JUNE, 1985
VOLUME I, NUMBER 2

the American Woodworker

$2.95

COURTESY: JACK ROGERS HOPKINS

Here's Front-Page News:

ANOTHER MR. SAWDUST BLADE FOR THE *TWO*-SAW SHOP!

We got fancy last Fall and did a survey.

Out of the hundreds who came to our shows, we hand-picked 358 *very* serious woodworkers and asked them to fill out a lengthy questionnaire. Here's part of what we learned:

Of the 358, table-saws are used by 242. Radial-arm saws by 212. And 124 own BOTH. So -- **35% have TWO-saw shops!** What's more, they convinced us: My original Mr. Sawdust blade is ideal for those "perfect, polished cuts" on *either* machine -- but they also want an all-purpose, fast-feed, planer blade *strictly* for their table saw. One that will give them a GLUE-LINE cut right off the blade.

They *least* enjoy ripping heavy stock and cutting up large sheets of material -- so they want to get the job done as *quick and clean* as possible. But more than that: Without changing blades, they want to crosscut and miter with an equally good cut.

So, for the TWO-saw shop, here's *another* Mr. Sawdust blade.

MR. SAWDUST *I* (For the ONE-Saw Shop)

This is my *original* Mr. Sawdust blade -- most desired by the American craftsman. Kerf: 3/32". 60 teeth. Modified triple-chip with micro-finish grind. Exclusive Forrest 400 carbide. **Perfect, polished cuts in every direction.** The one blade that does it all -- for as long as you'll cut wood or plastics.

Designed for use on *either* table- or radial-saw. A **MUST** for your radial.

Available in 8", 9" and 10" diameters.

MR. SAWDUST *II* (For the TWO-Saw Shop)

My new **special-purpose** blade -- *strictly* for your table-saw. 1/8" kerf. 30 or 40 teeth (see below). Modified alternate-bevel with micro-finish grind. Exclusive Forrest 400 carbide. Designed for super-fast and planer action in ripping heavy, solid stock with *glue-line quality* of cut. Slices ply-panels, particle-board and one-side laminates *quick and clean*. Crosscuts and miters with equal quality and ease.

Generally, I recommend 40 teeth. However, if your ripping includes a lot of heavy hardwoods, specify 30 teeth. See dampener information (*) pertaining to table-saws.

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It's a vital part of the Forrest blade design -- to suppress harmonics caused by motor, belts, even change of grain in wood. For 10" blades, specify 6" dampener. This allows a 2" depth of cut. (For table-saws, if you cut a lot of full 2" stock, specify 5" dampener to expose blade above material.) For *maximum* 3" depth of cut -- table-saw or radial -- remove dampener. (For 8" and 9" blades, figure dampener size accordingly.) Want some expert advice? Our 800-number is toll free!

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8" 60T.	150.00	**105.00**

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10" 40T.	$156.00	**$109.20**
30T.	135.00	**94.50**
9" 40T.	146.00	**102.20**
30T.	125.00	**87.50**
8" 40T.	136.00	**95.20**
30T.	115.00	**80.50**

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4" Dampener	20.00
8" 24T. DADO SET #3	$299.00
10" 24T. DADO SET #3	362.00

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Please enclose $1.00 for Postage and Handling.

Guaranteed to cut to your satisfaction or we'll buy it back.

JUNE, 1985

the American Woodworker

VOL. I, NO. 2

JM PUBLICATIONS INC. • 13 WALTON MALL • BOX 1408 • HENDERSONVILLE, TN 37075

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CONTRIBUTIONS: We encourage contributions that would be of interest to woodworkers. Subject matter may include any topic that concerns the use of wood. For safe return please include a self-addressed stamped envelope. Articles should contain clear, uncluttered, glossy photographs, easy to follow instructions and sketches and/or drawings if necessary. Schedule of payments and guidelines available upon request.

ADVERTISING: Advertising rates and mechanical requirements available upon request. When inquiring, please address to: Advertising Dept., The American Woodworker, P.O. Box 1408, Hendersonville, TN 37077-1408.

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EDITORIAL

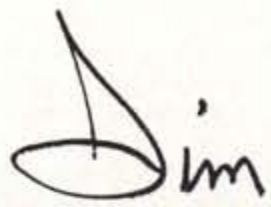
Your Place In Woodworking

Many of us, including myself, have stood in awe of the abilities of the master craftsman woodworker. To some he serves as a source of inspiration, to others he represents a degree of skill that will never be obtained by the average woodworker. To some, depending upon the attitude taken, this can be discouraging. Knowing that it requires a certain degree of natural talent, some form of instruction, and years of practice to become a master craftsman, one must stop and evaluate his/her place in woodworking. Is this my hobby, my profession, or does my place lie somewhere in between? There are various stages for both the amateur and the professional woodworker. Each has its own rewards and each has its own pitfalls.

For the amateur woodworker there are so many areas to explore that one can work and experiment forever and never grow tired of the hobby. The joys are many and as long as the amateur does not try to work beyond his capabilities, he will find satisfaction in his work. Oftentimes it is just the opposite that will stagnate him at his work. Fear of failure is a common stop sign for many. One of the major pitfalls for the amateur woodworker is when he decides that he would like to make some extra money at his craft. There is, of course, nothing wrong with this, but one must realize that the once peaceful serenity of ones own workshop will never be the same. Many a hobby has become a business, but once the business factor enters the situation, the hobby will never be the same. If you are an aspiring amateur seeking nothing more than a hobby, beware of the pitfalls. Progress, explore, and learn at a pace that is enjoyable and acceptable to you. In my opinion, the amateur's role lies somewhere in the middle of the road. Overzealous projects will probably lie unfinished in the corner of the workshop. At the other end of the spectrum stands the dormant workshop. One must participate to be able to enjoy. Maybe it's time for a quick, simple project to respark an old love affair. There are many complex criteria that can be used to evaluate ones position in anything. In this situation, I believe there is but one question to ask. Am I having fun doing this? If the answer is no, then something is out of balance and needs to be examined and adjusted.

While amateurs may have certain problems, they will probably never reach the magnitude of those encountered by the person attempting to make a living from working in wood. Not only must one achieve an acceptable level of skill, but one also has to learn how to market that skill or the product produced from that skill. If the venture is one of private business, many additional skills are required. The smaller the business, the more the proprietor must know about the business. There have been many very skilled craftsmen who have failed because they did not receive the necessary training to market their product. The areas of woodworking are so varied that there are no standards to apply. The craft entails everything from flea market breadboxes to museum quality pieces of furniture. Even so, each has to be produced and each has to be sold. A certain person may make more money mass producing a product, but if that person is happier working on custom made pieces, maybe the latter is the best choice for him. Money is certainly a necessity, but it should not be the only area of consideration. It is certainly not the ultimate vehicle that brings the satisfaction and happiness we all seek.

As we can see, there are many options available to the woodworker, both in the projects and techniques he chooses for himself and the role he chooses. I only hope that the inexperienced craftsman will realize that there are choices to be made and that the best way to make those choices is to gather all the information he can. Although not providing all the answers, the story about woodworking associations in this issue may offer some help. We all know that two or more heads are better than one. We at **The American Woodworker** hope that you have found your place in woodworking, but if you have not, have a good time during your search.



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Letters To The Editor

"Congratulations! Your first issue is very well done. Much better than most first issues."

Robert T. Granger, Mustang, OK

"I would love to see an article/project on making a drop-leaf table. I would like to see more than four times a year."

David Eble, Tupelo, MS

Dear David:
The drop-leaf table will be in a future issue for sure. We are working on six times a year in the future!

Editor

"Very good first issue, keep it up. I hope you don't get too 'arty' with your projects in the future."

Ed Sheppard, De Queen, AR

"Those were excellent pictures of the finished products. Especially the dog and llama. It gives me a good idea of how to construct each. Better than the plans."

Tom Russell, Evanston, IL

"I would like to see any pertinent article which is thorough, complete and full of detail. It should address most problems which always crop up, and give more insight than the armchair woodworking magazines."

John W. Morris, McMinnville, TN

"Have just finished reading my first copy of *American Woodworker* and have filled out my questionnaire. Just wanted to write a few lines. I am interested in the craft of woodworking, i.e., how a piece is put together, how and why it was designed the way it was.

Your publication seems to do just that. That is why I subscribed. Your cover impressed me greatly. I am an amateur woodworker who wants to learn how to improve. Your cover picture of the Chippendale Lowboy was an inspiration of the goals I have in mind. And not only did you show the piece on the cover, but also showed how it was constructed, which increased my knowledge.

I especially like period pieces because they seem to be designed better than modern pieces. But this could be just bias on my part. I like the way you have included three types of woodworking projects. A beginner has to start somewhere and by including harder projects it gives the beginner something to strive for. Let's face it; you're not going to improve your woodworking skill making bird houses all the time.

Many people get upset with a lot of advertising. I understand this is a way to cut cost. This doesn't bother me because I am constantly looking for new outlets for tools, and ads are the best way, but I'd rather them all to be in one section than sprinkled in among articles.

I know there are many other people with many other interests than myself, but just wanted to let you know one woodworker's likes and dislikes, so thanks for listening. Oh, by the way, I enjoyed the first issue of *American Woodworker*. Keep up the good work."

David J. Racz, Broad Brook, CT

"I received my first issue of *The American Woodworker* last week and immediately read it from cover to cover. I'm sorry to say I was disappointed. I hope that future issues change this disappointment and warrant renewal.

The following is in response to your expressed interest in reader comments. I currently subscribe to *Fine Woodworking*, *Woodsmith*, and the *Woodworker's Journal* which I find worth the money. It would be unfair to hold the *American Woodworker* to standards of publications whose success is based on many years of experience and experimentation, but there are several characteristics in the first issue of the *American Woodworker* that I believe are in need of change.

1. Seven of the thirteen articles or projects are excerpted from other available sources. The excerpt should be reserved for special situations. Most read exactly like excerpts, cut-and-paste jobs.
2. The tongue drum project was presented in the *Woodworker's Journal* in Sep-Oct 1984. This is inadvertant, I'm sure, but it detracts from a new publication. *Woodworker's Journal*, Mar-Apr 1985 includes a lowboy, although in Queen Anne style.
3. The space devoted to bills of materials is extravagant.
4. The drawing on page 50 reversed the measurements for drilling hole in part 16.
5. How about a project article for the jewel box on the inside back cover?
6. For a new publication nothing seemed new or fresh.
7. The writing style struck me as sterile. Very little of Gottshall and Capotosto as personalities comes through.

I have written this in response to your invitation to give an honest reaction, not to nit-pick over personal taste. I am not a professional woodworker, but a person who enjoys working with wood, as most of your subscribers do."

Duane C. Hawk, Rush, NY

As editor, it is always nice to receive a letter complimenting our efforts. It is also expected that I will have to "take my licks" for our mistakes. As Harry Truman once said, "The buck stops here." I will not expect compliments for our work. Our job is to produce a quality product that our readers have paid for. Neither will I try to explain away our mistakes. We will make them, but we will try to keep them to a minimum and correct those we find.

Mr. Hawk's letter does warrant some explanation for the use of excerpts. I started The American Woodworker *because I was forced out of active woodworking. After teaching and working in the craft for 12 years I had to give it up for health reasons. I soon found that there were few willing to contribute articles and projects to a new publication. Upon investigation, I discovered it was possible to obtain enough material to produce an all original first issue, but what about the second, third, fourth, etc. I also learned that a few potential good woodworking magazines failed because they had overlooked this problem. I was determined not to meet this fate, so I contracted to excerpt articles from certain texts. I am happy to say that since that time I have been careful in my selection of original material and am planning some excellent original features on both projects and articles.*

The excerpts will drop sharply in each issue and by the end of the first year they will disappear altogether. In defense of using some excerpts, I must admit that other facts were considered. The articles by James M. O'Neill (now deceased) were first published in 1971. The 25 year old woodworker may have not ever had the opportunity to see these fine projects. The young craftsman may also not have heard of Gottshall or Capotosto.

There is not enough room to describe the entire years' plan, some of it is not yet formed; but judge us upon four issues. After you receive your first four issues, examine the contents of all and ask yourself if you have $10.00 worth; not if you agree with every single policy or article.

We will stay with our policy of offering beginning, intermediate and advanced projects along with instructional articles. We will also include non-technical reading articles.

Take from our publication what you enjoy and what will help you grow and expand your knowledge of woodworking. What we publish that is "old hat" to you, leave to the newer, less experienced woodworker.

We welcome your letter about any woodworking subject.

Every letter received will be read and those of the greatest interest will be published. We hope to hear from you.

Jim Jennings, Editor

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RYOBI TOOLS

		List	Sale
S500A	3x5½ Finish Sander . . .	70	41
SU6200	Finishing Sand. ½ Sheet	142	88
B7075	3x21" dustless Belt Sand.	179	116
B7100	3x24" dustless Belt Sand	209	140
B7200A	4x24" dustless Belt Sand.	249	165
D100VR	3/8"VSR 0-1200 rpm drill .	91	49
W640	7¼" 13 amp circular saw	158	99
W740	8¼" 13 amp circular saw	171	109
JS60	Jig Saw-Single Speed .	172	99
JSE60	Jig Saw-electronic v/speed	198	123
R150	1 H.P. Plunge Router . .	138	86
R330	2 H.P. Router	220	138
R500	3 H.P. Router	265	163
E3800	Drywall screwdriver 0-4000	126	79
L120U	3 5/8" Planer	142	89
BD1020R	3/8" 2-spd Cordless Drill w/free holster-Xtra special buy	148	95
TS251U	10" Mitre Box	300	185
SG1150C	4½" H.D. Mini-Grinder	99	59

MILWAUKEE TOOLS

		List	Sale
0224-1	3/8 drill 4.5A magnum . .	154	109
0234-1	1/2 drill 4.5A magnum . .	159	115
0244-1	1/2 drill 4.5A magnum . .	159	115
0222-1	3/8 drill 3.3A 0-100 rpm . .	139	99
0228-1	3/8 drill 3.3A 0-1000 rpm .	129	95
0375-1	3/8 close quarter drill – NEW – 3.5 amp	168	118
0210-1	3/8 cordless drill – NEW – 2 speed	154	114
6539-1	cordless screwdriver – NEW – 190 RPM	84	64
1007-1	½" drill 4.5A D-Hdle . . .	194	145
1107-1	½" drill 4.5A D-Hdle . . .	199	145
3300-1	magnum rt angle drive kit	239	170
3102-1	Plmbrs rt angle drill kit . .	253	180
1676-1	HD Hole Hawg w/cse 2 sp	323	235
5395	3/8 sgle sp hammer drill kt	203	150
5397	3/8 var sp hammer drill kit	208	155
5371-1	HD mag. hammer drill ½"	287	207
5373	HD mag. ham. drill 3/8" . .	240	175
6507	TSC Sawzall w/case . . .	184	125
6511	2 speed Sawzall w/case	172	123
6226	port band saw 2 sp w/case	382	280
6234	TSC band saw port w/case	382	280
6365	7¼" circ. saw 13 amp . .	159	109
6405	8¼" circ. saw 13 amp . .	179	127
6460	10¼ " " 15 amp w/case	349	245
6377	7¼ HD worm saw 13 amp	235	155
6378	8¼ HD worm saw 13 amp	249	165
6165	12" Chop Saw 15 amp 4200 R.P.M.	267	189
6170	14" Chop Saw 15 amp 3600 R.P.M.	289	209
6255	v/sp Jig Saw 3.8 amp . .	199	140
6245	sgle sp Jig Saw 3.8 amp	175	125
6287	HD v/sp Jig Saw w/case 2.3	312	225
6012	⅓ sheet HD Orb. sander.	149	110
6014	½ sheet HD Orb. sander.	159	115
5935	4" by 24" belt sander w/bag 10 amp	299	215
5900	3" by 24" belt sander 9.5 amp	355	255
5660	1½ HP router 10 amp . .	256	185
5680	2 HP router 12 amp	314	220
8950	Wet/Dry 8 gal vac 6 amp	136	110

BENCH GRINDERS

4901	¼ HP 2.6 amp 24#	149	110
4921	⅓ HP 4 amp 26#	169	130
4891	½ HP 4 amp41#	269	195
5041	¾ HP 8.2 amp 58#	369	270

DRYWALL SHOOTERS

6753-1	3.5 amp 0-4000 rpm new .	115	85
6747-1	4.5 amp 2500 rpm	144	100
6750-1	4.5 amp 0-4000 rpm	144	100
6751	4.5 amp 4000 rpm	144	100

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Univ. Bore — Professional Series
CARBIDE TIPPED SAWBLADES

Item No.	Description	Diam.	Teeth	List	Sale
PS203	Gen'l Purp.	7¼"	24	27.24	17.50
PS303	fine cutting	7¼"	40	32.97	20.50

5/8" Bore — Industrial Grade
CARBIDE TIPPED SAWBLADES

Item No.	Description	Diam.	Teeth	List	Sale
LU72M010	Gen'l Purp.	10"	40	68.58	35
LU81M010	Gen'l Purp.	10"	40	69.30	36
LU73M010	Cut-Off	10"	60	79.65	39
LU82M010	Cut-Off	10"	60	86.40	45
LU84M010	Combination	10"	40	70.99	36
LU84M011	Combination	10"	50	74.51	40
LU85M010	Super Cut-Off	10"	80	110.88	68
LM72M010	Ripping	10"	24	64.85	37
DS 306	6" Dado			139.00	95
DS 308	8" Dado			170.00	115
TR 100	3 blades & Dado set			399.00	255

RECORD PLANES

Model	Type	Length	Width	List	Sale
03	Smooth	9½"	1¾"	37	31
04	Smooth	9¾"	2"	38	32
04½	Smooth	10¼"	2-3/8"	38	32
05	Jack	14"	2"	48	37
05½	Jack	15"	2-3/8"	56	41
06	Jointer	18"	2-3/8"	70	54
07	Jointer	22"	2-3/8"	80	60

★ ★ *New* ★ ★

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12 volt 1 Hour Charge
Cuts (80) 2x4's (Pine)

List Price 195.00 ★ **SALE PRICE 135.00**

DREMEL TOOLS

		List	Sale
3801	v/sp b/bearings, 35 acces.	98	61
572	Deluxe Moto-shop compl.	134	85
332	v/sp Moto-flex tool	113	71
580	4" tilt arbor table saw . .	133	85
290	electric engraver	21	15
1500	Woodburn/Solder. Iron Kit	22	15

MAKITA TOOLS

		List	Sale
B04510	Sander	79	43
9900B	3"x 21" belt sander .	198	124
9924B	3"x 24" belt sander .	204	135
9924DB	3"x 24" b/sand. w/bag	214	140
9035	⅓ sheet finish sander	79	48
9045B	½ sheet finish sander	156	100
9045N	½ " " " w/bag	170	110
4200N	4-3/8 circ. saw 7.5 amp	152	95
5008NB	8¼ circ. saw 13 amp	178	110
5201NA	10¼ circ. saw 12 amp	348	225
5402A	16-5/16 " " 12 amp	468	375
4300BV	v/sp jig saw 3.5 amp .	192	120
4301BV	orb v/sp jig saw 3.5 amp	208	130
2401BW	10" mitre saw	319	185
2400BW	10" mitre saw (for vice)	359	249
JR3000WL	2 sp recip saw w/cse	168	120
JR3000V	vs recip saw w/case .	178	125
6010DWK	3/8 cordless drill w/case	152	89
5081DW	3-3/8 cordless saw kit	165	109
1900BW	3¼" planer w/case .	154	95
1100HD	3¼" planer w/case .	278	165
1805B	6-1/8 planer w/case .	416	265
3608BK	¾ hp router w/case .	132	85
3601B	1-3/8 hp router	198	120
3700B	½ hp trimmer 28,000 rpm	124	85
DA3000	3/8" angle drill	158	105
DP4700	½ v/sp w/rev " 4.8 amp	154	96
HP1030W	3/8 v.s.r. hammer drill w/case	145	98
6300LR	½" angle drill w/rev .	229	152
84198B-2W	½" 2 sp. hammer drill w/case	238	150

DRYWALL SHOOTERS

6800DB	2500 rpm 3.5 amp . . .	123	79
6800DBV	0-2500 rpm 3.5 amp .	133	89
6801DB	4000 rpm 3.5 amp . . .	123	79
6801DBV	0-4000 rpm 3.5	133	89
2030	12" planer/jointer . . .	1980	1350
2040	5/8" planer	1780	1195

NEW *from* MAKITA

9207SPC	7" Electronic Sand/Polish	209	130
2708	8" Table Saw	336	229
122251-6	Table Saw Stand . . .	48	40
8400DW	3/8 c/less hammer drill	188	120
DK1001	drill (6010D) charger/vac	178	125
6010SDW	3/8 cordless drill, rev. .	82	49
DA3000DW	3/8 angle drill, cordless 700 7.2 volt	172	105

DELTA *(formerly* Rockwell)

		List	Sale
33-890	12" Radial Saw featuring "Turret-Arm" Action	1280	975
33-990	Deluxe 10" Radial saw	589	475
33-150	Sawbuck frame/trim saw	686	519
34-621	9" contr. saw w/o motor	500	395
34-410	10" contr. saw w/o motor	871	650
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34-010	motorized mitre box 9"	231	169
15-091	15" floor model D/press	467	375
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28-283	14" wood cutting Band Saw	897	695
28-243	14" " " " w/o motor	594	450
37-207	Saw/Jointer Combination	1018	810
37-609	6" Motorized Jointer	413	335
37-290	4" deluxe Joiner w/o motor	346	275
22-651	RC-33 — 13" Planer	1943	1450
43-122	Wood Shaper w/stand and 1 HP Motor	669	495
46-140	11" lathe, gap bed model w/stand w/o motor	407	335
52-493	1 hp motor for #34-621	170	130
62-042	1½ hp motor for #34-410	230	170
62-144	½ hp motor for #37-290	136	105
62-142	½ hp motor for #28-243 and #46-140	121	85

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DP3720	3/8 drill Rev. 0-1800 rpm	88	50
6510LVR	3/8 drill Rev. 0-1050 rpm	114	67
6013BR	1/2" Drill Rev. 6 amp.	174	100
9501B	4" Sander-Grinder Kit .	119	59
5007NB	7¼" Saw Circ. 13 amp	158	99
3612BR	3 HP Plunge Router .	286	180
9401	4x24 belt Sander w/bag	279	165

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691	1½ HP Router D/handle	210	145
696	H.D. Shaper Table	150	105
695	H.D. 1½ hp Router/Shaper	278	190
514	2½ HP Router 12 amp . . .	435	315
399	Drywall Cut-Out Unit	100	70
736	V/Speed *Speedtronic* Band Saw	450	330
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#2/0	7"	3½"	14.35	8.95	48.35
#0	8"	4½"	15.97	9.95	53.75
#1	10"	6"	18.25	11.35	61.25
#2	12"	8½"	20.94	13.50	72.95
#3	14"	10"	26.56	16.75	91.35
#4	16"	12"	34.55	23.75	128.25

JORGENSEN BAR CLAMPS

STYLE 37 — 2½" Throat 1/4" x 3/4"

Model	Jaw Length	List	Sale	Lots of 6
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#3712	12"	8.73	5.95	32.13
#3718	18"	9.64	6.95	37.53
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#3730	30"	11.76	8.25	44.55
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7542VR	Xtra hvy/dty rev. tek driver variable speed — 5.2 amp — 0-2000 rpm .	165	110

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		List	Sale
314	4½" Trim Saw 4.5 amp . .	180	115
587	7¼" circ. saw 14.5 amp	199	130
315-1	7¼" circ. saw 13 amp . .	159	104
368-1	8¼" circ. saw 13 amp . .	169	119
9548	HD v/s bayonet saw w/case	255	179
648	H.D. single speed bayonet saw 3 amp	255	169
9627	2 sp. tiger saw kit 8 amp .	183	120
336	3" x 21" belt sander	164	115
337	3" x 21" belt sander w/bag	174	115
361	3" x 24" belt sander	249	175
360	3" x 24" belt sander w/bag	269	180
363	4" x 24" belt sander	269	180
362	4" x 24" belt sander w/bag	284	190
505	H.D. ½ sheet finish/sander	155	105
330	spd bloc sander ¼ sheet sz	85	56
304	Professional 7" disc sander	150	105
305	Professional 7" polisher	150	105
7511	3/8"xtra hvy v/s drill 5.2 amp	149	100
7554	½" xtra heavy drill 8 amp	195	135
309	3.8 amp laminate trimmer	115	80
310	3.8 amp laminate trimmer	180	130
312	offset base laminate trim.	195	135
319	tilt base laminate trimmer	205	140
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3051	7¼ worm/drv saw 13 amp	232	149
3052	8¼ worm/drv saw 13 amp	247	160
3030	7¼ circ saw 13 amp NEW	155	100
3047-09	7¼" super Sawcat circular saw	226	150
3048-09	8¼" super Sawcat circular saw	240	160
3157-10	v/sp orb. jig saw 4.5 amp	174	115
3153-10	v/speed jig saw 4.5 amp	158	105
3934	14" chop saw 13 amp 3800 rpm	279	169
4300	drill bit sharpener 1/8-1/2"	275	215
1321	½ rev spade hdle drill 6 a.	175	115
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TT 108	8 Pc. Turning Set	67.90	54.35
WC 104	4 Pc. Chisel Set .	29.90	23.95
WC 106	6 Pc. Chisel Set .	39.90	31.95
WC 110	10 Pc. Chisel Set	66.90	53.60

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		List	Sale
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The Answer

By Ernie Conover

Q. **I am trying to steam bend some parts for a wood fish net. I am experiencing about an 80% failure rate. Is this normal, and if not, what can I do to remedy the situation?**

A. Although a variety of things lead to your problem, you probably aren't getting the wood hot enough prior to bending attempts. Two things are necessary to successfully steam bend wood — the wood must have a 20% moisture content and it must be at a temperature of 180 degree farenheit or higher. This is best accomplished with a well insulated steam box and liberal quantities of steam.

A low tech steam box can be built from a section of 6'' diameter Schedule 40 sewer pipe. You can cap the end by glueing standard end caps, or simply turn tapered wooden plugs, which are cheaper. Create a shelf for the work by drilling and inserting a ½'' diameter dowel crosswise through the pipe about ⅓ from the bottom. This allows the steam to surround the work and heat it better. A good source of steam is a tea kettle and Coleman stove. Run automotive radiator hose from the spout of the tea kettle through a hole drilled into the bottom of the Schedule 40 pipe. A radiator hose clamp at the tea kettle spout helps keep things from becoming disconnected at critical times.

Time in the steam box will vary greatly with the cross sectional area of the work. Any work will have to stay in the box a minimum of fifteen minutes and times can be as long as an hour and a half for large cross sections. The point often overlooked by beginners is that once out of the steam box there is very little time to do the actual bending. Taking longer than twenty or thirty seconds often spells disaster. As a rule of thumb, one has no more than forty-five seconds in which to accomplish the entire bending operation. This means that the bending form has to be well thought out and things have to be laid out well in advance. One last point is: a pair of heavy leather gloves greatly aids in doing the operation quickly and efficiently with a minimum of bodily injury.

Q. **Which type of hand plane is better, wood or metal?**

A. I think this often asked question stems from the feeling that the beautiful wood planes offered by most tool purveyors must be better. At least I hope so, because I sure would like an excuse to buy one. Well, the truth of the matter is that wood and metal planes perform about the same.

Each type does have some advantages. Because of woods' low coefficient of friction, they glide over the work with less effort. Aesthetically, they are pleasing to hold and own. In fact, I think this is the single most important factor that captivates most wood plan afficionados.

Metal planes are much easier to adjust for the average person. This one factor probably makes metal planes a good starting tool. Learn to plane with metal, then move on to wood if you want to. Most good metal planes produced in the last hundred years have precise controls for adjusting the mouth opening and moving the iron both up and down and side to side. Occasionally, rubbing a little candle wax on the sole will greatly reduce friction, making metal glide almost as well as wood.

The Answer...

Much more important than the material of manufacture is that a plane be tuned properly. No plane works well fresh out of the box and always benefits from a little doctoring. Make sure the sole is really flat, with no rounding around the mouth. If necessary, put a piece of emery cloth or sand paper on the bench and rub the plane body on it until flat.

Hone the iron with a series of wet or water stones until razor sharp. You may want to grind the edge slightly convex (up to 1/64'') and hold it to an angle of 30 degrees. Finally, make sure that the cap iron fits well with no gaps. It should be placed from 1/64'' to 1/16'' behind the edge, depending on the class of work. Finally, keep the adjustments modest. Most beginners try to take too heavy of a cut.

Q. **I have several old planes with the term ''cast steel'' stamped in the iron. Just exactly what is cast steel?**

A. Cast steel is a process developed in the late seventeen hundreds in Sheffield, England. Up until the invention of this process, most cutting tools were made from carborized steel. That is, a blank of steel was packed in charcoal and brought to a high temperature. This imparted enough carbon in the surface of the steel to heat treat it for a working cutting edge. The problem was that the carbon content was not consistent throughout the entire cross section of the tool. Repeated sharpening lead to a tool which would no longer hold an edge because one had ground into the core. Alternately, edges were often created by ''steeling.'' In this process, a piece of high quality steel was placed at the edge of a tool and attached through hammer welding in the forge. Thus, an expensive piece of steel was backed up by a relatively cheap piece of steel.

The term ''cast steel'' signifies the steel was made in a true steel making process in a crucible and poured into an ingot. The ingot was then rolled out into bars for subsequent manufacture into tools. This term became quite widespread and cast steel tools were so much superior to older carborized rod iron tools that it became a mark of excellence. Although it is mostly found on tools from the Sheffield, England area, the term is also used elsewhere.

Q. **I have inherited an old joiner that has tables which sag badly. Each table seems to drop about a 1/16th of an inch from the cutterhead to its outboard end. What can I do to remedy this situation?**

A. This is a common problem with joiners and probably stems from poor gib adjustments. Most joiners are constructed in such a manner that each bed is fitted into dovetails in the base assembly. The play in these dovetails is adjusted through a gib. The gib is simply a strip of metal which is tightened by a series of screws along the edge of the bed. Often you will find that dirt has built up in the gib over the years, making for the inaccuracies you describe.

The best thing for you to do is start by totally disassembling the machine and scrubbing out the dovetails with a wire brush and kerosene oil. Apply some light machine oil to all of the parts and reassemble the machine. Tighten the gibs until all of the play is removed but the bed moves smoothly. One generally tightens the outfeed table a little tighter than the infeed table as it is desirous that it maintain a constant adjustment. If this does not correct the problem, you will have to have the machine tables reground. If it is a large, heavy duty machine this process may be worth it. If it is a smaller machine, it may be cheaper to purchase a new one.

If you decide to have the tables reground, make sure that whoever does it has a machine capable of holding the entire joiner, and grinds the two tables as a unit with the gibs adjusted tight. Most major cities have a few grind shops which have equipment big enough to handle this type of work.

Q. **I am about to buy a small planer for my workshop, and am skeptical about the new type of Japanese machines with two-knife cutterheads. Will I get an acceptable finish with a two-knife cutterhead, or should I stick with one of the more traditional machines with three-knives?**

A. The Japanese have been able to get their two-knife cutterheads to work very well by running them at very high speeds. Most of them are small diameter, running in excess of 10,000 rpm, while the more traditional planers use a three-knife head turning around 5,000 rpm. Although they have been able to get a fine finish out of the two-knife design, there is a corresponding drop in knife life, because the two knives are doing one-third more work. Another advantage of the high speed heads is high production rates from thirty to thirty-five feet per minute.

An important measurement to remember in planer performance is the number of cuts per inch, which should generally be above forty-five. This can be figured by multiplying the feed rate in feet per minute times twelve and dividing this by the product of the cutterhead speed times the number of knives.

The Answer...

One thing everybody seems to be overlooking, however, is that another important factor is the circumscribed radius of the cutterhead. The bigger the diameter the better. I have seen some real old machines which had five and six inch diameter cutterheads. Although they yielded only about thirty-five cuts per inch, large circumscribed radius compensated for this fact and they left magnificent finishes. Really, the best way is to try to go to a dealer and have a few boards run through the machine.

Q. **I am equipping a shop for retirement and want to include one of the new plunge routers. They seem to divide between small ¼'' shank models and ½'' shank 3hp giants. What are the advantages of these bigger machines?**

A. The plunge router is a new tool on the American market and has only been with us for about five years. They are really a Japanese innovation but Black & Decker has recently joined the ranks with a plunge type machine. Plunge routers have the advantage that work can be done in steps, but exact stops can be set up so that each piece is exactly like the next. They are also very quick and easy to adjust. However, the old rack and pinion or helical type adjustment is still better for some fussy type situations.

Hitachi, Makita and Riobi are all Japanese manufacturers which offer both ¼'' and ½'' models with the ¼''being approximately 1-1½HP and the ½'' shank being about 3HP in all models. Most of the companies offer collets with big machines that allow them to accept ¼'' and 3/8'' bits, and with 3HP they are something you can plow your driveway with should your snow blower break down. They are great for doing large mortising operations and for knocking out mouldings. One seldom gets something for nothing and these machines are large and heavy which quickly translates into operator fatigue. The ¼'' shank models on the other hand are light, dynamic and gutsy enough for the amateur and professional alike. It will also get into tight corners where the ½'' shank model wouldn't fit at all.

Complicating the situation is the fact that the ½'' shank models often cost little more than the ¼'' shank models. I think that most buyers should really set aside the price and look at the dynamics of the tool. Do you really need that 3HP? The answer, often as not, is probably no and one would be much better off with the baby brother.

The Answer...

Q. How important is variable speed in a planer? I can't seem to find a machine that offers this feature that is within my budget and I feel I need it because I do very exacting work.

A. Variable planing speeds seems to be a feature that you will mistakenly find highly important. While it is true that slowing the feed rate does improve the finish to some extent it doesn't changes things radically. Things that have a much greater effect on finish are design and grind of the knives, sharpness of the knives, circumscribed diameter of the cutterhead, and the number of cuts per inch (which is really the cutterhead speed, that is in relation to feed speed). The bigger the diameter of your cutterhead the better, and any

TAW

machine should yield at least forty cuts per inch. Finally, correctly ground and honed knives can't be over valued. Often giving a knife a 10 degree back bevel will greatly improve finish in cantankerous hardwoods over slowing the machine down. When you graph feed speed against cutterhead speed, there is some point at which optimum performance takes place. Slowing the feed rate speed down from this point does result in some improvement in finish but not a lot.

Got a question you would like to ask? Address it to: The Answer, The American Woodworker, P.O. Box 1408, Hendersonville, TN 37077-1408.

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Woodworking Techniques

Text by Jerry Lyons

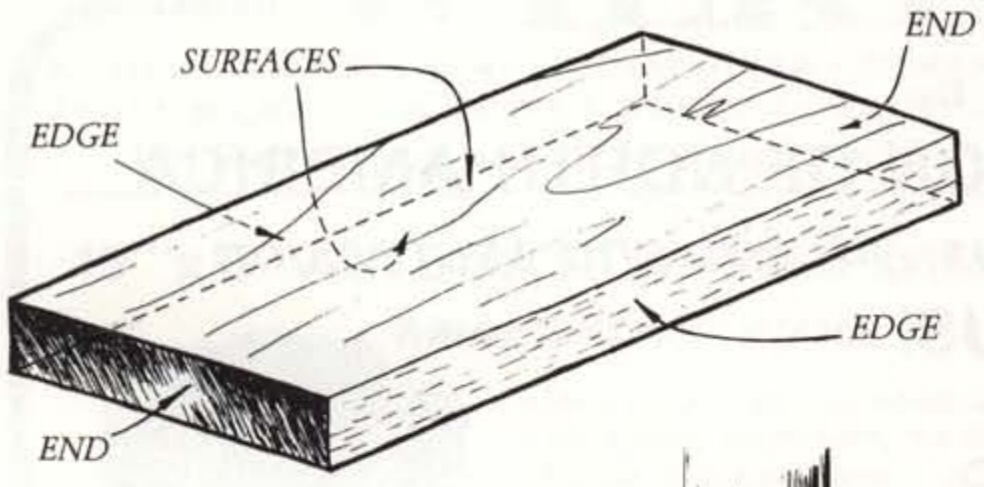
Illustrations by Jennifer Chiles

One of the things a good craftsman must have is the basic understanding of "squaring a board". Since I have taught at the university level full time for the last twelve years, I find that many of the students that have had high school woodworking classes don't have a solid concept of the sequences that should be used in conjunction with the basic wood processing machines. These machines are the jointer, surfacer, and table saw. For several reasons too numerous to mention here, I find the students confused about the objective or reason that a particular machine was designed. That is, most people don't really understand that the only reason a jointer was designed the way it was in the first place was simply to allow you to take a rough piece of lumber and machine one of the surfaces straight and flat. Or, that you can't joint the opposite surface and expect the same piece of wood to be parrallel in thickness. A basic "six step squaring procedure" is the basis from which I teach first time woodworkers. Be sure everyone has a grasp of the terminology used to describe the six positions of a piece of wood. The illustration below describes both terminology and squaring procedure.

