requirements clearly, and give enough details for quality and recovery decisions to be made. Mistakes happen from bad drawings and inadequate information, and management has better things to do than continually explain processing requirements.

Take time to look at the way you machine the components. I used to machine glass door stiles, along with a bead to hold the glass in the rebate. This required two machine settings and two runs, one for the stile and one for the bead. The stile rebate was removed with cutters and the waste fed to the furnace, the bead was then run separately from another piece of wood. After some thought, we developed one operation to shape the stile and bead at the same time, cutting the bead off the one piece with saws on the same moulding machine. We not only saved the cost of the bead material, but also the cost of two other machining operations.

Storage And Materials Handling

Well laid out storage systems are essential. They provide a safe working environment, allow for adequate stock control, and allow you to store your materials in an environment that conserves your resource.

Sheet materials should be stored in packs, and laid flat on adequate bearers. Never stand them up against a wall. Cut the straps off the packs as soon as they are delivered. This will prevent the banding from damaging the corners of the sheets if the pack absorbs moisture and expands. Half a percent increase in a pack 1200mm high can result in the pack swelling 6mm, enough to seriously damage the outer boards. For solid timbers, packs should be stacked with bearers vertically lined up, and preferably on separate racks. You are wasting time if you have to move two packs to get at the one you want, and remember, you have to put them all back again.

You must know what you've got in storage! A Melbourne supplier of laminates once wanted to clear some space and gave our college all of their laminate offcuts. We collected what amounted to thousands of dollars worth of laminate pieces, some of them 3600 x 600mm, or half sheets. The company had no idea what they had in stock, so when a new order came through, rather than going out to see if there was a piece in stock, they ordered a new full sheet and cut what was required.

Manufacturing Costs

'Time is money' is an old saying, but still very relevant in today's manufacturing environment. Every piece of wood in your factory will eventually bear a share of the cost to buy, store and process it. What you can sell it for will set your profit margin.

Every time a piece of wood is handled it accumulates a cost, which must be accounted for when the finished product is sold. If I can manufacture a cabinet in twenty operations, I will be able to sell my product much cheaper than someone who does the same thing in thirty operations. Consider also that the more a component is handled, the more chances it has of being damaged, or that problems with quality may arise.

Larger companies do not always do things cheaper. I know of several companies where very expensive machinery is being under-utilised. In this case the greater than necessary cost of the under-utilised machine forms part of the company's overheads.

Look carefully at the way your equipment is laid out, and the way the material flows through the workshop. You can make significant savings in materials handling and production time by timing the flow of the individual stages and re-organising accordingly. In 1908 Walter Flanders reorganised the Ford factory in Detroit with revolutionary results. Where a *Model T* had

previously taken 728 hours to assemble, it subsequently took 93 minutes. The cost of each car dropped from $780 to $360 and Ford's cash balance rose from $2 million to $673 million.

Finally, don't forget your maintenance, it's more important than you think. Many a future order has been lost because of a missed delivery date.

Production Planning

An acceptable way to plan your production is to finish one process before starting another, but this will result in the longest time for the whole job. A better method may be one of 'overlapping' each process, or starting the next operation before the first one has been completed. The advantages here are less total time for the job and less down time between each process. There is also a feeling in the factory of greater urgency if operators can see components flowing straight to the next operation.

You will have to be a little careful if you decide to adopt this technique as any machine breakdown will cause disruptions to the subsequent operations. If this happens your production will become fragmented and you could lose track of your production lots. You should not usually commence the second operation until the first one is half finished, and if the second operation will be completed before the first, then the overlapping will not work.

There are a number of questions you can ask yourself to achieve a more efficient workplace. Are your production runs based on a realistic assessment of your workshop capacity? Do you know exactly how long each job should take? Have you set realistic production specifications and have these been documented and distributed to the proper personnel? Have you set in place a process by which materials and machines are brought together at the right time? Is the work reviewed regularly against your production schedule and required delivery dates? Are your staff continually trained in processes and waste reduction? Lastly, are your manufacturing processes different from what they were five years ago? They should be, or you are not learning anything.

Design For Profit

Manufacturers are discovering that product design is a lot more than just appearance. Your design may influence the reliability of the product, and will almost certainly affect production costs, which increase with the complexity of the product.

In Japan manufacturers of woodworking machinery apply a process called 'mechatronics' which translates as 'design for assembly' wherein the number of parts which need to be assembled are reduced, trimming the production costs accordingly. This is effected at the design stage, and an example of this is to design one component to fit several completed items. For kitchen manufacturers this process should be relatively easy, but it can work effectively with solid timber cabinetry. Other benefits include reduced inventories, less suppliers to deal with, and faster production.

The narrowest range of goods gives the best productivity; increase the range and complexity and you decrease productivity. Design for production with interchangeable parts and standardised components. Sub-assemblies can be machined on CNC equipment with slots, grooves and holes for more efficient assembly. Use the *KISS* principle, *Keep It Simple, Stupid.*

It is a good idea to design your products around commercially available timber sizes. This way your offcuts are reduced to a minimum, and your processing times will be shorter. Keep your eye on the market and if possible try and forecast trends. A good way to do this is to attend trade shows regularly. You should wherever possible try to manufacture to Australian Standards. This could give you an advertising edge, especially if the product has been tested for quality, and received some form of certification.

The Bottom Line

There are definite savings to be made when you look at your total manufacturing situation. Materials purchasing and storage, production scheduling and documentation, manufacturing methods and product design all play an equally important part in making your production meaner and leaner, and your profits higher. □

By Peter Scrymgour

A JEWEL OF A BOX

Cedar jewellery box with jade lid.

Peter Scrymgour, former architect and property manager, likens the design and construction of a jewellery box to the process of creating a building—both must serve a specific function, be well constructed and pleasing to look at.

A jewellery box is both a functional and a decorative item. When displayed the box should look good from all angles, with the lid open or closed.

Diamonds scratch pearls, and if they co-exist within the one collection of jewellery there should be separate containers for them, or one box with two or more compartments. The interior of the box must be lined with a soft material, and the box should not be too deep, so that the contents can be easily seen. The lid can be hinged, or, if relatively small, designed to be lifted off with one hand.

Even within the constraints of function the scope for design is enormous. The box shown above is made in one piece, with a lid of sawn and polished jade. The hinges are fabricated from brass. Strange to relate, silver stocked by a jewellery supplier usually has the same extruded shapes as brass stocked by a hobby shop, so that you can practise fabricating hinges using inexpensive brass before venturing into the use of silver. Both materials are surprisingly simple to work and solder, and both look particularly handsome against dark polished timber.

In general my preference is for Tasmanian blackwood or Queensland cedar; of the two I tend to favour blackwood which is harder, but nowhere near so easy to work nor as delightfully aromatic as the cedar.

Play around for a while with a pencil and paper and decide on a shape and design. You need a solid wood block, free from cracks and other defects, around 300 x 200 x 50mm deep. So having selected a timber, let's start with the body.

The first step is to hollow out the interior. I use a *Record* drill press and a small *Bosch* router, fitted with a 1/4" straight bit (photo 1). The excavated shape is precisely controlled by means of a shaped piece of 8mm MDF screwed to the base of the wood block, which is then placed on a simple purpose-made guide fixed to the base of the drill stand (photo 2).

The block is revolved by hand with the router bit located over the headless screw. The MDF guide can be any shape but a little practice is needed to fine-tune the shape of the guide to give the routed shape that you want. A variety of circles of different diameters can be created using one circular guide but all other shapes, ellipses, squares with rounded corners and so on need to be purpose-made and adjusted as necessary after a trial run or two!

You'll need two hands to keep the guide against the screw, so the router is lowered by means of foot pressure on a custom-made extension of the drill press lever arm (photo 3). Once the shape is outlined, the router is replaced with a drill fitted with a 1/2" Forstner bit and the excavation is completed by trimming with a chisel. A drum and small disk sander are used to smooth the excavation. I shape the exterior of the box with a saw and a chisel followed by careful use of my *Record* 7" sander. The curves are fine-tuned by hand sanding and the whole surface is then sanded to 800 grit.

Some of the lids I make feature an inlay or inset strip of silver. For this the lid is fixed to the MDF inlay shape and a 1mm (or 1.3 or 1.5) groove is precisely cut about 2mm deep into the surface. To be effective the fit must be exact. Place a little glue *(Zap A Gap CA)* in the groove and inset the silver, pressing it down firmly. Once dry, the lid is shaped with a sander and sandpaper to give a smooth surface, with the silver set in flush.

At this point, assuming the lid is to be hinged, you may either purchase small hinges and screws, or, if you prefer make your own hinges using brass or silver. The hinge illustrated is fabricated from 1mm thick brass, two brass tubes (one fitting snugly into the other), solder and a small propane torch. Cleaning up is achieved with a *Dremel* tool and a wire-brush. I position the hinge, carefully mark where it is to go and glue it with epoxy.

The interior is lined with velvet, and the base is covered with felt. The finish is best applied before assembly. I use six coats of *Feast Watson Spa Varnish* rubbed down with wet and dry between coats. The final coat is either left shiny or carefully dulled down using 0000 steel wool and wax polish.

The very last thing to do is find a person who wants a jewellery box. They usually sell, through galleries, for $260 to $400.

Note: Cut and polished jade is available from Auslap Pty Ltd, (08) 8373 2421

Peter Scrymgour lives in Burnside, SA.

Hollowing out the interior of the box.

The purpose-made jig and guide.

A foot extension on the drill press frees the hands.

The jig guide is fixed to a timber base.

By Len Crane

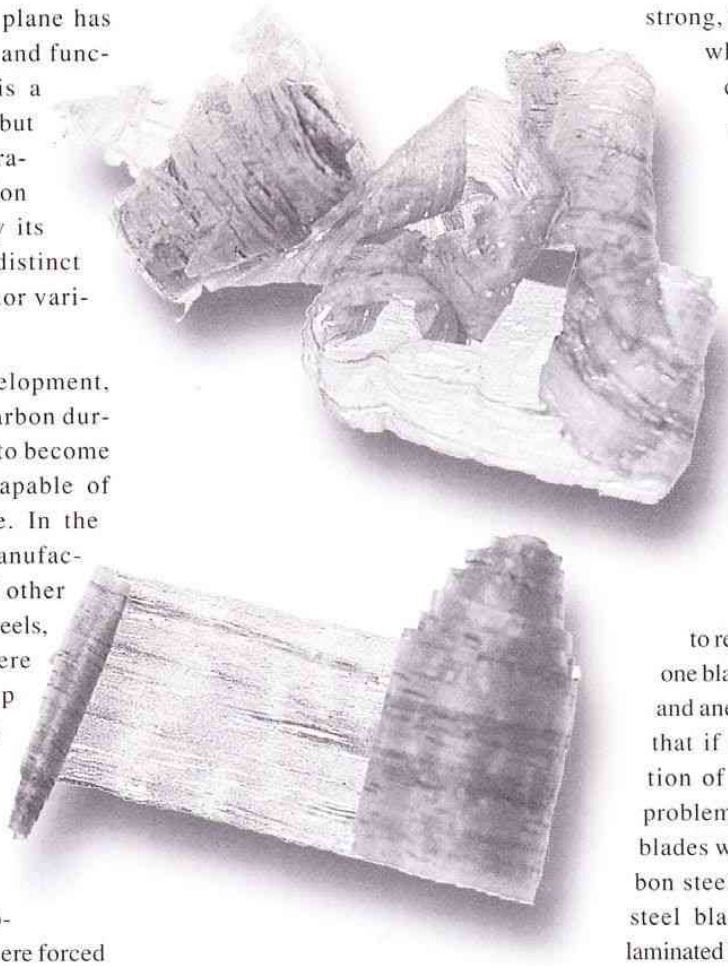
THE BLADE: HEART OF THE PLANE

It is almost impossible to be a woodworker and not use a plane. Even in a modern, fully mechanised factory handplanes are evident, and in frequent use. The serious woodworker will find the plane to be the centre piece of his precious kit and the blade to be the heart of that 'prince of tools'. Len Crane, fine woodworker, compares carbon steel, HSS steel and Japanese steel blades.

Throughout history the plane has been evolving in form and function and even now there is a proliferation of plane types, but none depart far from the traditional form. The evolution of the blade and especially its metallurgy, has had four distinct steps, albeit with many minor variations.

In the first phase of development, hand forged steel took up carbon during heating and hammering to become stronger and harder and capable of taking a fine durable edge. In the second phase, steel was manufactured to contain carbon and other elements. These carbon tool steels, as they became known, were durable, took a good, sharp edge, and were a leap in quality over the forged carbon steels. They are still used by many woodworkers today.

In another phase of development engineering industries were forced some time ago to seek out better cutting steels to meet the needs of their emerging high speed machine tools. Alloys, containing additives such as carbon, manganese, silicon, chromium and so on in various combinations and percentages, were developed. Some brave soul experimented with these steels and found wood cutting blades of excellent durability and keenness could be made from this material. Though generally known as high speed steels (HSS), even a casual glance through a steel makers catalogue will disclose a bewildering list of steels and their qualities.



The ribbon from the Samurai and from the Stanley HSS blades were identical (upper shaving) and clearly show a fineness and delicacy which contrasts with the coarser and thicker shaving obtained from the carbon steel blade.

In Japan, around two or more hundred years ago the samurai caste was banned, resulting in a lack of work for their sword makers. Quickly these craftsmen turned their hands to other products, including woodworking tools. The Japanese blades generally consist of two laminations, the backing soft and strong, the face being a forged steel, which is very hard with excellent edge ability.