*SIX STEP SQUARING PROCEDURE**

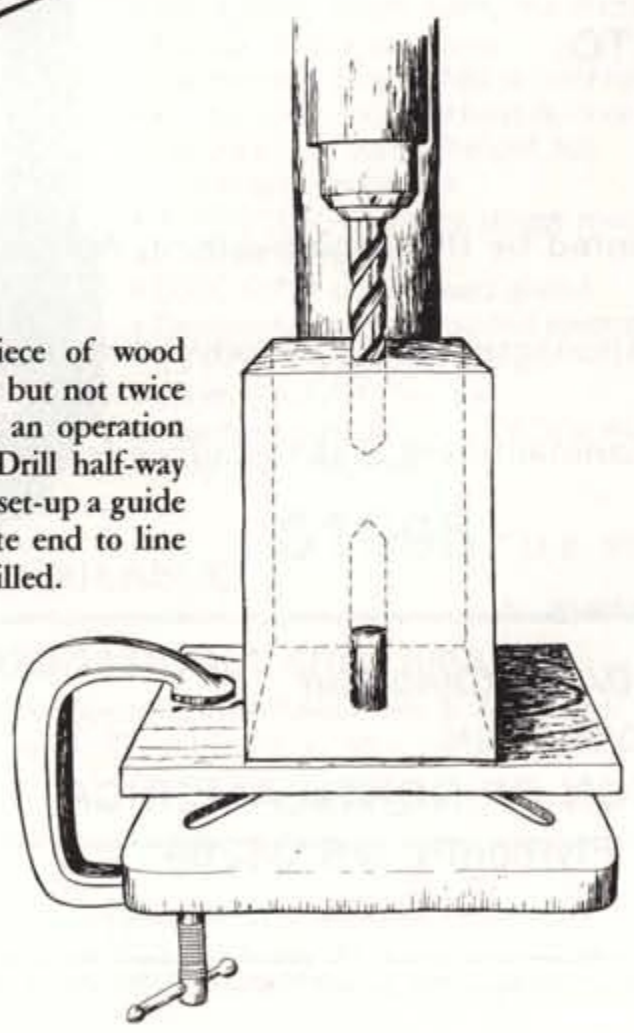
Sequence	*Operation*	*Machine*
Step One	Joint Flattest Surface	Jointer
Step Two	Plane Opposite Surface	Surfacer
Step Three	Joint Straightest Edge	Jointer
Step Four	Rip Opposite Edge	Table Saw
Step Five	Crossout Best End	Table Saw
Step Six	Crossout Opposite End	Table Saw

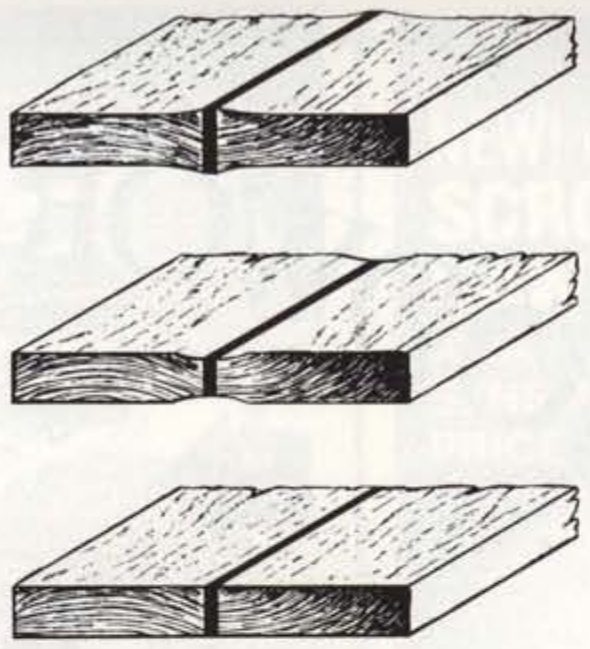
** This is a good safe, efficient sequence of teaching people how to use the basic three wood processing machines.*



DRILLING JIG GUIDE

When drilling holes in a piece of wood longer than the drill bit length but not twice that distance, you may set-up an operation similar to the sketch shown. Drill half-way through on all pieces and then set-up a guide pin and drill from the opposite end to line up exactly with the first hole drilled.



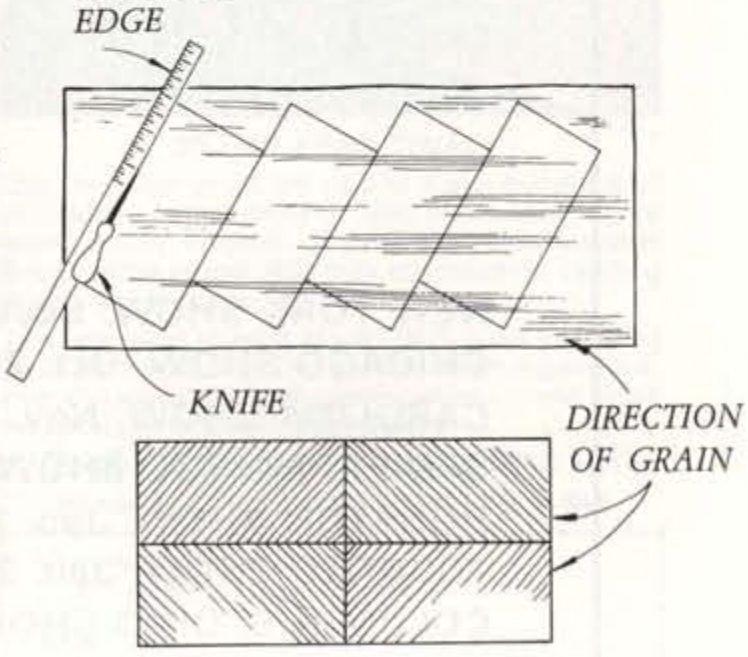


PROPER MATCHING OF GLUE JOINTS

The sketches show the reaction of improper matching times of glue joints. The top sketch shows the edge butt glue joint right after the pieces have been clamped. If these pieces are surfaced before the glue has fully dried, a sunken joint occurs. I recommend letting the glue dry overnight, if possible. To prevent this, if the joint has been allowed to dry completely, the bottom sketch shows the levelness as it should be.

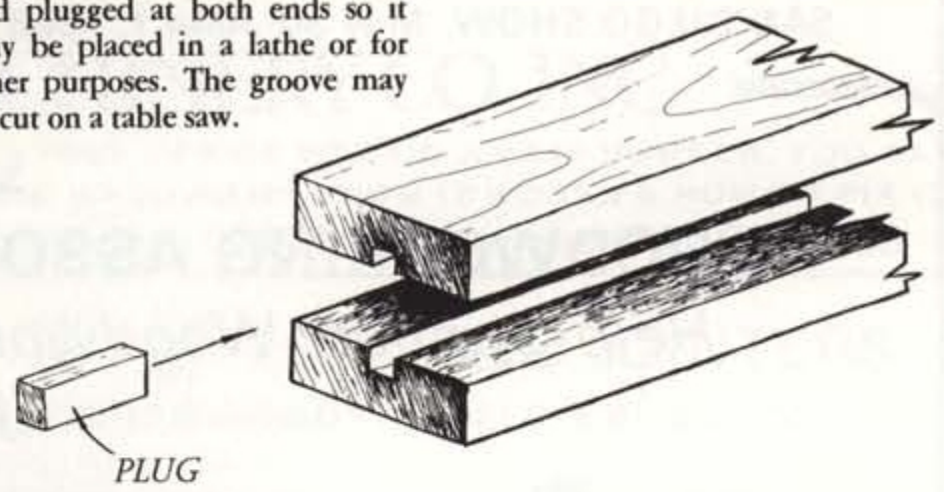
FORMING A DIAMOND MATCH IN VENEERS

To create a diamond matched pattern out of veneer, determine the finished overall sizes you need. Secure a single piece of veneer so you can layout the four smaller pieces according to the sketch below. Be very careful in preparing the joints. Use veneer tape which is a specially prepared tape made of very thin paper with lots of glue on it. The taped surface should be up after the pattern has been glued to its base material. This prevents a raised area and allows you to sand off the tape after everything is dry.



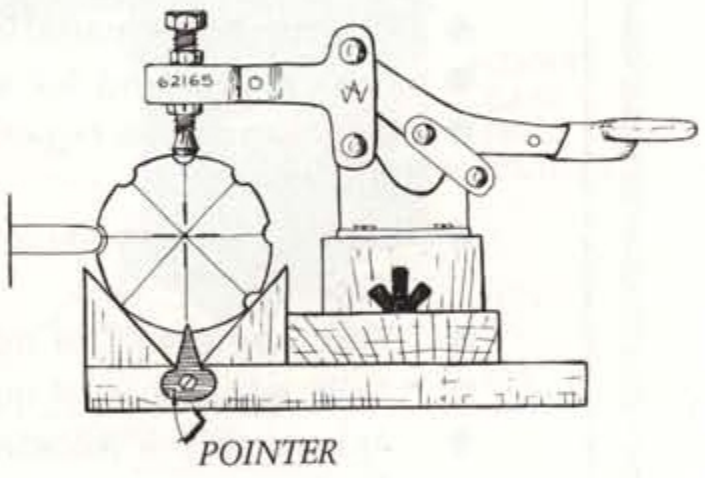
LONG HOLES

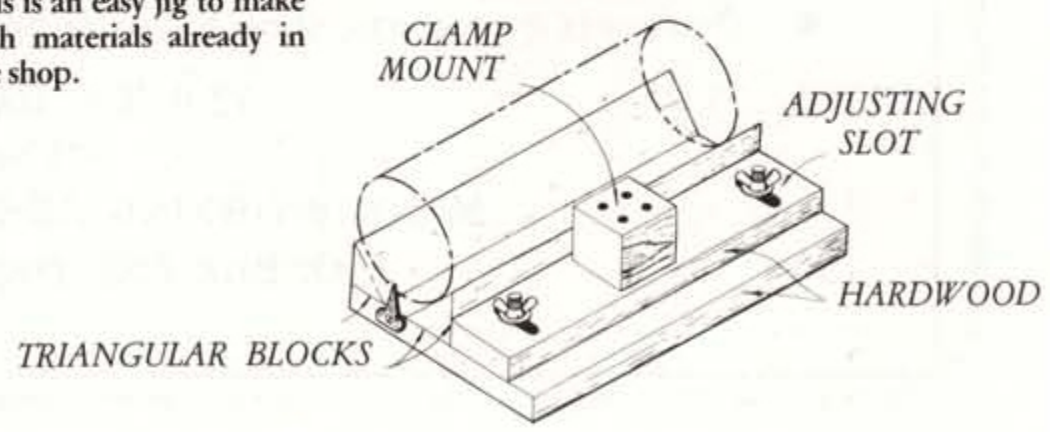
Long parts requiring a hole through the inside may be grooved, glued together and plugged at both ends so it may be placed in a lathe or for other purposes. The groove may be cut on a table saw.



ADJUSTABLE V-JIG

This home-made jig is used for holding round stock while cutting in flutes or reeds down a column of wood. It may be used on a shaper or perhaps a drill press using a regular fence type set-up. Once the layout marks have been drawn on one end of the wood column, the homemade brass pointer may be adjusted to accommodate the diameter to center it up. The toggle damps hold the wood in the position necessary. This is an easy jig to make with materials already in the shop.

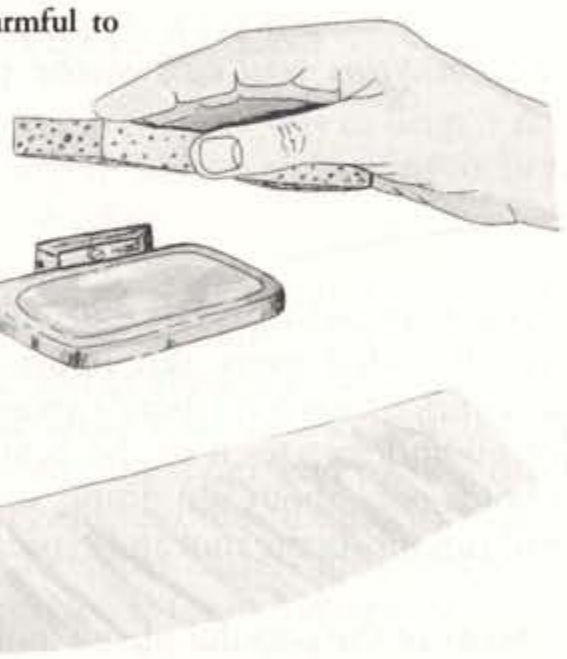




The following ideas are a contribution from
KENN OBERRECHT

INSTALL A SPONGE TRAY

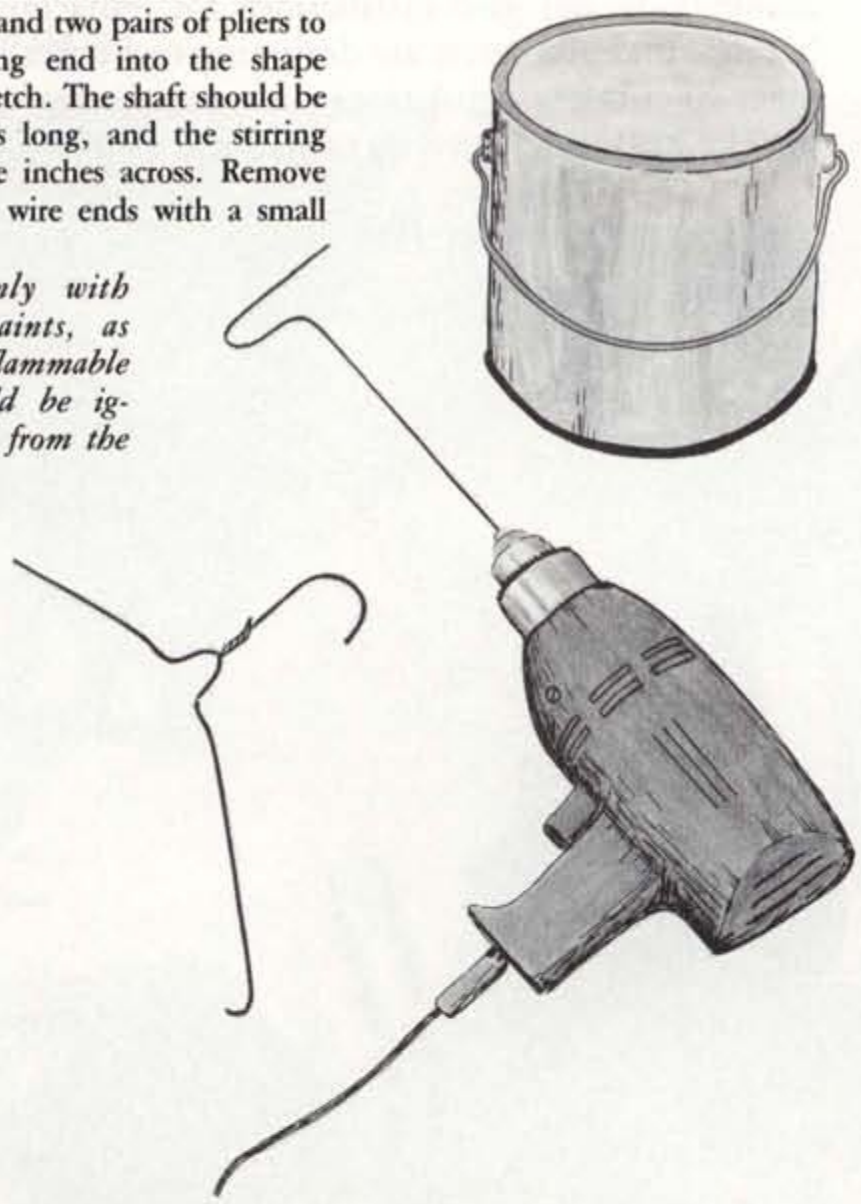
Most woodworkers like to keep a damp sponge nearby for wiping excess glue that seeps from joints. But the water and glue in a sponge carelessly laid aside can damage a benchtop or other surfaces. Install an inexpensive metal soap dish with screws near your workbench, and keep a sponge there, where it will always be handy, but never harmful to other objects.



FREE PAINT MIXER

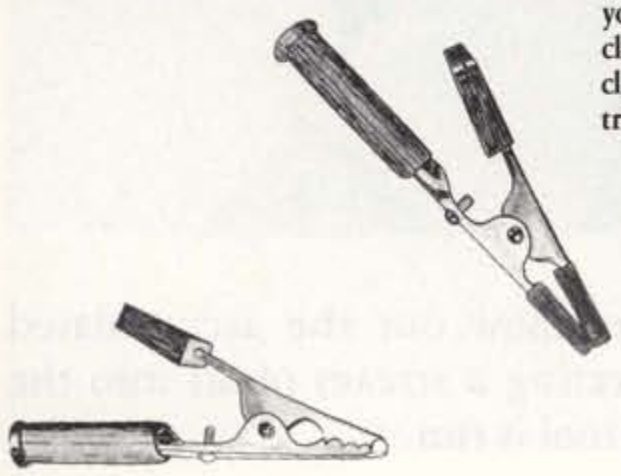
Mixing water-based paints by hand is a tedius task that can be reduced to seconds by using a paint mixer in your electric drill. You can make your own mixer from a heavy-gauge wire coat hanger. Use wire cutters to cut a suitable piece of hanger and two pairs of pliers to bend the stirring end into the shape shown in the sketch. The shaft should be about 10 inches long, and the stirring end about three inches across. Remove any burrs from wire ends with a small file.

NOTE:Use only with water-based paints, as fumes from flammable substances could be ignited by sparks from the drill motor.



MINI CLAMPS FOR SMALL JOBS

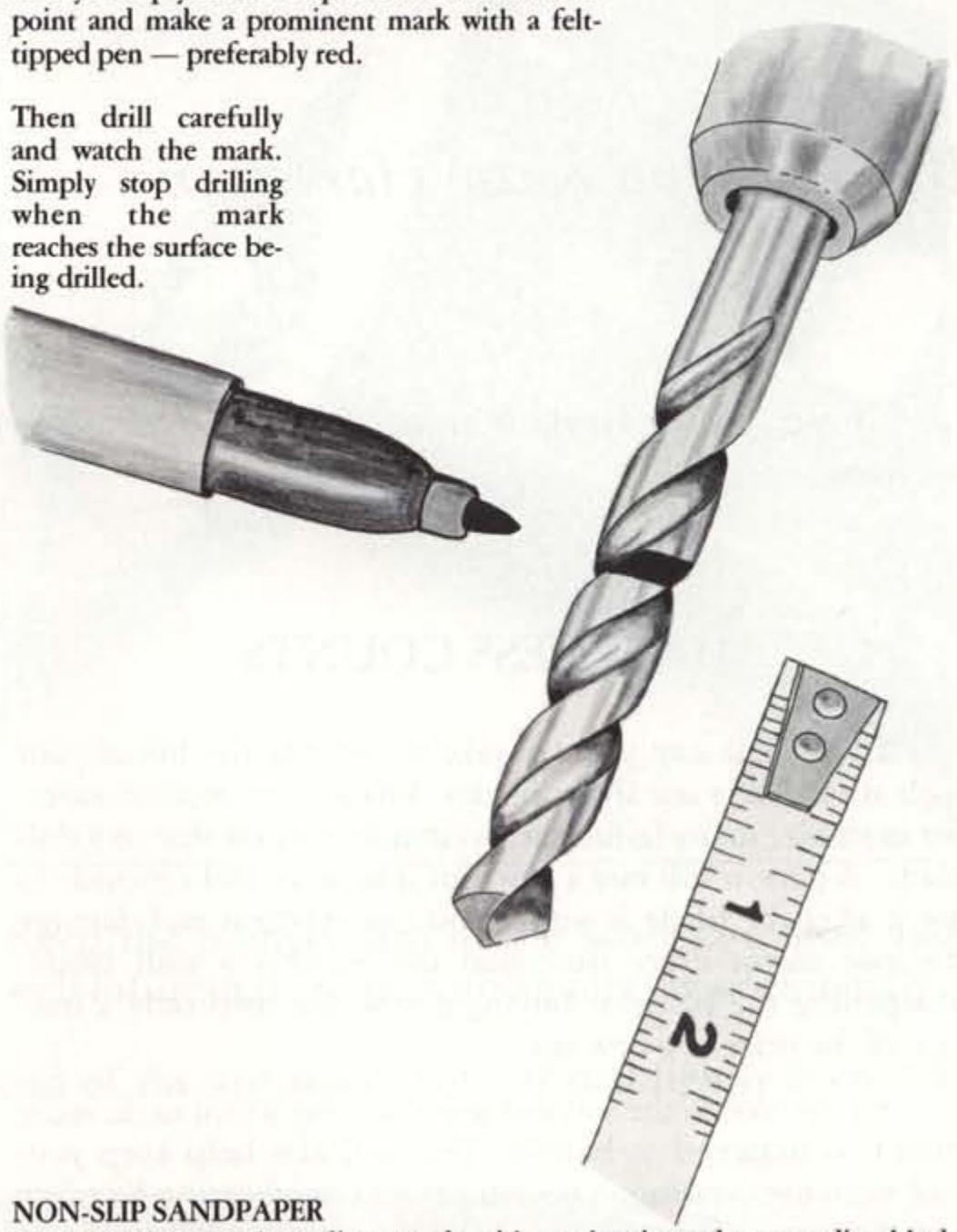
Clamps are among the most important tools in any workshop, but most are too big for small jobs, hobby work, or clamping in tight quarters. You can make your your own miniature spring clamps from inexpensive alligator clips, available at radio and electronics outlets. Use pliers to mash the teeth of the clips flat; then make jaw cushions with small strips of vinyl tape, tightly wrapped.



DRILLING TO PRECISE DEPTHS

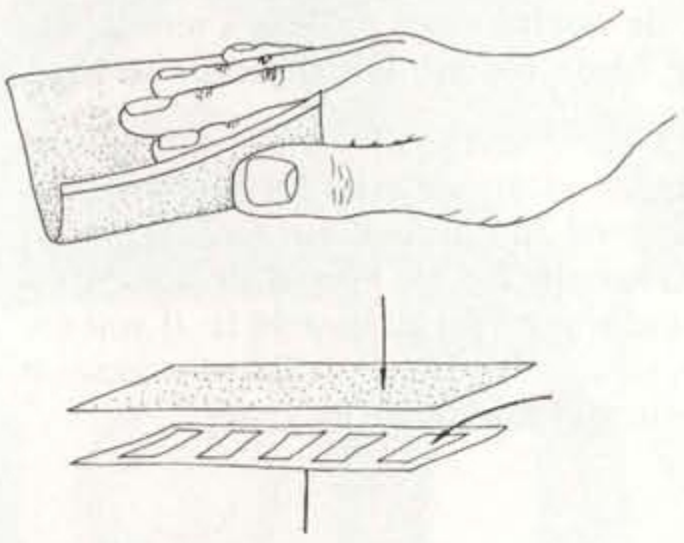
In the absence of a drill press or drill-bit depth stops, you can still drill holes to predetermined depths with a fair degree of accuracy. Simply measure up the drill bit from the point and make a prominent mark with a felt-tipped pen — preferably red.

Then drill carefully and watch the mark. Simply stop drilling when the mark reaches the surface being drilled.



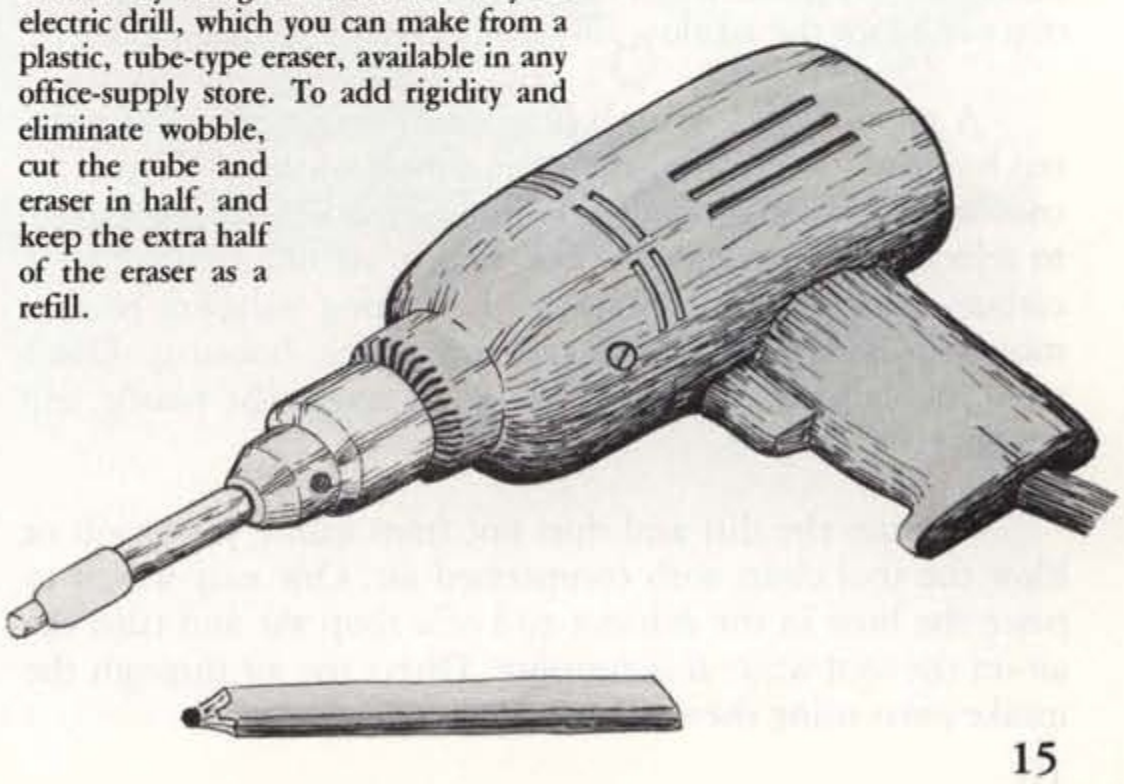
NON-SLIP SANDPAPER

No matter how much sanding you do with an electric sander or sanding block, most projects require some hand-sanding. Prevent sandpaper from slipping beneath dry, dusty fingers by first cutting sheet abrasives into quarters. Then stick two quarters back to back with strips of double-sided tape. With the abrasive on both sides, sandpaper will no longer slip your grip.



POWER-ERASE LAYOUT LINES

Most woodworking projects require layout lines for precision sawing, drilling, joining, and other operations. These lines should be removed before sanding and finishing. Cut this step to effortless seconds by using an eraser bit in your electric drill, which you can make from a plastic, tube-type eraser, available in any office-supply store. To add rigidity and eliminate wobble, cut the tube and eraser in half, and keep the extra half of the eraser as a refill.



Commonsense Tool Maintenance

By Gene and Katie Hamilton

With a little know-how and some simple maintenance techniques you can make your power tools top performers.

SHARPNESS COUNTS

The easiest step you can take to prolong the life of your tools is to always use sharp blades, bits and other accessories. For example, many failures with circular saws are due to a dull blade. A person will buy a saw, put it to work and continue to use it after the blade is worn. You can overheat and damage the saw motor every time you use it with a dull blade. Sharpening the blade or buying a new one costs only a fraction of the price of a new saw.

Fit the tool to the job and avoid forcing a tool to do more than it is designed to handle. This will also help keep your tool from overheating. You can prevent overheating by using commonsense. When your tool gets too uncomfortable to hold, stop cutting or drilling. Let it run without load for a few seconds. It will cool down faster running free than if you turn it off and set it down. Be careful when cooling a tool in this manner; that spinning blade or drill is dangerous and can cause serious injury.

Choose an appropriate extension cord for your tools. A common cause of overheated and burned out tools is undersized extension cords. Generally for a 3/8-in. drill, a standard 18-gauge heavy-duty cord is good for at least 50 ft. If you use a cord over 50 ft. long, especially with a circular saw, consult the table or your tool manual for proper wire gauge.

CLEAN AND WELL LUBRICATED

Keeping your tools clean is the next step. A clean tool runs cool. Sawdust and dirt buildup inside the tool can combine with moisture, wood resins, and oil to form a solid mass that can block the air flow and the design of the insulation.

A good rule of thumb is to clean your tools after every ten hours of use. Keep the cord and body of the tool clean according to the manufacturer's recommendations. Be careful in selecting a cleaning solution. Don't use one that contains carbon tetrachloride, chlorinated cleaning solvents or ammonia because they'll damage the plastic housing. Don't store tools in direct sunlight which damages the plastic and rubber parts of tools.

Vacuum the dirt and dust out from inside your tools or blow the tool clean with compressed air. One easy way is to place the hose in the exhaust end of a shop vac and turn the air on the tool while it is running. Direct the air through the intake ports using the tool's air flow to help.

Many popular-priced tools have sleeve bearings that should be oiled every ten hours. For example, on most popular priced sanders, there's an oil reservoir, a felt pad that holds oil and secretes it to the bearing as it gets warm. The pad holds only about ten drops, so avoid over oiling. Excess oil will run inside the tool and cause problems.

Many of the popular priced tools have brush systems that are designed to last the useful life of the tool. If you take care of your tool or purchase heavy duty tools sooner or later you will have to replace the motor brushes. Many owner's manuals do not give instructions for replacing the brushes because manufacturers are designing consumer tools today to meet strict safety regulations with double insulation. Replacing the brushes incorrectly or with the wrong part will defeat

After every 10 hours blow out the accumulated dust and dirt by directing a stream of air into the air intake port as the tool is run.

the double insulated safety feature. If you have a tool that does not have brushes that are under easy to remove covers you are probably better off taking the tool in for service when the brushes need work.

If your tool stops, and you suspect the brushes are at fault, try this trick: Tap the top of the housing to see if you can free the brush. If it is hung up in its channel, this will work. If it doesn't work, the brushes probably are worn and have to be replaced.

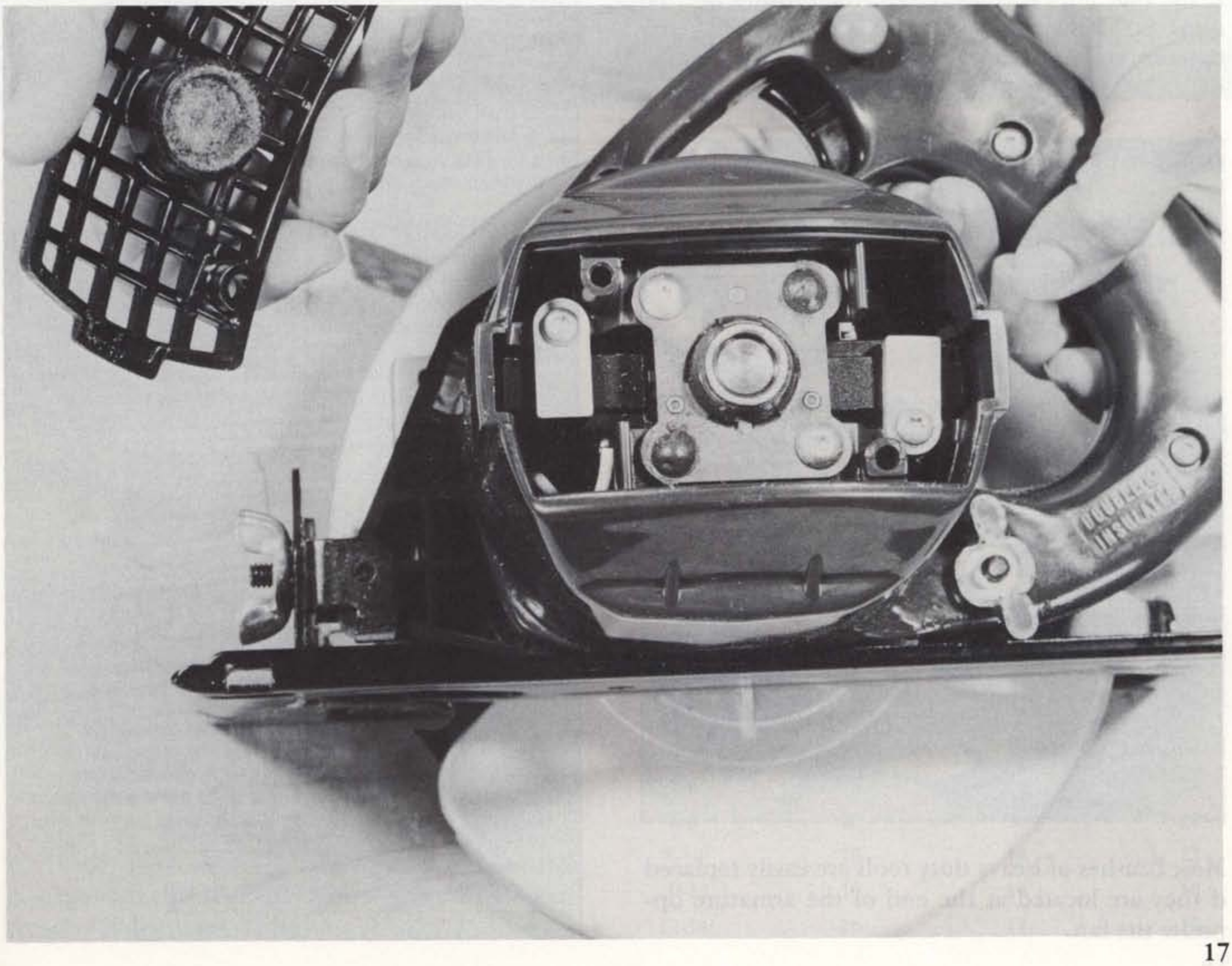
RECHARGEABLES

Using a rechargeable tool is the best way to keep it running well. Keep it fully charged, always recharging it before you use it or before you put it away.

If it doesn't seem to hold a charge like it did when new, it might be suffering from 'nicad memory'. This forms in the battery if the tool is discharged to about the same point every time it is used. To help eliminate this, discharge the batteries completely and then fully recharge them, completing this cycle several times. This will help restore full capacity to a battery that may seem faulty. Keep the battery fully charged and stored out of temperature extremes for maximum use.

Keep the plunger arm of the saber saw clean and well lubricated. Wipe with an oily rag occasionally.

Most consumer grade tools have sleeve bearings at the end of the armature. Oil felt pad lightly every 10 hours with #20 oil.



If the tool stops or runs rough, the brushes may be hung up. Before replacing, tap the housing at the opposite end from the fan to free the brushes.

Most brushes of heavy duty tools are easily replaced if they are located at the end of the armature opposite the fan.

MAINTENANCE SCHEDULE

DRILL

1. Use sharp drills and accessories
2. Don't overload tool
3. Use recommended extension cord
4. Keep tool and cord clean (avoid strong solvents)
5. Store out of direct sunlight
6. Oil bearing at end of armature after 10 hours of operation (Unplug tool for all maintenance)
7. Blow out tool after 20-25 hours of operation (Unplug tool for all maintenance)
8. Check brush wear
9. Repack gear case with approved lubricant

SANDERS

1. Change sandpaper often
2. Do not force tool
3. Use recommended extension cord
4. Keep tool and cord clean (avoid strong solvents)
5. Store out of direct sunlight
6. Oil bearing at top of armature opposite fan after 10 hours of operation (Unplug tool for all maintenance)
7. Blow out tool after 20-25 hours of operation (Unplug tool for all maintenance)
8. Check brush wear

BELT SANDERS

1. Change sanding belt often, as needed
2. Do not force tool
3. Use recommended extension cord
4. Keep tool and cord clean (avoid strong solvents)
5. Store out of direct sunlight
6. Oil bearing lightly in front pulley (some belt sanders have sealed bearings on front pulley) after 10 hours of operation (Unplug tool for all maintenance)
7. Blow out tool after 20-25 hours of operation (Unplug tool for all maintenance)
8. Inspect drive belt if so equipped
9. Check brush wear

SABER SAW

1. Change blade when dull
2. Do not force tool
3. Use recommended extension cord
4. Keep tool and cord clean (avoid strong solvents)
5. Store out of direct sunlight
6. Oil bearing at end of armature opposite fan after 10 hours of operation (Unplug tool for all maintenance)
7. Blow out tool after 20-25 hours of operation (Unplug tool for all maintenance)
8. Clean and oil plunger arm (arm that holds blade)
9. Check brush wear
10. Repack gear case with approved lubricant

CIRCULAR SAW

1. Change blade often
2. Do not force tool
3. Use recommended extension cord
4. Keep tool and cord clean (avoid strong solvents)
5. Store out of direct sunlight
6. Oil bearing at end of armature opposite fan after 10 hours of operation (Unplug tool for all maintenance)
7. Blow out tool and clear air outlet by blade after 20-25 hours of operation (Unplug tool for all maintenance)
8. Remove blade, clean out and inspect blade guard (guard should snap and remain closed when saw is held inverted)
9. Check brush wear
10. Repack gear case with approved lubricant

Most belt sanders have a sleeve bearing on the front idler pulley. Oil it lightly after 10 hours of operation.

Change the blade often on a circular saw. When the blade is off, clean the blade guard and see that it snaps shut and remains there when the saw is inverted. Oil lightly if it binds.

RECOMMENDED EXTENSION CORDS

Wire Gauge Chart A.W.G.

NOTE: The smaller the gauge number, the heavier the wire. The bold type gauge numbers are extra heavy duty cords.

Name Plate Amps.	25 ft. to 50 ft.	51 ft. to 100 ft.	101 ft. to 200 ft.
0-2	18	18	18
2-3	18	18	**16**
3-4	18	18	**16**
4-5	18	18	**14**
5-6	18	**16**	**14**
6-8	18	**16**	**12**
8-10	18	**14**	**12**
10-12	**16**	**14**	**10**
12-14	**16**	**12**	**10**

Westmorland slate, scrubbed English oak. The carved and laminated frame constantly changing in the rhythm of the shapes, blends with the soft and reflective forms of the streaked green slate of exceptional size (500 mm. high, 1350 mm. across). Designed by John Makepeace and made in his workshops by Alan Amey. Copyright 1983 John Makepeace, Parnham House, Beaminster, Dorset.

Making A Curved And Laminated Frame

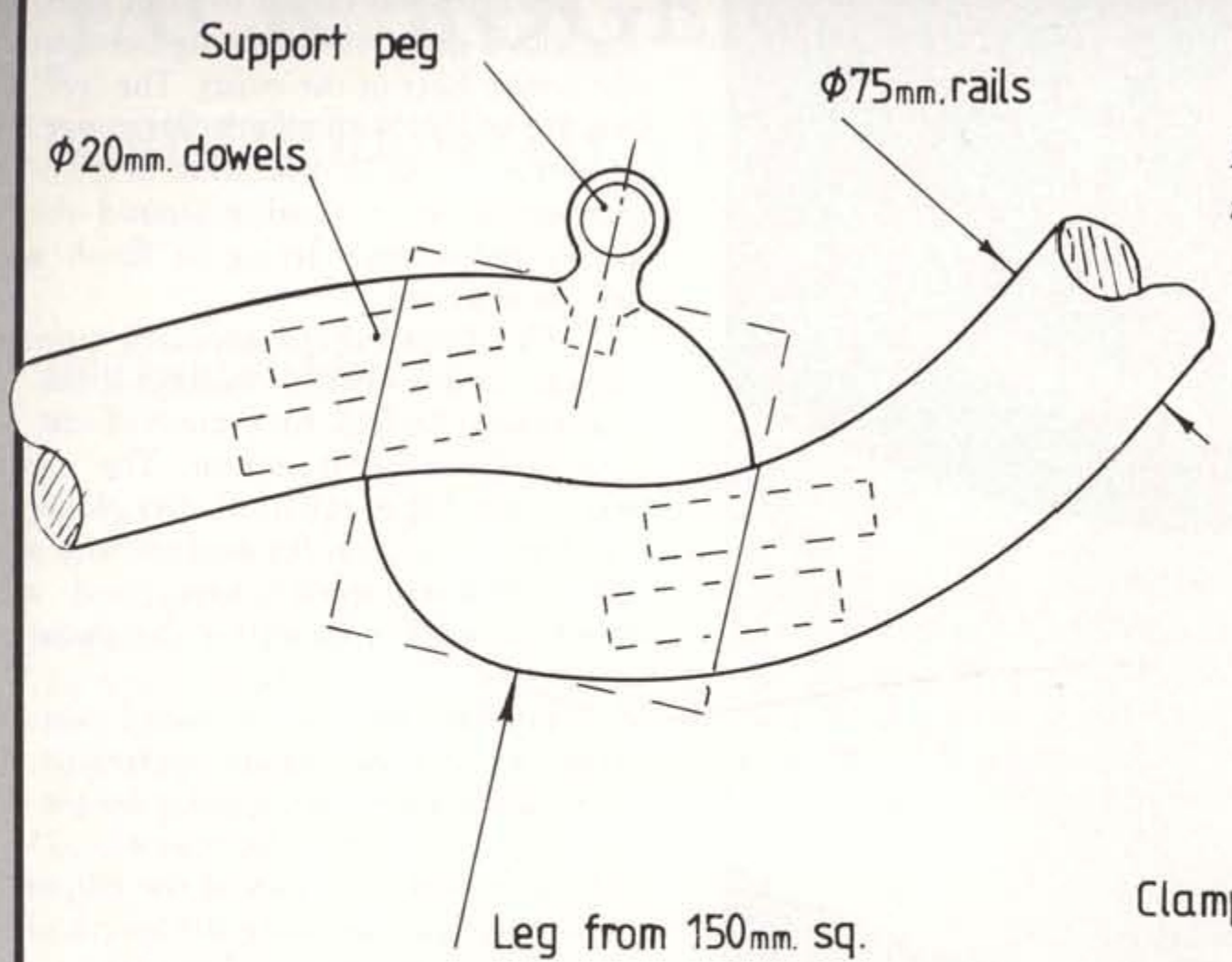
By John Makepeace

Oak was chosen for its good working properties and open texture.

A full-size plan and an elevation of a leg was required to determine the profile of the rails and the jointing needed at the junction with the legs.

The rails were laminated from 3 mm. sawn veneers. The veneers were planed both sides and glued into a jig — in the order in which they were cut — to a section of 75 mm. square.

The legs had a section of 150 mm. square. These were turned into a cylinder, leaving one end square for a length of 120 mm.



Plan, showing jointing between leg and rails.

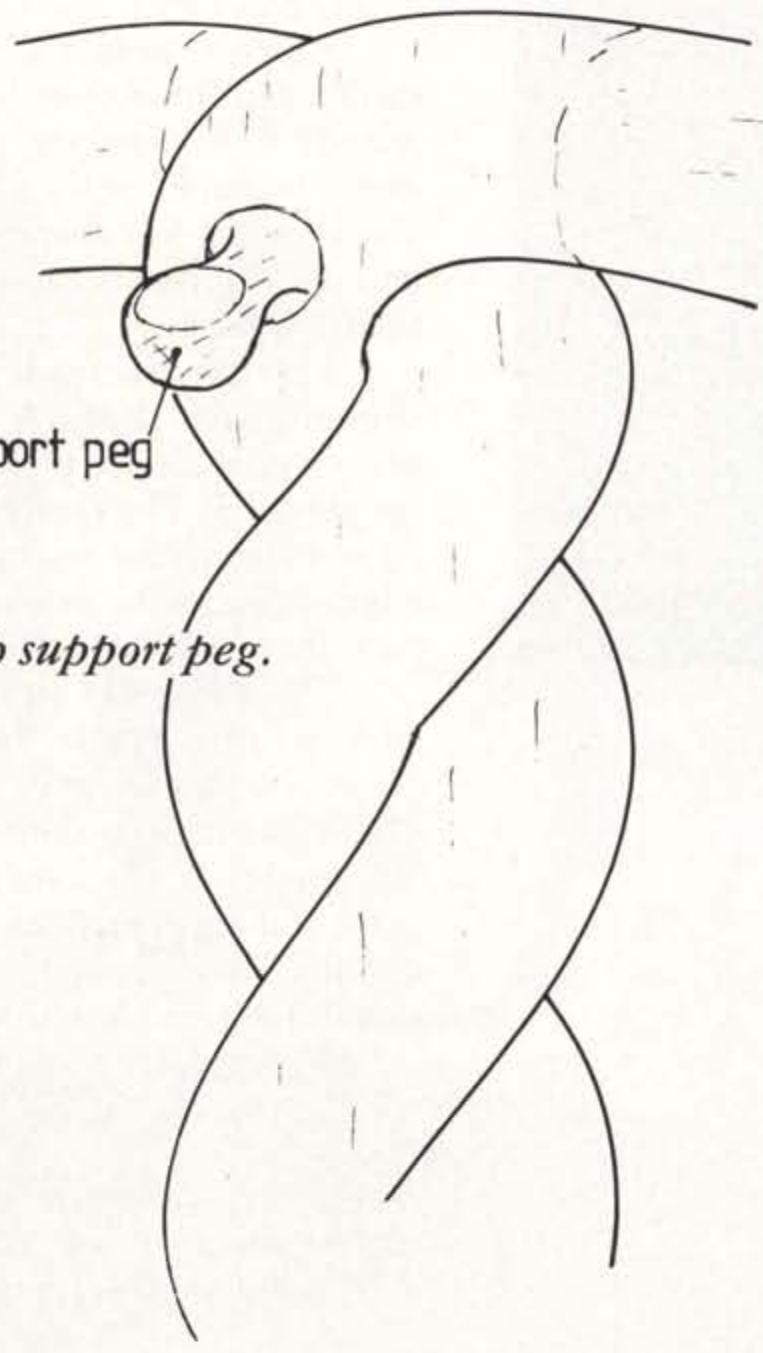
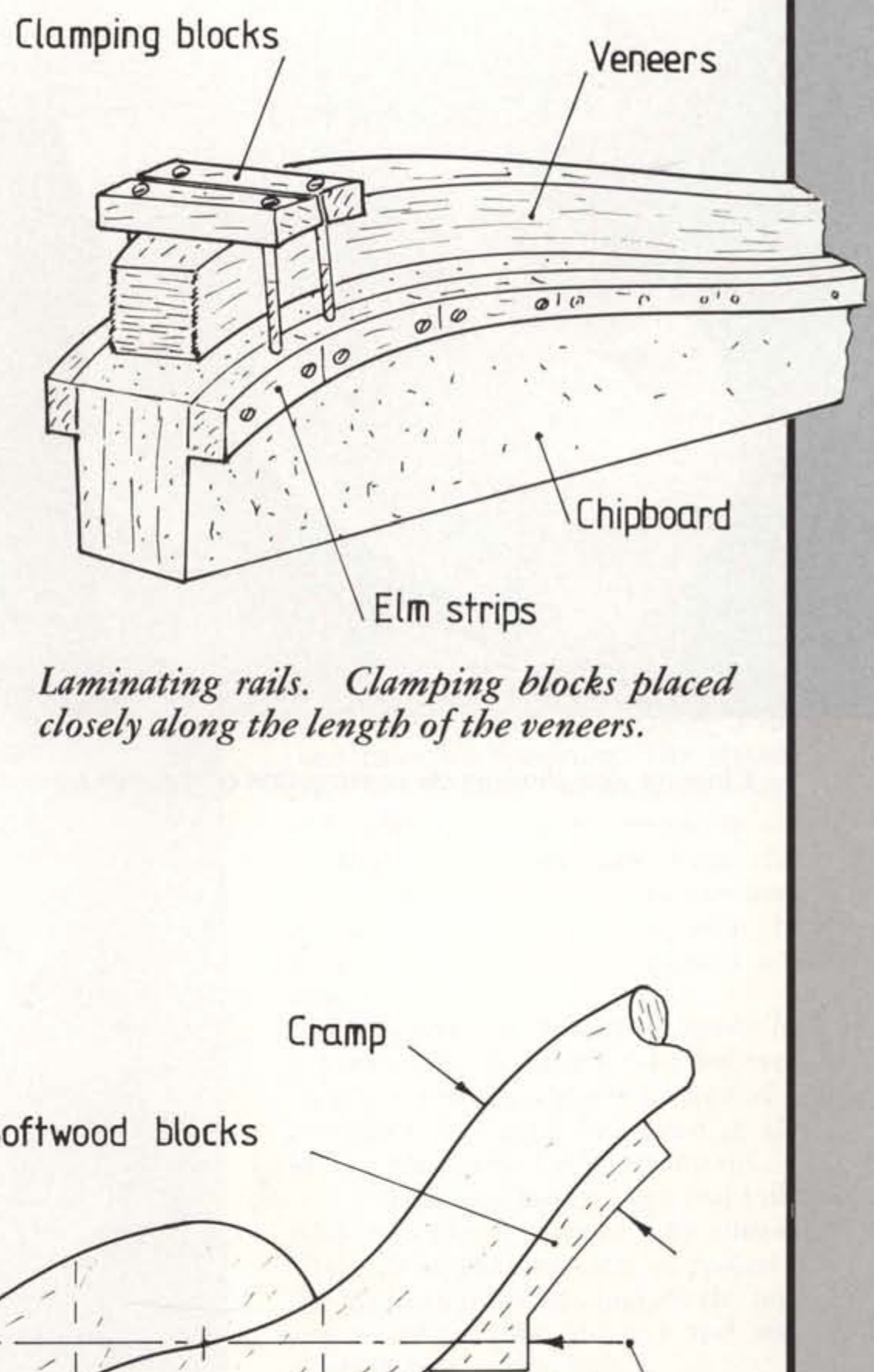
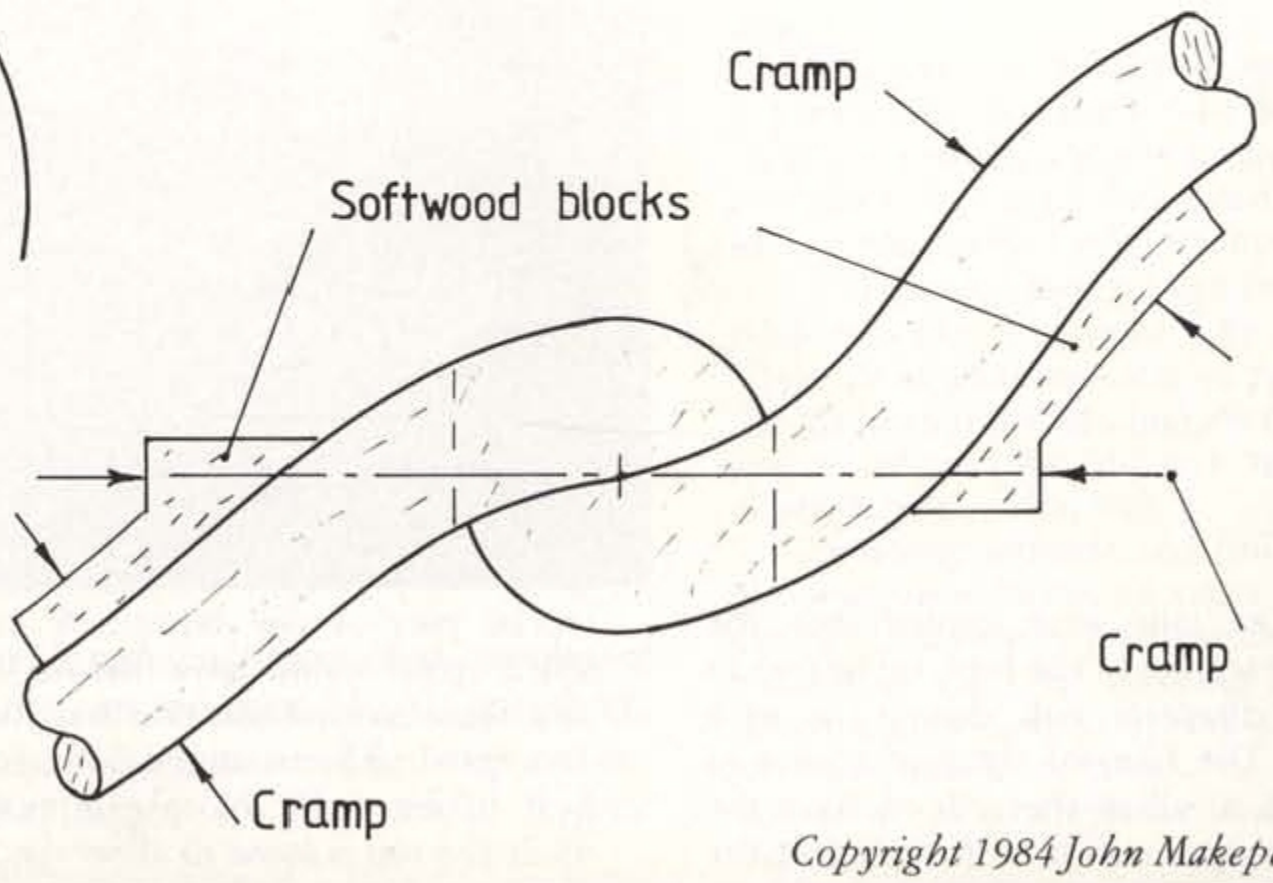


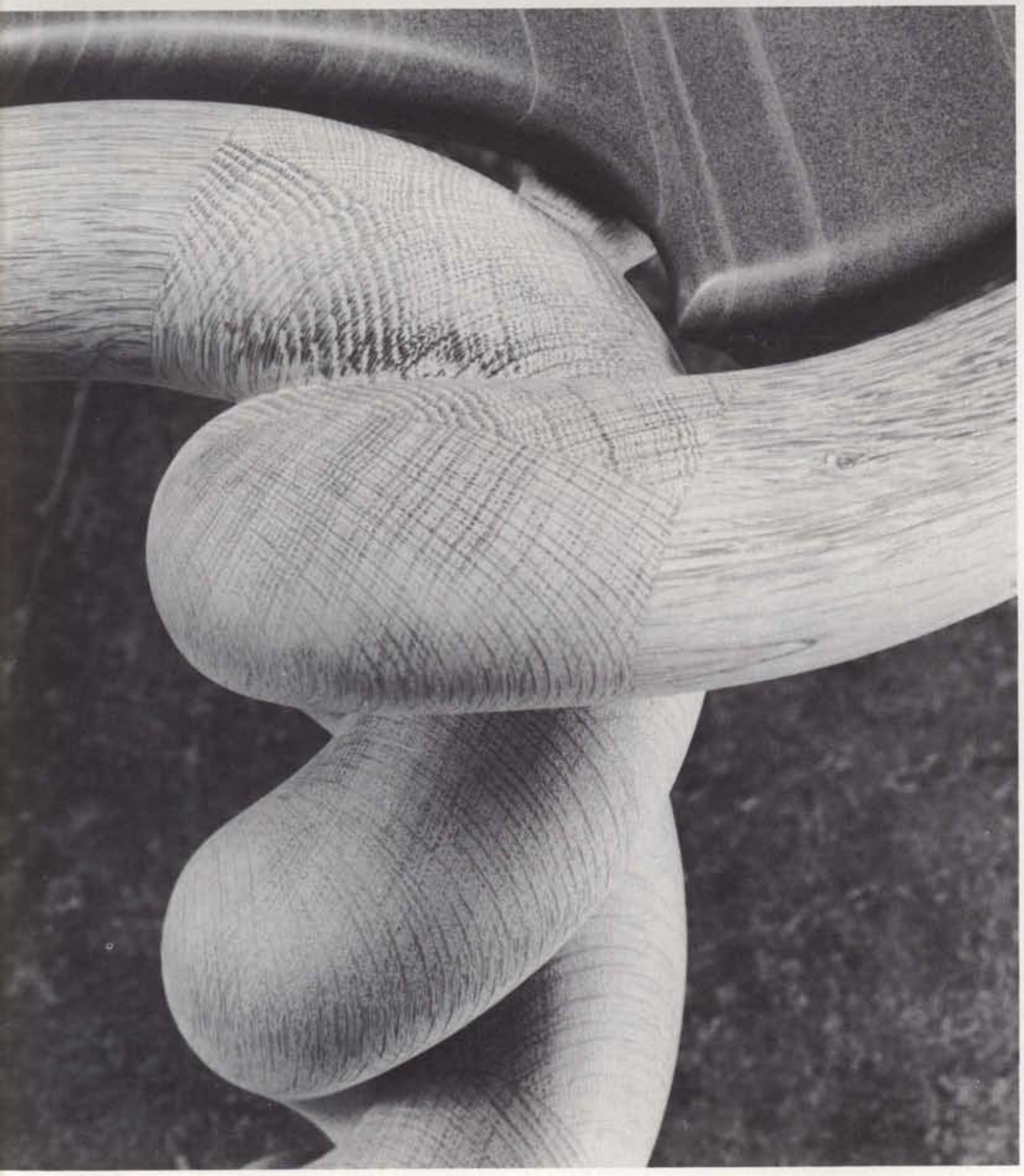
Table top support peg.



Laminating rails. Clamping blocks placed closely along the length of the veneers.



Method of cramping rails onto the legs.



Close-up view showing the construction of the twist leg and the support of the top.

The rails were jointed into the square section of the legs, using two 20 mm. diameter oak dowels at each joint. The faces of the joints were so angled to allow the rails to have the desired approach into the spiral of the leg.

While the blank legs and rails were dry-jointed, the centre line of the spiral was plotted. This was the most crucial part of the layout. A mechanical spiral would have had no 'life', so a more natural solution was found. The spiral tightens at the base, to appear to be under more compression, while the top is loose to allow the final twist to swing around its partner.

Each leg was carved in turn, starting with a deep 'vee' running between the centre lines of the twists. The 'vee' was opened up with a fairly flat gouge, between 15 and 25 mm. wide. It is important to move steadily around the piece, rather than trying to finish a section at a time.

The desired shape appeared quite rapidly, and it needed constant checking, mainly by feel, for eveness of contour and consistent section. The top section was left rough until after gluing up, but the rest was finished off with a fine boxwood spoke shave, and a round-ended flat chisel for the throat of the 'vee'.

The rails were spoke shaved next. At the ends, their section was circular, 75 mm. diameter, but quickly becoming elliptical towards the centre — 75 x 50 mm. The long axis of the ellipse twists through 180° along the length of the rail, and ends up circular again.

Shaped softwood blocks were cramped to the rails, and the table finally glued up.

Support pegs for the top were turned and fitted to each leg. The pegs were 20 mm. diameter, going up to 40 mm. diameter, with a 45° shoulder. The shoulder was chopped into the leg and the peg finally carved to flow into the leg surface.

The top was made from a green Westmorland slate. A quarter template was made for the top from built up plywood. The centre needed to be 35 mm. thick for strength, while the edge, between the support pegs, could be as thin as 15 mm.

The table was scrubbed all over with a stiff bristle brush using a bleach, pummice and soda solution. The scrubbing was done several times, and the result was a more accentuated grain and a paler colour. No sealer was applied, the scrubbed surface being very durable and easy to wipe clean.

NOTE: To convert millimeters to inches multiply by 0.04. To convert to feet, multiply by 0.0033.

ABOUT THE AUTHOR:

John Makepeace is a furniture designer and author in Dorset, England.

JACK ROGERS HOPKINS

FURNITURE WITH A FLOURISH

By Dona Z. Meilach

Anyone who sees or experiences a Jack Rogers Hopkins piece of furniture is not likely to forget it. Each piece satisfied the artist's singular and most overriding premise: "To create furniture to delight the eye and challenge the intellect."

Chairs, tables, and other pieces by master craftsman-artist, Jack Hopkins, are so appealing that anyone who can appreciate their fine design, materials, and workmanship will want to look at them often and, in return, receive pleasure in some personal way.

WOMB ROOM, an environmental functional sculpture that combines chair, footstool, library, coffee table, lamp, stereo and 5½ ft. speakers. Honduras mahogany, ash and ebony stack laminate. This was an exploratory, experimental piece. Six feet high, 13 feet wide, 9 feet deep. Shown at Pasadena crafts exhibition.

Hopkins says that when one of the first chairs he made appeared in the Home Section of the Los Angeles Times, a man inquired about the chair and immediately bought it. Later the customer wrote "Every time I go into my living room and look at that piece it's an emotional experience."

"Isn't that a beautiful way of putting it?" Jack asks, obviously delighted, yet a bit timid about enjoying the reaction so much. "Isn't it nice that a customer can feel so strongly about a thing merely to be sat in? Chairs have been around for centuries, but there still can be a new approach."

How does Jack Hopkins wed both his philosophical and practical goals in the unique furniture he creates?

It's a combination of esthetics, thought, application, and hard work. That's not too different a combination from the factors many people bring to their creations. Still, Jack Hopkins manages to make an individual statement that has earned him a solid reputation, though "reputation" is not one of his goals.

Hopkins is not interested in building an empire nor making a fortune from his furniture. The reason? Once you become "well known" for a particular approach to design in any medium, you become locked into that style. "My style?" There's no hesitancy in his answer; he knows what he wants, "is to constantly discover and invent."

"Something should be made for it's own sake. For itself," he believes. "Once it's made, I'm not interested in the piece. I'm only interested in the ideas it has released in its resolution.

"Oh sure, I have an ego and I like people to like the pieces," he admits, "but the continuing creative process is the greater thrill and I may be the only one to whom that matters and who experiences it in that way."

A strong attitude and philosophy about creating furniture takes time to evolve. Jack readily acknowledges that today, at 64, he treasures privacy which allows him to spend as much time as possible in his studio and toss out or avoid whatever encroaches on that time.

The only exception is his teaching. His classes about furniture making at San Diego State University nurture another facet of his personality. "Since I make my living as a teacher, I can explore my craft freely and not depend on making furniture. Teaching does put constraints on my own studio time, but there are satisfactory trade-offs," he says.

THE EVOLUTION OF HIS FURNITURE

Jack Hopkins began making furniture in the early 1970's. What he made was so innovative, so different at the time, that it won him immediate recognition in the modern furniture making community. The pieces first appeared in the prestigious craft exhibits and accompanying catalog of the Pasadena Museum.

They were, and continue to be, stacked laminate pieces with flowing organic forms that combine function with a sculptor's approach to 3 dimensional design.

But "function" has a special connotation for Jack. "My first pieces were meant to be pure pieces of sculpture in which one factor of the total esthetic was function." That premise led him to the idea of combining two or more separate furniture entities into a single sculptural concept.

"My first pieces were heavy and ponderous," he believes now. The WOMB ROOM (see photo) was an experimental, exploratory piece that was meant to be an 'environment' (the concept was new in the early '70s), in which many things you find in separate pieces of furniture are all integrated into one sculptural entity. That one piece integrates a chair, footstool, library, reading lamp, coffee table and stereo music from two speakers each 5-½ ft. from each ear.

In subsequent pieces Jack explored the potential of stacked laminations for chairs, tables, desks, clocks and he is currently preparing a piece for a three person show including Sam Maloof and Michael Cooper. "A piece," he says, that he is still sketching and refining before he commits himself to it and it to wood.

SKETCHING, RESKETCHING, REFINING, BUILDING A MODEL

Constantly sketching, and resketching, searching for an essence that begins to say this is substantial enough to think about investing time, labor, materials, and commitment, is the way Jack works.

"I'm constantly drawing in a sketch book. I often go through past sketches and find things that I might not have had the maturity to recognize at the time, but now it's right for a project. I think you need to make several drawings. You need a second drawing to challenge the first, a third to challenge the second and so forth, perhaps infinitum. The student, or novice, falls in love with the first sketch and it has absolutely no value other than being a beginning. One has to explore, sometimes think about the idea, sleep on it, come back to it. It may boggle you so that you think about it no matter what else you're doing."

"It's hard to convince students that the first isn't always the best," explains Jack. "Sometimes they have to learn the hard way, or have an experience that eventually teaches them what only experience can. The beginner may have marvelous ideas, but he may also be what I call "innocently immature." Those concepts can be pushed to a valuable state when properly nurtured by experience and/or a good teacher.

Once committed to a design, Jack makes a full scale working drawing so he can develop proper dimensions and proportions. Early pieces were fabricated from corrugated cardboard in a full scale 3-D model and the subtle bends in the cardboard become the swooping elements of the finished piece. He doesn't have to do that anymore because he's had enough experience. But he may still build a full scale model in cheap lumber first. That can save time, materials, frustration, and money, he emphasizes.

The model is built of pine using 3/4 in. stock cut on the bandsaw and assembled with hot melt glue. After the piece is shaped, he can take it apart. The shaped pieces can then be fit onto the final hardwood boards with the greatest economy of materials. By fitting the pine patterns onto the expensive materials, the result may be only a 10 to 15% waste factor compared to a much larger waste factor if the model were not built.

It's noteworthy that Jack's pieces are almost all made of stacked laminations. He uses very little joinery and almost no right angles.

He explains, "I don't use straight lines. I can't say what I want to say with straight lines. Everything is connected. I like the way the arm grows out of the body; I don't want it to suddenly appear as a right angle. I guess I strive for a total integration. The curved linear, the curved planal area are exciting. The key word is 'organic'; just as things in nature are curved, bending, undulating, sinuous, soft looking, even when a surface is hard and ungiving."

THE WOODS: THE PROCEDURES

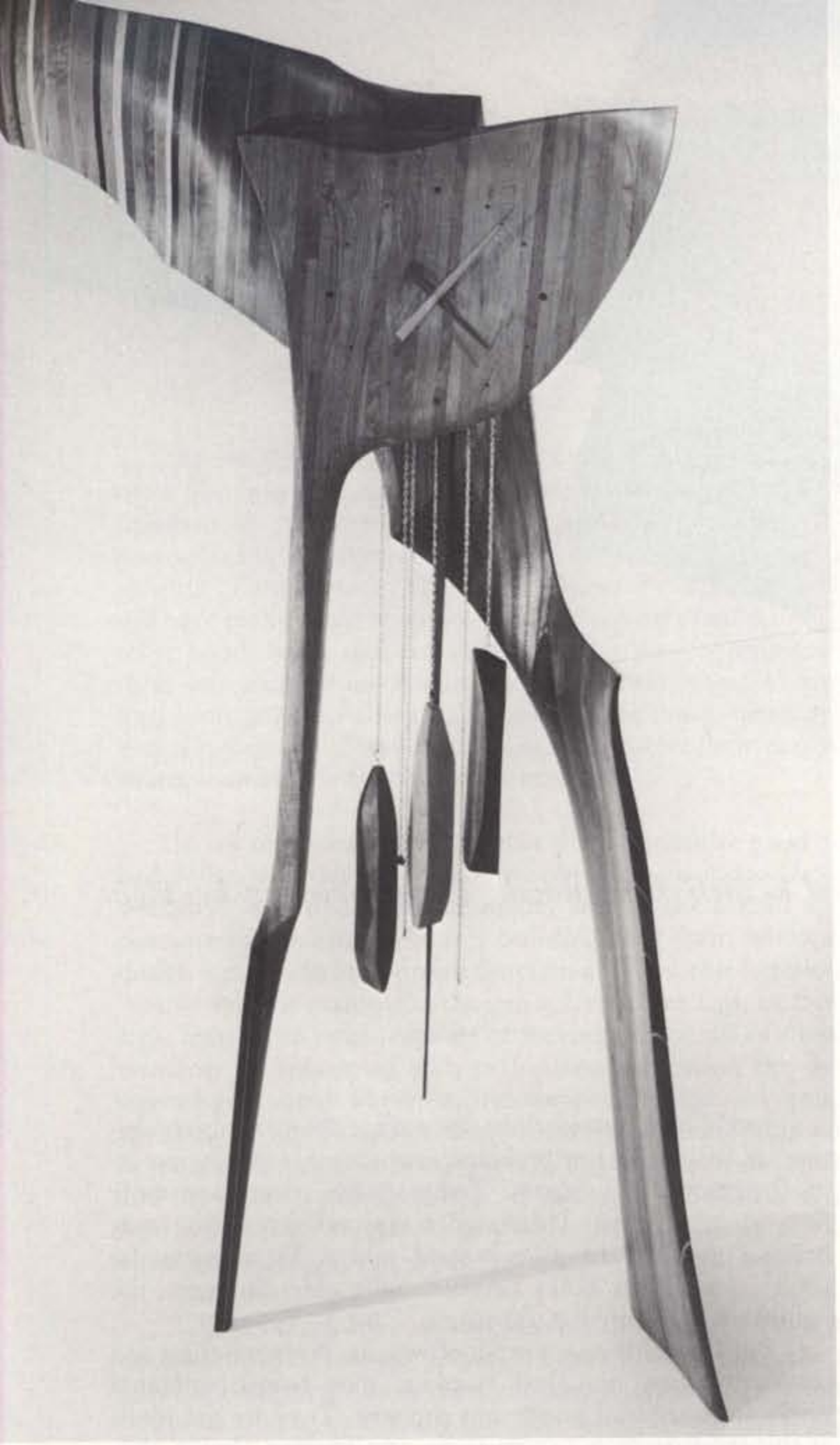
"I have used most of the popular hardwoods," he recalls. "I find black walnut personally satisfying as well as acceptable by most people because they know it. But I have a background in painting, so I like to work with different colored exotic hardwood, put them together, and incorporate them into my work. The early pieces were not so concerned with colored wood; then I was dealing more with the problem of sculptural mass."

What glues does he use? He says, "I couldn't possibly laminate today without the high-tech glues. I've used urea formaldehyde plastic resin glues, and mainly 'Wilhold', which is a boat glue and I have practically no horror stories about pieces falling apart. I must instinctively mix the right amount of water with glue. I use a glue machine and hand clamps. I put an amount on so that when the boards are clamped the glue oozes out so I know I've covered the entire surface. Really, though, a good glue job boils down to a good clamp job. You've got to force that glue into the porosity of the wood to the point where you know it's set. It takes some experience. I use a diathermic wood welder which has an ultra sonic high frequency radio wave that causes the molecules to be agitated at such a pace that, through friction, heat is generated and heat is what sets the glue."

TOTAL IMMERSION IN ARTS AND DESIGN

The sculptural organic forms in Jack's furniture is no accident; no Johnny come-lately idea. It's another expression of his ideas in a medium that is the latest in a love affair with art media. It's a coming together of unique concept, dramatic design, integrated shape and color, organic form, all of which have a basis in varied influences and experiences along life's way.

He used to copy pictures when he was a boy and knew he loved art. But he got little direction about college and education from home. His mother had only an 8th grade education and didn't know how to encourage a child to get an education. His father stammered and did not communicate well but was given carving tools so he could keep busy working by himself. "My father could really draw and make a line take off," he recalls with admiration. As a child, Jack helped his father sand the curving shapes in Queen Anne cabriole chair legs.



GRANDFATHER CLOCK. Mixed woods laminated and sculptured.

After graduating high school, in winter, 1939, Jack tried several jobs. With World War II on the horizon, he decided he had better be prepared for something. He returned to high school to take photography courses and eventually enlisted in the Navy and qualified for third class photographer's mate. Later, he passed an officer training exam and was sent to the University of Redlands where he began his lasting association with colleges.

There were water colors on the wall of that library study room that captured his attention and are still vivid in his memory. After the war, while finishing credits toward a drawing and painting masters degree at the Claremont Graduate School in Claremont, California, Jack met Paul Soldner who introduced him to clay. He knew that 3 dimensional materials were those he wanted to explore; but it was too late to change his major.

A teaching position in Bakersfield, California, plunged him into a 34 year career. During the first 11 years, while teaching painting and drawing, he explored clay, silver and gold, and made "tons of jewelry" which continued "until the bifocal and trifocal years."

Jack learned to let the natural characteristics of materials express themselves. He experimented with molten metals, silver and gold, and poured them into unlikely materials that would become a kind of "instant" mold. Molten silver poured into 10 minute cooked spaghetti resulted in a form "completely outside of one's ego or treatment by any of the formal procedures one could intellectualize." It was experiments such as these, silver into clay shapes, into cabbage, into ice remaining from a Coke, or other unlikely materials that absorbed him. They became the basis for the jewelry, scuplture, and eventually led to the organic furniture forms.

He realized that his jewelry pieces were like miniature sculptures and with their small size becoming a limiting factor, he began to create large clay sculptures, then wood sculptures while continually adhering to the exploration of organic forms. He often mixed media; there were necklaces of laminated wood and silver, rings of more than one material beautifully integrated.

Jack was asked to fill in during another teacher's sabbatical at San Diego State University sometime during the early 1960's and he's been there ever since. It was later in that teaching assignment that Jack began to layer wood. He had never heard of the term "wood laminating." He showed the idea to fellow teacher, Larry Hunter, who asked, "Have

Edition chair with its own coffee table. Honduras mahogany. Collection, artist.

Chair with its own coffee table. Tripod base; laminated 3/4 inch cherry wood. Twenty-seven inches high, 5½ feet wide, 2½ feet deep. Collection, artist.

you ever seen the work of Wendell Castle?" Jack hadn't, but he found Castle's pieces and knew he had also found something very meaningful for him. It was the beginning of his abiding amour with wood as the medium for expressing his ideas.

"Failure is an essence, a disguised success..."

The Pasadena Craft Exhibits provided the showcase of many subsequent stacked laminated pieces. But he needed time to work them out. About 1972 a sabbatical period allowed him to burrow himself "into my studio and into my mind." He believes one doesn't have to physically go anywhere to enlarge oneself; the perfect place is where you can achieve privacy and where your mind is.

Jack has evolved a number of statements to sum up his thoughts ... what might be called "Jack Hopkins-ism's" by his admiring students and peers.

He believes, for example, that "failure is a facet of success. Failure is an essence, a disguised success, that sometimes requries moving through several facets."

Another is: "A goal is undefined until the object appears before one. I feel that the artist is the first person who comes along and experiences the finished object which has only been a conception in his mind up to that point. That's the paradox of total realization. It's a process of developing one's concepts and it takes time."

And another, "Art is nothing more than discovery and invention. Your discovery, your realization, and that you are always inventing."