The purpose of this article is to publish the results of an experiment I conducted to examine the qualities of the latter three of the four steels just discussed. The main aim of the experiment being to compare 'sharpness' and durability of blades of different steel types.

The first problem was to define sharpness or how to reliably compare sharpness from one blade to another, avoiding hearsay and anecdotal information. It seemed that if that was achieved the question of durability would present no problem. To this end three No 5 plane blades were purchased: a *Stanley* carbon steel blade, a *Stanley* high speed steel blade and a Japanese *Samurai* laminated blade. I then selected an English-made *Bailey* No 5 plane and precisely 'tuned' it.

Each blade was sharpened using 1000/6000 grit waterstone and stropped on leather impregnated with very fine jewellers rouge. The sharpening angles were 25° for grinding and the honed facet 30°. It was initially felt that these angles may favour the carbon steel blade but I proceeded nonetheless.

A piece of Tasmanian blackwood (*Acacia melanoxylon*) 600 x 75 x 100mm was selected as a workpiece. This species was chosen for its firmness and

texture, but especially for its ability to produce a good fine ribbon off a well prepared and sharpened plane. A very shallow wedge was cut from the piece to produce a taper from 100 to 80. This meant the grain was slightly sloped and would prevent any grain changes from affecting the plane action. All this was done to produce a workpiece as regular in texture as possible so that it would not present variables during the blade testing. This face was then prepared using another plane, a *Stanley*, tuned and sharpened in exactly the same way as the trial plane. The workpiece was then ripped to produce two pieces each finished to 600 x 35 x 100/80 and marked N°1 and N° 2.

The *Bailey* plane was now carefully fitted with the carbon steel blade, and by advancing the blade by minute increments from a negative setting, each workpiece was planed in turn, till a full length and width ribbon was obtained from each. Having now adapted the workpiece faces to any indiscernible idiosyncrasies of the plane/blade combination, the blade was removed and its edge carefully refreshed.

With the blade refitted, each workpiece was again planed in turn as before till a continuous ribbon was obtained from each. The first fully continuous ribbons were obtained from each workpiece at exactly the same blade setting, which to our delight seemed to reliably establish a definitive measurement of 'sharp'. By this time word had got out and four of my co-woodworkers had gathered to watch the fun. They very soon formed a jury to adjudicate on observed results, and if able, to take the credit! Friends!!

An attempt to measure a single thickness of these ribbons was not successful using the available vernier callipers so the ribbons were curled into a ring of five turns, then flattened giving ten thicknesses. The callipers then showed the combined thickness to be 0.4mm giving a single shaving of .04mm (40 microns).

The durability of the edge was established by continuing to plane (alternatively) the work pieces till the ribbon produced failed to be full length and width. The exact moment this occurred was difficult to discern, but it was of the order of 50 strokes (25 on each).

Exactly the same procedure was followed using the *Stanley* HSS and the Japanese *Samurai* blades. In each case 'preparing' the workpiece surface with the other plane, then proceeding exactly as before. The ribbon obtained by the *Stanley* HSS blade measured 16 microns and that from the *Samurai* 18 microns. The exact moment the full length and width ribbon showed deterioration was difficult to ascertain but certainly between 25 and 30 strokes for the *Stanley* HSS and just a little earlier for the *Samurai*.

In fairness to the carbon steel blade we refreshed the edges of the HSS and *Samurai* and set them to cut a ribbon of about 40 microns, and attempted to find the winner of the durability stakes. After about 50 strokes of each blade on each workpiece without either ribbon showing signs of quality deterioration, the jury declared a dead heat for first with the carbon steel blade a poor second. We then retired to the verandah for serious and considered discussions on the results obtained.

The conclusions we arrived at are, that the days of the carbon steel blade, albeit long and respected, are over, and that despite the excellent results from the other two blades we are merely at the 'cutting edge' of our ever expanding technology. It was also our opinion that it would be seldom that even the most devout, dedicated aesthete would find the need to work to such difficult to obtain tolerances.

Author's note: Since carrying out these tests I have formed the opinion on empirical grounds only, that the Samurai performs better on soft timbers such as cedar with furry grain and that the Stanley HSS is a little more durable on hard timbers such as red river gum and broad leafed ironbark.

Len Crane is a furniture maker and teacher of woodcraft who lives in Basin View, NSW
Photo: Allen Crane

By Todd Moor

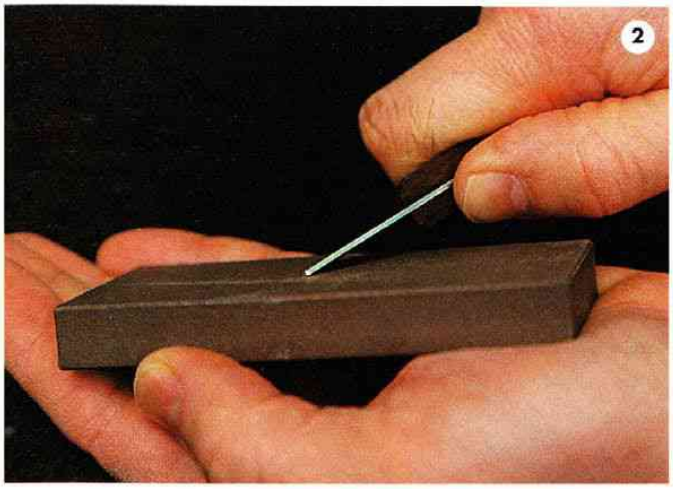
CHIP CARVING: PART II—TECHNIQUE

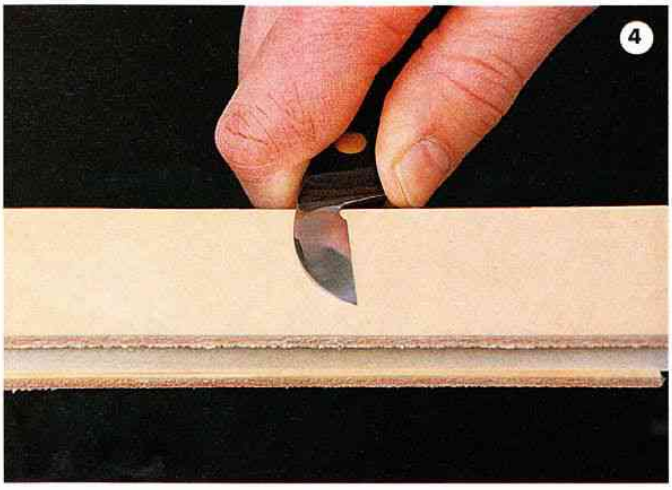
Last issue Todd Moor introduced chip carving, a method of relief carving whereby geometric or free-flowing patterns or images can be created as stand alone artworks, decorative panels or details on cabinetry and architectural fittings. Moor discussed selection of timber and subject matter and described different methods of transferring patterns to a wood surface. This issue he focuses on sharpening the knives and the actual technique.

SHARPENING THE KNIVES

The 'cutting' knife (available in two sizes, shown right, top and centre) is the main implement for removing chips of wood which are either two or three sided. The 'stab' knife simply separates wood fibres leaving an impression. The quality of your work depends on the sharpness of your knives—all you need are two stones and a leather strop.

It is important that your knives are sharpened to the correct angle. When sharpening the cutting knife lay the blade flat on the sharpening stone and then raise the back edge off the stone just slightly, to an angle of no more that 10° (photo 1). The stab knife should be sharpened to a 30° angle (photo 2). Most stab knives will come with this angle already ground into the steel, and will require little time to sharpen.





Both knives require a lot of attention on the polishing stone which is used in the same way as the coarse stone. Lay the knife at the appropriate angle and slide the blade back and forth across the surface of the stone. Watch for metal on the stones. This will appear dark and should be equally distributed across the length of the blade showing the knife is laying flat on the stone.

The ceramic stones shown here don't require any water or oil for lubrication, and are easily cleaned with cream cleanser and a scouring pad. After you have sharpened both sides of the knife on the coarse stone, and honed each side on the fine grit stone you will be ready to go to the strop.

Wiping the knife blade (away from the cutting edge) with a cloth or finger before stropping will help prevent your strop from getting dirty with metal filings. The strop should have a rough side and a smooth side. Rub a high grit polishing compound on to the rougher side of the leather only. If this compound is a bit greasy the moisture will soften the leather up and extends its life. If the leather seems dry even with the compound added you can work a few drops of honing oil into it.

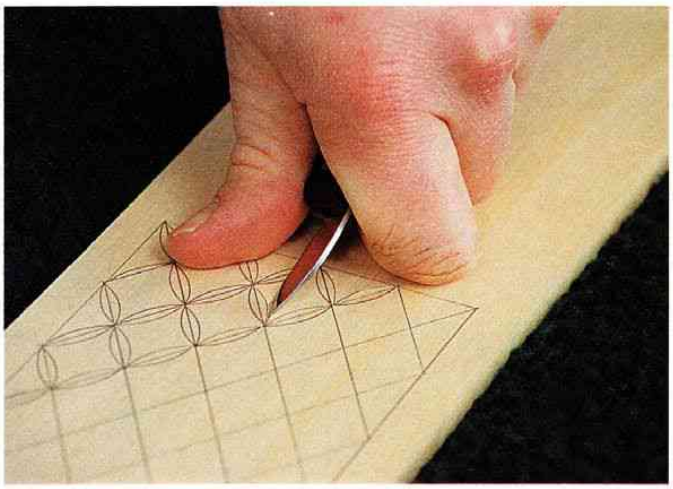
Lay the cutting knife with the back edge off the leather (just enough so it will not cut into the leather) and draw the blade across the strop away from the cutting edge. The angle is less than on the stones, however the leather is softer and will give a little, making up for the discrepancy. The stab knife is stropped in a similar fashion, but at its 30° angle. Strop both sides of each knife and then make a few strokes on the smooth side of the leather, without compound (photos 3, 4).

It may take about 30 minutes to sharpen the cutting knife and about 10 minutes for the stab knife, but you should be able to carve for about two hours before returning to the strop again. You can never polish a knife too much however, so do not hesitate to return to the strop earlier if you wish. After around 20 hours of carving you will need to return to the fine grit stone. You will know it is time when the knife does not seem to slip through the wood easily, even after stropping the blade.

Honing on the fine grit stone is always followed up with a stropping, just as the fine stone always follows the coarse stone (which you will return to after approximately 100 hours of carving). Note that these time estimates are based on carving basswood and butternut, and can vary if you are carving harder woods.

Holding the Knives

Photos 5, 6 and 7 illustrate the sequence of gripping the cutting knife. First, wrap your last three fingers around the knife so that the handle lies across the base of your fingers and the blade faces away from your hand. Next, place the inside of the thumb's middle knuckle on the lower bevelled edge of the knife handle. The index finger is simply wrapped around the handle.



With the knife in this position lower your hand onto some wood and look at the angle that the blade has to the wood. This angle should be 65°. If it is not 65°, simply loosen your grip and gently twist the knife with your free hand until the angle is corrected, then re-tighten your grip. This is what I call the cutting position, and it is the way that you will hold the cutting knife about 80% of the time.

This cutting position is the only position used for two-sided chips (photos 8 & 9). In this position the thumb acts as a guide, keeping the knife at 65°. It is important to keep your thumb on the handle of the knife in order to carve consistently at this angle, as well as to prevent cutting yourself.

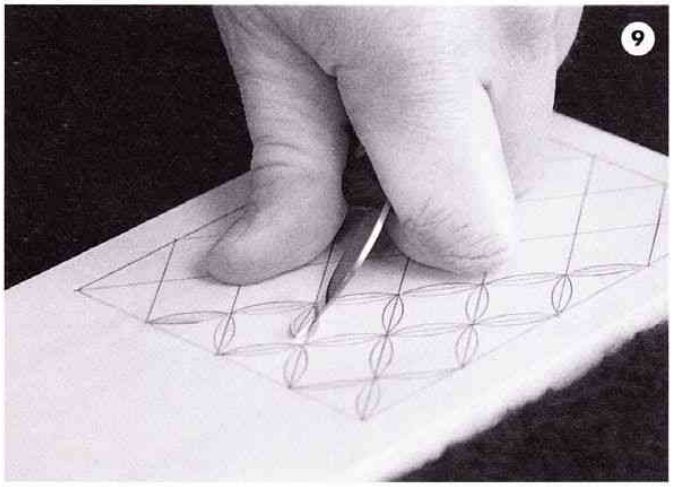
Unfortunately, this position makes it easy to pry the wood out. 'Breaking' the chips out in this way won't give a clean finish and you may break a knife tip. Good blades are made of hardened steel which is not flexible, and with the cutting knife sharpened to such a steep angle the tip of the knife becomes very thin. While these features benefit you when you cut chips out, they work against you if you pry. Only put pressure on the cutting edge of the blade, never on the side.

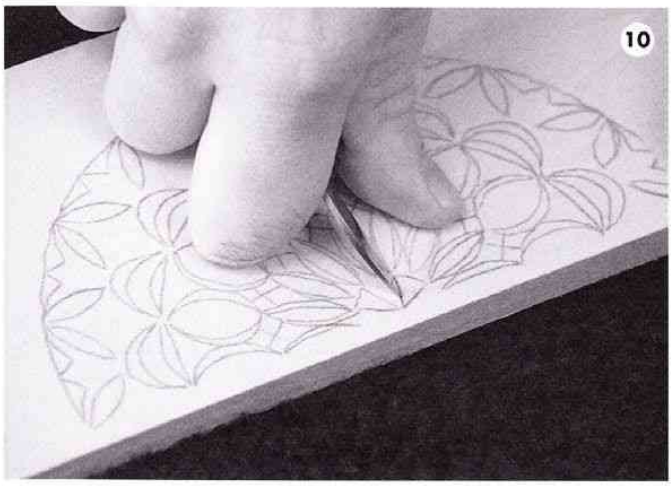
The 'pressing' position is the second way of holding the cutting knife. This position is used for the second cut of a triangular chip when that cut is short and straight (photos 10, 11 & 12). To move the knife into this position, loosen your grip and turn the knife in your hand so that the blade points away from your thumb. Place your thumb on the back of the blade close to the handle, and re-tighten your grip.