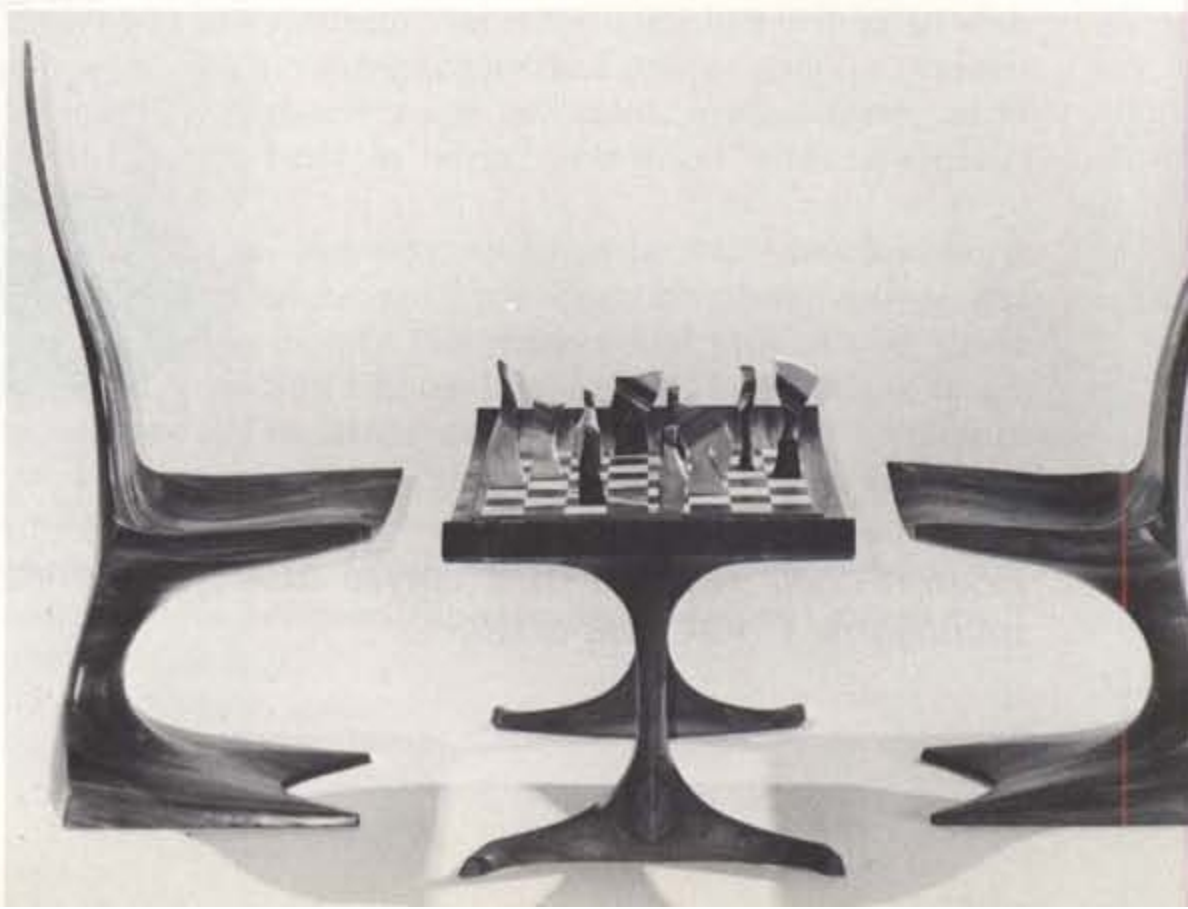
ABOUT THE AUTHOR

Dona Z. Meilach is a contributing editor to The American Woodworker.

Jack's large laminations set a stage for more investigations of his own. They provided continuous investigation into the process by others. Today Jack's pieces are more sinewy, more open, laminated sculptural forms that may become the base of glass topped tables. These bases, he smiles, are all less bulky because, "the older one gets, the lighter the furniture has to become."

But lighter is only a state of weight. From a design and conception viewpoint, Jack Hopkins' most recent laminated works are worthy of ponderous thought. They are the result of this sensitive man's convictions, applications, design ability, innate talent, and dedication to innovation and invention.

Chess Table with chairs and Chessmen. Table: 18 inches high, 36 inches wide, 25 inches deep. Table and chairs of stacked black walnut and birch. Chess set: birch veneer, rosewood, padauk and maple.



DESIGN OR STYLE?

By Jerry Spady

As designers, woodworkers are a curious lot. There are those who believe, quite sincerely, that the best furniture was designed in the late 17th century and that design went distinctly downhill upon the arrival of the machine age. Hepplewhite, Chippendale, Sheraton, Duncan Phyfe and others still have enthusiastic supporters and are copied often. On the other hand, some modern woodworkers sculpt objects that leave one gasping for breath and wondering where in the world you sit on the thing. It's probably safe to say, however, that the majority of woodworkers attempt to fix their design strategy somewhere between these extremes.

In my own view, much of what people consider good or bad design is simply the style of the object. A distinction between style and design can be made. Style is the overall appearance of the object, be it a building or a chair, whereas design is more concerned with function and how this function is achieved. For example, a chair may have three legs, or four legs, arms or no arms, capable of rocking or not: all of these elements are concerned with performing a function the designer has in mind. However, the shape of the legs and arms, whether they are curved or straight, carved or plain, polished or rough, have a direct bearing on the appearance of the chair and therefore its perceived style. If you sit in the chair and it feels comfortable to you, then the design is probably good, although you might not think the style is your cup of tea.

Like most of life, of course, the distinction between design and style is not so simple. Anyone who has tried their hand at designing knows there are many pathways they can follow to achieve a particular function and that each has a real bearing on the final appearance — in other words the design influences the style. With that acknowledgement, how do we as woodworkers design an object? Some will forfeit this opportunity and copy other's designs, and that is their right. But many woodworkers feel that the effort expended in designing an object is at least half the fun of woodworking, and the resultant style to be a statement of their creativity. The traditional method of design is a drawing wherein all the elements and their methods of joinery or other relationships are itemized. This works well except that a two-dimensional design doesn't readily translate into the final three-dimesional appearance. Many factors not apparent in the drawing, such as edge treatments, wood grain patterns, and color affect the style or appearance. Another method is to design as you build, which often leads to unforeseen, and sometimes insoluble, problems. A third method, which is really a combination of the previous two, is the one I prefer.

This method depends most of all on the designer knowing exactly what functions he wants the furniture to perform. If this is clearly defined, then the task of designing results in at least one solution to the problem of getting a piece of furniture to perform a set of functions. If the designer thinks of two or more solutions, then that design which has the most pleasing style may be chosen. For example, let us return to the relatively simple design problem of a chair (not the style, of which there may be, and probably are, thousands). The main function of a chair is to elevate a human mass a particular distance above floor level. One could use a log of appropriate diameter, an orange crate, or the traditional slab with legs below it. All of these can result in a comfortable seating area, and thus good design, but with varying styles. If more support is required, backs or arms can be added, which will increase the number of functions the chair can perform. Once the functions are well defined, a good chair design will perform them.

Furniture can be considerably more complex, however. The computer/word processor used in preparing this article sits upon new furniture, designed specifically for the computer and the paraphernalia that goes with it. This furniture was required to perform many functions: the keyboard is most comfortable to the operator in a plane several inches lower than the average desk or table top height, and this consideration determined the overall height of the furniture; the maximum width was controlled largely by the placement of a file cabinet on one end, while allowing room for a closet door to open; the depth of this furniture is sufficient to hold the computer without its falling off the top, while still being narrow enough to slip in front of other furniture in the room. These three essential features determined the overall dimensions of the furniture.

All of these requirements were considered during the design stage. No doubt other designs would achieve the same purpose. The point is that these particular functions were defined first and the cabinet design evolved from this. Considerations such as these can lead to ludicrous proportions which affect the appearance, and therefore the style, of the piece. So it is wise to at least sketch to scale, to see if the constraints will allow for an acceptable appearance. If, at this point, the proportions seem reasonable, I will usually begin construction.

It's helpful if the woodworker keeps this evolutionary process in mind. Design and construction rest upon recognizing the functions required of the furniture. These functions will help determine the design, which in turn will help determine the style. Woodworkers inhibited about designing might lose their inhibitions if they viewed design as a problem solving exercise. The trick is knowing what problems need solutions, and that knowledge requires the person to understand exactly what it is that the proposed furniture must do. If you have been copying other people's work, try a few designs of your own. You may just create a new style.

ABOUT THE AUTHOR

Jerry Spady is an amateur woodworker living in Oak Ridge, Tennessee.

Small Tilt-Top Table

By Franklin H. Gottshall

Many uses can be found for this diminutive tilt-top table of black walnut. In colonial days, a tilt-top table with the top turned to an upright position, as shown in Figure 3, often held a lighted candle on its "crow's nest," the tabletop shielding the flame from drafts. The table shown is actually a reproduction of a much larger tilt-top table. The design enabled a large table to be moved out of the way against a wall by tilting the top to the vertical position.

The walnut should be the best quality. Use kiln-dried stock, free of knots. Walnut, if correctly processed, is first steamed before being dried in the kiln. This drives out the sap and makes the color nearly uniform.

First turn the column (A). Select a good piece of stock, making it an inch or two longer than the length specified in the Bill of Materials, so that the lathe center mark at the top can be trimmed off after turning. Column details are given in Figure 7.

Make the three legs. Figure 12 shows the layout from which a full-size pattern of the leg can be made. Figure 6 shows both a dovetail joint and a mortise-and-tenon joint for fastening legs to the column. The dovetail is called a "running dovetail" because it runs the length of the joint. Nearly all antique tilt-top tables have the legs joined with running dovetails. However, this traditional method is not recommended for maximum strength. The author has repaired several antique tilt-top tables on which the running dovetail has broken loose because the column has split at the joint. Many old tilt-top tables have been repaired by having the joints reinforced with metal plates screwed to the bottom. This is especially true of tables with large, heavy tops which subject the joints to great stress.

The running dovetail's only advantage is in the making of the joint. The sloping knee of the leg provides no surface for clamping, and the dovetail need not be clamped after gluing as the mortise-and-tenon does. The dovetail is simply slipped into the column. A solution that makes the sturdier mortise-and-tenon joint possible is to saw the leg to the pattern and trim it to the shape except at the knee. Instead of rounding the knee, leave it square so that clamps can be applied. After the glue sets, cut the knee and trim to shape with chisel, spokeshave, file, and sandpaper. Clamping is shown in Figure 14. Block Z has one concave side that fits against the column.

Next make the crow's nest. Cut out the lower board (C) and the upper board (D). The 3/8-inch dowels in D are not inserted but are part of the board itself. When the board is sawed out, leave the half-inch in the rear 4¾ inches long. The rest of the board is only 4 inches long (Fig. 8). Using a chisel and a file, round the dowel sections to a diameter just under ½-inch so that they can fit into cleats H with just enough looseness for easy movement.

Bore the holes in boards C and D on a drill press, using special bits for the diameters indicated. To bore the holes for spindles E, clamp the boards together on the drill-press table so that the top and bottom holes will be in line with each other.

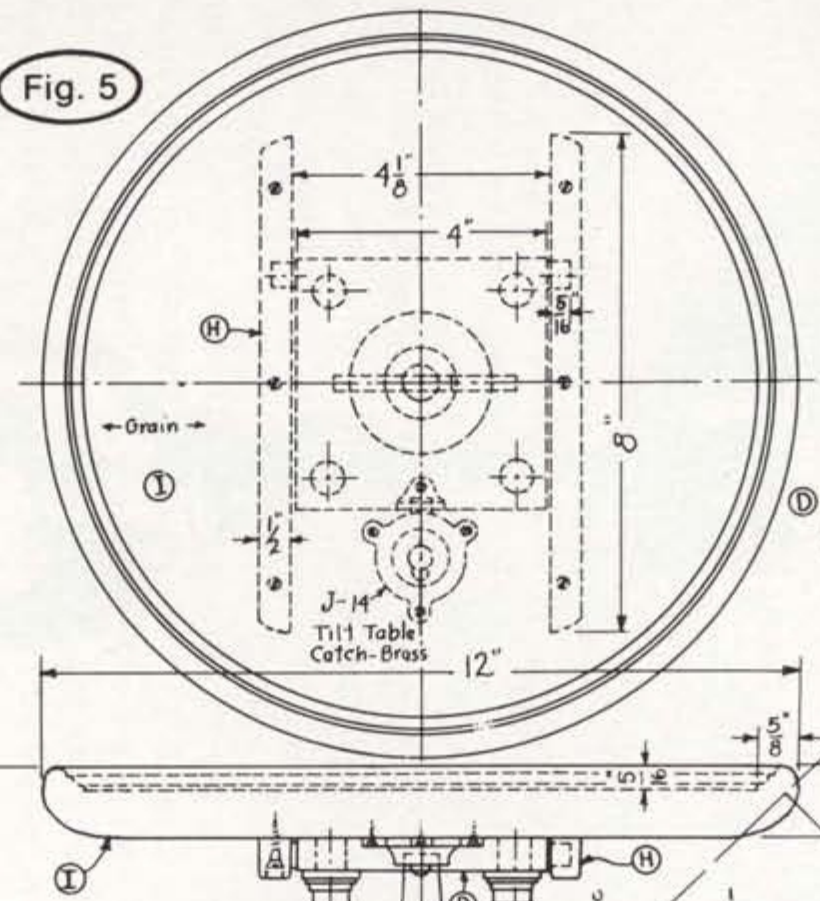
Now make the collar (F) and also the key (G), which locks the crow's nest to the shaft (Fig. 10). A 1 1/16-inch hole is bored into the collar, allowing a clearance of 1/16 inch when the collar fits over the shaft at the column top. Bore the hole before shaping the collar. Use a squared piece of stock that is planed to a thickness of 3/8 inch. Saw to the finished diameter of 2½ inches. Cut the groove for the key, and cut and shape the key itself. The key should slide freely in the collar groove but should not be too loose. It should similarly fit the mortise which goes through the shaft at the top of the column.

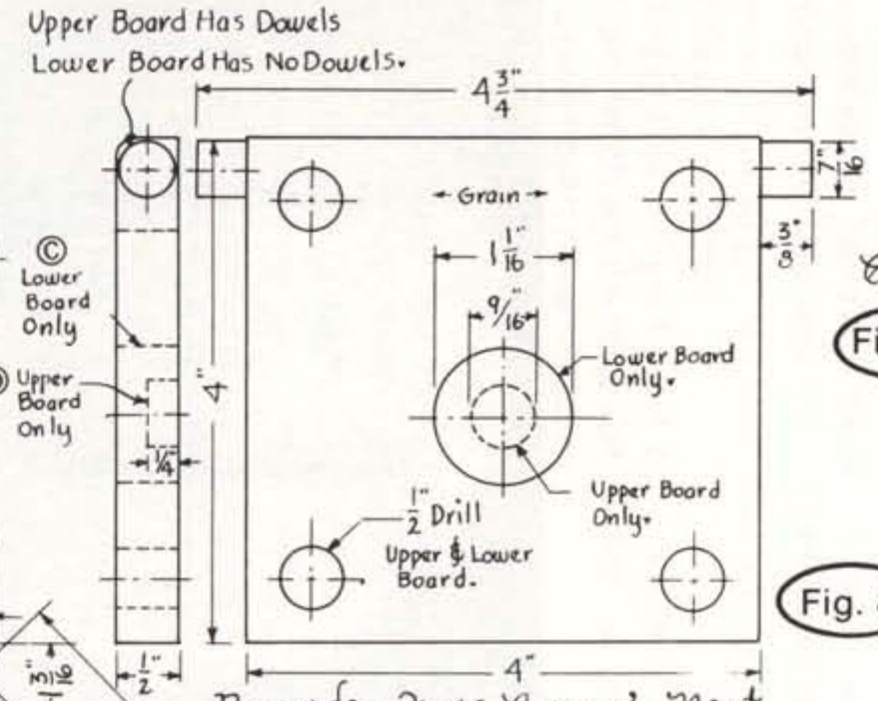
Make the top (I). The top is quite thick for its small diameter. Good early tables of this kind always had tops of ample thickness. If you find one with a thin top, the antiquity of the table must be suspect. The top is shaped on a lathe, and the 12-inch diameter was chosen over larger sizes so that it would fit on most lathes.

After turning, screw on the brass tilt-table catch, and make and screw on cleats H, which should first be hung on the dowels of D. A cleat is shown in figure 13.

Small Tilt-Top Table

Fig. 5





Boards for Crow's Nest

Fig. 8

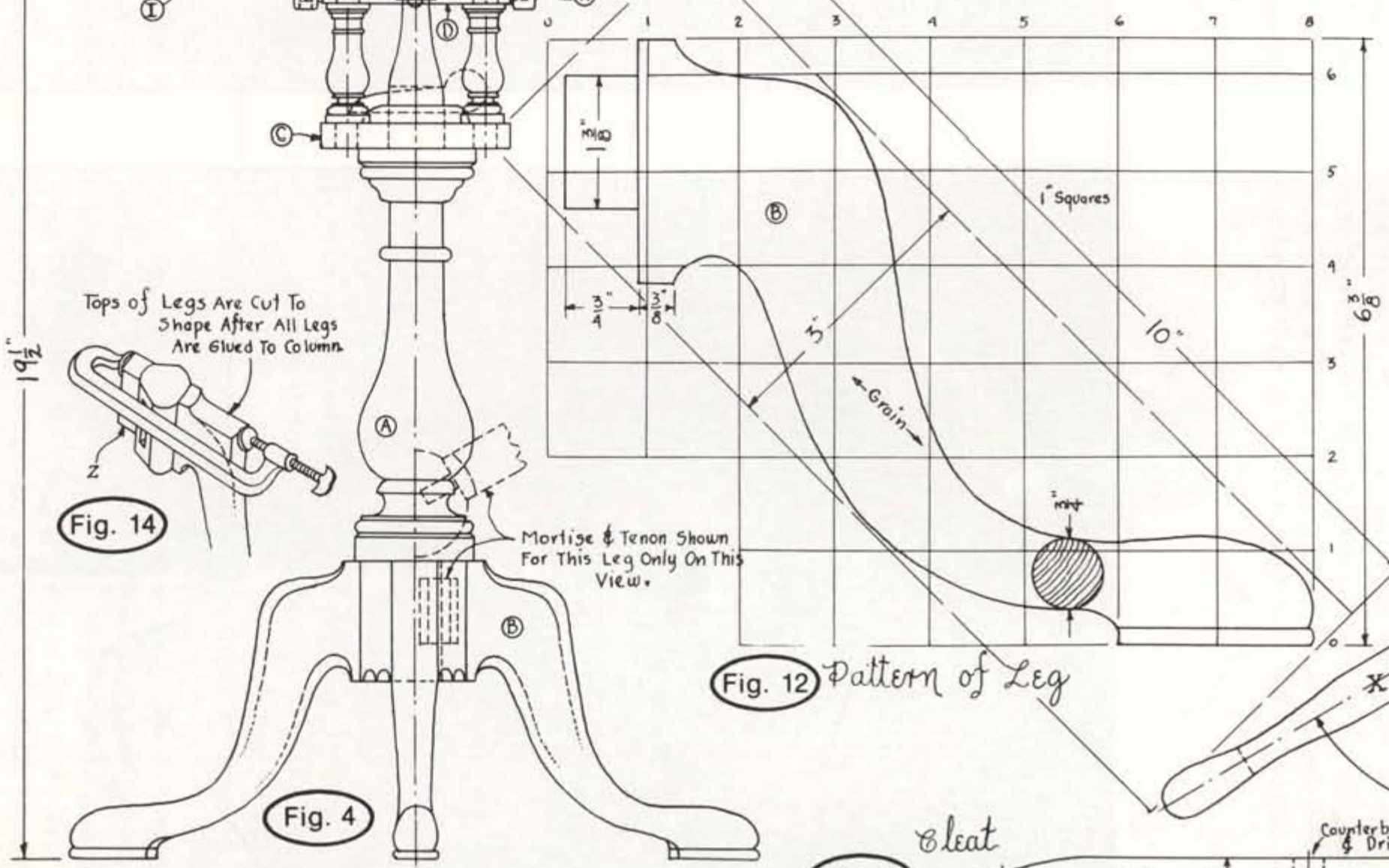
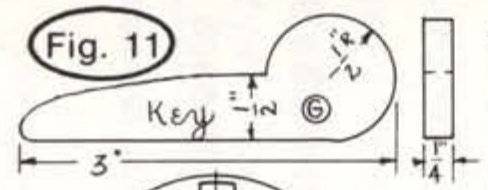


Fig. 4

Fig. 14

Fig. 12 Pattern of Leg

Fig. 11



Collar

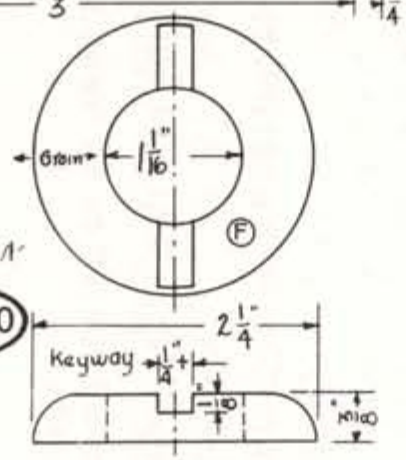
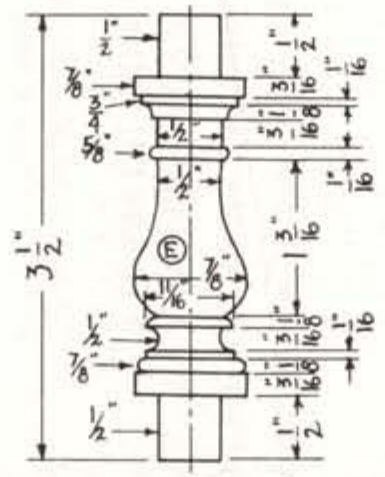


Fig. 10



Turning for Crow's Nest

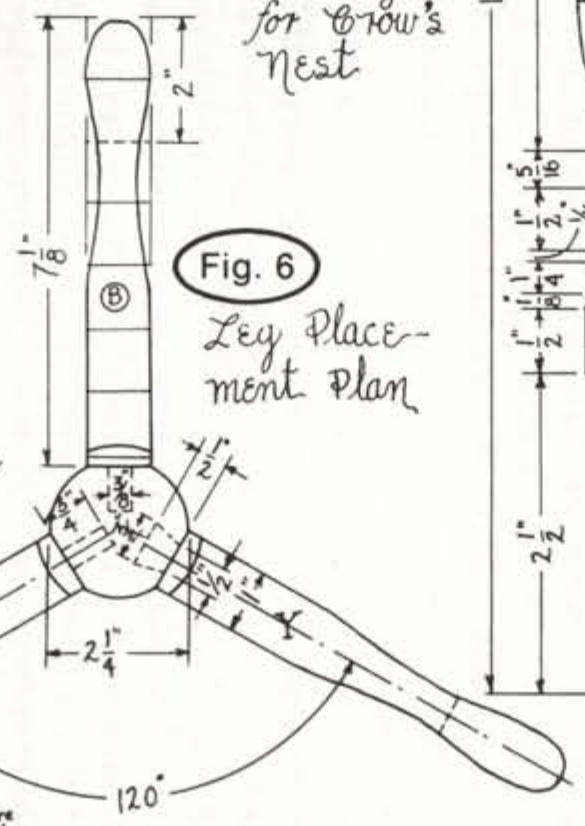
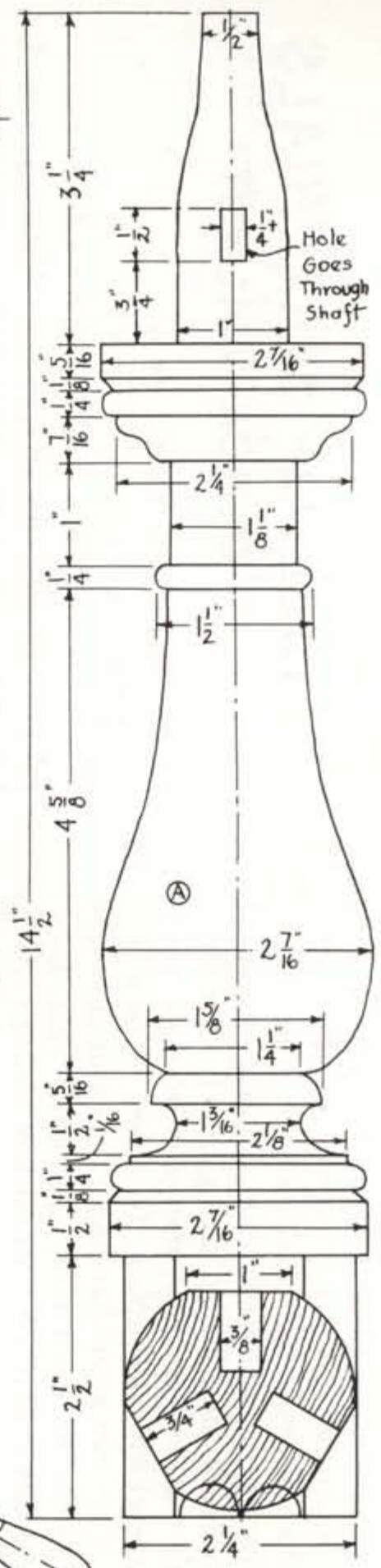


Fig. 6 Leg Placement Plan

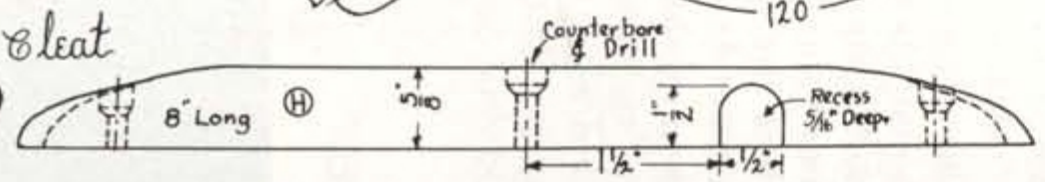


Column Detail

Fig. 7

Cleat

Fig. 13



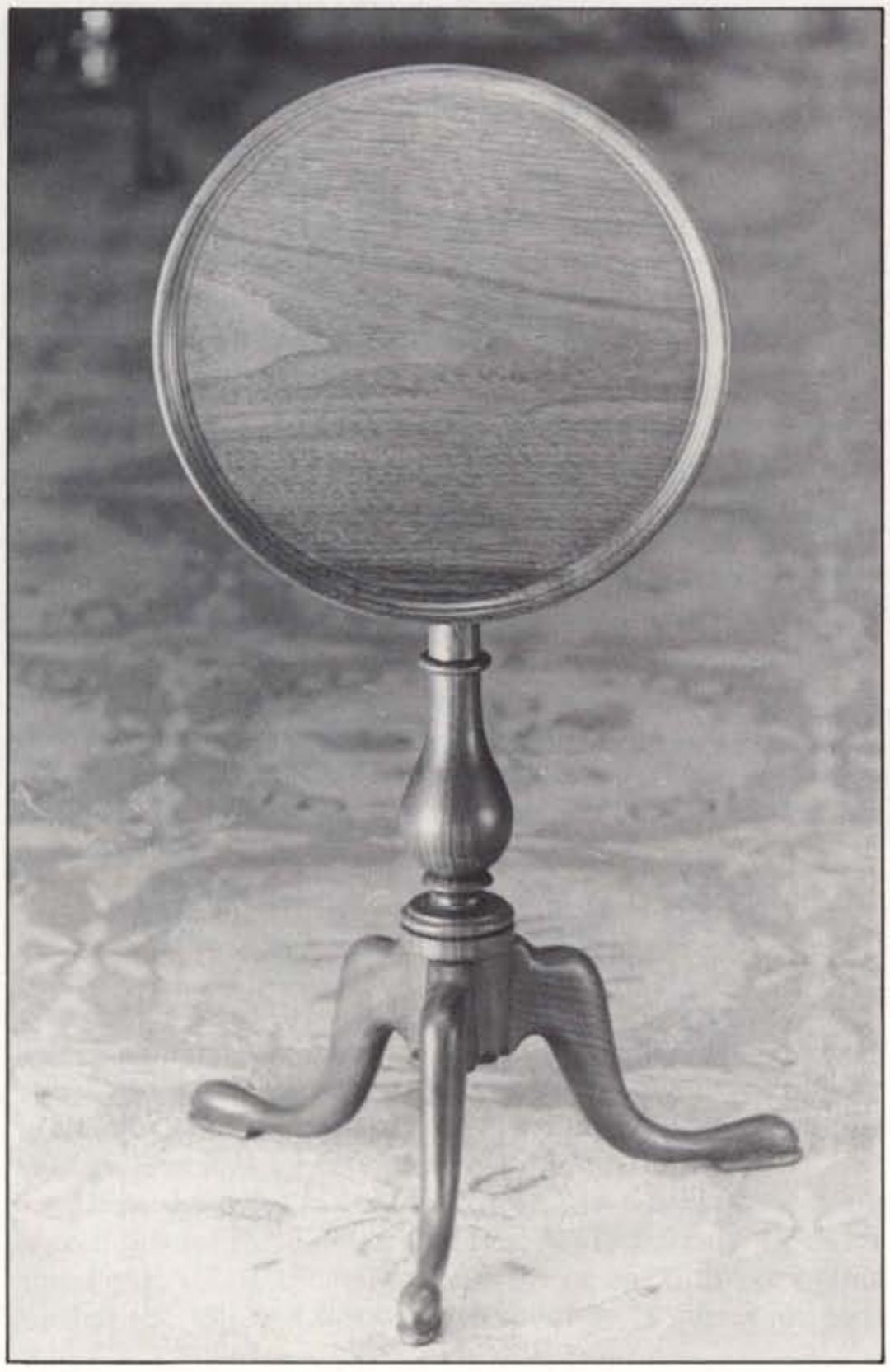
No stain was used on the table shown except that used to color the filler. Since walnut is an open-grained wood, filler must be rubbed into the open pores to achieve a good finish. A good silex filler, mixed to the consistency of heavy cream and tinted with a walnut oil stain, such as burnt umber thinned with turpentine, gives a rich color and provides a good base for the finishing coats to follow. Do not attempt to apply filler to the entire table all at once. Apply to one small area at a time. Brush the filler on pretty thickly. Then rub very thoroughly with burlap across the grain until the open pores are filled level with the surface. This must be done in a short period of time, not more than about thirty minutes and perhaps less, depending upon how rapidly the filler dries. Once the filler starts to harden it should be cleaned off as rapidly as possible since upon hardening it cannot be removed except by sanding.

If a varnish finish is applied, use a sealing coat of thin white shellac (about 2 lb. cut) over the filler. When thoroughly dry, rub down with #0 steel wool, and then dust thoroughly. Then brush on at least three coats of high-grade floor varnish. This should be done in a well-heated room where the temperature is not less than 75 degrees. In the summer do all the finishing in a well-ventilated room on days when the humidity is low. Allow sufficient time for drying: not less than 48 hours for each coat of varnish, even though the drying time given in the directions on the can label may say less. Rub down each coat of varnish with fine steel wool and dust carefully. Rub down the final coat with powdered pumice stone and rubbing oil, then polish with rottenstone and oil for a high-gloss finish or with high-grade floor wax for an eggshell finish.

BILL OF MATERIALS
BLACK WALNUT

1 Column (A) 2½ diam. x 14½
3 Legs (B) 1 x 3 x 10*
1 Bottom of crow's nest (C) ½ x 4 x 4
1 Top of crow's nest (D) ½ x 4 x 4¾
4 Spindles for crow's nest (E) 7/8 diam. x 3½
1 Collar for crow's nest (F) 3/8 x 2¼ diam.
1 Key for crow's nest (G) ¼ x 1 x 3
2 Cleats to fasten top to crow's nest (H) ½ x 5/8 x 8
1 Top (I) 1 3/16 x 12 diam.
1 Brass tilt-table catch #J-14 Ball and Ball brasses

**If squared part on knee is to be left on for clamping to column, cut from stock 4 inches wide.*



The Art Of Mother-Of-Pearl Inlay

By Tom and Mary Morgan

For many years mother-of-pearl and abalone shells have been used to enhance the beauty of musical instruments and furniture. These shells are considered to be art objects in their polished form. They are also used to make jewelry. The mother-of-pearl is white in color and the abalone is delicately colored shell of the palest blue, pink, purple and green. The industry went through a period when mechanization held the upper hand. There is presently a groundswell of activity of ornamentation in customizing guitars, mandolins and banjos that is practical as an art today.

There has always been an aura of mystery attached to the craft, when in fact, the necessary steps to achieve professional results are remarkably easy:

1) Start with the shape you have in mind, or the pattern you have chosen to duplicate.
2) Transfer this design to the piece of shell you have decided to use, by either drawing the outline on the shell or by glueing a paper pattern on the pearl.
3) Cut out the piece to be inlaid, and trim any rough edges.
4) Rout a hole that the pieces will fit into.
5) "Bed in" with Epoxe glue and a colored filler.
6) Sand off the glue/filler and enjoy!

The simplest application of the above is a round 'dot' with a matching drill bit to make the hole, and if everything has been properly matched up, virtually any type glue will give perfect results. The opposite end of the possibilities are very elaborate inlay patterns, like the 'Tree of Life' design used on some muscial instrument fingerboards, as well as engraved pearl inlays, which require an entirely separate set of tools and skills.

Nothing can add beauty and improve the value of a well-built stringed instrument more than to add delicate, tasteful and finely executed inlays of white tropical oyster or abalone shell, inset and sanded or polished to the desired degree. Shell from salt water has always been our choice of material, due to the greater lustre over fresh water mussels. All the long-established instrument companies (who set our 'role model' standards) have followed this guideline, without exception.

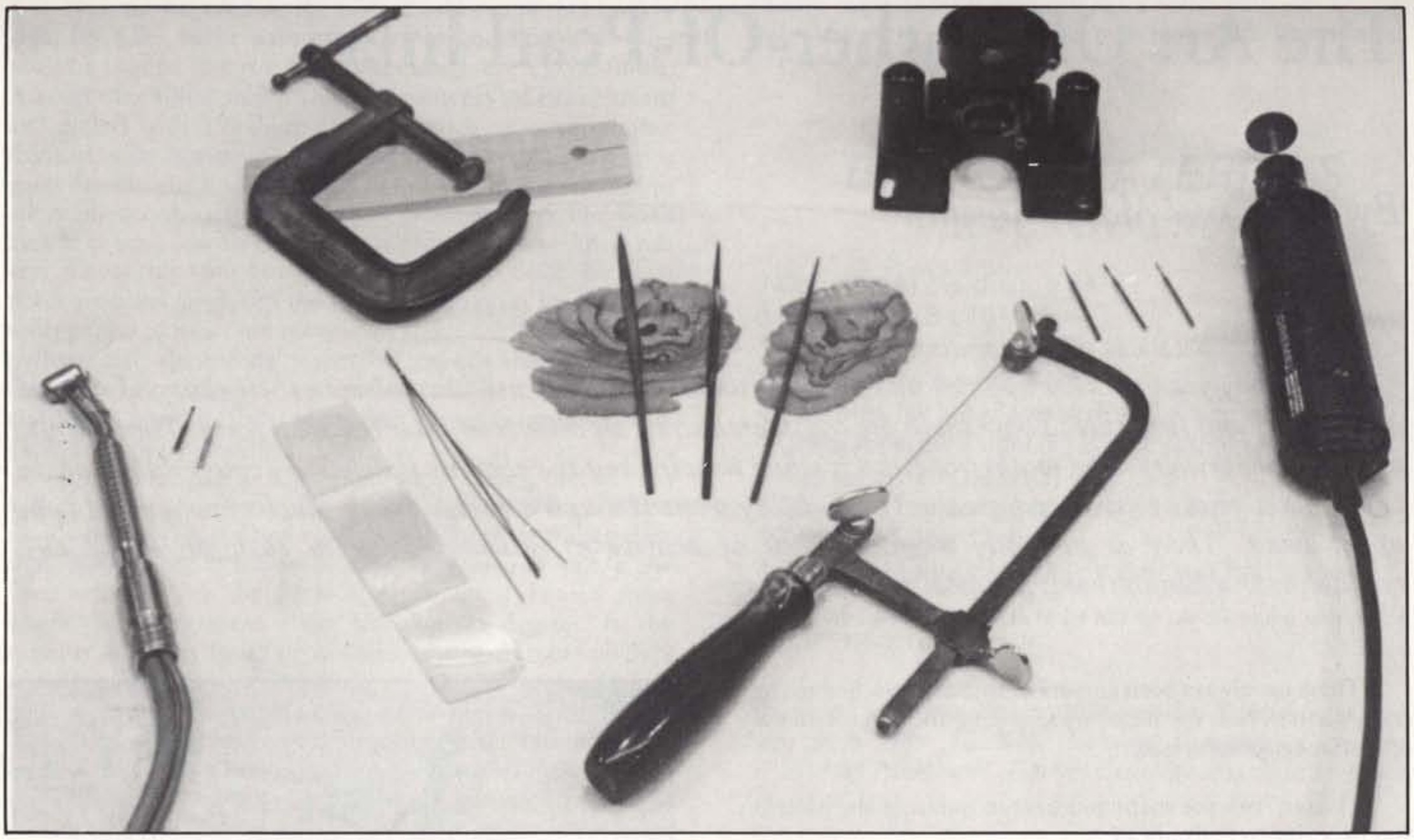
The choice of which materials are suitable for inlays is virtually unlimited, even though the bulk of our work has been in pearl, on stringed instruments. Anything that will contrast is possible, including snail shell, fresh water mussels, gold or silver wire, dark wood versus light woods, etc. For a customer who brought us a rifle stock to customize, we inlayed a delicate pearl heart into an ebony diamond, which in turn was set into the walnut stock for a 3-way contrast.