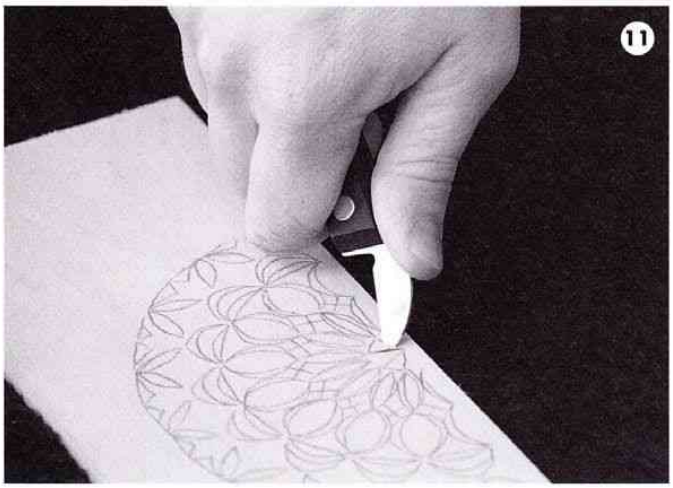
To execute cuts with this grip you simply push the blade into the wood using your thumb for leverage. The disadvantage with this position becomes clear if you try to draw the blade through the wood, especially on a curved line. The pressing position offers little control over the knife which is why the use of this position is limited. The main reason for the lack of control of this position comes from not having your thumb in contact with the wood. This means your thumb cannot act as a guide to help you keep the knife in the 65°.

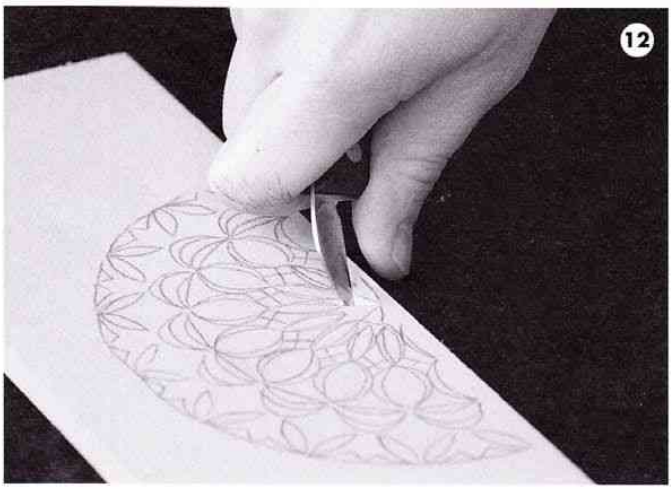
The stab knife is the easiest knife to use. Hold the knife with your thumb on the top and your fingers wrapped around the handle. The edge of the blade should be facing away from you so that once you have positioned the knife on the wood you simply press down and then rock the knife handle away from you. Removing the stab knife from the wood will reveal an elongated triangular impression where the knife has separated the wood fibres. The further you rock the stab knife the longer this triangular impression will be (photos 13 and 14).

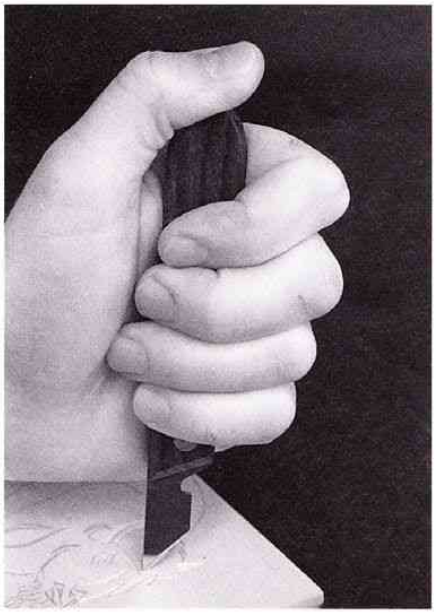
Practise a variety of each of these three types of chips (two sided, three sided, and stabbed) on a piece of scrap wood before you commence your first project.











Carving Tips

If you transfer the geometric design shown below onto your wooden project you will see a variety of three-sided and two-sided chips that blend together. For geometric patterns a well-planned order for removing chips will increase your chances of the carving going smoothly. I prefer starting in the centre and working outward when approaching a project.

Carve the entire centre area first beginning with a chip that runs with the grain, then moving to the chip immediately beside it. With the second chip and all chips following it make your first cut away from the last chip. This is a very important rule since it will act as a stop cut and protect the wood from splitting between your chips.

Keep going in the same direction until you return to the final chip in the section. This final chip will border on the previous chip as well as the very first chip that you removed leaving you no choice but to carve towards one of these chips with your first cut. However, if you began with the grain the wood will be working in your favour since it will be easier to cut and unlikely to split towards those other chips. Use a similar approach to all areas of the pattern, and avoid jumping from chip to chip randomly which will result in more circumstances than necessary where you are forced to cut towards existing chips.

Finish cleaning up one chip before continuing to the next. Experience has taught me that the approach of completing a carving quickly with an intent to go back over the project a second time in order to clean up all the chipped out areas is simply too overwhelming! Finished carvings are often so intricate that this task is monumental and a few small clean up details are likely to be overlooked.

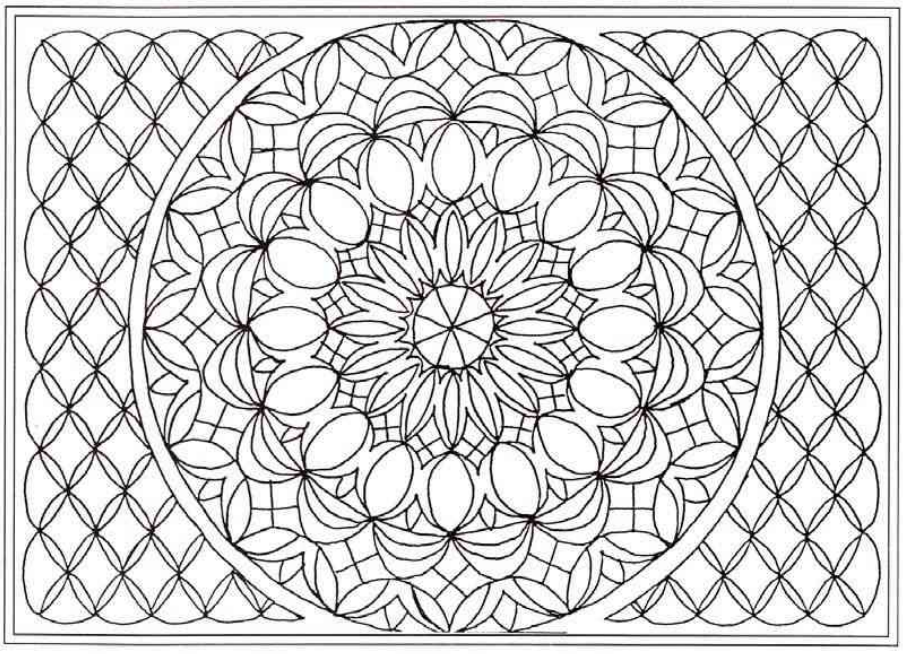
Also, try to carve off your drawing marks if you can. This will save you time and energy when cleaning off excess pencil or graphite marks. These rules are still good to keep in mind when carving free-flowing designs even though less difficulty will come to you by breaking them. Something that will improve your clean-up on this kind of pattern however, is to not draw on the stab marks. While the cutting knife can remove the drawing along with the chips of waste wood, the stab knife does not remove wood at all but splits the fibres. If you press the stab knife onto a pencil, graphite or toner mark, the mark will be pressed more deeply into the wood.

Not having the stab marks on the project should not cause you too much difficulty. Stab marks are usually completed last and positioned around existing chips so as to highlight them. You can use the existing chips as frames of reference for the placement of the stab knife and with free form patterns you have that 'artistic freedom' on your side too. If you have practised before you start your project you will know what to expect and can relax and enjoy the process.

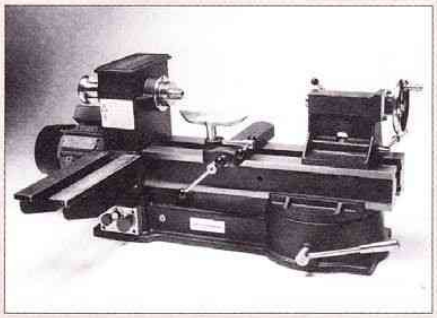
Chipping Away Australia is operated by Ainslie Pyne (08) 8379 6994, fax (08) 8379 9444, 82 Linden Avenue, Hazelwood Park, SA 5066, email <woodart@adelaide.on.net>

The Chipping Away Canada website is located on the internet at: <www.chippingaway.com>

or E-mail: dennis@chippingaway.com



PRODUCT REVIEWS



OMEGA S-500 WOOD LATHE

The growing interest in woodturning has attracted many hobby turners who are looking for a quality lathe at an affordable price. The obvious response from manufacturers has been to develop mini, or scaled-down products that serve this niche in the market.

The *Omega S-500* comes with a reputation established by its big brother, the *Stubby*, and is an attempt to create a robust and versatile lathe to serve both the amateur and professional woodturner.

Amongst the numerous features attributed to this lathe is its ability to convert from a modest spindle-turning lathe to an impressive and out of the ordinary bowl-turning lathe, which has a variety of setting arrangements that should answer the needs of any serious woodturner.

The standard lathe comes equipped with a 0.75kw motor that can be used on two drive settings and a soft start variable speed switch, running from 0-3200rpm. This provides the power and torque required to perform any type of turning from shorter length spindle work up to 700mm, through to heavy-duty faceplate work up to 540mm in diameter and 240mm depth.

Not only are you equipped with the power, but you are given a variety of well thought out options for positioning the lathe bed (which can be moved to 90° from its normal position), or for the placement of the auxiliary lathe bed, adjacent to either the main lathe bed, or the headstock.

Any initial doubts I had about the machine were put to rest after I was told how to set the lathe up correctly. Basic setting up needs little instruction, however the provision of written information would facilitate this.

Once in action, the lathe hums along smoothly in both spindle and faceplate modes. All components slide freely before locking tightly into position by means of camlocking levers.

It took little time or effort to find an alternative set up to respond to my changing needs. My only suggestion would be to use the auxiliary bed as a fill-in when the bed is extended to its full capacity in the spindle turning mode. The *Stubby S-500* was able to satisfy all my requirements, even though I found I had to occasionally adjust my stance or position of the tool because of the locking levers.

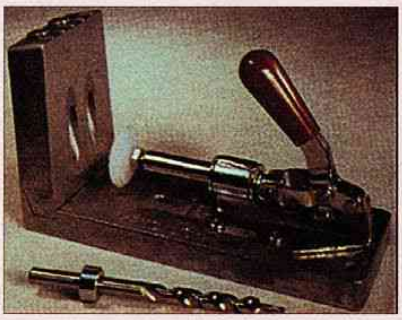
One of the features *of S-500* is that all components are made of cast iron, giving it plenty of weight and stability. This also proves to be one of its few weak points. Moving the combined motor, headstock and body assembly requires the joint strength of at least two people, however once in place additional assembly and set-up is easy, requiring little time or effort.

If you're a turner who needs lots of flexibility when turning large or deep bowls, with the need for some spindle turning, you may find this to be the ideal lathe. Information from Omega Engineering on (03) 9782 5226.

Reviewed by Andew Potocnik

KREG JIG

I confess that when I looked at the promotional and instructional videos of the *Kreg Jig* I was aware of the voice of prejudice demanding what I'd want with an American jig designed



for American construction methods. However once I'd started trialing it and thinking about its possible uses I steadily came to realise how useful it could be.

American style cabinetry (I'm referring to manufactured board work such as kitchen and shop fit-outs, as distinct from cabinetmaking) generally uses timber face frames attached to plywood carcases. Dowelling or biscuiting these frames requires clamping and time for the glue to set. When they're not in line or at 90° time must also be spent making jigs to hold them at the desired angle.

This is why pocket hole joinery, which has been around for some years now in America, has quite a following. At least seven variations of the jig are available over there. It is a heck of a lot quicker than the alternatives, and within the capabilities of anyone who can operate a drill.

The jig is clamped to the timber or board. Hardened steel guides set the provided 3/8" (10mm) drill bit at 15° for the boring of the pocket (or enlarged countersink) and a smaller lead hole for the screw. The pieces are held together and self-tapping screws are driven in. Pan head square-drive screws are recommended and certainly give very positive grip for driving, with negligible risk of splitting. Regular rapid drive screws also work but the head shape can encourage splitting.

I tried it with timber, particleboard and MDF and was impressed with its simplicity. I can see it being as handy,

if not quite as essential, as my brad gun which I use constantly for jig making as well as for pinning awkward to clamp, out of sight parts while the glue sets. Colleagues in joinery and fitout work would also find plenty of use for it, as long as the holes, with or without plugs, are out of sight or acceptable to view.

From Gregory Machinery (07) 3844 4433. Square-drive screws and pocket hole systems also from Sachys (03) 9803 2370.

Reviewed by Richard Vaughan

ERMO EDGEBANDER

At the last AWISA show, visitors commented that the Australian made *Ermo* edgebander was good, but the worst looking machine around. Good machinery made in Europe is designed with colour and style to attract buyers. *Ermo* has now responded with a vengeance and built the latest range of machines in a very attractive and easy to clean grey and light blue livery that matches anything coming out of Europe.

The new *Ermo* is an excellent piece of equipment. It is one of the easiest machines to set up, and runs anything from 3mm PVC to melamine veneer, PVC strip edging to 5mm solid timber edges.

It achieves an almost invisible glue line which results from a newly designed glue applicator. Glue is forced into the panel but doesn't escape up or down onto the surface of the board, so there is no extra work needed to remove excess glue.

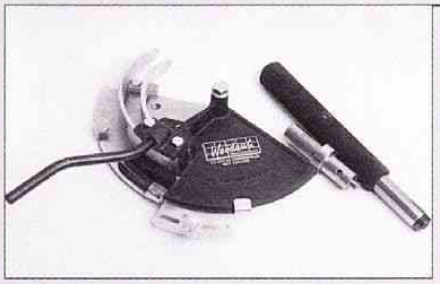
A switchable cut-off unit gives a square cut for the first edge of the board and a slightly bevelled edge for the adjacent edge, finishing the panel off perfectly. The cut-off unit is a smooth running air and hydraulically operated device. This moves away from the panel when the cutting is finished, rather than just slipping off the panel and causing surface chipping in the process.

The feed of the tape to the panel is very smooth and actually uses much less than most other machines. 'The tape you save over a two year period can be as much as the price of the machine,' commented one recent purchaser of the *Ermo* system.

Another outstanding feature is the use of big tools driven by conventional woodworking motors. While most other machines use hard working, high speed, high frequency motors which cause vibration, the *Ermo* runs so quietly you can almost forget it's switched on. The angle of tool approach on the bigger tool is better, and there are more cutter tips running at a slower speed to give a quieter machine.

The *Ermo* has many features that definitely make this machine worth a good look. Information from Gabbett Machinery (03) 9763 2555.

Reviewed by Philip Ashley



Woodcut Bowl Saver

With the cost of good turning timber rising and certain species becoming rarer, all woodturners should be trying to conserve timber wherever they can. Bowl centre saving systems are one way to do this. For this review I was sent the New Zealand made *Woodcut Bowl Saver*.

With this system the outside and base of the bowl are turned first. The blank is then reversed and held in a suitable chuck. It's a good idea to turn a recess in the bowl to be saved so that it can be re-chucked after it is cut out. Both my lathes are set up with foot clutches which means that if a centre saving tool jams, the motor will rise enough for the belt to slip. I suggest that for safety reasons you loosen the motor tensioning device if possible when saving bowls.

I've learned the hard way that being too greedy by trying to save centres from bowls that are too thin or too large in diameter may cause you to lose the lot. I like to leave my saved bowls and the outside bowl reasonably thick, as most of them will be carved on the rim. When working with wet wood, thicker walls leave more options for different shapes once the blanks have dried and warped.

This system has a base plate and tool mount which fits in the tool post of your lathe. The back of the base plate attaches to the tailstock. Two blades are supplied, the smaller one will cut a centre up to 250mm in diameter, while the larger blade will save a 310mm bowl 125mm deep. Two template patterns are supplied which show how deep the blade will cut into the bowl blank. These templates measure from the pivot point of the jig. Adjust the jig from the front face of the bowl to leave about 25mm in the base of the original bowl. Moving it further away will give you a shallower saved bowl.

To adjust the point of entry of the cutter for a larger diameter the tool post is moved towards the outside of your bowl. Move the tool post closer to the centre to cut a smaller bowl blank. The attachment to the tailstock will also need to be moved sideways. To swap from the large cutter to the smaller one two bolts are easily loosened and swapped over.

Once you start cutting (600 to 800rpm is recommended) you will need to move the handle slowly towards the bowl, stopping regularly to let the shavings clear and to check how close you are to the centre. You need to cut close enough so that you can break out the last little bit with a light tap.

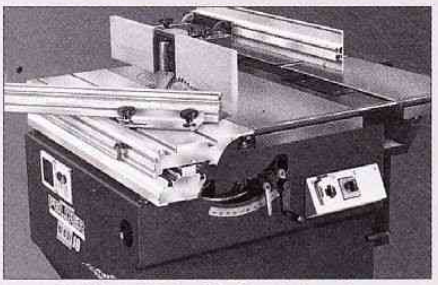
I used reasonably wet red cedar to try out this system and found the saved bowls could be cut without any problems. The system attaches to the tailstock and is therefore fairly rigid. Because of the large flat base plate and the wet wood the shavings produced quickly covered the jig making it hard to see what was happening. A few blasts of a compressed air gun solved the problem. The system was a bit time consuming to set up, swapping from a normal toolrest back to the bowl saver, as the tailstock has to be attached as well. The system seems safe to use, a feature which I consider most important.

The blades supplied are tipped with hard-wearing stellite. If you are cutting hard burls regularly, a different cutter grinding angle may be required. The manufacturers claim that up to 500 bowls may be saved before the tip needs replacing, providing due care is taken. The *Woodcut Bowl Saver* is available from Woodcut Tools (02) 9971 1181, or NZ +64-7-888-7474

Reviewed by Neil Scobie

Felder BF 6-31 Combination

After years of being a woodworking hobbyist and being restricted by the size of my electrical and hand tools I decided to take the plunge and buy some larger machinery: a tablesaw and a thicknesser. After hours of looking



Felder BF 6-31 Combination

at different machines I had to choose between a combination machine or two or three independent machines. Due to limited workshop space I chose the combination machine. The final consideration was cost versus quality of machine.

The machine I ultimately chose was the *Felder* BF 6-31 compact machine which has five different applications: tablesaw with sliding table, thicknesser/planer, spindle moulder and mortiser as an option. These applications are run by three 2.2kw motors which must add to the overall longevity of the machine.

As a dental technician, 90% of my equipment is manufactured in Germany, and it is common knowledge that German engineering is amongst the best in the world. The *Felder* machines follow in this tradition and seem to be set up in such a way as to be user friendly, as well as extremely safe. All applications are quick and easy to adjust—blades can be changed very easily, each application can be connected to a dust extractor and there is an emergency stop button on the front and both sides of the machine. Accessories and moulding tools are too numerous to mention here but there is one for every job.

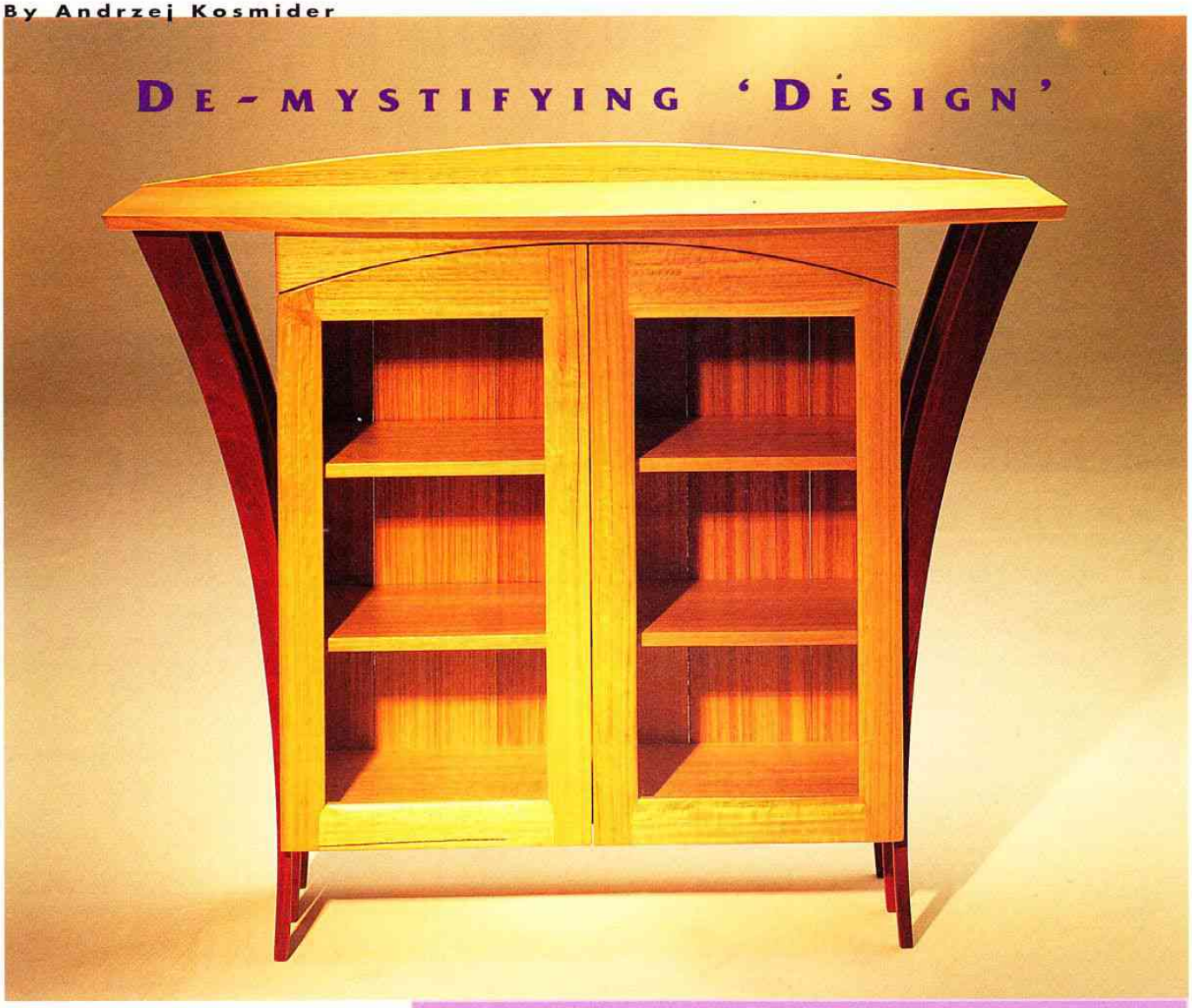
As stated before, my final consideration was cost versus quality. This machine cost more than I had intended to spend but was worth every dollar. Now I don't feel restricted in what I can or can't do and I know that this machine will still be around for my children and grandchildren to use. Felder Machinery (03) 9801 7728.

Reviewed by Bill White

Products for review are welcomed as are reader-written reviews. Contact the publishers for further details.

By Andrzej Kosmider

De-mystifying 'Design'



In designing this display cabinet in jarrah and Victorian ash I wanted to create a dynamic balance between the slender curved legs and the boxy shape of the main cabinet body. The rigidity and the structural strength of the cabinet is achieved by the triangular arrangement of the legs, sides and top. This structure provided the necessary lateral bracing and allowed the front of the cabinet to be free of any additional cross-bracing.

At a recent furniture exhibition I was asked by a potential customer: 'Where do you get your ideas from?' 'My head,' I answered. This answer obviously did not satisfy the customer who then asked: 'Well, yes, but where do you get the examples from?' 'I create them,' was my response. At which point the customer wandered off looking slightly mystified.

A rather poor selling technique, you might think, however this conversation did prompt me to think more about something that I have often taken for granted: the design process. Six years of university training in architecture had, in effect, de-mystified the word 'design'. I had been taught to see 'design' as a rather down-to-earth and matter-of-fact process spiced with a large dose of common sense. Most of the decisions made in the process of designing a piece of fine furniture have a rational explanation. They are usually the result of what is, in fact, a structured method of creative thinking.

It would obviously be an impossible task to describe the design process in a few pages so instead what follows is an attempt to, firstly, illustrate the importance of design in the context of making fine furniture and, secondly, to explain some of the principles of design and also to illustrate some directions which I have followed in my work.

The Design Process

The process of designing and making a piece of fine furniture begins with an initial concept. This concept can be generated from many different sources. It might, for example, be a variation of a piece that the designer/maker has created previously or it might be a copy of the work of one of the great designers of the past: Charles Rennie McIntosh, Marcel Breuer, Mies van der Rohe et. al. Alternatively, the designer/maker might decide to follow a trend in design that is popular at that particular time.

Using one of the above methods, the designer/maker selects an idea and, possibly with some variation, the project begins to materialise. Some time later, standing in front of the finished

cabinet, the exhausted maker feels vaguely disappointed; the finished product somehow falls short of his or her expectations. At this point in time however, it is too late to change what has been so laboriously created and the maker is left with the question: 'why doesn't it work?'

For a piece of furniture to work it has to be functional but it also has to look good. In fact, I would go further than this and state that the appearance of a piece of furniture is one of its functions; that the appearance of a table, chair or cabinet is an integral part of its functional nature. All of which means that there is no excuse for poor design. A functional object does not, and should not, be a clumsy one.

The answer to the maker's question 'why doesn't it work?' lies at the beginning of the design process, with the idea, and when the the initial design decisions are made. Ideas are not tangible, physical objects which we can test or measure; because of this we cannot predict the outcome of the project until it takes some physical shape. So we take a risk and hope that it will work provided we use the best of our expertise and technical skills. In short we underestimate the thought and effort required at the initial stage of the design process.

To illustrate this, let me give you an example. It is not uncommon for a furniture maker to spend 5% of the total time on a project on conceptual design; 95% of the time is taken on the actual construction of the piece and on the finish. Does this mean that the overall character and appearance of the piece constitutes only 5% percent of its total value? Or do we vaguely hope that the beautiful timbers, the perfect joints and the silky finish will somehow compensate for what the piece lacks in look and style?