In furniture, contrasting woods may be used in either solid or veneer forms, and mother-of-pearl in many cases will enhance the beauty of the piece. Hopefully, this article will also be helpful in cases where existing furniture with missing inlay pieces can be successfully restored.

Example of the five steps to inlay. Pattern, draw around, relieve, glue in, sand off.

One unusual effect that was popular around the turn of the century occurred when musical instrument guard plates were made of real or celluloid simulated tortoise shell, with elaborate pearl, snail or abalone set therein. Refreshingly, a replication of period instrument appointments is still being done by the Custom Order Department of the C. F. Martin Guitar Company in Nazareth, Pennsylvania, which has one of the most respected inlay specialists in the business.

For less intricate shapes where a large number of the same piece is used, a thin metal template can be used to draw the pattern directly on the pearl, and the cutting can be done with carborundum 'cut-off' discs or steel saws in a Dremel Moto-Tool. We've always used the #280 tool, since it can be switched on and off with one hand, but a #380 with variable speeds would have an advantage in some applications, as in celluloid or plastic where the higher speed melts the material, rather than cut.



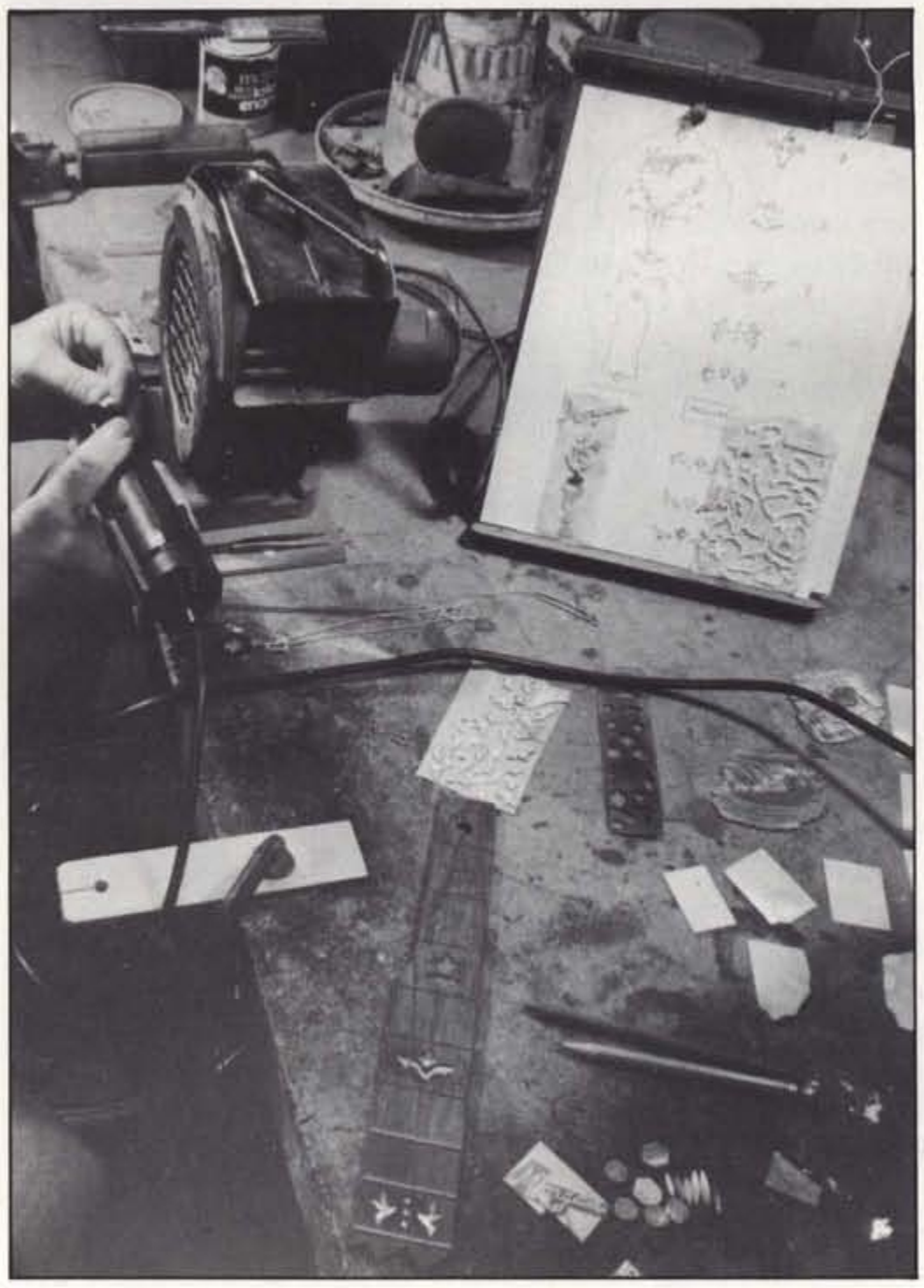
Useful inlaying tools: No. 280 Moto Tool w/cut off disc, engraving cutters and No. 229 base. Jeweler's saw frame and blades. Shell blanks and needle files. Sawing board and clamp. Dental drill and burrs (could use flexible shaft instead).

Virtually any hobby shop we've ever entered has had the Dremel tools and accessories in stock, but the Company has been a mainstay in our work, and by writing Dremel Manufacturing, 4915 21st Street, Racine, Wisconsin 53406 - telephone 414-554-1390, you can receive a handy reference list of what they have to offer. In our case, we've often had the #280 tools rebuilt after long and steady usage, and they provide a very reliable service here also, at a moderate cost.

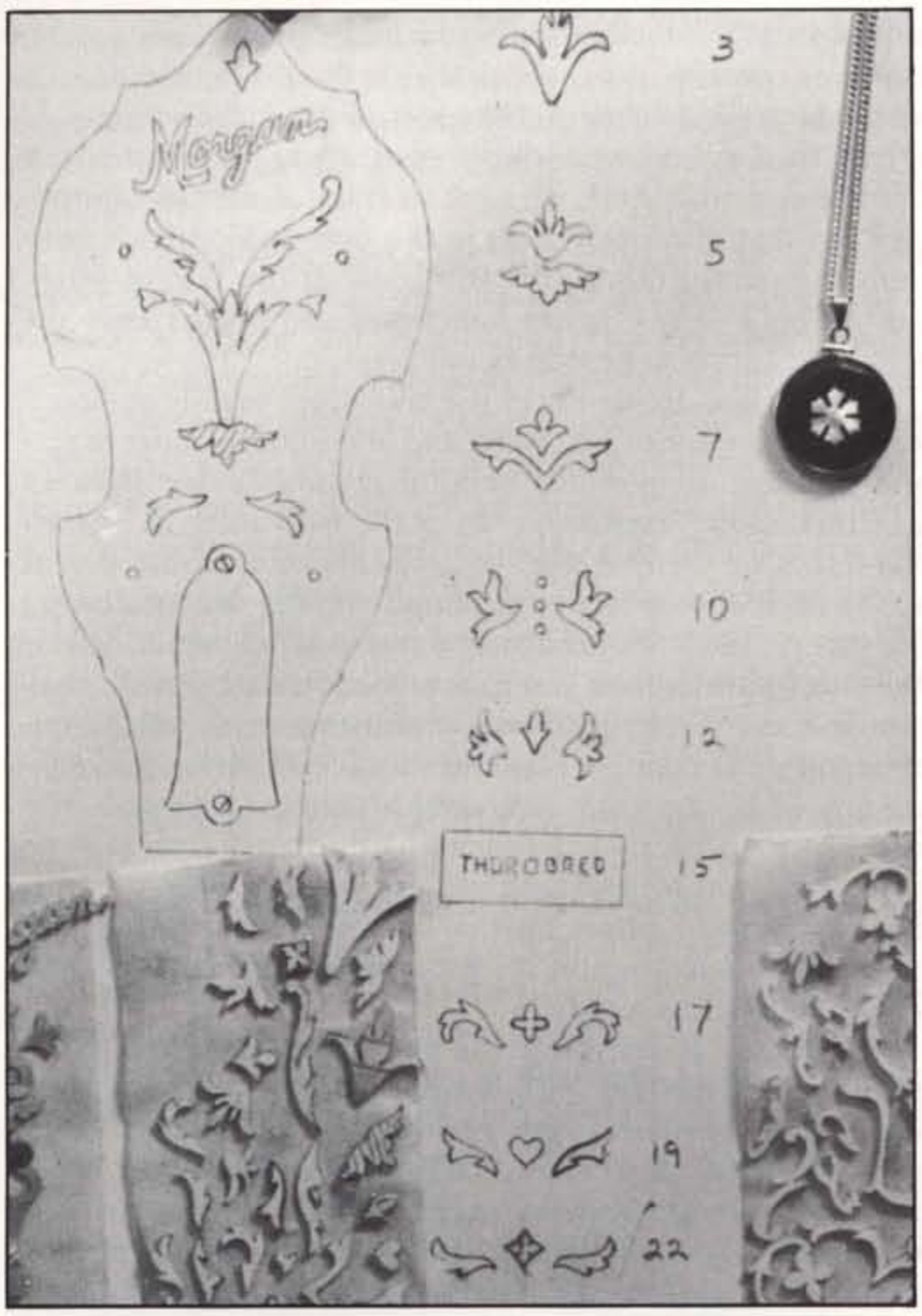
We started our inlayings, many years ago, using a hand-held Moto-Tool, but for the last several years have been fortunate enough to acquire a surplus dental air drill (a much more expensive and efficient piece of equipment). For someone just starting, the Model #232 drill with handpiece and flexible shaft might be a logical alternative. For comparison sake, the #280 is rated at 30,000 r.p.m., their flexible shaft, 25,000, and a dental air drill 300,000! It is likely that other makes of flexible shafts, with heavier motors, would run too slow to be effective for this type work, and it is also not known whether the dental and Dremel cutter shafts will fit.

A more efficient method for cutting out more intricate and delicate shapes is to use the jeweler's saw, with its ultra-thin blades. The handle and blades are available from jeweler's supply houses (or the two instrument builders suppliers listed at the end of this article), and for most of the shapes we cut, the #1 blade works well.

The support you'll need is a thin piece of wood with a hole drilled (see photo) and a slot sawn to accomodate the blade. Clamp this board to the edge of your work bench, and be sure the teeth of the saw blade are set to cut on the down stroke. It will take a bit of practice to adjust the tautness to be tight enough, yet not break the blades.



Trimming pearl with Moto-tool in front of squirrel-cage fan.



Morgan banjo layout sketch, with pearl pieces awaiting inletting. Necklace is a silver coin mounting with ebony insert and Martin guitar 'snowflake'.

Another area where caution is required, is holding and cutting the pearl without cutting your fingers. To gain some practice, one should start with larger blank pieces of pearl, with small patterns, using thumb and forefinger (or any combination of two fingers, with the blade to work between), and applying firm downward pressure to prevent the pearl jumping on the upward stroke. Saw with smooth, long strokes, always being careful to keep the blade exactly vertical. This will insure nice, square edges on the pieces you end up with, and although you should probably practice on simpler patterns, as your skills improve, there is virtually no limit to how intricate the final results can be.

The saw blade cuts approximately the same width as a pencil line, and it works well to saw directly on the line to cut down on the trimming or filing that is usually needed next. Simple needle files can be used to smooth the edges, although there are several items listed in the dental supply catalog, including stones and even diamond abrasives that are very efficient for trimming. The #1 blade will actually cut and turn within a space of approximately 1/64 of an inch (small enough for most of the 'corners' you'll need to cut into) and the secret is to turn the workpiece as you saw. For even finer detail, back the saw into a tight cut and saw out, or make separate cuts in from either side.

In some patterns, the pieces are mirror images, and especially with thinner 40 thousandths pearl, it is practical to saw two pieces glued together to insure a perfect match. Some attractive pearl inlay and wood marquetry have contrasting colors, and sometimes it is possible to saw two pieces at once to give an 'instant' fit. In some guitars, a nice effect has been achieved by inlaying ebony blocks into a rosewood fingerboard, and then setting pearl designs into ebony. A nice effect is also achieved by using rectangles of white pearl with a triangle of abalone set into one edge.

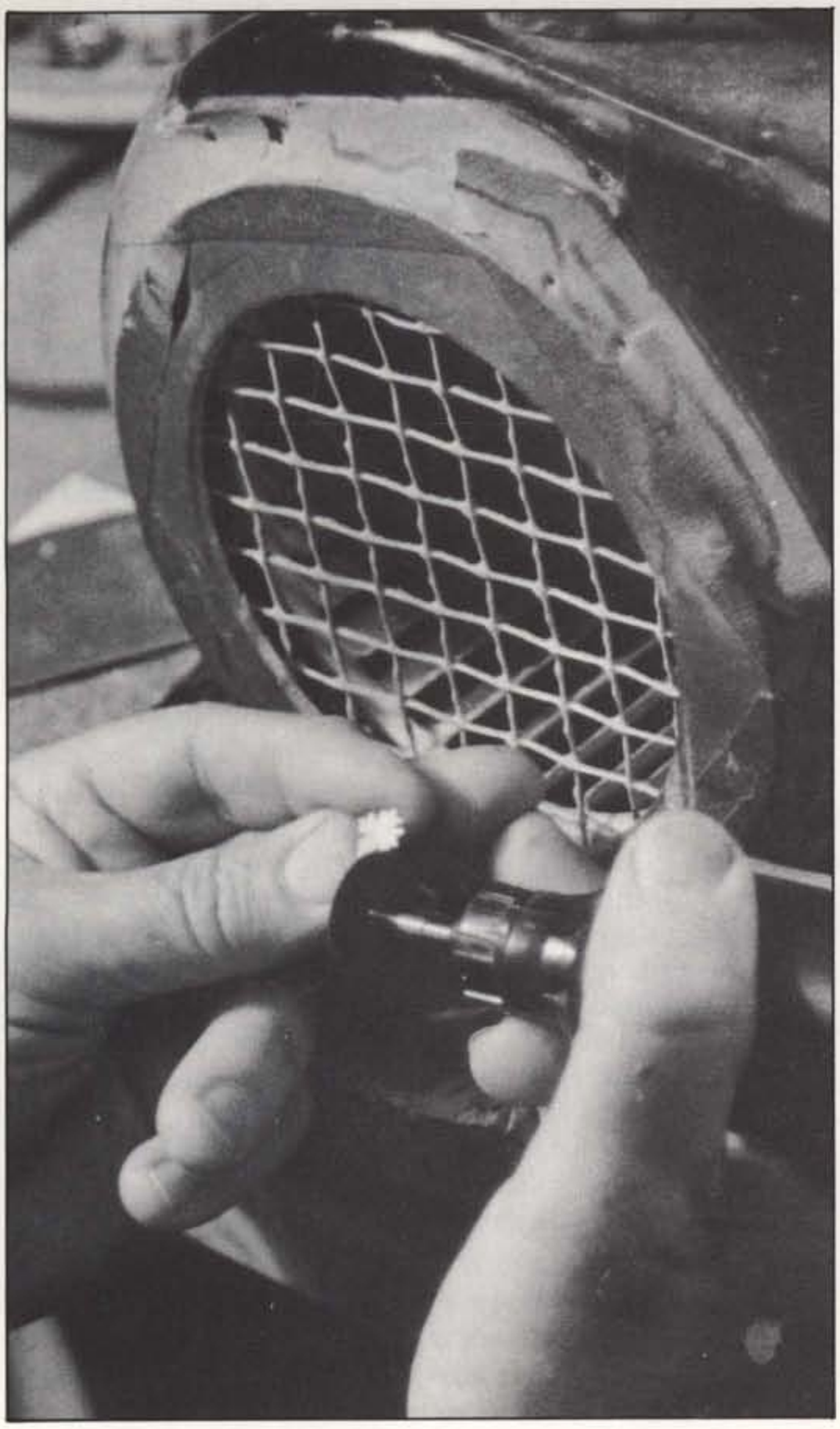
Once the desired pieces are ready, the next step is to do an accurate layout on the material to be inletted. Our method, simply, is to position each piece, and hold it down with a small dowel sharpened like a pencil (with a blunt point to prevent slipping), and using a #3 pencil, an easy-to-follow outline is achieved. An alternate method is to glue the pearl with a very small amount of super glue, Duco cement or white glue, and then use the appropriate solvent to remove it. When using the glued-down method, you must use caution in getting the pieces loose (especially the narrower ones) as they can be easily broken. Some even choose to use a contrasting spray paint, working straight down to avoid a shadow effect, to show the exact shape to relieve, but you should use the method that works best for you.

To actually cut the hole, choose the smallest available burr and follow the *inside* of the lines, much like you would sketch on paper. For the Moto Tool, or flexible shaft and handpiece, a Dremel #108 engraving cutter of a #33½ dental burr (both of which are shaped like a truncated cone) will work well for the outline. Then switch to a larger burr of the same type to remove the rest. The reason for not using a round cutter here is to have the walls square (or even undercut) and not have a radius in the corners to stop the piece. In the past, dental burrs were made of high speed steel and carbide, and for our purpose, the carbides are much preferred. Modern burrs are all carbides, and even the ones your friendly dentist is ready to discard will still have a lot of use left in them for inlaying into wood. The cost, however, is not excessive, and you may want to start your project with new burrs instead.

Some inlay specialists prefer a #111 Dremel engraving cutter, in conjunction with one of the router bases made by Dremel, and this has the advantage of giving an even depth. There are small drawbacks, such as less delicate corners, and some difficulty in getting a light positioned so as to see the outlines. David Nichols (Custom Pearl Inlay, 1 Nell Manor Drive, Waddington, NY 13694) is a source of a much more exotic tool bit for routing with a base, though by comparison, the price is high, and we still prefer to do the relieving freehand.

By relieving inside the lines, you can gradually work toward the most nearly perfect fit, and with practice, you can see where your first outline cuts should be made. Proceed very slowly here, with very light enlarging cuts, and try the pearl piece often. Sometimes, it helps to erase any remaining pencil marks at this point, and as one side of the piece starts to fit into the hole, use the pencil again to show where it has to be relieved to accomodate the pearl. You should also guard against too tight a fit here, as the pearl still has to come out one last time for glueing, and could break if it gets wedged in.

The optimum now is to leave the pearl a few thousandths higher than the wood, as it can easily be sanded flush. Special care must be taken so that none of the corners are lower than the wood, but you can use scraps of sandpaper, masking tape, etc., as glued-in shim stock *in the bottom* of the hole, as the pearl and filler will hide any extraneous material. The next step is to mix a fine, matching wood dust (or commercially available filler) in a two-part Epoxe glue, and we prefer to use the slow variety to let one batch of mix do even elaborate jobs, once everything is in readiness. The 5-minute variety is very useful for smaller jobs, and when a faster end-product is desired.



Trimming a 'snowflake' with the Moto Tool.

By filling the holes with the mix, the pieces are carefully pushed in *level,* leaving plenty of excess squeezed out so there is less danger of gaps in the filler, and the dried material is relatively easy to sand off. We know at least one specialist who uses only clear Epoxe with no filler (the glue picks up the color of the surrounding wood), but it requires very accurate inletting, and would be a logical goal for the novice to strive for.

Once the filler/glue is completely dry, the only remaining step is to sand the inlaid part with the surrounding area flush, and the safest way to do this is to use a sanding block. We prefer 100 grit paper at this stage, and you'll need to use a light, slow stroke to cut fast and still keep the paper from loading up. A periodic, sharp rap against the workbench helps clear the sandpaper, and cleaning the paper with a wire brush is sometimes required.

After all the wood, filler and pearl is completely level, you should change to finer grades of sandpaper, but you'll be surprised how fast professional results will be achieved. For our work on instruments, we don't strive for a highly-polished look such as you would find on jewelry, compacts, and the like, because it has not been traditional to do so.

The supposition that pearl dust is especially hazardous probably goes back to the time when shell products were soaked in a poisonous solution to make them easier to cut. However, as with other dusts which should be avoided, it would be logical to wear some sort of mask for protection. When cutting and smoothing pearl edges with either the Dremel or dentist drill, we work in front of a small squirrel-cage fan that effectively pulls in the dust and carries it away from the person doing the work, but in the case of small, hard-to-hold pieces, it has sometimes also carried away the workpiece, never to be seen again!

There is a difference in the way some brands of Epoxe react, both on unfinished wood and also under lacquer or varnish finishes, the problem being that some brands show an unnatural shiny appearance or swell, with time. A known brand that we prefer is 'Sig' but may not be available at your hobby or hardware store, although the Sig Manufacturing Company, Inc., Montezuma, Iowa 50171, would likely welcome inquiries from you or your local dealer.

To touch briefly on the subject of engraving pearl, it can be as simple as taking a blank to your local jeweler, and having any of his available pantograph patterns followed. The material is not nearly as fragile or hard to work with as some would have you believe, and you can expect excellent results if it can be held firmly on the flat surface of the engraver table, and the cutting bit is small enough and sharp enough for the desired line weight.

Also, if you determine the ratio preferred on any given machine, and the style of follower used, one can make their own plexiglas patterns. For example, to duplicate a hand-engraved effect of a 1930's Gibson MASTERTONE banjo block, we photographed an original and made a 5:1 pattern, and in this way achieved a period appearance in a brand new piece. The 'grooves' cut into the pearl are then filled with jeweler's wax, India ink, or black lacquer, as the finishing step.

Hand engraved mother-of-pearl is a completely separate art form, requiring different tools and skills, and giving a different aesthetic effect. A good example would be a dragon made with a single or multiple pieces of flat shell, set in the wood as in the previous examples, but with very elaborate engraved detail often seen in oriental art. For all the intricacy displayed, the principle is simply to hand-cut varying weight and depth lines into the surface of the inlaid pieces with a variety of shapes and gravers. This is best done after the pearl has been set into the wood, and everything is perfectly level.

A corresponding example would be the elaborate engraving done on some of the metal work of banjos, mandolin and guitar machines and hardware, and especially firearms, where the waterfowl or upland game scenes help personalize the piece for its owner, as well as dictate how high the initial cost and collectors appreciation value will go.

Some instrument makers in this country have favored engraved pearl (Fairbanks and Vega to name two), but our efforts have been directed to other makes and non-engraved styles. There have been occasions to touch up areas that have either been worn or sanded off, and by breaking off the cutting portion of one of the smallest dental burrs and grinding a flat surface tapering out to a tiny point, we've made a tool that works well in the Moto Tool, dental drill or flexible shaft, in small jobs and restoration.

One of the most expert specialists doing hand-engraved pearl is David Nichols (Custom Pearl Inlay), and they can also supply pearl and abalone shell blanks for inlaying, the improved router bit previously mentioned, and hopefully, sources of engraving tools and instructions.

Our background was developed in replicating 5-string necks to made Gibson tenor banjos more useful to their new owners, as the popularity of bluegrass music grew. As our abilities became more widely known, we were asked to copy

Martin guitar inlay patterns, Epiphone, Bacon, Vega and Weymann banjo designs (to name a few of the more popular), personalized items as diverse as a white pearl Martini glass, with abalone olive and bubbles, and finally, a distinctive clear pale abalone inlay pattern, with an occasional 'colored' piece for accent, when the Morgan banjo became a reality in 1975.

In approximately 1962, a stop at John D'Angelico's luthiery shop in New York's Bowery section had yielded a nice stash of precut pearl patterns left over when a local company had gone out of business. Previous visits had produced small quantities, carefully hand-selected, and John (in frustration) offered the rest of his stock for $20.00! Back at home, the mound measured about 8 inches in diameter, and some 1½ inches deep at the center, but contained several thousand pieces of very diverse shapes. Some friends who had the first shot at sorting thru this 'nightmare' allowed the resulting psychiatry bills were likely to be much higher than our original investment!

Our goal in writing this article is simply to pass on some of our experiences to you, the reader. Our background is steeped in the 'do-it-yourself' traditions of the East Tennessee mountains, but the contacts made with woodworkers, luthiers, various suppliers, collectors and institutions, while living in the Washington, D.C. area, has given us a broad overview of the art form.

If you have a piece of oriental furniture with missing inlays, one should first carefully match the material (river mussel pearl may even be closer), and then strive for the style and workmanship of the original pieces, even if it takes quite a bit of practice or 'dry runs' to achieve this. The same analogy applies to a lot of other restoration situations, whether in muscial instruments, jewelry boxes, woodworking, etc., but we would also encourage you to be creative (and just a bit daring), with your own ideas of how inlays can be used to enhance almost anything. There is nothing quite so rewarding as having your own examples of delicately inlaid work to enjoy, and for others to admire, but there is also the liklihood that you will be storing up family heirlooms for the future.

Handsawing an 'M' with the jeweler's saw.

SOURCES: (for tools, instruction, materials, precut patterns and shell blanks)

Stewart MacDonald Mfg., Inc.
Box 900
Athens, Ohio 45701
1-800-848-2273

Morgan Company
Rt. 3, Box 204
Dayton, Tennessee 37321
615-775-2996

First Quality Banjo Supply
5303 Galaxie Drive
Louisville, Kentucky 40258
502-447-5670

L to R: Mary Morgan with custom carved-top autoharp; Tom Morgan with 'mountain style' guitar; Scott Morgan with A-model mandolin.

ABOUT THE AUTHORS

Mary and Tom Morgan, with their son Scott, build and repair instruments in the Morgan Springs community on the Cumberland Plateau, near Dayton, Tennessee.

Dry Sink Hutch

By James M. O'Neill

An excellent combination piece. It is more informal than a hutch and has a more rugged appearance. It need not be placed only in the dining room; it has been used effectively in certain types of kitchens. Storage space is ample and useful. The sink area is often used for abundant sprays of real or artifical greenery.

CONSTRUCTION NOTES

Begin the construction with the end pieces (2). Brad them together to cut identical shapes. Take care that the front surface of the 15 degree angle projection is perfectly straight for a good joint with the front panel. A separate jointed piece could be glued on to make up this triangular areas. Match the grain.

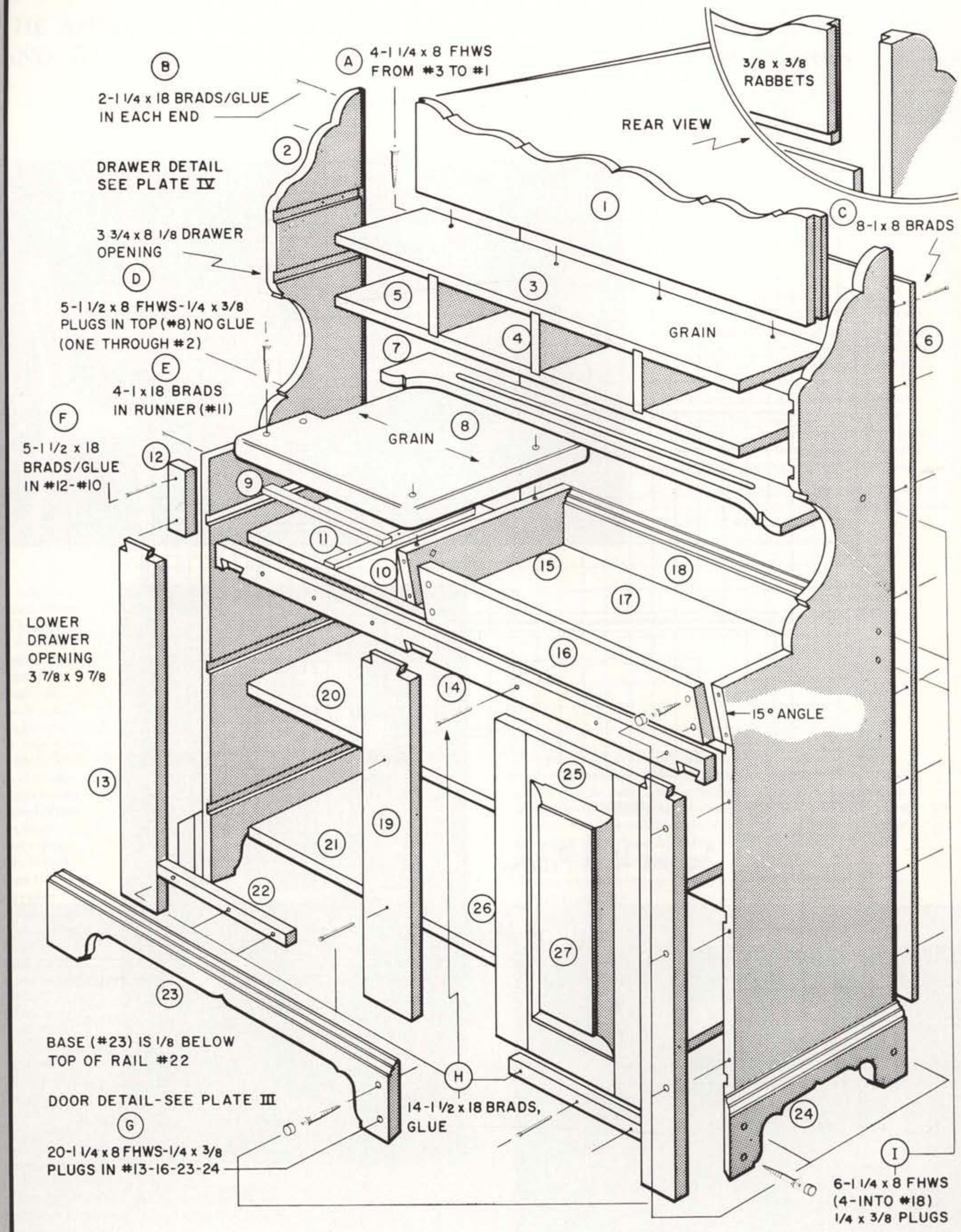
The main stiles are shown as dovetail joints for authenticity. If desired, they can be shortened and simply butted, or dowelled.

Drawer runner (11) is merely a strip bradded in place. Use no glue so adjustment can be made should there be a shrinkage problem of drawer or panels. Thumb tacks may be placed in the upper main partition (17) under the lower edges of the drawer sides to reduce friction.

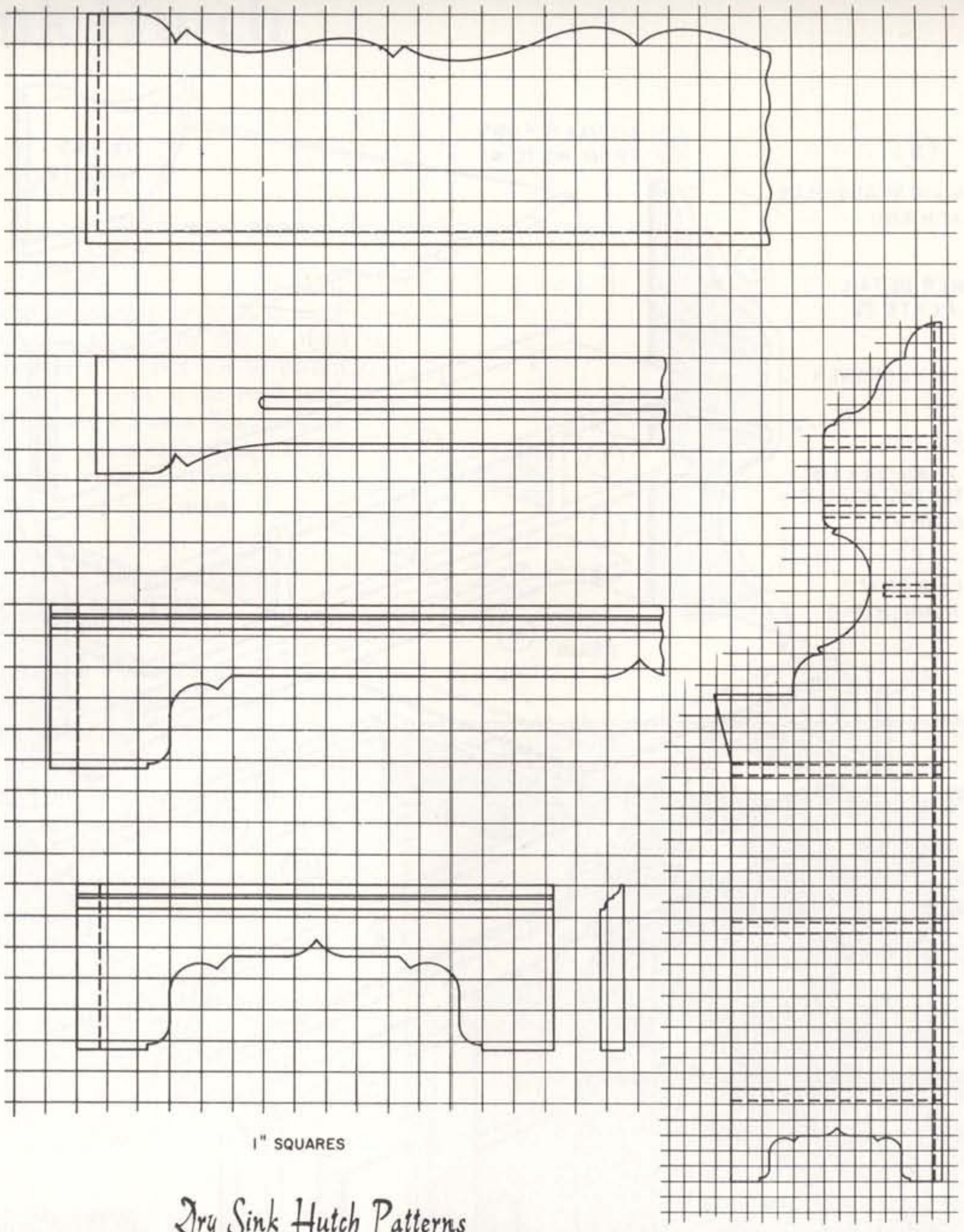
Care should be taken to accurately fit the main top (8) into place with the end piece. It should overhang ¾'' on three sides.

The spoon rack is made with one continuous open slot and should be well rounded to indicate wear. An optional choice may be that of individual spoon holders.

If the rear center skirt (18) does not draw tightly against the rear panel using brads, then two or three ¾'' x 8 wood screws may help.