An Approach To Design

Time spent thinking about an idea for a piece of furniture is time well spent. In fact it is probably the best investment you can make on a project, for even though this time may seem unproductive (because you may have nothing concrete to show for it) this investment will pay its dividends at the later stages.

For example, I might have an idea to make a cabinet that would present itself as a dynamic showpiece without the usual heavy box-like form. This idea then becomes a goal or an objective towards which I focus my creative thinking.

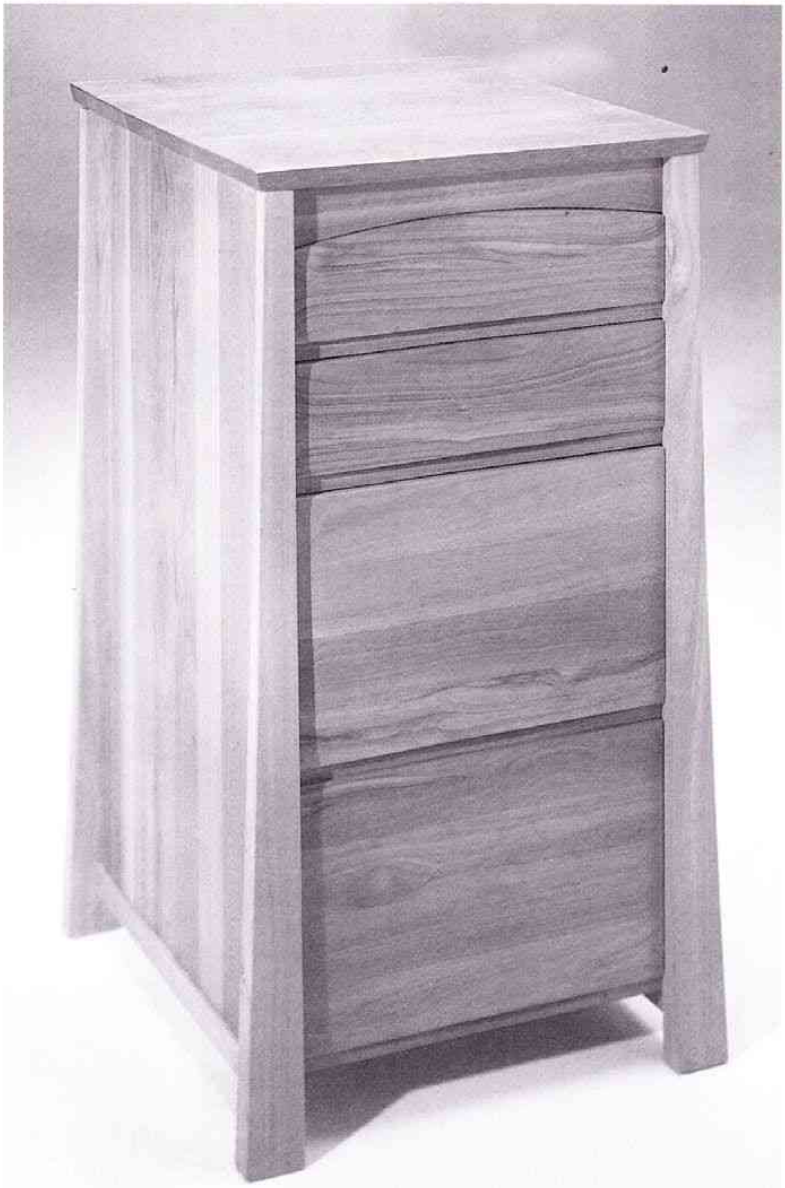
Thinking about the idea can be done while in the process of working on other jobs, or while driving or day dreaming. I often think about my conceptual piece for weeks or months

'Claw Dining Setting' The inspiration for this piece was a simple question: 'Why does a table have to have four legs?' Multiple slender and curved legs allowed me to produce a large table which touches the ground gently. Structural strength is achieved by a 'space frame' like configuration of the legs which support the top of the table.

before I begin to make it. I try to visualise the piece as a three dimensional object, to imagine how it would look from different view points and how I could solve some of the functional aspects of its components, such as doors or drawer fronts. All of this is done so that by the time I begin construction I feel that I already 'know' my project and am prepared to meet the challenge of making it.

This visualisation process is not easy at first and requires concentration, patience and a lot of practice, but design skills are really no different from other technical woodworking skills and they can be improved with perseverance. At this stage of the design process practical approaches such as sketching, modelling and comparing the relationship of materials can be very helpful in the development of an idea.

Similarly, participation in a proven design-oriented course may also be of great benefit. In the same way that learning about tool sharpening, wood properties or finishing methods contributes to the overall technical skills of the woodworker, undertaking design education improves the ability of the designer/maker to create ideas and develop them into fine furniture.



This filing cabinet was designed to a brief. The client told me his functional requirements and left the design aspect to me. He did say, however, that he wanted something elegant rather than bold. Hence the clean lines with gently tapered legs as the main support and a selection of three different timbers to eliminate the monolithic appearance of the cabinet while creating some play between the elements.

Designing Commission Pieces

In the case of a commission piece, the main source of 'concept' must necessarily be the client's brief. When speaking with a client I ask specific questions relating to their lifestyle which gives me an indication of what might work for their living space. A family with children and a lot of in-house activities will be more likely to prefer an understated, simple and easily maintained dining suite over a highly stylised ultra-modern looking piece of furniture. In other words, their needs would be very different from those of people who do a lot of formal entertaining and have fewer concerns regarding everyday wear and tear.

One question I often ask my clients is: 'What do you want this piece of furniture to do?' By this I mean, what impact, in terms of appearance, do they require. A cabinet can be a showpiece, that draws everyone's attention with its unorthodox shape and large size or, it can be designed to blend into, and become part of the overall room arrangement; a harmonising addition to a room rather than a dominating or contrasting element.

You may find that many clients, in fact, find it easier to describe what they expect their furniture to do in terms of the impression they want to create rather than in terms of the way it should look! They know what they like, but need some guidance as to what visual devices can achieve the required effect. This is where the skill of the designer comes to the fore, finding a 'package' most suited to the client's needs.

The answers I get from the client give me the foundation I need to compose the conceptual idea of what the desired piece might look like. That is, my client's brief gives me some concrete reasons why I choose one option over the other. At this stage of the design process I often question myself as to why I have chosen one option in preference to another. If I can find no convincing answer to this question, then I tend to proceed with caution.

There is no recipe for good design. There is, however, an ordering network of design principles and suggested methods or guidelines that one can follow.

Andrzej Kosmider is a furniture designer/maker and co-director of 'The Table Shop' in Coogee, NSW.

Advertiser Index

WOOD DIARY

1997-98

Wood Dreaming Exhibition
Contemporary turning curated by Terry Martin
22 Nov-3 Jan 98: Cairns Reg.Gallery
10 Jan-7 Feb: Toowoomba Reg.Gallery
13-Feb-7 Mar: Crows Nest Reg.Gallery

21-30 November
14th Vic Woodworkers Association Festival & Exhibition
Manningham City Offices, Doncaster
(03) 9497 1916

25-30 November
Australian Craft Show
RAS Sydney Showground
(02) 9957 4514

28 Nov-7 Jan
Tasmanian School of Arts 3rd Year Students of Furniture Design at Forestry Tasmania centre, Hobart

29-30 November
Woodturners Society of Qld
Sales and Exhibition
Mt Coot-tha Botanic Gardens Aud.
Tel: (07) 3397 8156

5-19 December
Conclusions—A Stage For Living
Canberra School of Arts Graduates' Exhibition
(02) 6249 5810

7 Dec-Jan 25
18th Biennial Craft Event
Mornington Peninsual Regional Gallery
(03) 5975 4395 Fax (03) 5977 0377

Dec 12-Feb 1
9th National Dame Mary Durack Outback Craft Awards
Queensland Museum, Brisbane
Tel: (07) 3221 5300

3-23 January
Australian Wood Design Exhibition 1998
Info: Wood Inc, PO Box 626, Orbost 3888

19-25 January
International Furniture Fair
Cologne, Germany
(02) 9955 4022
Fax (02) 9955 9872

2-5 March
International Furniture Fair Singapore 1998
(with 15th ASEAN Furniture Show)
Singapore International Convention & Exhibition Centre, Suntec City
(65) 568 2626 Fax (65) 568 2922

12-15 March
ToolTime Show
Tools & Allied Products & Materials
Royal Exhibition Building, Melbourne
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18-20 March
Ornamental Turning Group of Australia
1st National Workshop/Seminar
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27-29 March
Timber & Working With Wood Show
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16-19 May
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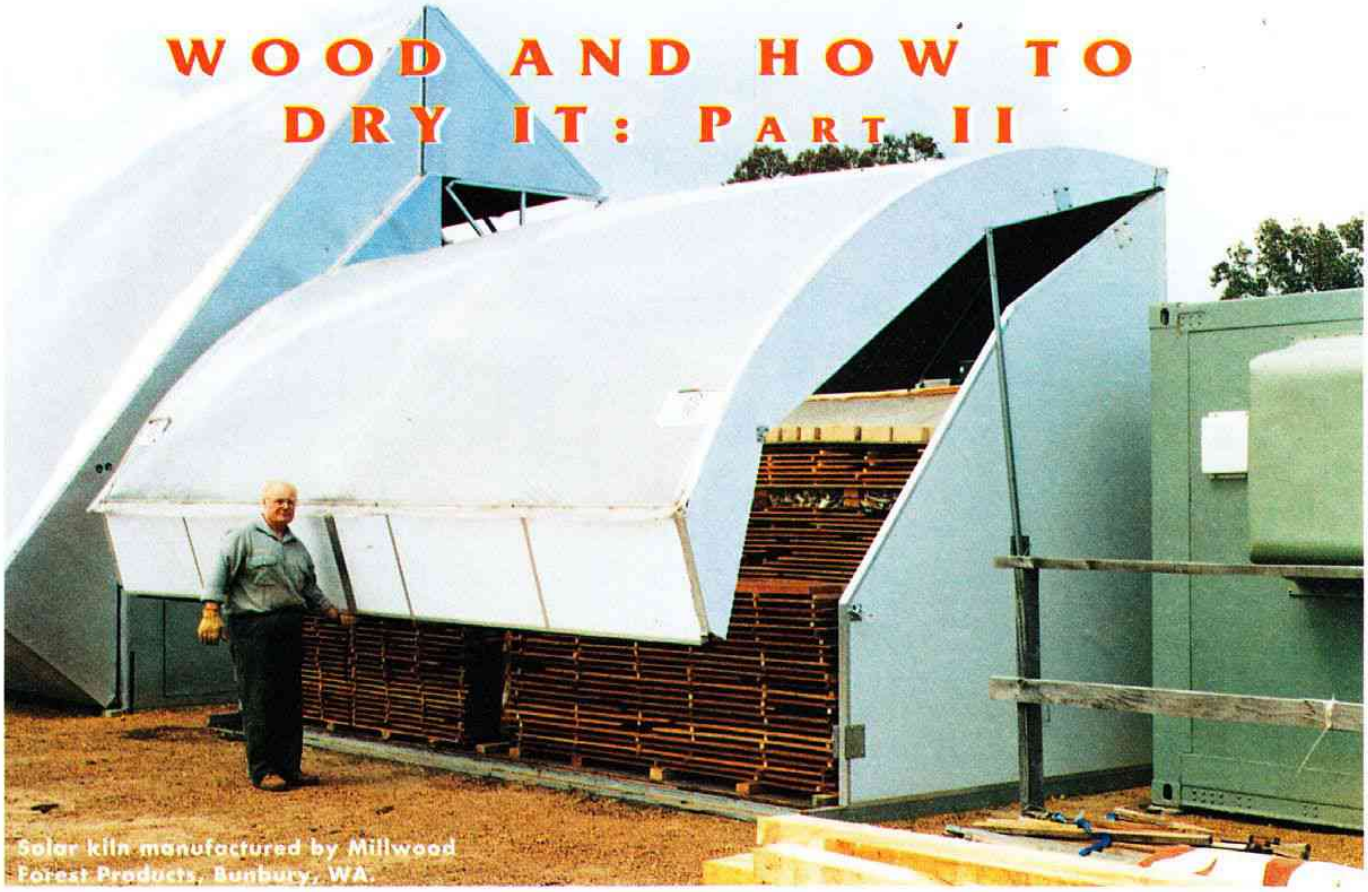
By Dr Eugene Dimitriadis

WOOD AND HOW TO DRY IT: PART II



Solar kiln manufactured by Millwood Forest Products, Bunbury, WA.

Last issue Dr Eugene Dimitriadis discussed the nature of wood and described the air and kiln drying of timber. Here he looks at solar and alternative methods.

Solar Kilns

Using the sun as a source of heat instead of electricity or combustion fuels is another way of accelerating the controlled drying of wood. In an ultra simple 'solar' process the air drying stacks are simply wrapped in plastic sheet.

Humidity is kept high as moisture gradually diffuses out of, or condenses onto the plastic in a kind of hot house environment. More sophisticated kilns use the glasshouse principle to trap the sun's heat in a glass or plastic-covered frame. Ventilation through the stack is provided by a small fan; moisture exits through vents to the outside.

Some kilns have heating lamps to ensure drying continues through the night. More sophisticated kilns function by first transferring heat to water then transferring it to the air by a heat exchanger as and when required. Even more sophisticated models have humidistats. Solar kilns work more slowly than other kilns. They are easy-build, low cost and operate at low temperatures.

An alternate technique involves the use of gentle heating and dehumidifiers. Heat from the compressor of an air conditioner is also used to preheat the circulating air, while the cooling coils remove accumulated moisture from the air by condensation. The rate of moisture removal from the stack is easily measured by regular monitoring of the volume or weight of the condensed water. Operating temperatures are modest, typically 30-50°C. The rate of drying is thus slow and gentle, while the kilns are easy to operate, low cost and energy efficient.

Microwave Drying

This technique has not been used extensively on a commercial scale, but has been experimented with on a very small scale, notably by woodturners, using a domestic sized microwave oven. Microwave energy penetrates the wood more deeply than surface heating and agitates the cellulose and water molecules, opening pores and preventing surface drying.

Fires within domestic ovens are not uncommon with the uninitiated, and the dirty kitchen oven can take some explaining on the return of one's partner! Regular application of low energy levels, for small fixed periods while carefully monitoring and recording weight loss seems to be the secret. It would, however, be advisable to base any experimentation on the experience of others who have been successful in using this process.

Drying can cause severe stresses in wood, resulting in bowing, cupping, twisting, checking (on the surface and ends) as well as surface and internal collapse. End checks result from rapid drying of end grain, where moisture evaporates 10-20 times faster than from other surfaces.

Ends should therefore be sealed as soon as possible after the tree is cut or boards are docked. Coat with wax (hot dip or emulsion coat) or acrylic paint (undercoat works well and is inexpensive, dries quickly and can be written on). Flatsawn wood is more prone to cupping and movement than quartersawn. Some timbers seem to 'self destruct' no matter what techniques are used.

Some cool climate eucalypts are particularly prone to collapse and internal checking. Referring to published material on shrinkage rates (see *Wood in Australia*, K.R. Bootle) for different species can indicate which are most prone to movement during drying and in use. Those which have big differences between radial and tangential shrinkage values will often cause the biggest problems.

Small Scale Drying

Wood from smaller species destined for turning, carving or other craft uses, is usually obtained as logs. My method for handling these is as follows.

- Clean and end coat as soon as possible (preferably within minutes of cutting the tree shrub).
- Cut into two longitudinally along the pith or centre line as soon as possible with a bandsaw.
- Leave the bark on (examine for borers and spray if necessary) and label (species and date cut).
- If the timber is check prone, coat the surfaces and leave in a cool, airy place (avoid direct sunlight) to part-dry for 6-12 months.
- Re-saw lengthwise removing pithy area and surface checks, square edges (if required) and remove some wood and bark from curved side (if required) to allow more rapid drying of these surfaces.
- Leave to air dry for a further 6-18 months, trim off ends with any checks, re-wax ends or re-coat with *Dimension-4* until ready for use. Further drying may still be required.

With burls, the cut surface/s should be coated immediately after cutting to reduce surface checking, this applies especially to the cooler climate 'wetter' burls such as myrtle. The drier inland species are usually more stable but should be similarly protected.

Drying bark-to-bark slabs from portable bandsaws, chainsaws or other bush mills requires the same level of care. Drying times are typically longer as the slabs are usually 38 or 50mm thick. End coat as soon as possible and stack using stickers to 're-assemble' the log. Care should be taken to ensure the stack is stable as lowest boards will be narrower than those above.

Freeze Drying

Widely used in the food and pharmaceutical industries this technique is practised by some woodworkers. Freezing the timber causes the cells containing ice crystals to swell, a process which aids the drying process. The low humidity of a low temperature environment also helps.

Chemical Seasoning

Boards or semi-finished items such as golf clubs, rifle butts, carvings and turnings may be dipped into solutions containing hygroscopic (water-absorbing) chemicals. These include the polyethylene glycols or PEGs, glycerol (glycerine), urea (commonly used as a nitrogen fertiliser) and sodium chloride (common salt).

Freshly sawn timber is soaked in moderate concentrations of these chemicals dissolved in water for around one to two days for each 25mm of thickness or for a matter of minutes in concentrated solutions of the PEGs or glycerol. These chemicals are absorbed in the surface layer of the wood and draw out the moisture by diffusion and capillary action to the surface where it evaporates slowly.

Hygroscopic chemicals are involatile and leave a supple wood surface which reduces the risk of checking. Salt is inexpensive and effective on hardwoods but even after machining remaining traces can cause corrosion of fittings. Thick ash and satin box sections up to 75mm have been successfully treated with this method.Wood, after dipping into a 1-2% solution of alginate containing a preservative and fungicide, has a similar hygroscopic skin which allows controlled slow drying, minimising checking.Unorthodox drying methods have also been tried in the US and some Asian countries, but with limited commercial application. For example, placing the wood in boiling solvents, oil, or solvent vapours. Infra-red drying, electro-osmosis and mechanical centrifugal pre-drying are methods that have been tried but found to be largely ineffective.

Solar Kiln Options

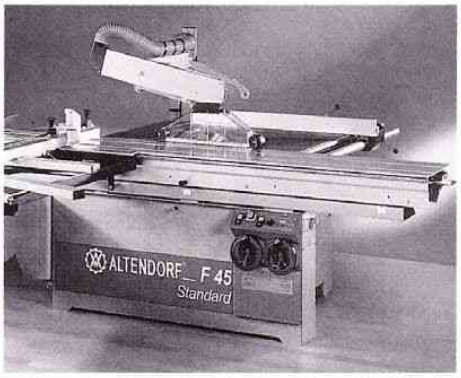
Millwood Forest Products is a production sawmill operation in the south-west of Western Australia. In addition to supplying Wood-Mizer bandsaw sawmills, Millwood manufactures a solar powered kiln which the company describes as a 'controlled air dry system'. Under this system the wood has a chance at night to rest and reabsorb a little of the moisture lost during the day, which eases, Millwood claim, the stresses in the timber producing a better final product. More information from Millwood Forest Products tel: (08) 9725 6226, or Dry Air Systems Pty Ltd (03) 9701 5540

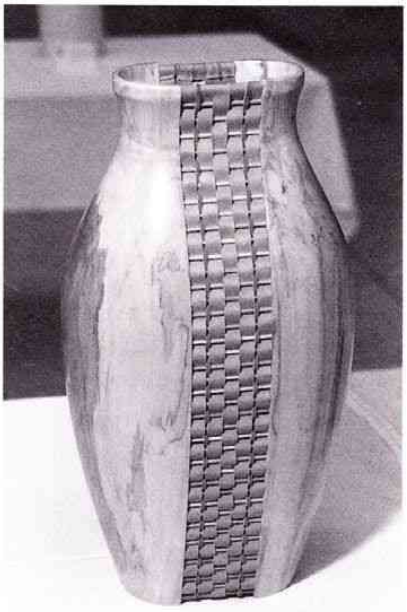
Rose Gum Timbers is a NSW company specialising in the production of furniture grade rose gum and blue gum. The timber is dried in solar kilns which have been developed and are marketed by Rose Gum Timbers. The S2 Solar Kiln is aimed at commerical drying operations and consists of a solar collector mounted on top of an insulated shipping container. At night and on cold days the chamber is isolated from the collector to retain the accumulated heat. Controlled venting unloads moisture while minimising heat loss. The S1 Portable Solar Kiln is designed in modules of 2.5m which can be joined. This kiln is designed for smaller scale use without the need for forklifts. More information from Rose Gum Timbers (02) 6655 2100.

WOOD NEWS

Boat Building Revival

A group of young shipwrights have constructed a 12' Cadet One , a 1924 design reminiscent of Sydney's working wooden skiffs of the last century at the Australian National Maritime Museum in Sydney. *BuildaBoat*, a venture between Rotary and the Museum, was behind the project which has brought together young people to put into practice the geometry and maths of the classroom.With strict adherance to traditional methods (clinker built) and timbers (kalantas over a silver ash frame) and the employment of handtools only (block and rebate planes for final fitting of planks), the group, led by boatbuilder Ian Smith of Woodcraft Boats, are from a variety of backgrounds ranging from residents of a homeless youth hostel to high school students. While the project had many sponsors behind it, the assistance of Richard Clarke at *Trend Timbers* helped bring the project to fruition in regard to sourcing of timbers.





Top: Participants in the Buildaboat project in Sydney.

Above: Altendorf's F45 Standard.

Right: A piece from the 'Turned For Use' exhibition presented in conjunction with the AAW symposium.

State-Of-The-Art Saw

Altendorf have a new model panel saw, the *F45 Standard* comes with a bag full of advanced engineering refinements: 4 speeds, digital read-out on tilt, electric rise and fall on scriber, a new crosscut fence with sight glass, two stops and machined stops for accurate locking. Standard safety features to full CE requirements include electric brake on blade and sensors that cut out the motor if the sliding table extends past the safe cutting point, or if blade covers are removed. The *Standard* is $22,000 ex tax from Altendorf (02) 9756 6669.

Huon Pine—New Source

A new source of this wonderful timber is now available in the market place. Limbs, stumps, small logs and shapes of Huon pine to suit carvers, turners, furniture makers and box makers are or will be available nationally through selected timber merchants. For details or your nearest stockists call Tasmanian Special Timbers (03) 6471 2510. Ask also for details of a new video about this precious timber.

Course News

A big first for NSW is the Diploma of Furniture Design being offered at Lidcome TAFE in 1998. The course complements existing courses and offers virtually one on one teaching by highly qualified teachers. The two year full time course is geared towards the designer/maker with highly developed skills and an innovative approach to furniture. It is hoped to also offer this course at Coffs Harbour and Wollongong if a minimum number of student enrolments can be found. Contact Allan Perry or Pat Fiddler at Lidcombe College of TAFE on 02 9749 3300.

AAW Symposium

The American Association of Woodturners, the 6,800 member international organisation dedicated to organising and educating woodturners, held their annual symposium in July in San Antonio, Texas. Top turners participating included: Ray Key, Jean-Francois Escoulen, George Hatfield, Stuart Batty, Frank Sudol, Christian Burchard, Michael Lee, John Jordan, Virginia Dotson, Betty Scarpino and Al Stirt. Sales from the Gallery netted $21,000 for the AAW Educational Opportunity Fund. Next Year's National Symposium will be held in Akron, Ohio in June. More information from Mary Lacer in the US, 612 484 9094.

AWISA Biennial

Following the early sell-out of space at the 1996 show, the Australian Woodworking Industry Suppliers Association (AWISA), has booked extra space for the July 15-18 '98 industry-specific show at the Sydney Exhibition Centre. New exhibitors are welcome, especially those who may have mistakenly believed the show was machinery for only. Information from Geoff Holland (02) 9144 2465

Know Your Furniture

Furniture Features: Elements of Furniture Quality is a booklet produced by the FIAA to provide a checklist of furniture features which will be assessed by a salesperson assisting a customer in a purchase. It provides a salesperson with an overview of furniture product knowledge. Contact the Furnishing Industry Association of Australia on (03) 9698 4362.

WOOD NEWS

Arakaria

Wearing its new brand name, hoop pine has really taken off overseas as a high quality joinery and interior grade timber. Its clear grain and easy working properties are what make it a highly prized timber. In Australia this native timber is available from most timber merchants or through one of the biggest producers Hyne & Son, (07) 4121 8800

New Outlet

Island Specialty Timbers have opened a second retail outlet for salvaged wood from forestry operations. The specialised wood outlet for wood designers and craftspeople, operated by Forestry Tasmania, sells burls, butts and limbwood, as well as celery top poles and specialty timbers including sassafras, blackwood, Huon pine. Managers Stuart Vance and Carlton Cox welcome inquiries on (03) 6398 2205 or visit Forestry Tasmania's website: www.forestrytas.com.au.

Robland in NSW

Robland's reputation for solid no fuss design, heavy cast iron machines and large working capacities at highly competitive prices, has seen it added to the stable of high quality machinery distributed by Hare and Forbes in NSW. *Robland* machinery can be viewed at their George St, Parramatta showroom or a free video can be obtained by telephoning (02) 96 33 4099.

New Machinery Dealer

Advantech, a new specialist woodworking machinery dealer, has opened its doors for business at 64 Duerdin St, Clayton, Victoria. Owned by W & R Jack of NZ the company distribute *Robland*, *Scheppach*, *Casolin*, *Proform*, *Janssen* and *Homag* machinery. 1998 will see the launch of a new *Scheppach* 450mm bandsaw plus new model panel and scrollsaws. Contact Advantech on (03) 9574 9779 or 1800 355 635 or telephone New Zealand 546 2286 or 544 1995.

Rapid Growth

Qld Woodworking Supplies are rapidly expanding. With existing branches in Yatala and Bundaberg the company will soon open a new store in Rockhampton. Owner David Drescher aims to supply Queenslanders with all the machines and accessories they need for fine woodwork. Call 1800 240 470 for product details.

Measuring Moisture

A new non-destructive moisture meter has hit the market in the form of the *Tramex Wood Moisture Encounter (WME)*. Working on the principle of impedance measurement, the pocket sized meter's features include: switchable species adjustment, digital LCD and a timed on/off switch. The meter can identify pockets of moisture in coated or uncoated wood. Contact Cornell Group (02) 9418 1002.

Not Just For Boats

The modern boatbuilder has a few woodfinishing tricks up his lifejacket: *Bote-Cote* epoxy resins are worth finding out about. A new product, *Pour On Gloss*, is now available for the woodturner, woodworker, woodcarver and cabinetmaker, not to mention the decoupage artist. The two component plastic resin sets to a hard, non-brittle, glossy coating for internal applications. Available from BoatCraft Pacific (07) 3806 1944.

Save Time On Doors

Making doors is made easy with new spindle moulder tooling to save kitchen cabinet manufacturers, joiners and furniture makers hours of time. The Woodman Group's *Freud Cabinet Door Set* features a cutterhead with interchangeable and resharpenable knives of solid carbide. Contact the Woodman Group in Vic (03) 9555 5199, NSW (02) 9708 3233, Qld (07) 3844 4433, SA (08) 8346 4561 and WA (08) 9272 3844.