Dry Sink Hutch



1" SQUARES

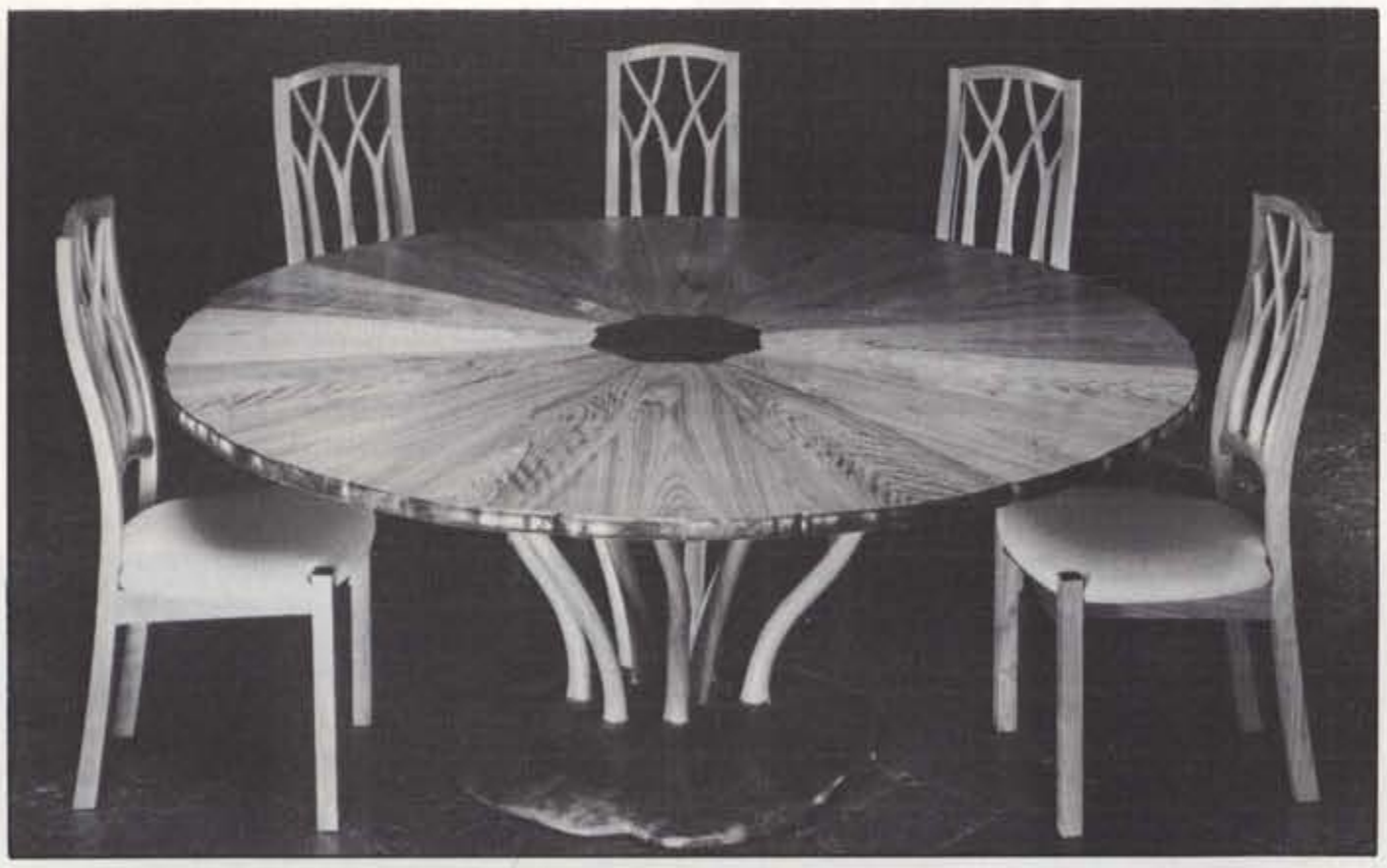
Dry Sink Hutch Patterns

Bill of Materials

PART	QTY.	DESCRIPTION	DIMENSION
1	1	Upper Skirt	¾ x 7 3/8 x 35½
2	2	Ends	¾ x 13¾ x 55¼
3	1	Top Shelf	¾ x 7 x 35½
4	3	Drawer Dividers	¾ x 4½ x 7
5	1	Lower Drawer Shelf	¾ x 7 x 35½
6	1	Back Panel	¼ x 35½ x 47½
7	1	Spoon Rack	¾ x 3¾ x 34¾
8	1	Main Top	1 1/8 x 15¾ x 16
9	1	Upper Drawer Rail	½ x ¾ x 9 7/8
10	1	Upper Right Stile	¾ x 1 x 4½
11	1	Drawer Runner	5/16 x 11/16 x 13¼
12	1	Upper Left Stile	¾ x 1½ x 4½
13	2	Stiles	¾ x 2 7/8 x 25¼
14	1	Upper Rail	¾ x 1¾ x 36¼
15	1	Divider	¾ x 4½ x 14½
16	1	Front Panel	¾ x 4 7/8 x 21¾
17	1	Upper Main Partition	¾ x 13¼ x 35½
18	1	Rear Center Skirt	¾ x 4½ x 20 5/8
19	1	Center Stile	¾ x 4 3/8 x 22
20	1	Center Shelf	¾ x 13¼ x 35½
21	1	Bottom	¾ x 13¼ x 35½
22	2	Bottom Rails	¾ x ¾ x 13 1/16
23	1	Front Base	¾ x 5¼ x 37¾
24	2	End Bases	¾ x 5¼ x 14½
25	4	Door Rails	¾ x 3 1/8 x 10¼
26	4	Door Stiles	¾ x 2 7/8 x 18 7/8
27	2	Raised Door Panels	½ x 8 x 13 3/8
A	4	Flat Head Wood Screws	1¼ x 8
B	4	Brads	1¼ x 18
C	16	Brads	1 x 18
D	5	Flat Head Wood Screws	1½ x 8
E	4	Brads	1 x 18
F	5	Brads	1½ x 18
G	20	Flat Head Wood Screws	1¼ x 8
H	14	Brads	1½ x 18
I	6	Flat Head Wood Screws	1¼ x 8
J	5	Porcelain Knobs	7/8 dia.
K	2 pair	H-L Hinges	3
L	2	H-Latches	3

Worth Looking At

THE AMERICAN WOODWORKER TAKES A PICTORIAL VISIT TO ENGLAND AND THE FURNITURE DESIGNS OF JOHN MAKEPEACE AND FRIENDS.



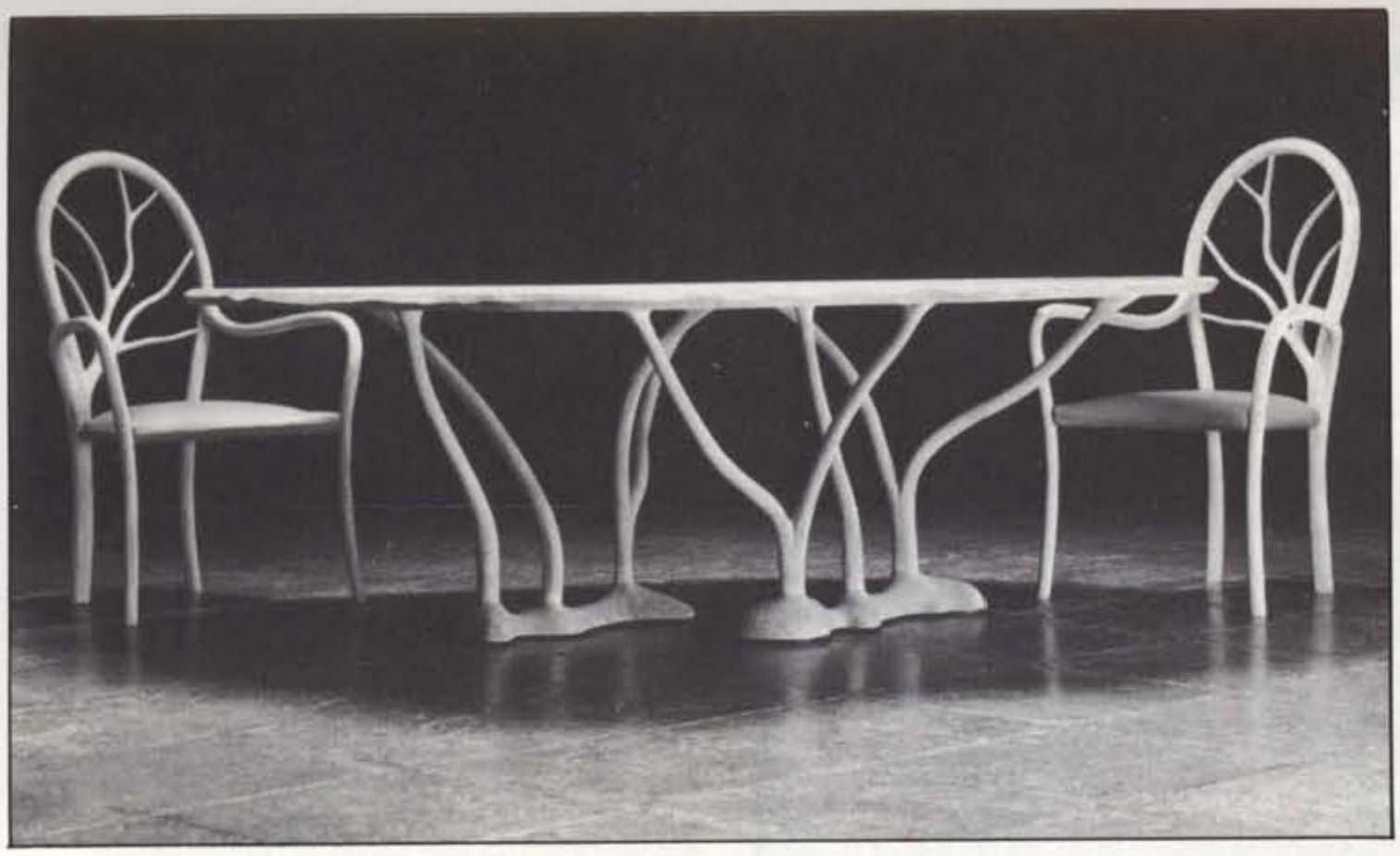
A dining room table and chairs in English wild cherry and burr elm. The table top is made up of a marquetry of cherrywood 'petals' with burr elm 'stamens' and edge details, supported on a central but irregular cluster of laminated and cherrywood legs springing from a central mound carved out of solid burr elm. The comfortable cherrywood and leather chairs give excellent lumbar support. The pierced backs of the chairs extend the natural forms of the table base in tree-like forms carved out of the solid.

Designed by John Makepeace and made in his workshops at Parnham House by Derek Christison 1983/84.

A sophisticated cabinet in English yew wood, designed by John Makepeace and made in his workshops by Alan Amey (1983).
In plan, the shape is comprised of four segments, and a quadrant at each corner. In elevation each segment contains two areas for book storage and a set of cedar of Lebanon lined drawers with ivory handles. These vary in depth and length to utilize all the enclosed space and to provide for the storage of writing and sewing materials. The open shelves are lined with the same buffalo suede as that used for the drawer linings and the top of the cabinet.
The three major horizontal elements that divide the elevation have decorative mouldings, finishing in a flared plinth concealing castors.
The main vertical structural elements are lipped and veneered with matching saw-cut veneers, and the curved drawer fronts are laminated. All the yew has been cut from the same tree.

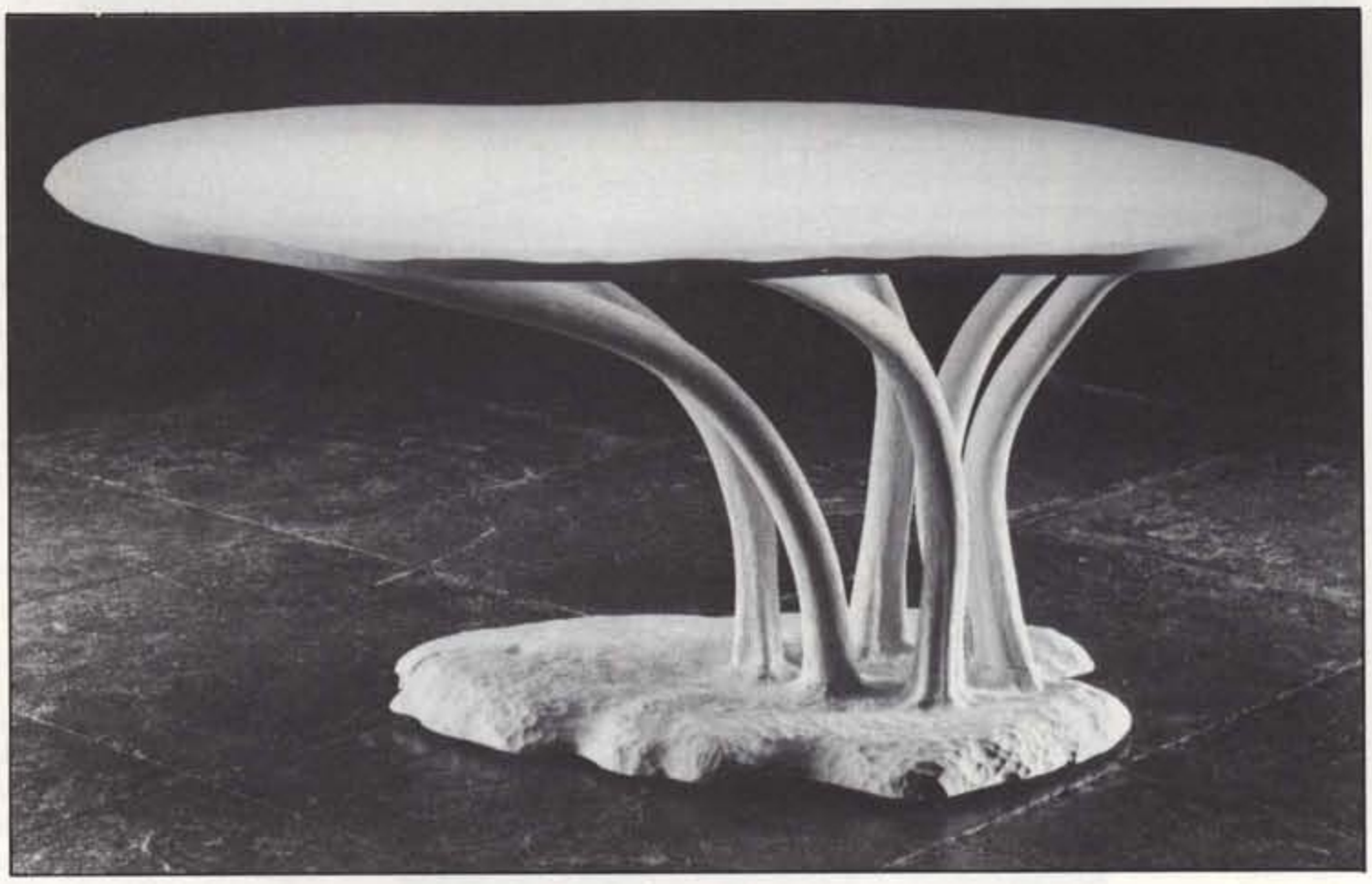
A dressing table of English cherrywood. It is made in an unusual way: the sturdy top is held flat by four dovetail cleats running from the front to the back. These provide the means of securing the top of the legs and suspending the three drawers which slide on central runners. The drawer slides taper at their top edge to accommodate the angles of the cleats. Each drawer contains a sliding tray, lined with hand-made marbled paper.

Designed by John Makepeace and made in his workshops by Adrian Foote 1984.



Dining Table and Chairs in English oak. This group has been designed for a room with a semi-circular window projecting into woodland and overlooking a pond. The timber has come from two trees of oak — a heavily burred one used for the table top and feet, the other straight-grained for the laminated and carved table legs and the six chairs. The boards for the top have been cut to provide matching grain on the top and bottom, with matching edge. The chairs have leather upholstery.

Designed by John Makepeace and made in his workshops at Parnham House, Beaminster, Dorset by Derek Christison, 1983.



A low table in English burr and plain oak has been designed for casual use alongside a relaxing chair, and to take up the theme of decoration in the room of birds, trees and plants. From a carved base of solid burr oak, a copse of six trees, each made of twenty layers of timber, support a canopy of irregular shape in the form of a table top. Carefully matched veneers of burr oak, lipped with matching edges, enable the table to be light but strong. The whole piece has then been scrubbed to a pale colour, as if exposed to the elements over a long period.

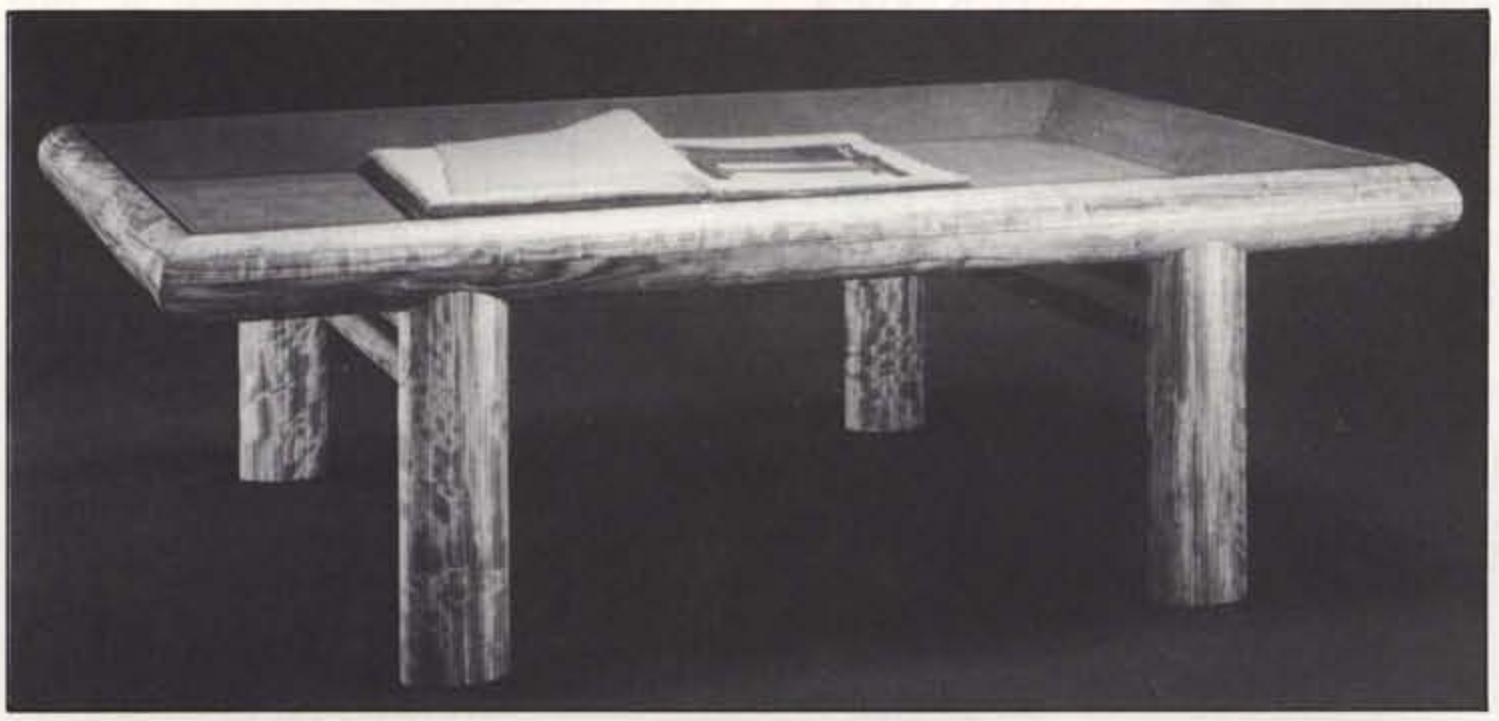
Designed by John Makepeace and made in his workshops by Andrew Millward 1984.

A low table in English plain and burr elm. All the timber has come from the same tree, some of it burred, some plain. The construction is unusual; the top is made as a thick but hollow platform. Where the legs join the top, there are carved features above and below the table.

Designed by John Makepeace and made in his workshops by Alan Amey 1983.

A Work Chair. Designed for use in conjunction with the built-in shelving and desk, the chair has a low back. Pivoted on each side are arms, with a work surface on each — to accommodate a telephone, pad and pencils, and an index on the opposite side. Alternatively, the surfaces on each side can be angled to produce convenient slopes for writing and reading. The main structure of the chair is made of Paldao from the Phillipines, with a specially tanned leather for the upholstery of the seat and the binding of the working areas. Specially made brass fittings limit the rotation of the arms and work surfaces.

Designed by John Makepeace and made in his workshops at Parnham House by Alan Amey 1983.



A low display table. Philipino paldao, buffalo suede and float glass. The central panel slides out so that the contents can be arranged without moving the glass.

Designed by John Makepeace and made in his workshops by Adrian Foote.

The American Woodworker would like to share your work with other readers. Send black and white glossy photographs along with descriptions of the items. Photographs should be of professional quality. Snapshots, polaroids, etc. cannot be used. $25.00 will be paid for each picture used. Include a SASE for return. Send all material to:

Worth Looking At
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Sawing & Grading Wood

By Christian Becksvoort

METHODS OF CUTTING

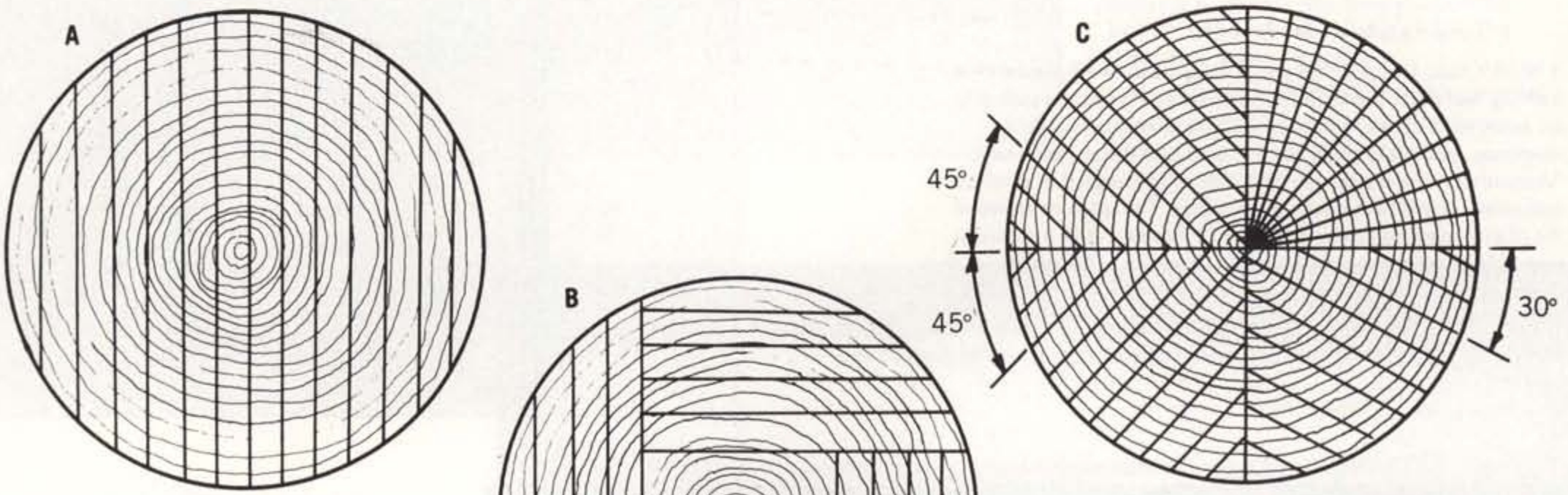


Fig.—1. (A) Plainsawn wood, "through and through." (B) Plainsawn wood, by "sawing around" (boxing the heart). (C) Quartersawn wood (45°), rift-sawn (30°), and true quarter.

There are two general methods of sawing lumber, plainsawn or flat-sawn, and quartersawn or rift-sawn (figure 1). Plainsawn wood is by far the cheaper, more common, and more readily available. Some sawmills will not even attempt to quartersaw.

Plainsawn (in hardwood) or flat-sawn (in softwood), as the name suggests, is a relatively simple method by which the log is passed through the blade in the same position until it is completely sawn into boards. A variation, called sawing around, involved cutting until defects are encountered, then turning the log 90°. Plainsawing is cheapest and most efficient because it involves very little rotation of the log during the cutting process and leaves very little waste. By definition, flat-sawing means that the angle of the growth rings is between 0° and 45° to the wide surface of the board. This results in the wide-figure patterns seen on the faces of plainsawn lumber (figure 2). To some, this pattern is much more attractive than quartersawn wood. Knots, when present, are round or oval; thus the board is stronger than a quartersawn board (which usually has spike knots across the entire face of the board). Plainsawn wood is less likely to collapse in the kiln and shrinks and swells less in thickness.

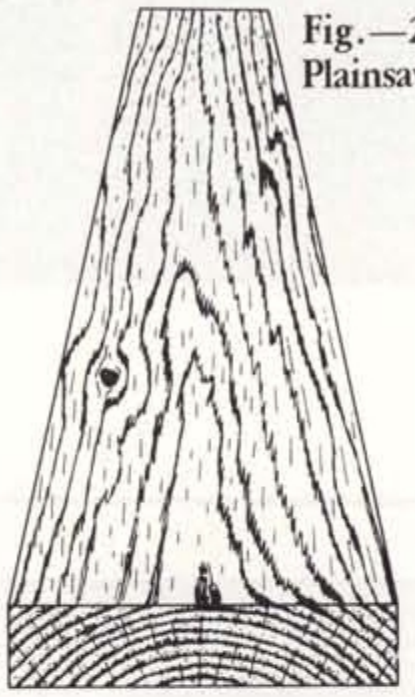


Fig.—2. Plainsawn board.

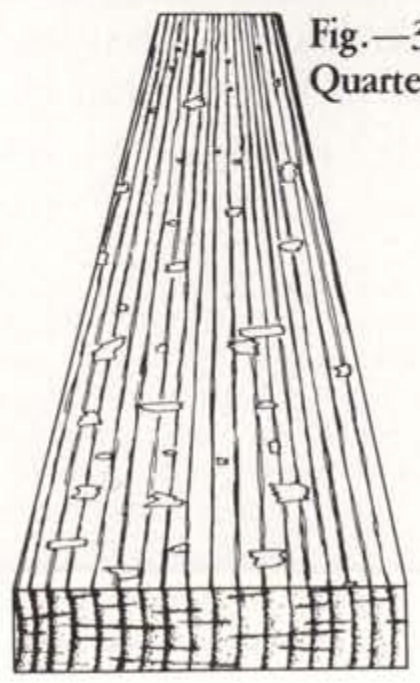


Fig.—3. Quartersawn board.

Quartersawn (in hardwoods) or vertical - or edge-sawn (in softwoods) is a little more complex. The log is first sawn in half, longitudinally, then each half is again sawn in half, resulting in four equal quarters (see figure 1). These are then tipped on their points (the pith or center of the log) and sawn in one of several ways. Most commonly, the quarter is just sawn through and through, with the blade at 45° to the two flat edges of the quarter and all saw cuts parallel to each other. An older and more difficult method is to set one flat edge of the quarter almost parallel to the blade and then cut a series of thin, pie-shaped boards. This involves repositioning the log after each cut so that the blade passes through the point of the quarter each

time. Old clapboards were almost always sawn this way. Rift-sawing, a variation of quartersawing, means that the flat sides of the quarter pass at 30° and 60° to the saw blade. True quartersawn wood has the growth rings at an angle of 60° to 90° to the wide face of the board. Rift-sawn wood has the growth rings running 30° to 60° to the wide face. Quartersawn wood lacks the large figure pattern of plainsawn wood. Instead, it shows a series of parallel lines, the edges of the growth rings. Species with conspicuous and long rays, such as oak, form a beautiful fleck pattern. The biggest advantage of quartersawn wood is that there is almost no cupping or twisting and only a minimum of shrinking and swelling across its width. There is usually less surface checking, and raised grain caused by ring separation is less pronounced. In use, it wears more evenly and holds paint and finishes better, depending on the species. Sapwood is confined to one edge of the board, and is limited to the width of the sapwood in the log.

A close look at the plainsawn lumber in figure 1 shows that if the wood is sawn through and through, a few boards next to as well as above and below the pith will be quartersawn, since the sawblade passes almost directly through the center of the log at this point.

When to use quartersawn or plainsawn wood? Quartersawn is preferred under circumstances in which warp, shrinkage, and expansion must be kept to a minimum and when wear is an important factor. For example, quartersawn wood is preferred in floors where the boards are subject to wear and must remain flat, and where the gaps between them must be kept as small as possible. Quartersawn wood is also ideal for clapboards, where warping, shrinkage, and expansion must be minimized, as well as for door frames, any frame construction, and unsupported shelves or breadboards. On the other hand, when the appearance of the wide, flowing figure of plainsawn wood is desired and the wood is properly restrained to prevent warpage, plainsawn wood is the proper choice. For panels in frames, case sides, drawer fronts, and even tabletops, as long as the wood is given room to move (as in a frame and panel) and supported to prevent warping (as in a dovetailed corner), plainsawn wood is fine.

Since plainsawn lumber is much cheaper, more common, and easier to find, quartersawn wood cannot always be used where it best suits. Out of necessity, any available lumber must therefore be substituted. Allowances must be made to provide for shrinkage and expansion.

GRADING LUMBER

Hardwood is graded into three categories, depending on its use and market: finished market products, dimension parts, and factory grades. Finished market products are cut and graded at the mill in their finished form; there is little or no remanufacturing involved. These products include flooring (by far the largest volume), siding, ties, lath, construction boards, trim, molding, stair treads, and risers. Both dimension parts and factory grades are intended for remanufacture. The difference is that dimension parts are graded on overall clarity, while factory grades reflect the proportion of a piece that can be cut into useful smaller pieces. Factory-graded lumber is most commonly available at lumberyards and is also sold to furniture manufacturers. Consequently, the grading for this type of lumber is the most important for the woodworker. Rules for grading are those established by the National Hardwood Lumber Association. The grades, from best to worst follow: Firsts and Seconds (FAS), Selects (Sel), Number 1 Common, Number 2 Common, Number 3A Common, and Number 3B Common. The standards for each grade are quite complex and include allowable minimum width and length, and the number of cuttings allowed per board to produce a given percentage of clear wood. For example, FAS has a minimum allowable width of 6 inches (15 cm) and a minimum length of 8 feet (2.4 m). The board can be cut up to three times, depending on the length, and must yield 91⅔ percent clear wood, with a minimum cutting size. On the other hand, Number 3B Common lumber has a minimum width of 3 inches (7.5 cm) and a minimum length of 4 feet (1.2 m). The board can be cut an unlimited number of times to produce a clarity of only 25 percent. Defects taken into consideration when counting the number of cuttings include knots, checks, wane, bark, rot, and insect damage. Sapwood is not considered a defect. A complete listing of standards for each grade is shown in figure 5.

The grading of softwood is a different story. There are nine or more private organizations, each of which sets standards for one or more species of softwoods. For example, both the Northeastern Lumber Manufacturers Association, Inc., and the Northern Hardwood and Pine Manufacturers Association set standards for white pine. In general, softwood lumber is divided into construction lumber and lumber for remanufacture.

Construction lumber consists of stress-graded, nonstress-graded, and appearance lumber. Stress-graded lumber is 2 inches (5 cm) and thicker, and is graded not to appearance but for strength. It is used for studs, joists, posts, beams, and stringers. Nonstress-graded lumber is used for siding, shelving, paneling, and subflooring. Grades in this category are No. 1, No. 2, No. 3. Appearance lumber is graded for appearance only, not structural integrity. Graded B and Better, C and Better, and D, it is used for finish work, trim, flooring, ceiling, casing, and built-in cabinet work.

Lumber for remanufacture is composed of several categories, each with its own rules and standards. These include factory or shop grades, industrial clears, structural laminations, and various other standards for molding, ladders, tank, pole, and pencil stock.

For the small-woodlot owner who uses his own stock, these rules are of no real consequence. To anyone cutting and sawing for resale, however, as well as the woodworker purchasing wood from a mill or lumberyard, the rules covering the specific wood type should be known and understood.

About The Author

Christian Becksvoort is a cabinetmaker and a contributing editor to ***The American Woodworker.***

Fig.—5. Standard Hardwood Cutting Grades[1]

Grade and lengths allowed (feet)	Widths allowed	Surface measure of pieces	Amount of each piece that must work into clear-face cuttings	Maximum cuttings allowed	Minimum size of cuttings required
	In.	Sq. ft.	%	Number	
Firsts:[2]					
8 to 16 (will admit 30 percent of 8- to 11-foot, ½ of which may be 8- and 9-foot.)	6+	4 to 9	91⅔	1	4 inches by 5 feet, or 3 inches by 7 feet
		10 to 14	91⅔	2	
		15+	91⅔	3	
Seconds:[2]					
8 to 16 (will admit 30 percent of 8- to 11-foot, ½ of which may be 8- and 9-foot).	6+	4 and 5	83⅓	1	Do.
		6 and 7	83⅓	1	
		6 and 7	91⅔	2	
		8 to 11	83⅓	2	
		8 to 11	91⅔	3	
		12 to 15	83½	3	
		12 to 15	91⅔	4	
		16+	83⅓	4	
Selects:					
6 to 16 (will admit 30 percent of 6- to 11-foot, 1/6 of which may be 6- and 7-foot).	4+	2 and 3	91⅔	1	Do.
		4+	see[3]		
No. 1 Common:					
4 to 16 (will admit 10 percent of 4- to 7-foot, ½ of which may be 4- and 5-foot).	3+	1	100	0	4 inches by 2 feet, or 3 inches by 3 feet
		2	75	1	
		3 and 4	66⅔	1	
		3 and 4	75	2	
		5 to 7	66⅔	2	
		5 to 7	75	3	
		8 to 10	66⅔	3	
		11 to 13	66⅔	4	
		14+	66⅔	5	
No. 2 Common:					
4 to 16 (will admit 30 percent of 4- to 7-foot, ⅓ of which may be 4- and 5-foot).	3+	1	66⅔	1	3 inches by 2 feet
		2 and 3	50	1	
		2 and 3	66⅔	2	
		4 and 5	50	2	
		4 and 5	66⅔	3	
		6 and 7	50	3	
		6 and 7	66⅔	4	
		8 and 9	50	4	
		10 and 11	50	5	
		12 and 13	50	6	
		14+	50	7	
No. 3A Common: 4 to 16 (will admit 50 percent of 4- to 7-foot, ½ of which may be 4- and 5-foot).	3+	1+	[4]33⅓	see[5]	Do.
No. 3B Common: 4 to 16 (will admit 50 percent of 4- to 7-foot, ½ of which may be 4- and 5-foot).	3+	1+	[6]25	see[5]	1½ inches by 2 feet

[1]Inspection to be made on the poorer side of the piece, except in Selects.

[2]Firsts and Seconds are combined as 1 grade (FAS). The percentage of Firsts required in the combined grade varies from 20 to 40 percent, depending on the species.

[3]Same as Seconds with reverse side of board not below No. 1 Common or reverse side of cuttings sound.

[4]This grade also admits pieces that grade not below No. 2 Common on the good face and have the reverse face sound.

[5]Unlimited.

[6]The cuttings must be sound; clear face not required.

SOURCE: U.S. Forest Products Laboratory, *Wood Handbook*.

Band Sawn Boxes

by Paul Haines

As unlikely as it may seem there are many fine craftsmen here in the entertainment capital of the world. Hidden in little corners among the glitter of lights and life in the "fast lane" there are those of us who live normal lives and practice our craft as artists and craftsmen, just as those anywhere else.

Myself; a native Las Vegan employed in the local industry for many years needed a creative outlet which was missing in my work. Always into arts and crafts, I found woodworking to be the craft to which I gravitated. Eventually, I dropped the others, unless I incorporated them into my woodwork.

My interest in woodworking has snowballed over a period of 15 years and has been an obsessive interest for the last five of those years. What started out as a hobby has turned into a profession. My work seems to be gaining more acceptance as time goes on. I'm striving for a position where I can quit doing commission work (except when an exciting job comes along) to have enough favorable work to be able to do what I want and have a market for that work.

Wood; being a naturally warm and sensuous material keeps me in continual anticipation of what it will do and how it will react. This anticipation creates energy and excitement while working toward creating an original piece. I've had to learn not to prejudge a piece of work. Many times something unfinished just didn't seem so great, then once completed, turned out to be spectacular.

To me, one of the greatest pleasures is putting the first coat of oil on an original piece. One has to be there and see it for themselves to appreciate that thrill! The problems have been solved, the tedium has ended, its a relaxed time, almost festive. It's like opening a Christmas present. The lifeless object is there, but it hasn't truly come to life. It could be comparable to the stages in the development of a butterfly going from cocoon-like in color to having a vibrant rich life of its own. For the artist-craftsman, the challenges are twofold; design, plus the ability to make that design a reality. While a piece may seem simple, there is a point where one has to stare at a blank piece of paper, find the subject, get it on paper, then make the hundreds of construction and design decisions to finally have the piece become a reality.

I try not to be too rigid in the shape that I impose on the material. I listen to the wood and let it help lead me to the final design. If you go against the wood, your design will never seem natural.

I have no particular philosophy about my work, unless you could call just pure joy in the creative process philosophy. I don't concern myself about trying to make a statement of any kind through my work. I merely strive for a pleasing, creative, well-crafted design.

I like to keep exploring, to avoid getting in a rut, becoming bored with the work (horrors), or just plain burned-out.

At the present time I'm designing and building containers, particularly bandsaw boxes. This technique is fast (usually). It's just letting your imagination run wild. There seems to be few restrictions and the

Curved Lid Box

possibilities are endless. I've made at least 100 boxes; all of them different. Most of these are craft quality. Some are what I like to think of as show quality. I find these boxes to be so much fun to do. They're instant gratification, which most of us as woodworkers need at times between tedius, precision pieces.

I'm doing mostly boxes of consumer quality, as I plan to do three or four good West Coast craft shows a year. I do a series of these boxes in between major commission projects. Occasionally, I create a box of show quality. These boxes are not for sale because I am accumulating a collection to use for show purposes.

I enjoy the exploration of the woodworking processes and want to create designs in which I find pride and satisfaction. Of course, it's a giant plus if these designs enjoy public acceptance. I want very much to be able to point at what I've done with pride. If you need a "break" from more complex projects, or if you need a quick fun project for yourself or as a gift, try one or more of these boxes.