Price Correction

The *Felder K7 Compact* retails for $4800—we listed the price incorrectly in our story last issue on mid-range panel saws. Contact Felder on (03) 9801 7728 or at the new Brisbane showroom at *Toona Australis* (07) 3344 2790.

Workshop Residence

Expressions of interest are sought from qualified woodworkers and craftspeople interested in residency periods at the fully equipped Design for Production workshop in Ipswich, Qld. Residents would be expected to conduct workshops in return for access. Contact workshop manager Narelle Callen (07) 3202 2882

Disc Sanding Delight

Hare and Forbes new *DS-12 12"* Disc Sander fitted with a direct mount 0.6kw 1440rpm electric motor makes it ideal for fine sanding. The aluminium table tilts to 45° and comes complete with a "T" slotted mitre gauge. A full range of dust extraction accessories is also available. Call Sydney (02) 9633 4099, Perth Fiora Machinery (08) 9356 1811, Hercus in SA (08) 8346 5522 or Brisbane (07) 3849 1888.

Unique Finishes

For a truly quick and easy shine on your woodwork there are few really satisfying products around. *Mothers' California Gold* is a trusted product by those in the know. Apply the pure carnauba paste wax with steel wool or a damp cloth over a sanding sealer base. Allow to dry for a couple of minutes and then buff for a clean hard-wearing finish. For more figured finishes, *Krylon's Antique* and *Marble Finishes*, creates a great effect on wooden plates, picture frames or boxes. Call Qld Woodworking Supplies Toll Free 1800 240 470 to order.

U Beaut Finish

Shellawax Cream is another easy to use and highly effective finish, applied to raw timber it creates a beautiful French polish-type look that people are raving about. Suitable for woodturning, carving or furniture, it's made by 'U Beaut Polishes, (03) 5476 2356.

The Final Finish

The complete range of Watco timber finishes are available from Watco Australia. They have a variety of high quality products for furniture, turning, flooring, joinery and exterior uses, call (08) 8281 6767

Ornamental Turners

The Ornamental Turning Group of Australia is holding its first National Workshop/Seminar at Oyster Bay, Sydney in March (18-20). Further information is available from Alf Jordan (02) 9727 2116, John Rea (047) 77 5021 or W. Cyril Brown (03) 5258 1797.

New Cordless

Panasonic have added two 12 volt cordless drill/drivers models the *EY6101FQKW*, $559 and the *EY6100FQKW*, $519 to their extensive range. Both are powered by re-chargeable F type battery packs, with a two speed planetry gearbox providing a high level of turning torque. Call 132 600.

Triton Accessories

Following on from the raging success of the *Triton Series 2000 Workcentre* comes the release of two new accessories. The *Sliding Extension Table* and the *Series 2000 Bevel Ripping Guide* offer versatilty, accuracy, portability and affordability. Contact Triton: (03) 9584 6977.

Turn Around Down Under

Attending the Otematata Experience held by our trans-Tasman neighbours in New Zealand last November, good friends Guilio Marcolongo and Bruce Talbot decided that Australia needed a similar informal get-together for our growing ranks of grassroots hobby woodturners. *Turn Around Down Under* was born with the aim of mustering major turners and other keen enthusiasts to an event where they could relax and share their skills and ideas with other like-minded people. Held in mid-September the weekend provided an opportunity for turners of all levels of ability to join in and share ideas and enthusiasm.

One of the focal points of the weekend's program was a special presentation which was made to Vic Wood, one of Australia's best known woodturning exponents and teachers. Tears, gifts and tributes from former students, peers and admirers took both Vic Wood and his wife Bev by surprise and made the event a stirring occasion. *From Andrew Potocnik*

New Centre For Wood

Imagine this: a workshop equipped with eleven brand new Woodfast C-Series lathes, a new bandsaw, thicknesser, tablesaw, drill press and benches all housed in a purpose-renovated National Trust classified building. The workshop was established and is now operated and managed by the *Central Woodturners Inc*, who formed in 1987 with the aim of fostering woodturning.

Expressions of interest for the 123 year old former school building were sought by the Manningham Council in Melbourne. The concept of the Central Woodturners for a community woodworking centre won the support of the Council who, with a $30,000 grant from the State Government, funded the refurbishment and equipping of the building. Industry support came from machinery suppliers Carba-Tec and Woodfast Machinery Co.

With meeting and courses for all ages and abilities operating around the clock the idea is to utilise the facilities to an optimum level. As well as attending classes and group meetings members can pay a low $1.50 per hour rate for workshop 'Access Time'. For more information contact the clubrooms on (03) 9846 8148, Ken Barker (03) 9842 9446, or Jack Jones (03) 9850 5771. *From Andrew Potocnik*

Student Takes Honours

This year's Natural Feature in Furniture Award, held in conjunction with the Melbourne Timber and Working With Wood Show, was won by Ian McKenzie, a second year student of Furniture Design at East Gippsland Institute of TAFE. McKenzie's 'Wave Screen' was judged the most marketable piece in this year's competition. The competition, which carries a $5,000 dollar winning prize, was open to students and to professional designers and manufacturers throughout Australia. The screen formed part of the FIAA's display at this year's International Furniture Fair in Tokyo. Gary Dobbin, another student in the Diploma of Furniture Design course was also commended.

The Most Beautiful Burl in The World

From Samantha Meyer

It was a treasure hunt of a most unusual kind. The treasure being sought was a piece of timber, the kind of piece that is often passed over by many people, but one with the potential to create a beautiful piece of craft unique if only for its dimensions.

The organisors of this year's Deloraine Craft Fair in northern Tasmania wanted to create a large scale sculpture using a eucalypt burl. A burl is a growth on the side of a tree and in eucalypts they can grow to a large size. This hunt was for one as big as two to three metres in diameter.

The perfect piece of wood was located south west of Deloraine, in the Cluan Tier State forest, managed by Forestry Tasmania. The retrieval of the two tonne burl from the forest was overseen by Forestry Tasmania and became a major attraction at the Fair.

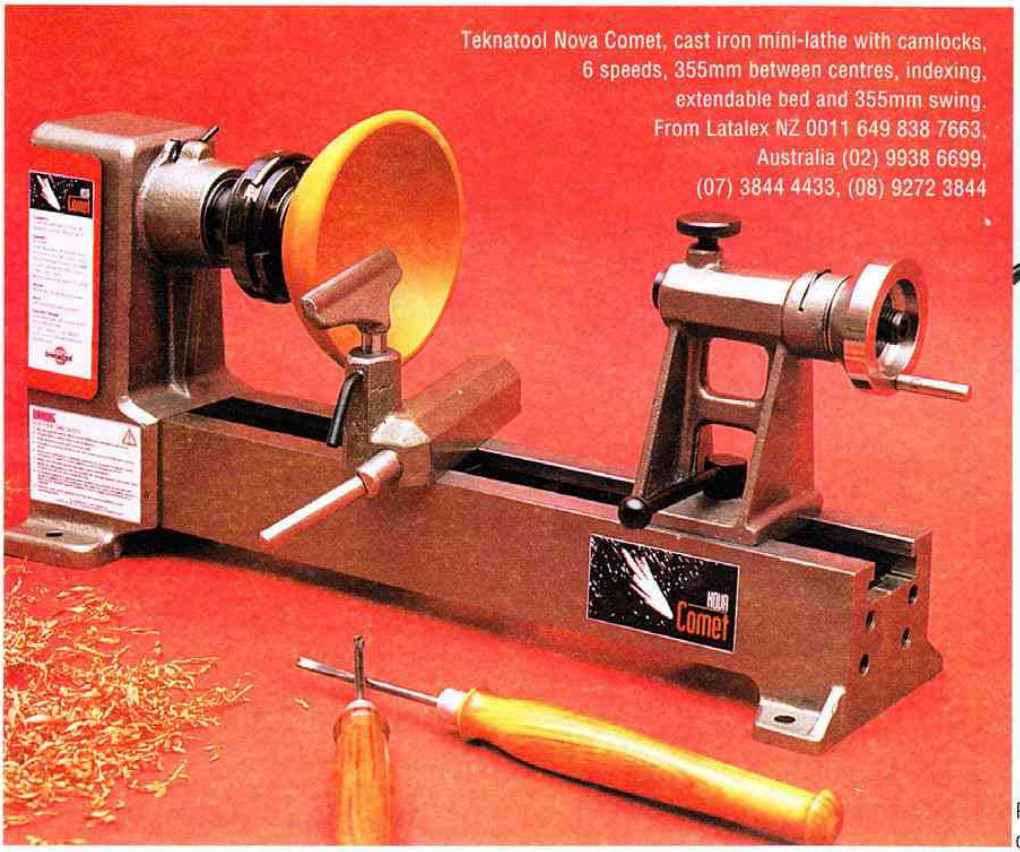
'While some preparatory work on the burl took place, the idea was for the project to be a working exhibition so that people could see the burl transformed before their eyes into a large scale work of art', said Deloraine woodcarver Paul Noordanus, one of the driving forces behind the project.

The burl was donated by Island Specialty Timbers (IST), a business arm of Forestry Tasmania which specialises in the sale of craftwood timber. IST seeks to optimise the value of timber from forest operations by utilising mainly lower grade logs that would otherwise be left behind on the forest floor.

The 'Big Burl' project will involve a group of carvers working together to create one piece. On completion, it will be placed in a local park under a pavilion built with support from the local council and Deloraine Rotary.

The project is a collaboration between Forestry Tasmania, Deloraine Rotary, local craftspeople, local business and the Meander Valley Council. The annual craft fair has become a major event on the Tasmanian woodcraft calendar and this year included 200 stalls, representing about 500 artisans.

All Subscribers enter this Prize Draw



Teknatool Nova Comet, cast iron mini-lathe with camlocks, 6 speeds, 355mm between centres, indexing, extendable bed and 355mm swing. From Latalex NZ 0011 649 838 7663, Australia (02) 9938 6699, (07) 3844 4433, (08) 9272 3844

Winners announced issue 18 (offer applies to Australian residents only) prize drawn Feb 7, 1998

DeWalt DW430 belt sander, lightweight but powerful tool for surface and edge sanding. From Black & Decker (03) 9727 8200.

Porter Cable new Profile Sander makes sanding difficult edges, corners, mouldings and carvings a breeze. From Carba-Tec 1800-658 111.

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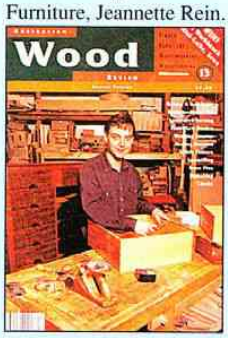
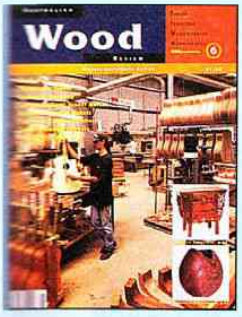
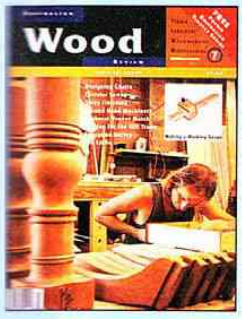


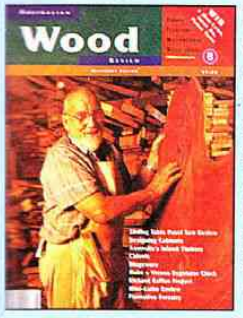
No. 13
Panel saws, making drawers, safety, a hall table, router usage, jigmaking, Huon pine, Leo Sadlek, working smarter, sawmilling, laminated/segmented turnings, collaborative woodturning, Wentworth Furniture, Jeannette Rein.



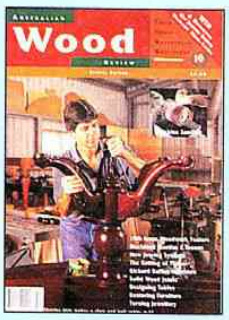
No. 6
Musical instrument making in Australia, timber veneer design , Chinese Furniture, laying a sunburst veneer match, computer design software reviewed, sanding and abrasives, bandsaws, winning at exhibitions, turning natural edged hollow forms, Maton Guitars.



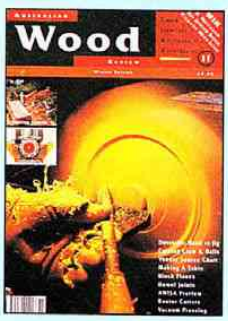
No. 7
Designing chairs, torsion boxes, spray finishing, making a marking gauge, plywood, second-hand machinery, circular saws, education survey, blackwood, Parker furniture, making lathes, gift trade woodturning, computer software, veneering. Free Special Timbers Poster



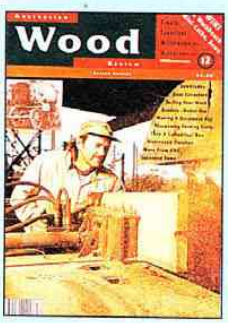
No. 8
Designing cabinets, panel saw review, desert & inland timbers, plantation forestry, Robert Dunlop, mini-lathe review, turning a lidded bowl, Wendell Castle, hingeware, the chisel, history of machinery, mahogany, making a Vienna regulator clock



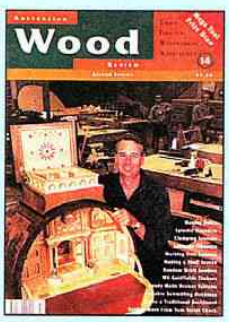
No. 10
Anniversary Australian Woodwork feature, designing tables, buying timber, joining systems, turning jewellery, pedestal table project, mortise & tenons, restoring furniture ct'd, mulga turnings, Raffan interview, machine sanding, solid wood joins



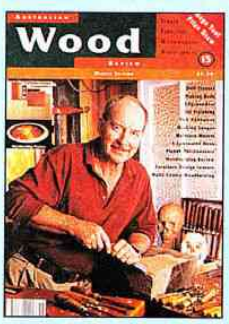
No. 11
Dovetails, router cutters, veneer reference chart, dowel joints, carving claw & balls, a colonial table, block planes, turned and carved 'winged' forms, Cook's Endeavour, collecting timber, walnut, tiger myrtle, vacuum pressing, Jah-Roc, MAP.



No. 12
Sawblades, dust extractors, routers, document box plans, sharpening turning tools, CNC, Japanese saws, distressed finishes, selling your work, sawmilling, Griffith Furniture, teak, French woodturners, veneered table top.



No. 14
Making doors, spindle moulders, clamps, laminate trimmers, squares, making shoji, random orbit sanders, WA Goldfields timbers, drawer systems, portable sawmilling, carve a backboard, scroll chucks,turning handled bowls, inlay, David Boucher.



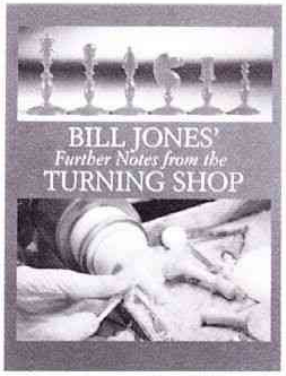
No. 15
Furniture design comp. review, making beds, drill presses, edgebanders, oil finishinng, PVA adhesives, marking gauges, moisture meters, a laminated desk, planer-thicknessers, new woodturners, multi-centre turning, turning bookends, eye safety, Don Powell

No. 16
1997 lathe review, buying mid-range panel saws, a collector's cabinet, spindle moulder operation, designing office furniture, Huon pine turning feature, Australian toolmakers, drying wood, turning spheres, chip carving, belt sanders, ancient timbers, Elvin Harvey, Paul Noordanus

Bookshelf

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

Book reviews by James Brook.

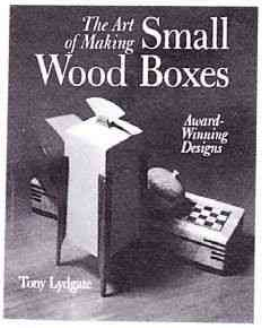


Bill Jones' Further Notes From The Turning Shop

By Bill Jones, of course

Here is something to read, plus it will help your turning. Most of the time it runs like a non-stop column in a woodturning club newsletter, which is fine for a newsletter, but Bill seems like such a nice bloke, he's human and wants to share his knowledge of woodturning. The notes are full of mini-projects, tips, waffle and good ideas. Pull up a chair, relax and listen to Bill, all the while learning about the craft of being a woodturner.

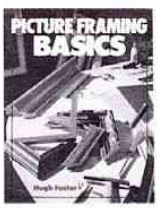
Softback, 144 pages, mostly colour, $34.95



The Art of Making Small Wood Boxes

By Tony Lydgate

This guy has written and sourced about four other books of this type, I can't believe he's done another one. But like the others this book is good, better I think. There are 40 'boxes' (some would be better labelled sculptures) all by different makers. There is plenty philosophy along with the photos of the makers, their boxes and plans, what more could you ask for, if you're into boxes of course. *Softback, 144 pages, all colour, $29.95*

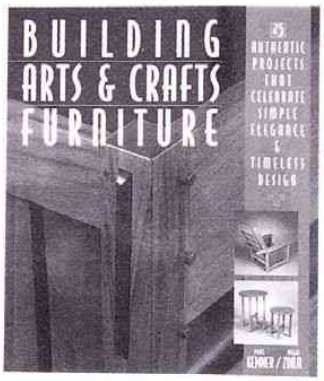


Picture Framing Basics

By Hugh Foster

This very modestly priced book covers all the processes of picture framing and is suitable for the amateur. There is plenty of advice and reasonable quality photographs.

Softback, 128 pages, black & white, $16.95

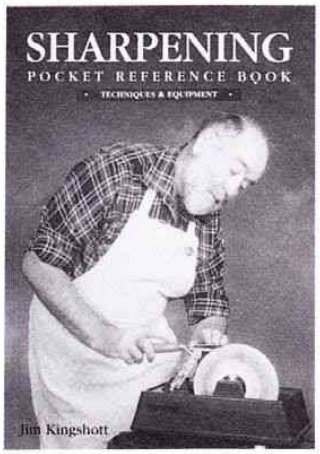


Building Arts & Crafts Furniture

By Paul Kemner and Peggy Zdila

The Arts and Crafts movement was happening between 1870 and 1920, and if I've got it right, was a reaction to the new flood of manufactured goods coming from the growing use of machines. Craft, beauty and natural materials were the catch-cries (sounds like the 60s and 90s doesn't it). The book leads in with photos, design cues, detail shots and philosophy and then has 18 projects of things such as chairs, shelves, tables and accessories all suitable for various skill levels. Most of the projects look good, although there are a couple which I thought were a little too simplistic to warrant making.

Softback, 144 pages, mainly mono, some colour, $29.95

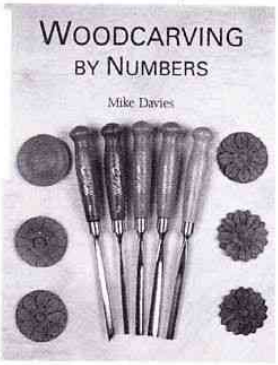


Sharpening, Pocket Reference Book

By Jim Kingshott

The author has written much on woodwork, particularly in regard to tools. This book is the why, what and how of sharpening, and it's very good. If you digest all it contains you won't go wrong handling the edge of virtually every cutting tool in the workshop, from planes to machine knives and everything in between. An excellent reference book, as the title suggests, on a critical subject.

Softback, 152 pages, black & white, $19.95

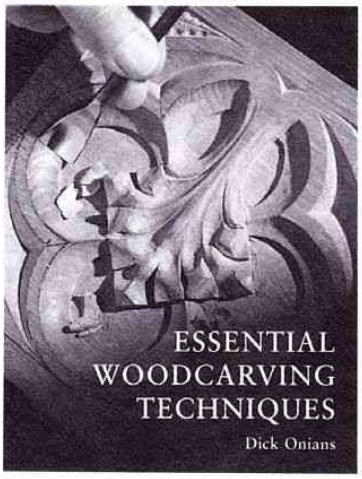


Woodcarving by Numbers

By Mike Davies

A fair amount of skill is assumed for this book which is very nicely presented and illustrated. There is a very brief section on chisels, sharpening and timber followed by technique, finishing and ageing, these are all reduced to their most basic facts. The main part of the book is devoted to individual projects such as corbels, mouldings, flowers, linenfold, etc. Finding designs is often a problem for beginners, but here are 30 pages exclusively on plans and patterns, nicely scaled on a grid. My main criticism is the title of the book, don't be put off by it.

Softback, 144 pages, colour, $39.95



Essential Woodcarving Techniques

By Dick Onians

Starts with an introduction to the carver's base tool, the chisel, providing useful information on tool selection. Moves on to types of chisels, various cuts, holding the work, sharpening and then to timber. The following chapters look at chip carving, mouldings, foliage (covered in quite a lot of detail), bowls, animals, humans, sculpture and lettering. Each chapter is very well illustrated with drawings and photos and most are written with projects to aid the learning process.

Softback, 182 pages, all colour, $34.95

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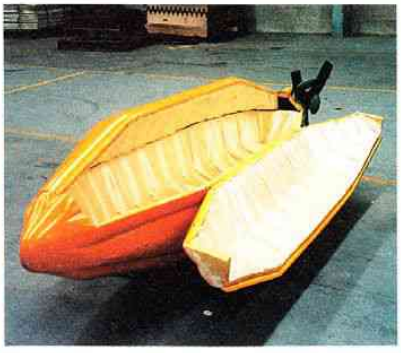
A CELEBRATED DEPARTURE



While respect and remembrance are the keynotes of funerals in industrialised societies, humour and celebration are often on the scarce side. In Ghana however, a funeral is often the high point of one's life—or rather the family's life—who spend a considerable amount of money on all the usual sendoff expenses such as embalming, morgue fees, funeral cloth, obituary notices, ceremonial bed for laying out—and perhaps most importantly, alcohol for the pre-funeral wake. DJs and drummers often donate their services for the mandatory dancing and singing.

Since 1951 an evolving art form based on the work of Teshi village carpenter Kane Kwei, his brother Adjetei and his apprentices, has developed into a local tradition. Kwei's coffins allow the deceased to depart in anything and everything—from a gold Mercedes Benz (wouldn't Janis Joplin have loved to have been sent off in one) to a spring onion—to reflect the departed soul's worldly status and aspirations.

The brothers' first feature coffin, an aeroplane, was made in 1951 for their grandmother. As a poor village woman she had dreamed of one day flying. Whereas once only wealthier tribal chiefs could afford such indulgences, independence in 1957 saw the wealth of Ghana grow, giving more families the means to honour their dead in style. Fishermen can go as fish in a net or a prized blue tuna just as farmers can choose anything from a corn cob to a soaring eagle.

Kwei originally made his coffins from mahogany but moved onto the far more workable 'wawa' as all are worked with hand tools—saw, plane, chisel and razor blade. Rounded areas are finished with a razor blade before any rough surfaces are sanded out. The desired shape is detailed in bright paint.

An exhibition entitled *Decorative Coffins from Ghana* appeared in the Brisbane City Gallery in July 1997 before moving onto the Melbourne Festival in October.

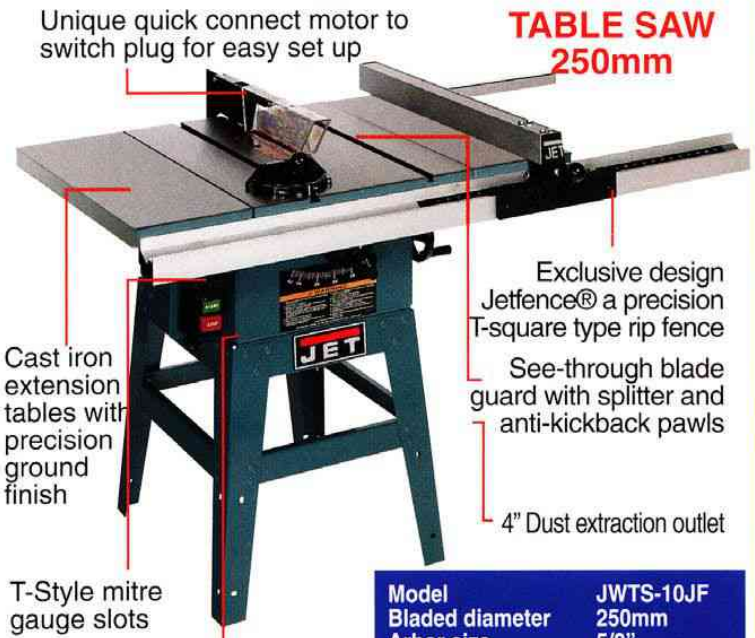
JET
EQUIPMENT & TOOLS

When Only The Best Will Do

SPINDLE MOULDER JWS18-HO

Model	JWS-18HO
Speeds	7000, 9000RPM
Table size	393x457mm
Table opening	133mmø
Spindle size	1/2", 3/4"
Router bit collet	1/4", 1/2"
Motor	1HP 240V

TABLE SAW 250mm

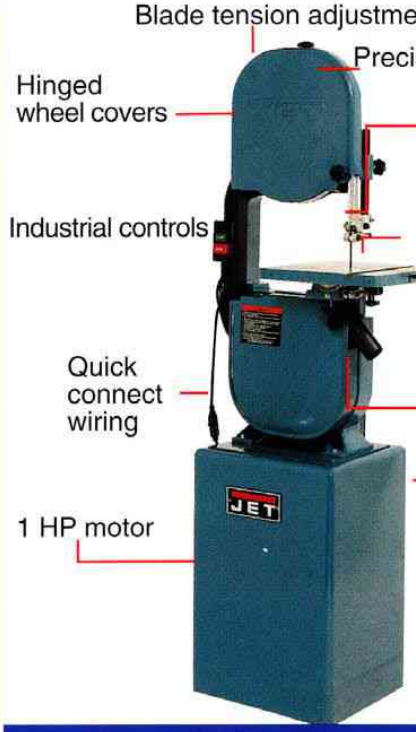


Model	JWTS-10JF
Bladed diameter	250mm
Arbor size	5/8"
Depth of cut	79mm
Rip capacity	762mm
Table size	685x1016mm
Arbor speed	4000RPM
Motor	1 1/2 HP 240V

JOINTER JJ6C-SX

Item	JJ-6C5X
Capacity (W&D)	153x12.7mm
Cutter speed	4800RPM
Number of knives	3
Rabbeting capacity	12.7mm
Table surface (WxLxH)	187x1169x806mm
Fence H&L	102x740mm, Tilting 45°
Motor	3/4HP 240V

8" MODEL AVAILABLE
ITEM JJ-86S
Table length 1690mm
Motor 2HP



BAND SAW WITH CABINET STAND

Item	JWBS-14CS	Table size	381x381mm
Max Height	152mm	Table tilt	45°
Cutting width	342mm	Dust chute	50mm
Min saw blade	1/8"	Blade speed	3000RPM
Max saw blade	3/4"	Motor	1HP 240V

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