CURVED LID BOX

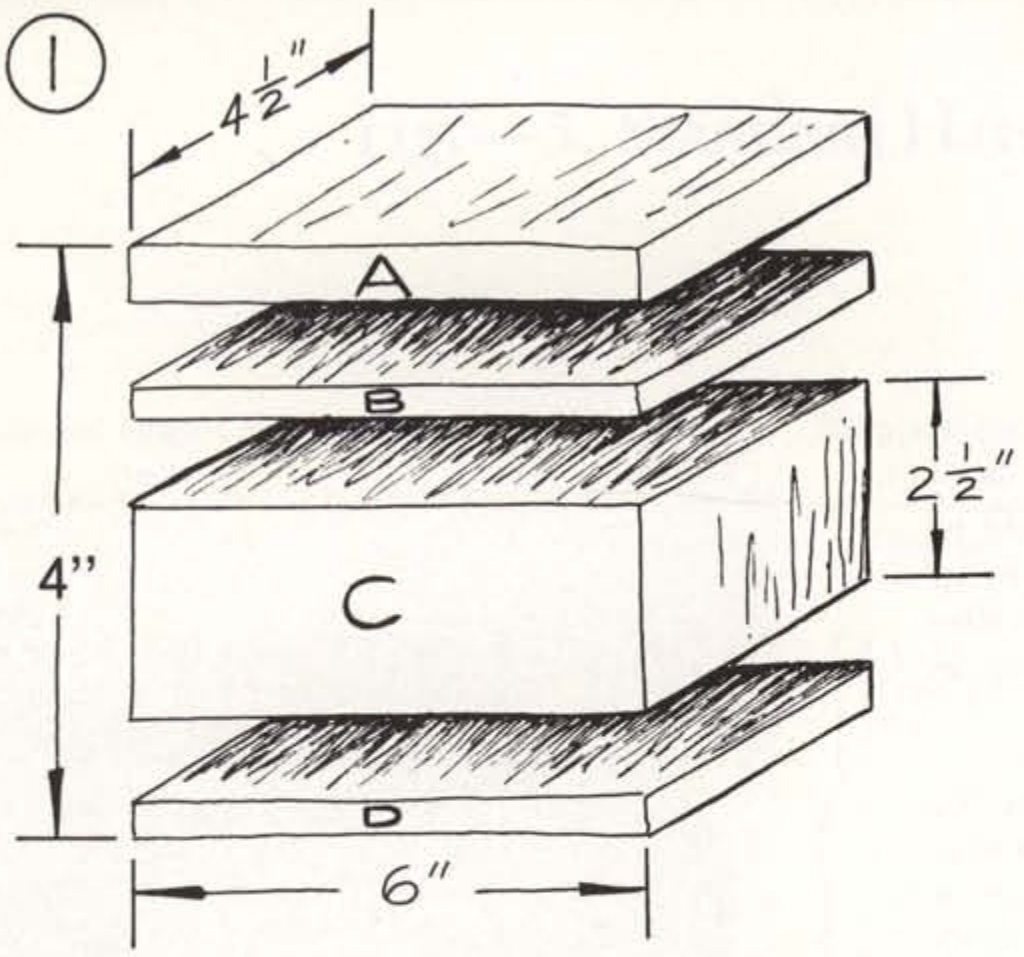


ILLUSTRATION 1

1. Laminate stock to make up block (C).
2. Mill two 3/8'' pieces (B & D). These will be the bottom of the box (D), and the bottom of the lid (B).
3. Mill a ¾'' piece of same dimension for the top of lid (A).

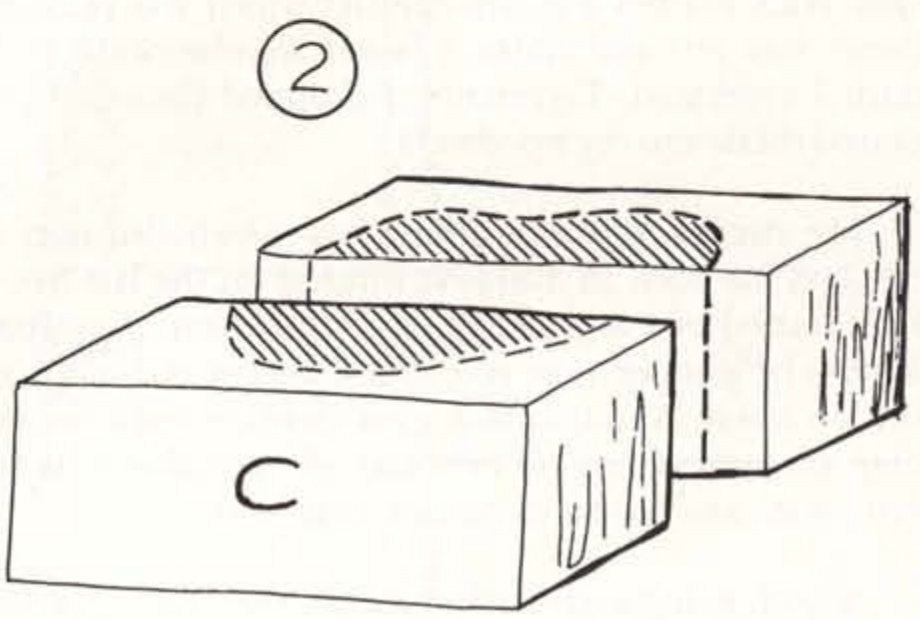


ILLUSTRATION 2

4. Cut body of block (C) in half lengthwise.
5. With the band saw, cut out the shaded area, and discard.
6. Glue body back together.
7. Align body (C) above piece (B) and draw outline of interior onto piece (B) and cut out. This is the bottom of the lid. (See Illustration 5).
8. Glue piece (D) to the bottom of the body (C).

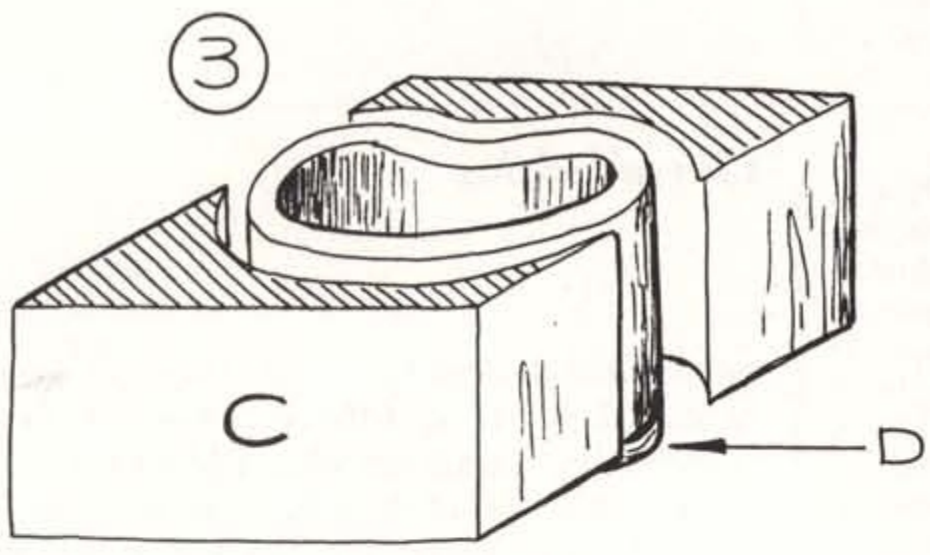


ILLUSTRATION 3

9. Cut the outside off. You now have a rough box with a bottom, but no lid.

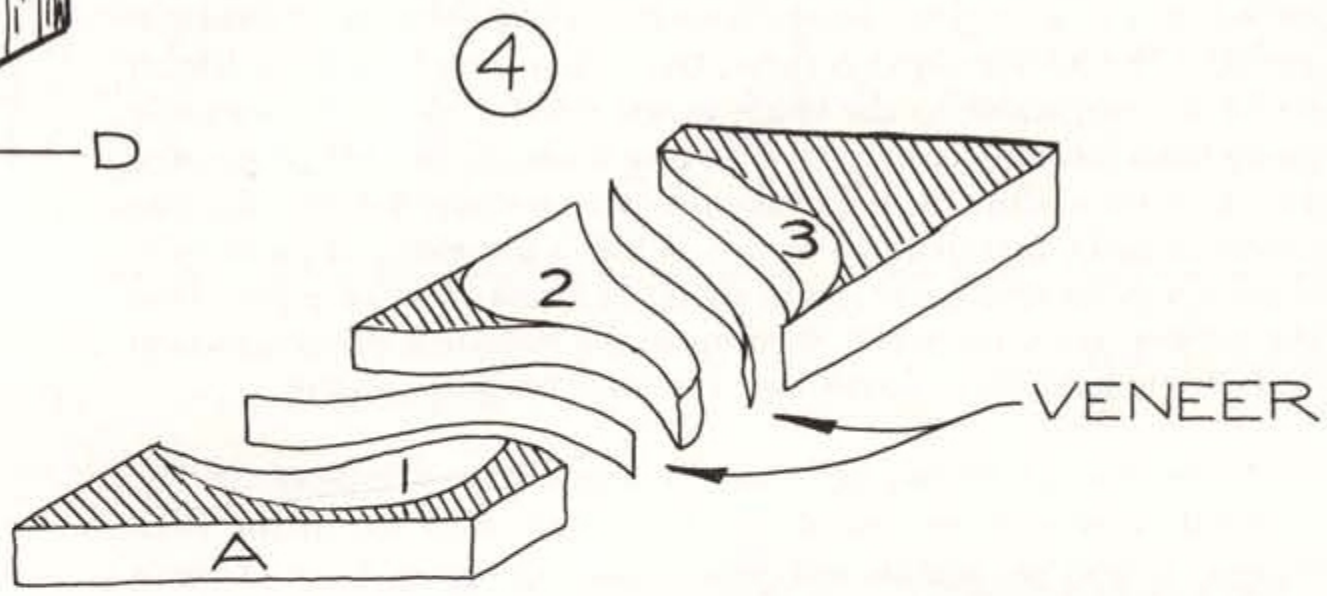
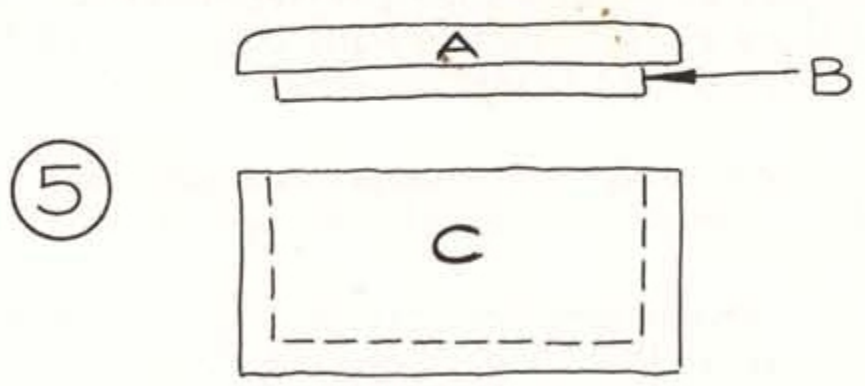


ILLUSTRATION 4

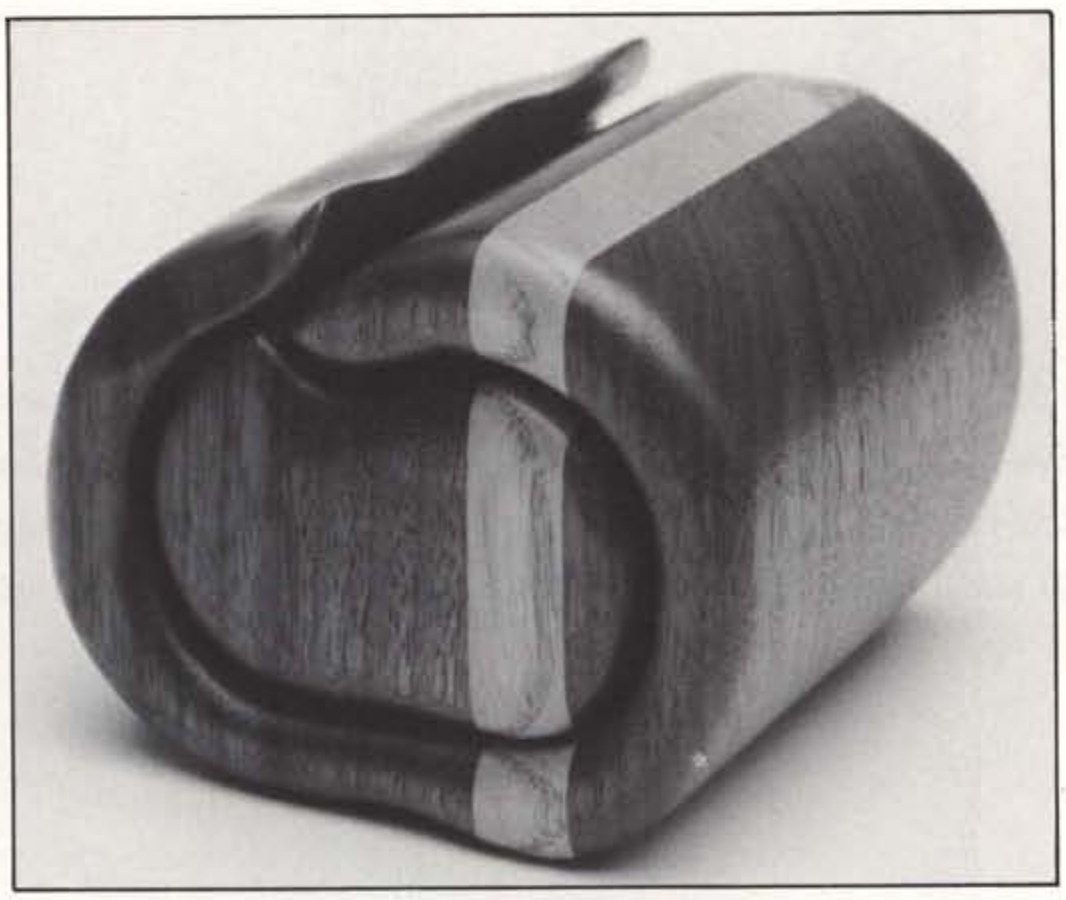
10. Draw outline of outside of box onto piece (A), then draw your design inside of this outline.
11. Cut individual sections of this design (1,2, & 3) on band saw.
12. Glue veneer the thickness of band saw kerf to cut line of sections 1 & 3, then clamp this whole assembly back together. (Note: there is no glue between veneer and section 2).
13. When dry, take sections apart again, round and sand all edges dramatically.
14. Now apply glue to free side of veneers and section 2 and clamp all three sections together again.
15. Band saw scrap off outline.

ILLUSTRATION 5

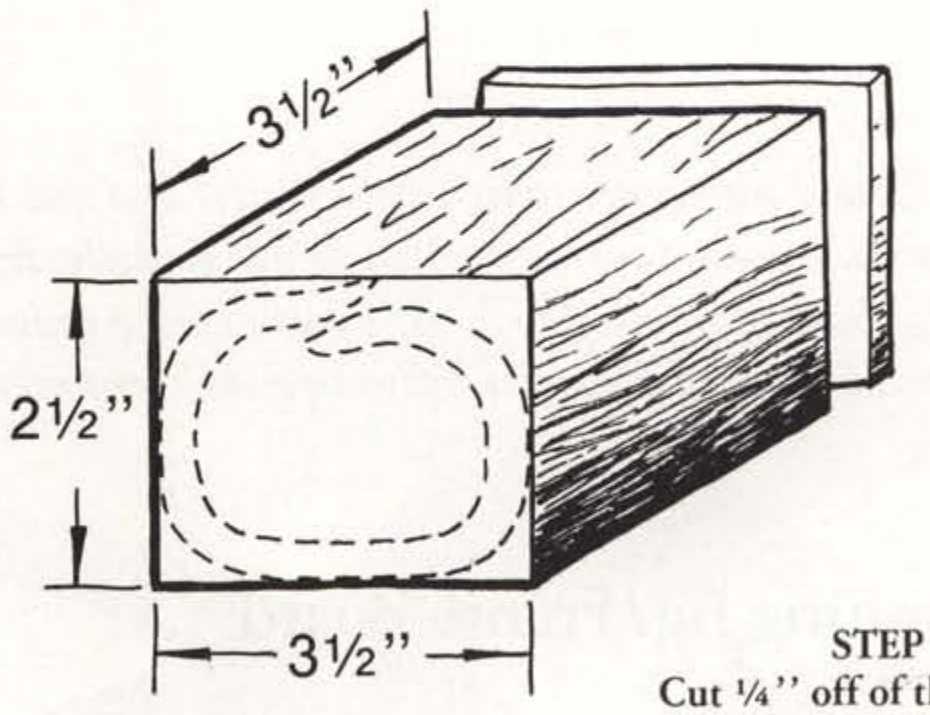
16. Fit and glue piece (B) to the bottom of the lid and you have a perfect fitting lid.



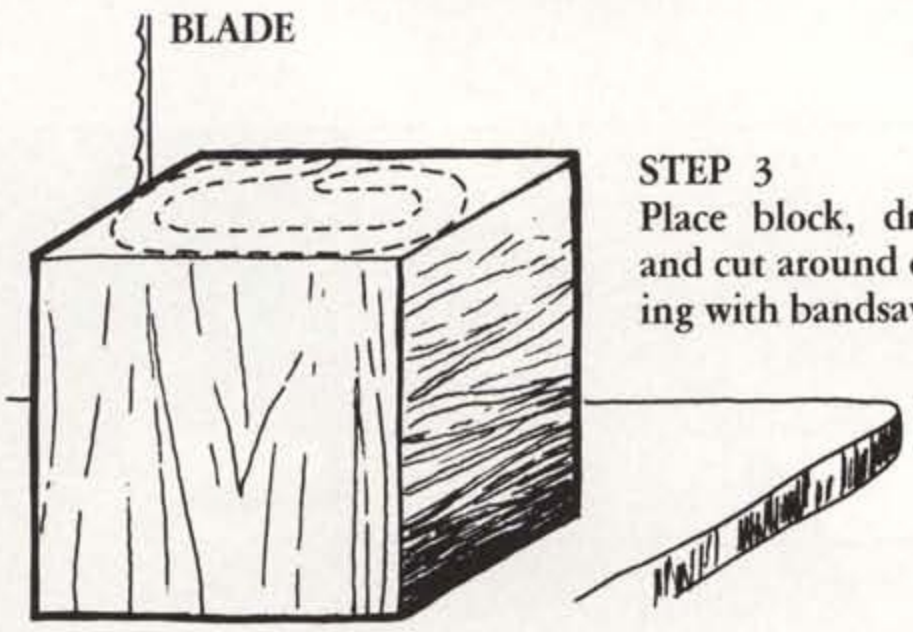
CONCH BOX



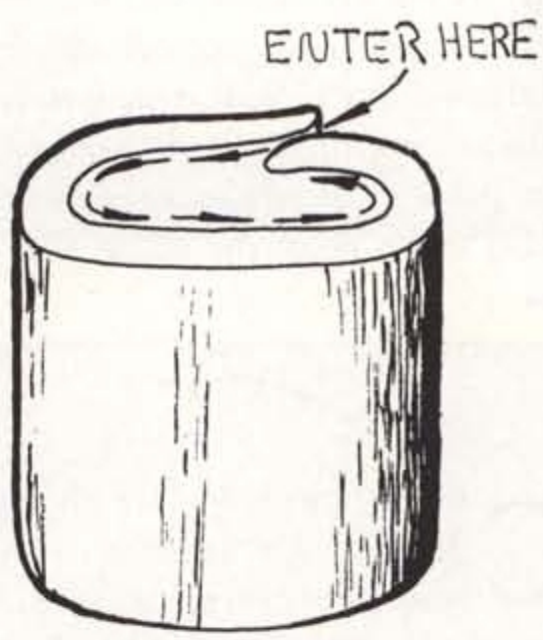
STEP 1
Draw face of box on block



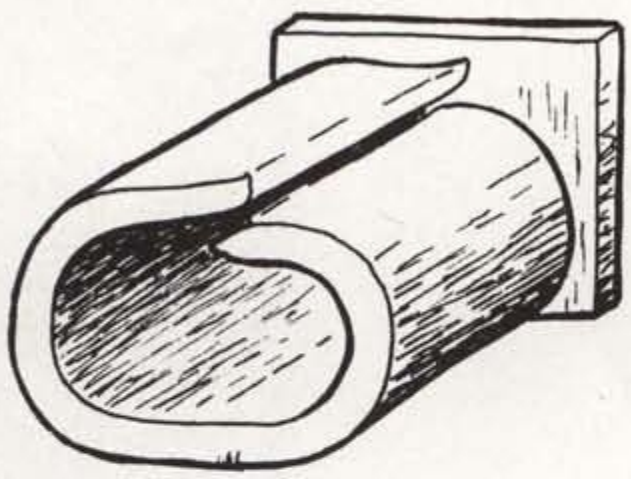
STEP 2
Cut ¼" off of the back. Make this as clean a cut as possible.



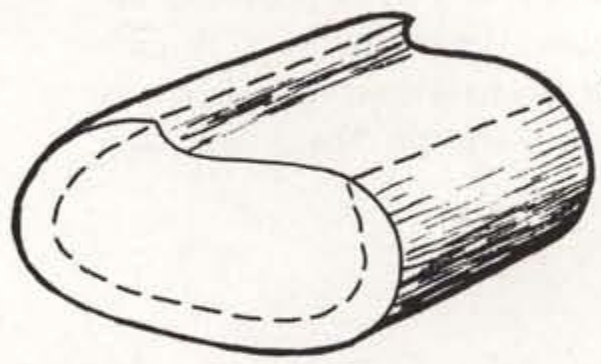
STEP 3
Place block, drawing side up and cut around outside of drawing with bandsaw.



STEP 4
Now, very carefully cut inside out, as it will become the drawer. Set aside this piece for use in Step 6.



STEP 5
Glue the ¼" piece back as close to its original position as possible. Cut with band saw on the outside circumference to follow form of box.



STEP 7
Cut out as indicated, leaving a shell. Sand the interior, glue the front and back pieces back on and you have your drawer.

STEP 6
Take the piece from Step 4 which will be the drawer and cut ¼" off both ends. These will be used in the next step.

STEP 8
Make a drawer pull, or drill a hole in the back of the box then glue a button of the same dimensions on the back of the drawer so drawer can be pushed out from behind. This particular piece is made of walnut and ash, finished with several coats of oil. The inside of the drawer is finished with a pleasant scented blend of oils (my own formula) as I find that regular oil tends to leave an unpleasant odor. You may substitute mineral oil.

Picture Frames

Some Tools and Methods To Make The Job Easier

By Dennis R. Watson

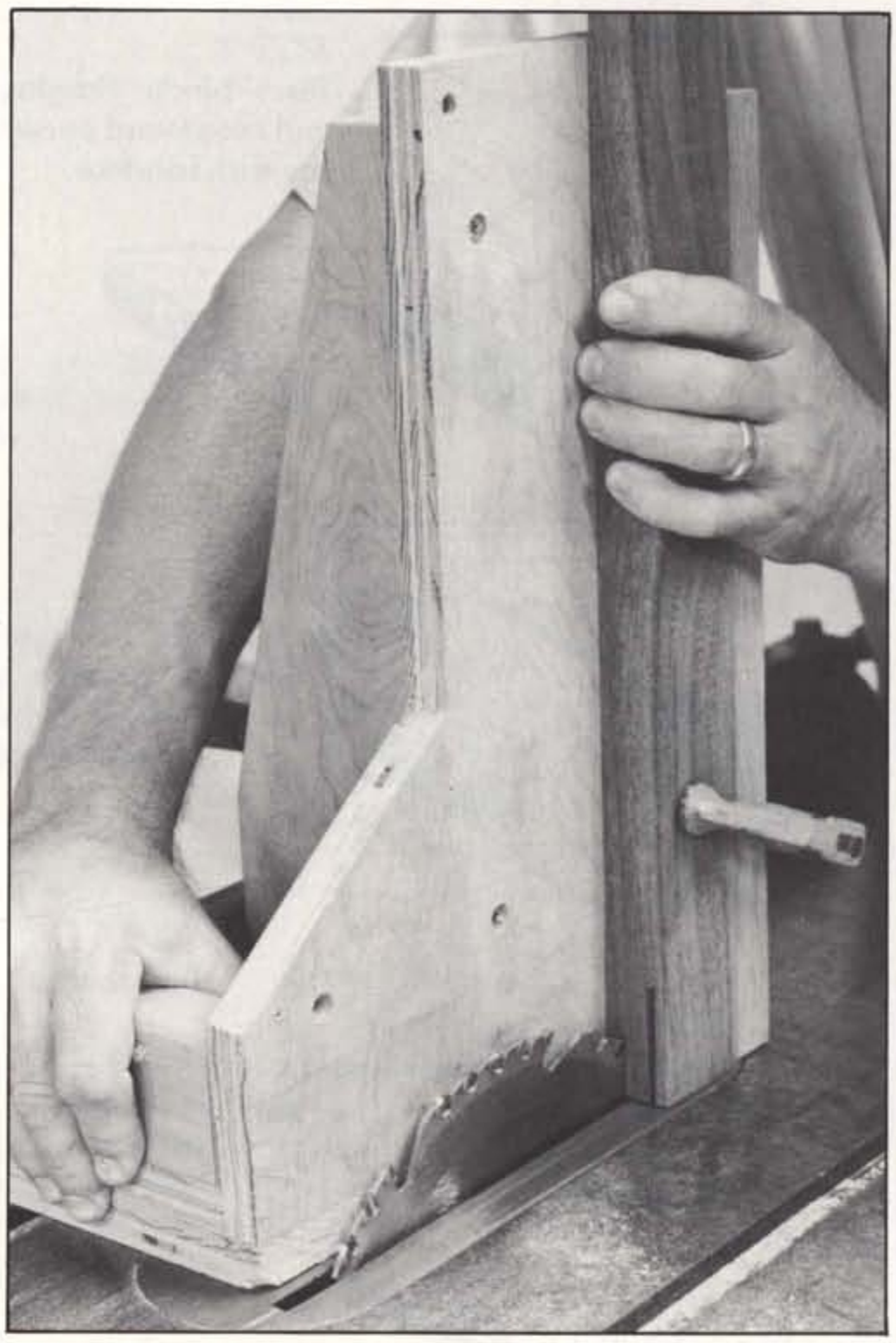
Picture frames are some of the easiest and quickest projects you can make if you have the right equipment and use the correct methods. This article actually describes two projects. The first shows how to construct a simple jig that can be used to cut the groove for a spline used in the picture frame. It can also be used to cut other joints. The second project details some different methods used in producing picture frames. We will begin with the jig.

Tenoning Jig / Frame Board

The tenoning/spline jig is a simple homemade jig which holds a board vertical while the board/jig is moved along the rip fence through the blade. The jig and a sharp blade will cut a clean, true groove for a spline, the cheek of a tenon or open mortise. A groove for a corner spline can be cut through a 45 degree miter joint with the addition of the frame board which holds the frame at a 45 degree angle to the table saw.

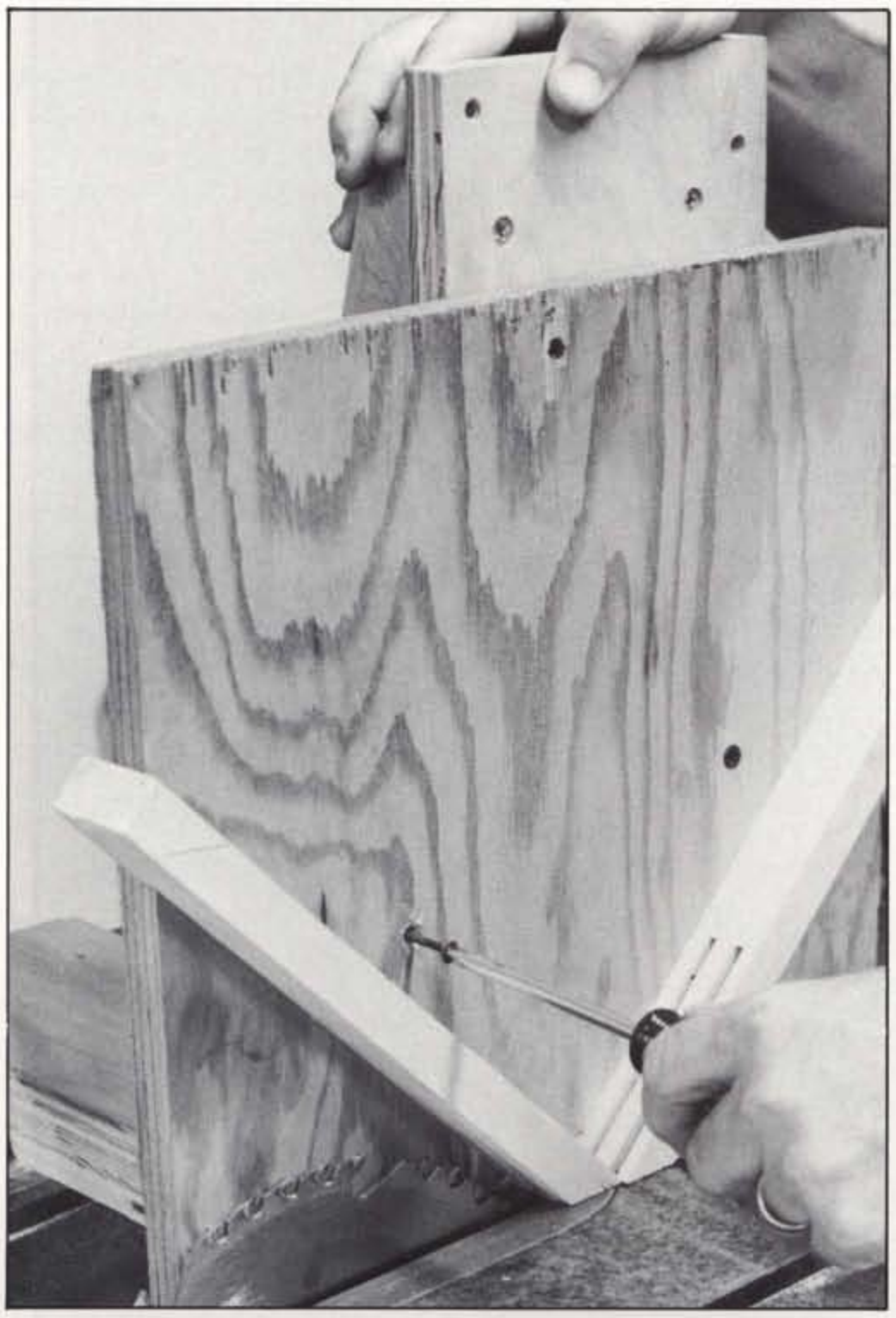
Cut two pieces of ¾ inch plywood, one 4¾ inches wide, the other 5½ inches wide and glue them together for the base. The difference in width forms a rabbet for the vertical piece which is glued and screwed to the base. Clamp the two braces in place and check to see if the vertical piece is square to the table, then glue and screw them in place. I added a couple of hardwood blocks, the front one is a hand hold and the rear one provides a clamping surface. Screw the ¾ x ¾ inch back-up board in place, don't glue as you'll want to replace it as necessary. The back-up board supports the board and also reduces tear out.

The frame board is a piece of ¾ inch plywood with two removable support blocks. The blocks which are rotated 45 degrees to the table not only hold the frame in position but they also support the back side of the cut reducing tear out. The blocks are screwed in a ¾ inch groove, which makes replacing them easy since realignment is not necessary. Be sure to place the lower screw about three inches above the bottom of the board which assures you of not hitting the screw with the saw blade. When screwing the frame board to the tenoning/spline jig check the alignment with a 45 degree square.

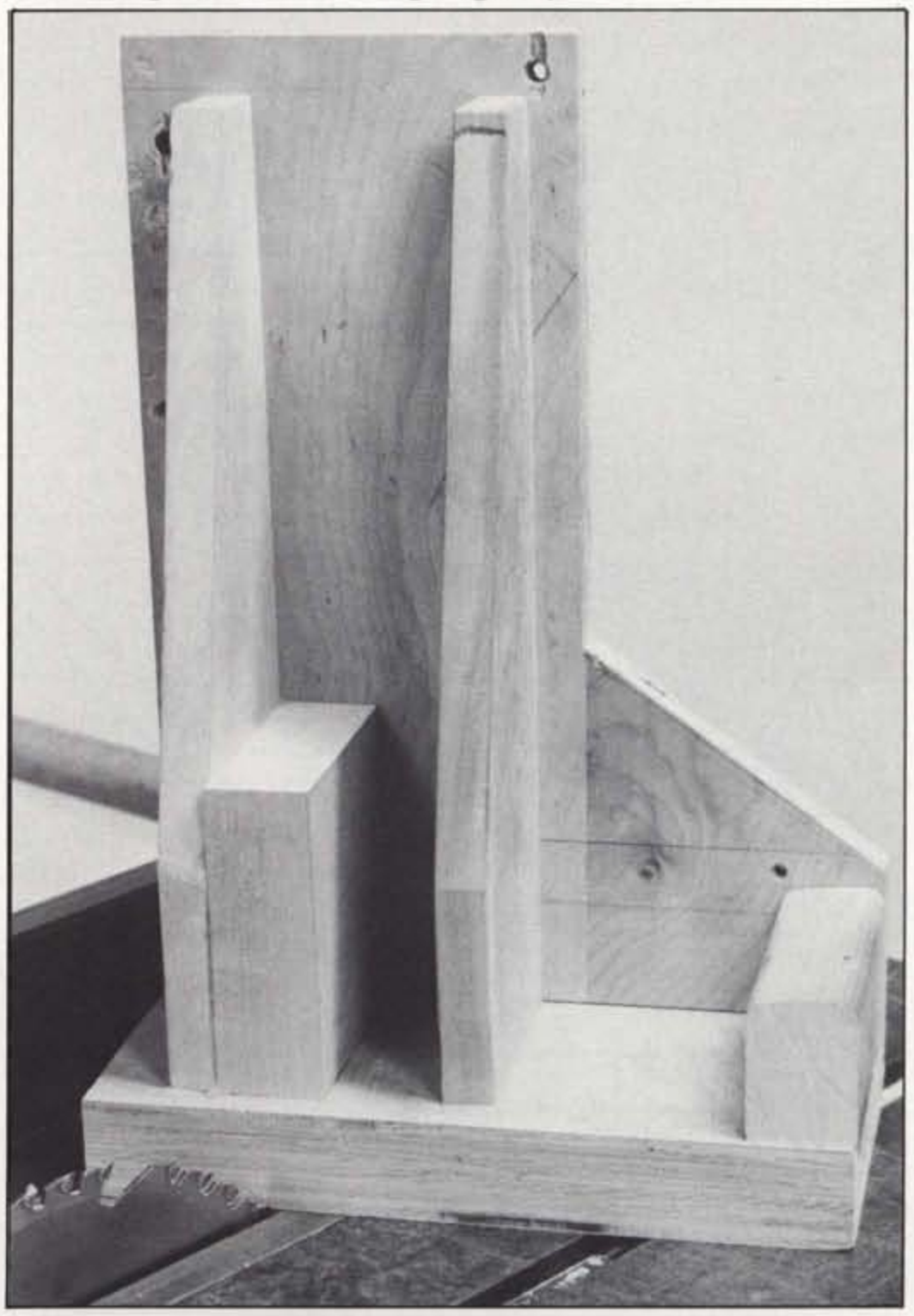


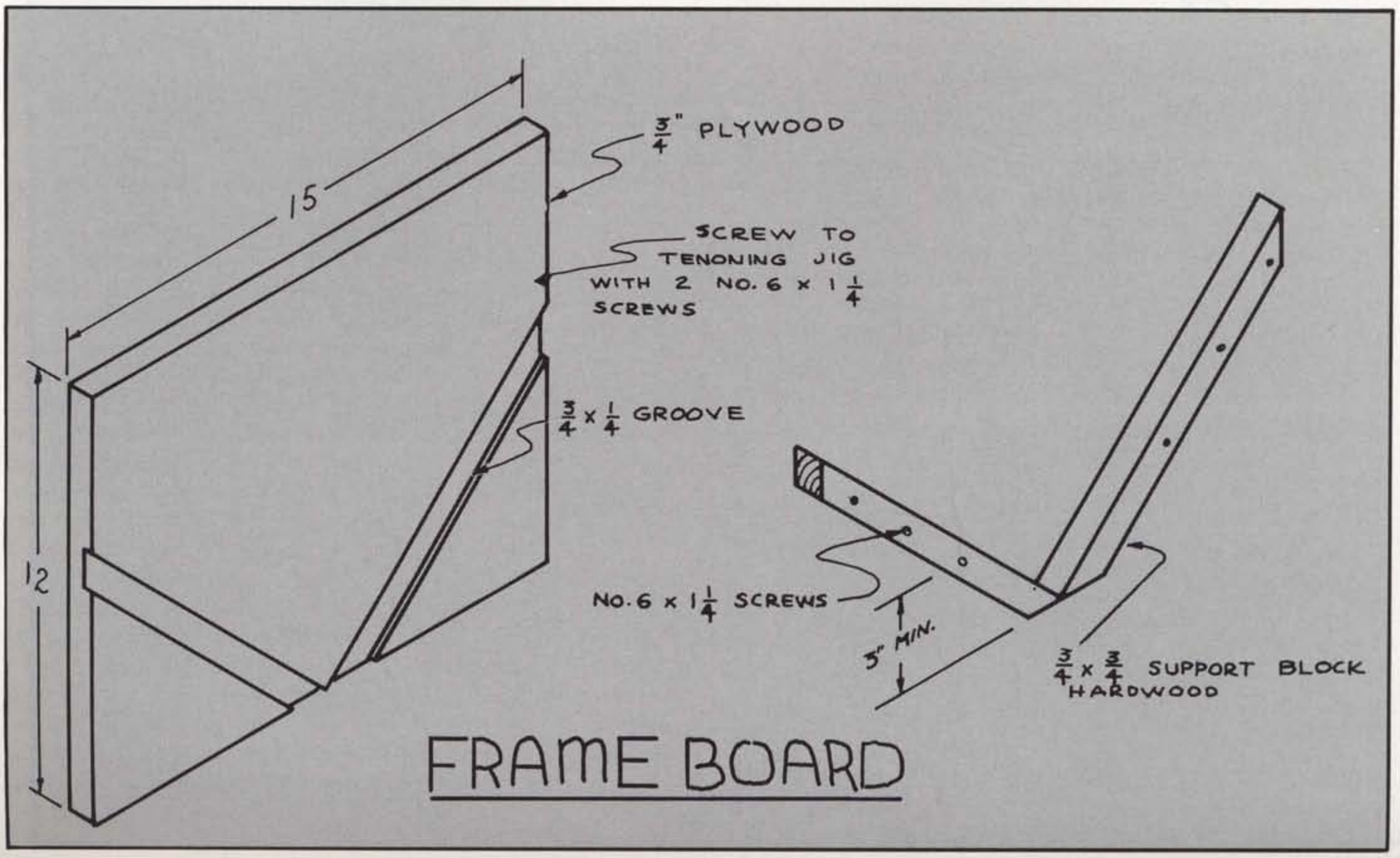
A tenon or groove is cut in the end of a board using the tenoning jig. The board is clamped to the jig and slid along the rip fence past the blade.

When the frame board is screwed to the tenoning jig, corner joints can be grooved to accept a spline for additional strength.

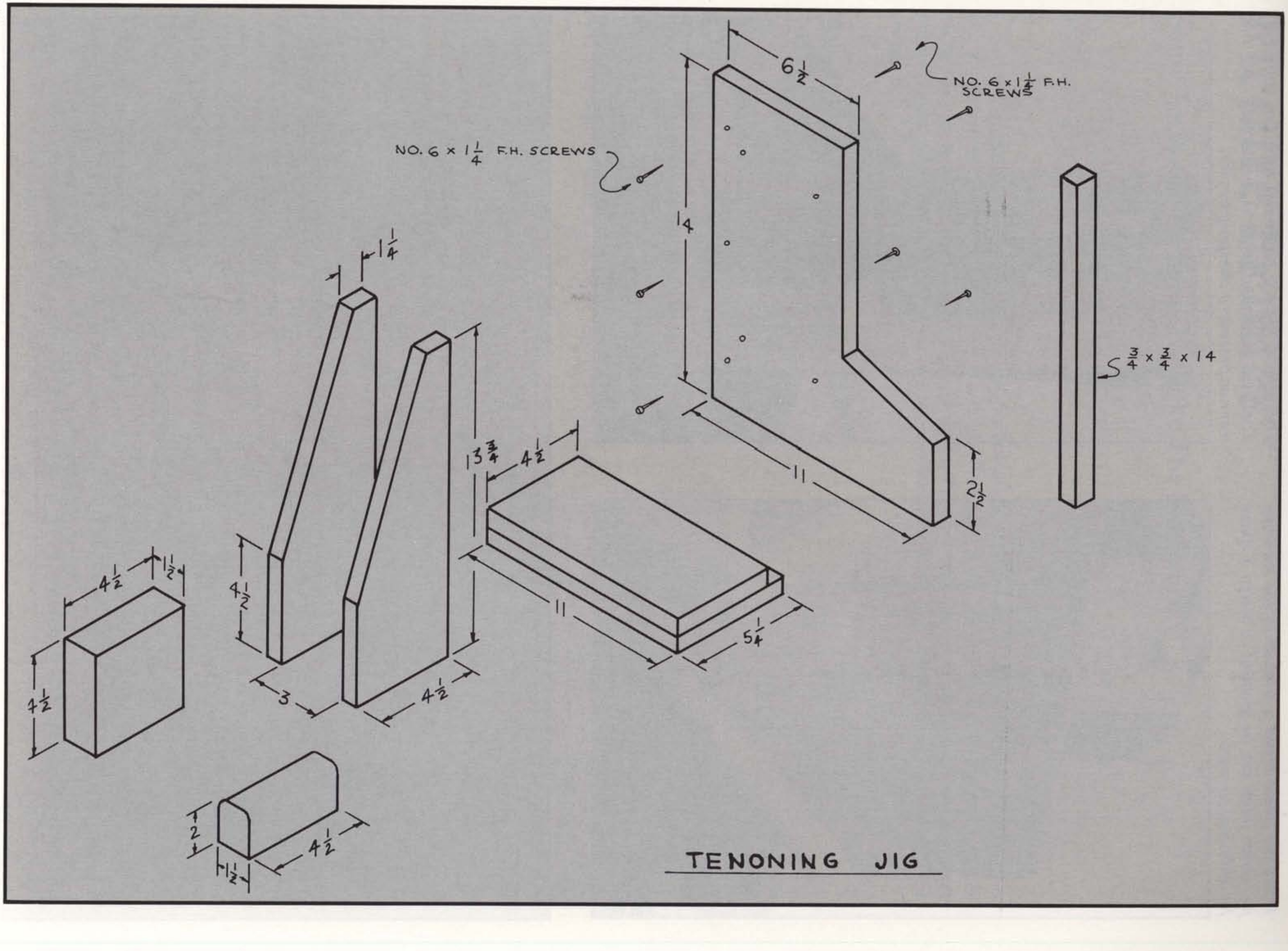


The vertical piece is reinforced with two stiffners. The front hardwood block is a handhold and the rear one provides a clamping surface.





FRAME BOARD



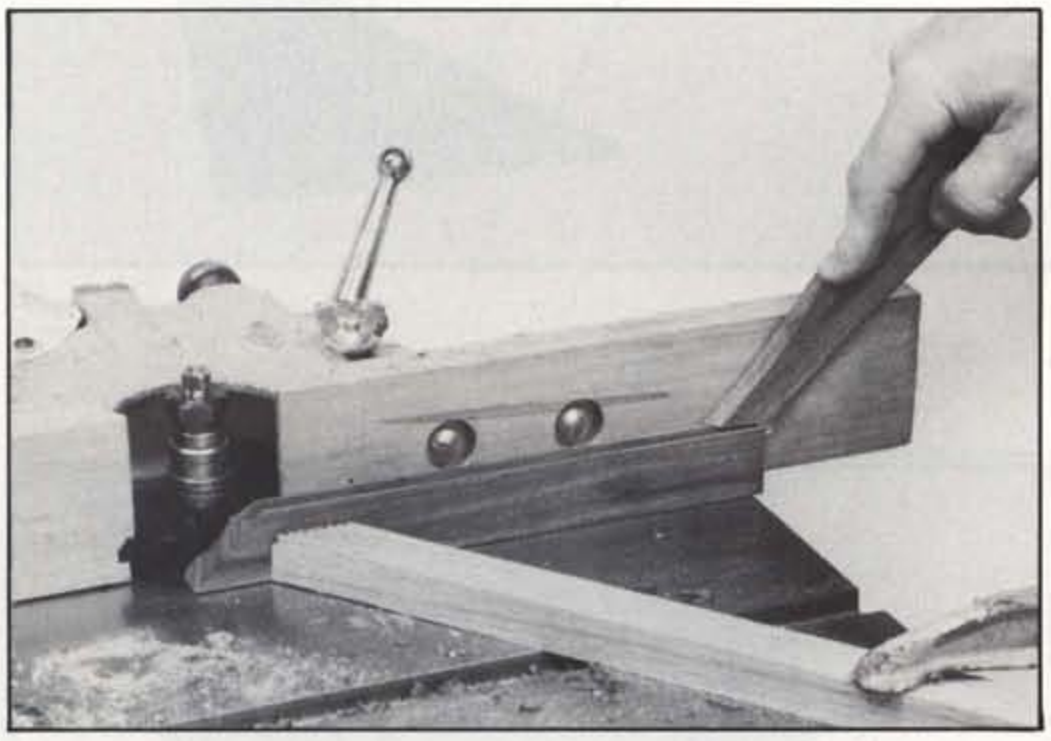
TENONING JIG

Picture Frames

The family portraits of that picture of grandmother found hiding away in the attic surely deserves a beautiful wood frame. However, quality wood frames 5''x7'', 8''x10'', etc. can be quite expensive. This was the incentive for me to dig through my scrap wood pile for suitable wood to make several frames. The frames are designed to hang on a wall or sit on a desk. A small arm folds out from the back to support the frame when it is sitting upright.

After the design is selected and the molding cut, there are two basic operations to consider when making frames. The first is mitering the corners; the second is clamping the joints. Clamping can be avoided altogether - a small step for mankind but a giant step for the framemaker. The joints are glued and simply rubbed together. This does not produce a strong joint until a 1/8 inch slot is cut across the joint and a spline glued in place. This makes the joint extremely strong. In addition, the color contrast of the spline, which can be increased by using different woods, adds to the visual interest of the frame.

Select the stock and shape it to the desired profile.



Moulding for the frames was made on a shaper. Note the use of a push stick and a feather board to safely shape a small strip of wood.

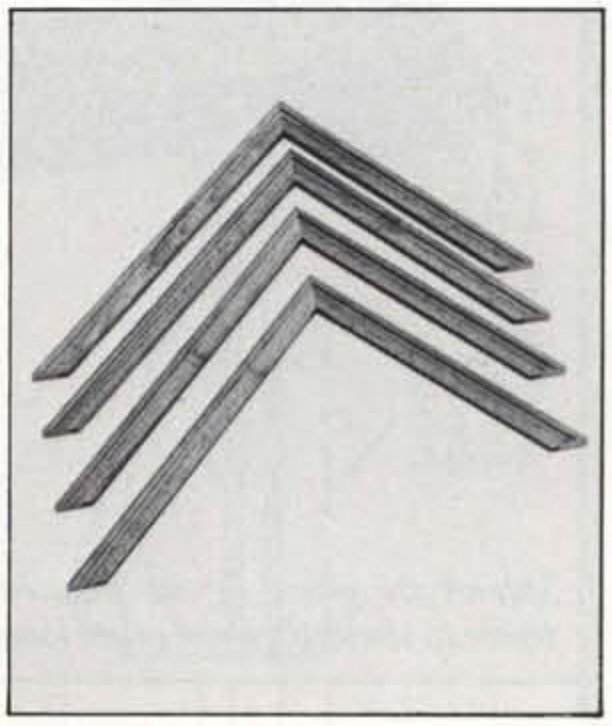
The profile is cut in a variety of ways, a moulding head on the radial arm or table saw, a router mounted upside down in a router table or a shaper. The shape of the moulding depends mostly on the cutters available. Cutters, of course can be combined to form many different shapes. After the moulding has been cut, run a ¼ inch deep slot about ¼ inch wide on the back side. The width is not critical. Then run a ½ inch deep slot slightly wider than the backing material - 3/16 inch for the frames shown. The spacing of this slot is critical; it should provide a rabbet for the glass plus the picture to sit in.

The next step is to miter the ends to the desired length. The miters can be cut in a variety of ways; a table saw, radial arm saw or by hand using a miter box. In any case they must be cut precisely; the smallest error when multipled by four will show up as a gap. I found the best way to get a true 45 degree miter is to make the cut in two scrap pieces of wood, put the joint together and check the angle with a square. If the frame is perfectly square you then have a perfect 45 degree miter.

The frames are easily assembled by simply placing a small amount of yellow glue on each end and rubbing the joint together; when the glue becomes tacky and resists the movement, set the two pieces aside to dry. After the glue has dried (about an hour) the two half frames can be assembled in a similar manner. Sometimes, if the moulding is slightly bowed it may be necessary to use clamps. However, clamping is much easier since two of the joints are already glued. These joints are not extremely strong but their main purpose is to hold the frame together until the slot is cut for the splines.

Splines were made from matching wood and glued in place; be sure to clamp the splines using a ''C'' clamp and some scrap blocks of wood. After the glue has dried trim the splines with a sharp chisel. The splines can be made from contrasting wood to add an interesting visual touch to the frame. Readily available model airplane plywood, 3/32 or 1/8 inch, also makes an interesting spline.

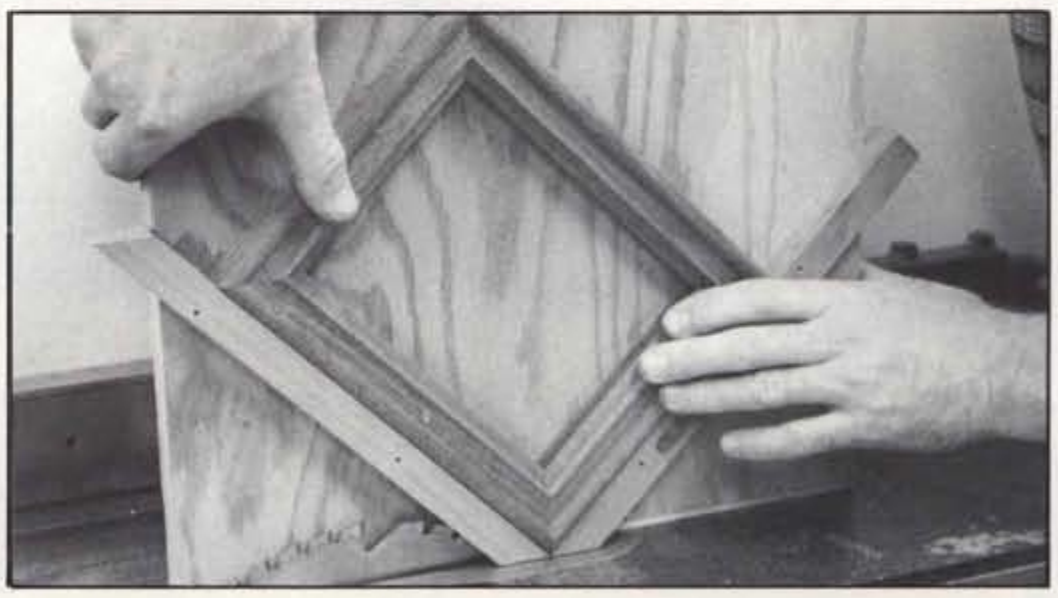
If the frames are going to sit on a desk or table a back with a swing out support arm will have to be made. The frames shown have a 3/16 inch plywood back but ¼ inch plywood or masonite will work fine. Cut the 1½ x 5 inch slot in the back and rip a strip to fit inside the slot. Select a hinge which is fairly large then route a recess in the back side of the plywood the size and shape of the hinge. Drill a few extra holes in the hinge to increase the effectiveness of the glue, then glue the hinge in place using epoxy glue. Once the glue has dried open the support; it probably will not open far enough and you'll have to bevel the end of the support arm with a chisel until the arm opens up about two inches.



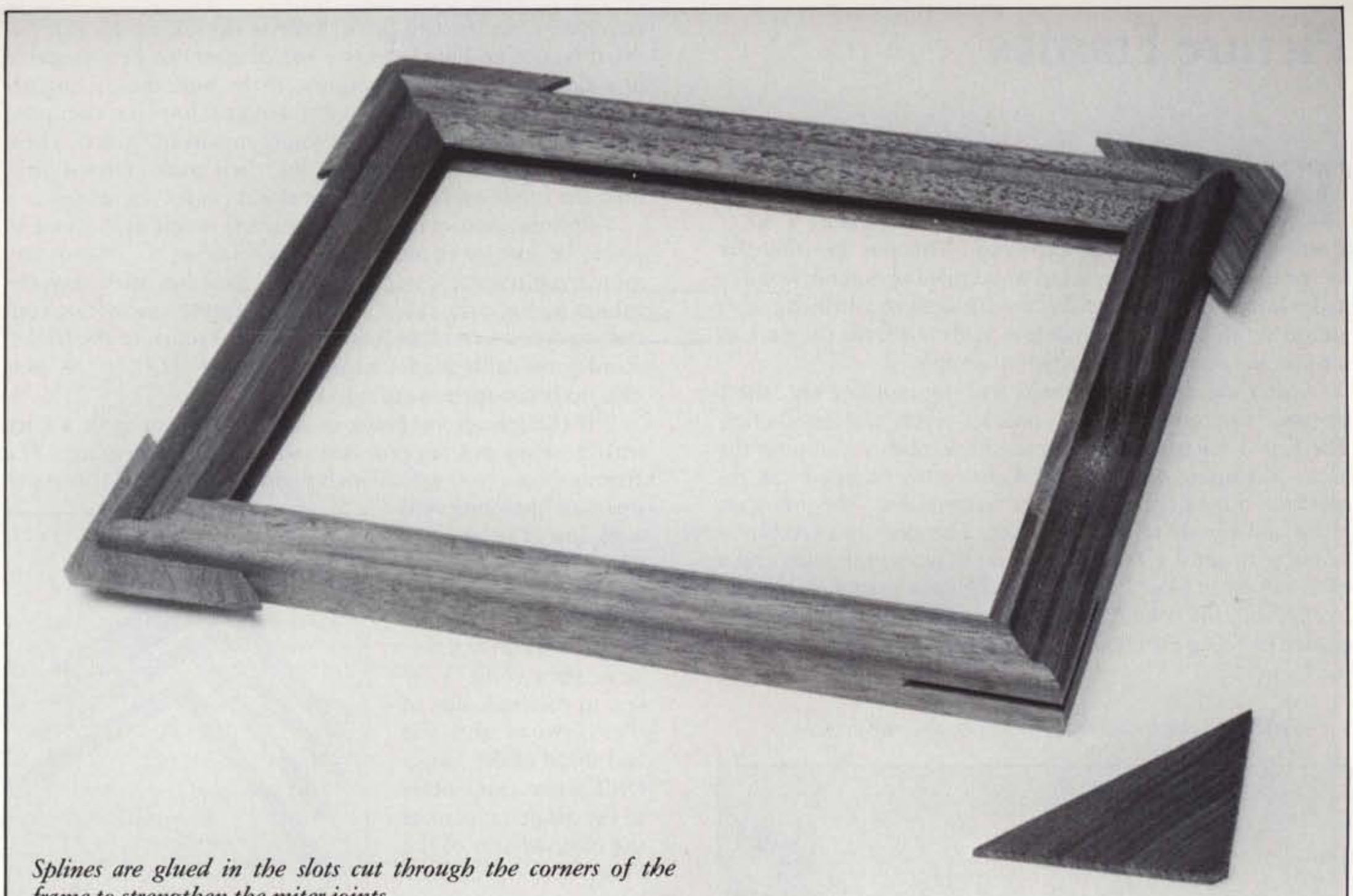
The miter joints are simply rubbed together and set aside to dry.

If you are not going to sit the frame on a desk or table, the swing out arm is not needed. The backing material can be almost anything; heavy cardboard, foam board, 1/8 inch masonite, etc.

When hanging a frame I prefer to use two attach points which keeps the frame from tilting. Two holes can be drilled in the frame or a special picture frame router bit is available which cuts a keyhole-shaped hole in the back of the frame. The bit is run straight into the frame then pushed toward the top of the frame producing a lip which grips a large headed nail. To hang the frame it is placed over a large headed nail then moved down. If you plan on making many frames the router bit is nice to have.

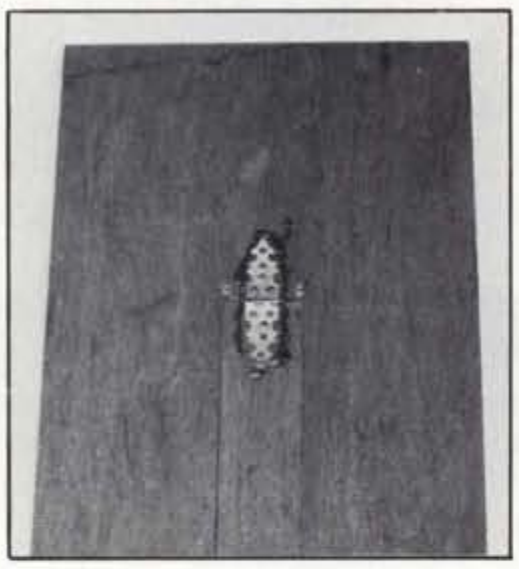


Slots for the 1/8 inch spline are cut across the miter joint. A homemade jig is used to hold the frame vertically, frame and jig are slid past blade.

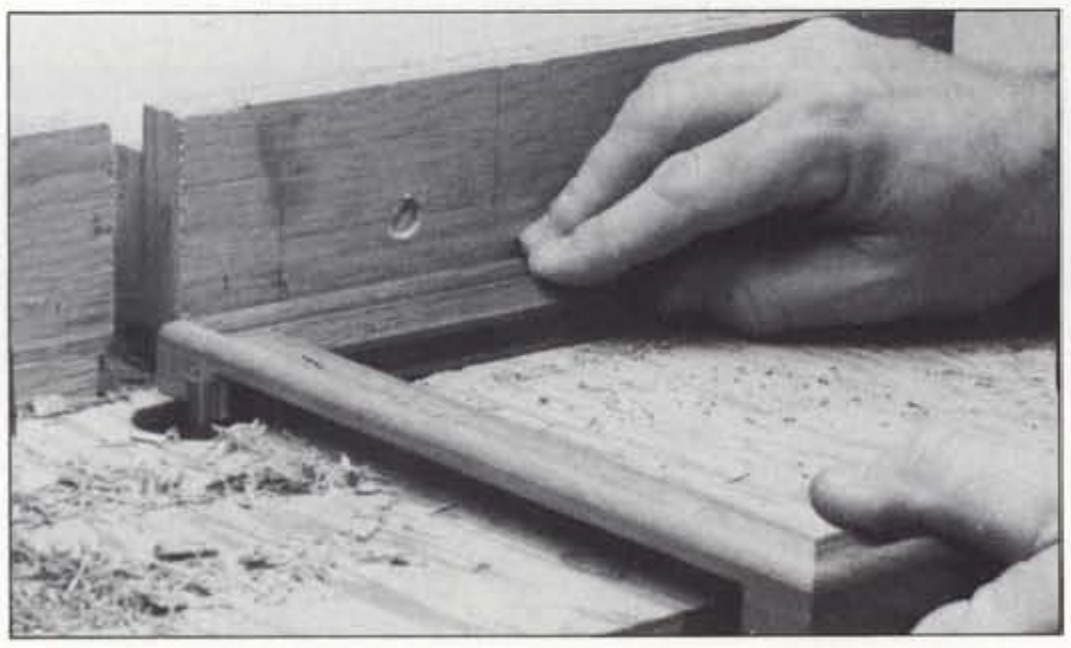


Splines are glued in the slots cut through the corners of the frame to strengthen the miter joints.

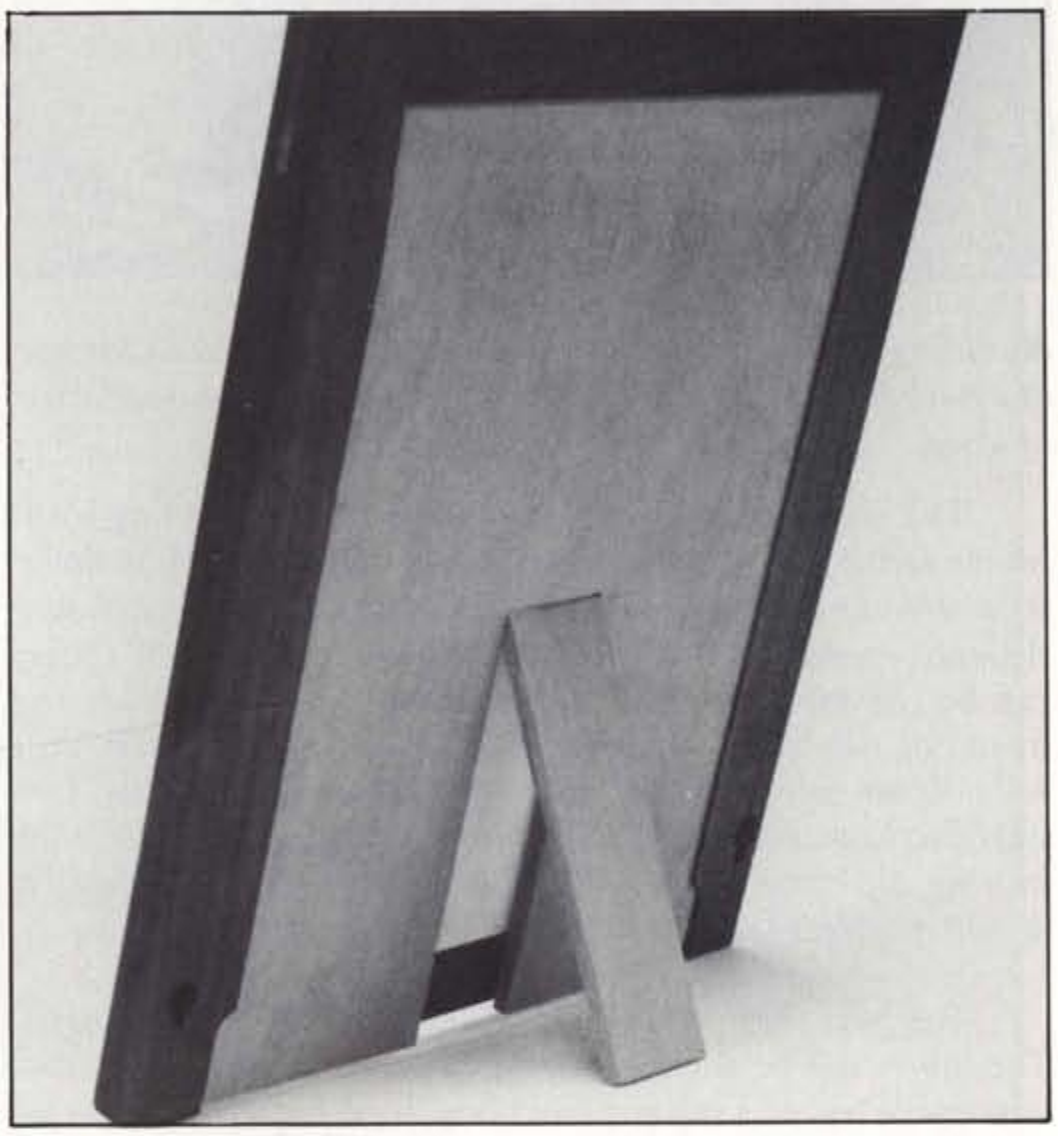
Apply your favorite finish, then cut the glass to complete the project. For a first rate job non-glare glass can be used or non-breakable plexiglass can be used for a childs room.



The interior side of the back is mortised to accept the hinge. Additional holes are drilled in the hinge to increase effectiveness of the epoxy glue.



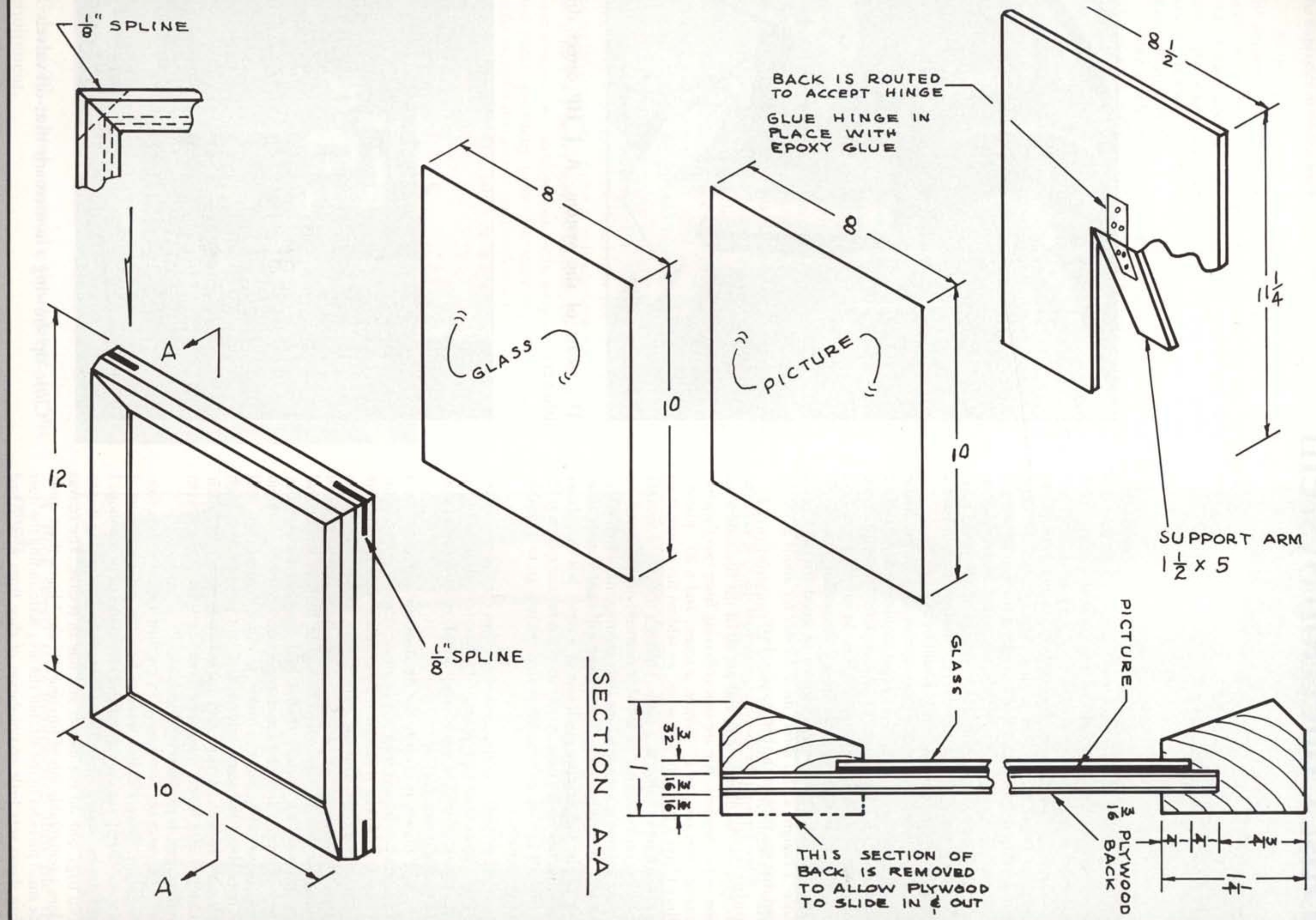
A router is used to remove wood from one end of the frame which allows the back to slide in.



A small support arm folds out to support the frame when it sits on a desk or table.

ABOUT THE AUTHOR

Dennis R. Watson makes his living as an Aerospace Engineer. He enjoys making his own furniture. He is a frequent contributor to various magazines.


1/8" SPLINE
A
12
10
A
1/8" SPLINE
8
GLASS
10
8
PICTURE
10
BACK IS ROUTED TO ACCEPT HINGE
GLUE HINGE IN PLACE WITH EPOXY GLUE
8 1/2
11 1/4
SUPPORT ARM 1 1/2 x 5
SECTION A-A
3/32
1
3/16
3/16
GLASS
THIS SECTION OF BACK IS REMOVED TO ALLOW PLYWOOD TO SLIDE IN & OUT
PICTURE
3/16 PLYWOOD BACK
2
2
4 1/2
11 1/4

Dust Collection System

By Rick Williams

It takes only about a minute in a shop with no dust collection system to understand how important an effective dust collection system is. Unfortunately, it only takes a minute with a price catalogue to discover why so many shops do without. I was faced with a shop which could generate enough dust in 10 minutes to take an hour to clean up. When I moved my shop to commercial space I was determined to keep it clean by developing a dust system which would handle all my dust collection needs. I could not afford to have a big fancy commercial system, so I built by own.

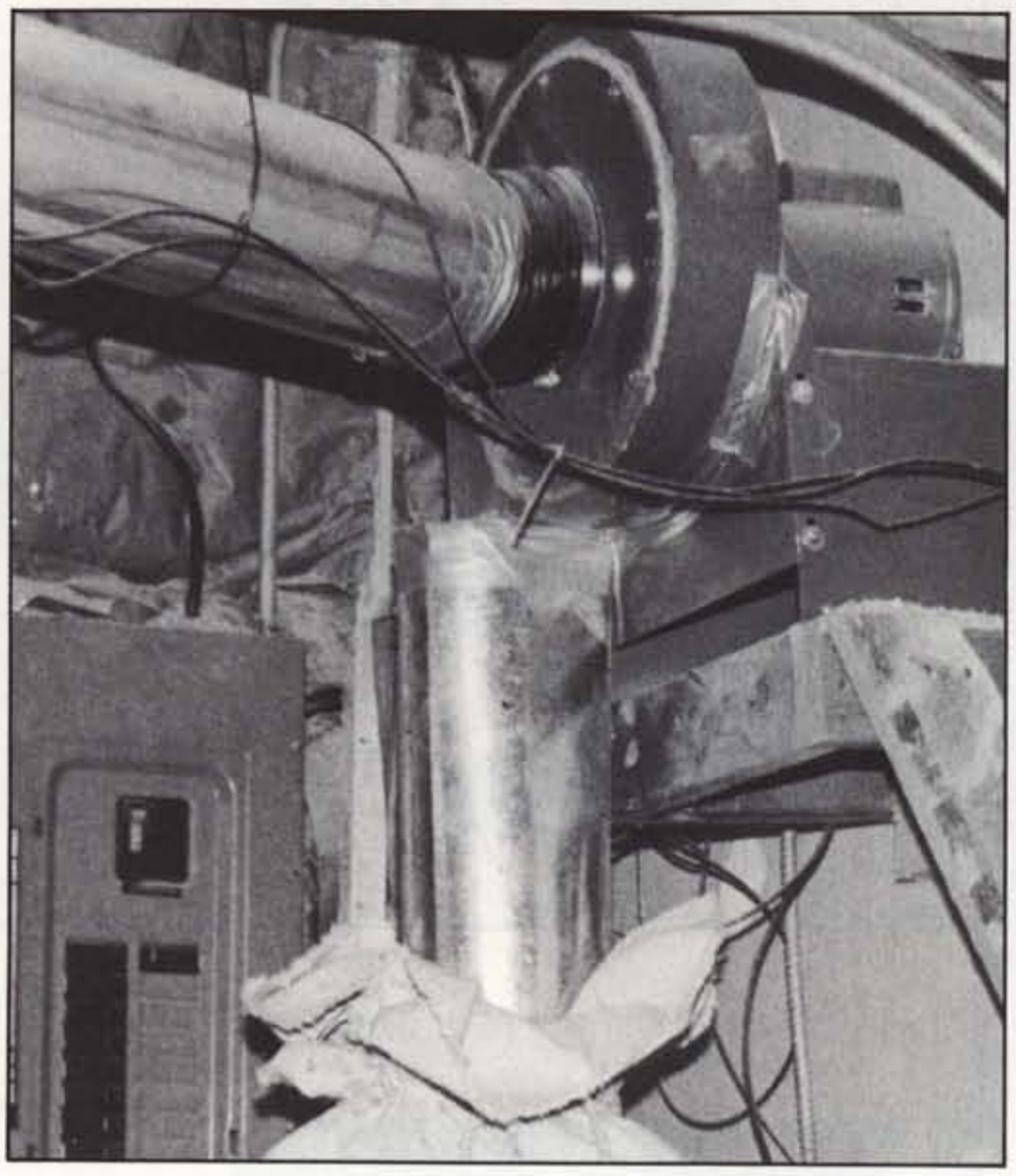
I had been trying to defeat demon dust in my home shop for years, and consequently had acquired a Bell Sawdust blower, which I had found to be completely inadequate for anything but the lightest applications. In my efforts to find the true meaning of a clean floor I discovered that W W Grainger had high pressure blowers of good size at a good price. I bought a 1hp direct drive blower for about $200.00 and that was 90% of the battle right there.

When I moved the shop to commercial space, it was time to upgrade the dust system, and get all of the machinery on one or two systems. We are now collecting from two shapers, a radial arm saw, an 8'' jointer, a resaw, and a 20'' planer. Since I have a two man operation, we seldom have more than one machine running at a time. Through the use of shutoff valves at each machine we are able to maintain maximum air intake volume at each machine thus assuring maximum effectiveness at each machine. The blower will handle more than one of the lighter dust producers at a time, but the planer must operate on it's own. As the shop is now, the system is effective. When we grow to larger size, we may go to a double blower system.

The principle components to my dust control system are a 1 hp, direct drive high pressure blower, 6'' galvanized tubing, plastic plumbing parts, scrap wood, scrap formica, and the all important duct tape.

The blower is literally the heart of the system. I use a high pressure blower with self cleaning veins. It is important to have a blower that can handle solids in high volume without clogging. Also the blower must be able to handle large volumes of air at increasing static pressure with minimum loss of efficiency. There are blowers which will handle more air initially than a high pressure blower, but their efficiency drops far faster as pressure increases. A radial vein blower may move 3 times as much free air but will deliver about the same volume at 2'' of pressure as a high pressure blower of the same power will at 6'' of static pressure. This is very important as the pressure of the system will increase as the filter medium clogs.

The next key component in my dust system is dust confinement. Since I didn't want to heat the great outdoors, I wanted to trap the dust, filter and return the air to the shop. I did this by buying about 10 yards of canvas and sewing it into two bags, one on the blower and one in reserve. The canvas does a remarkable job of filtering the air. I know there must be small particles in the air, but the area surrounding the dust bag shows very little accumulation of dust from what I had expected. The bags can each hold one and one half to two



The heart of the system. A 1 HP direct drive blower.

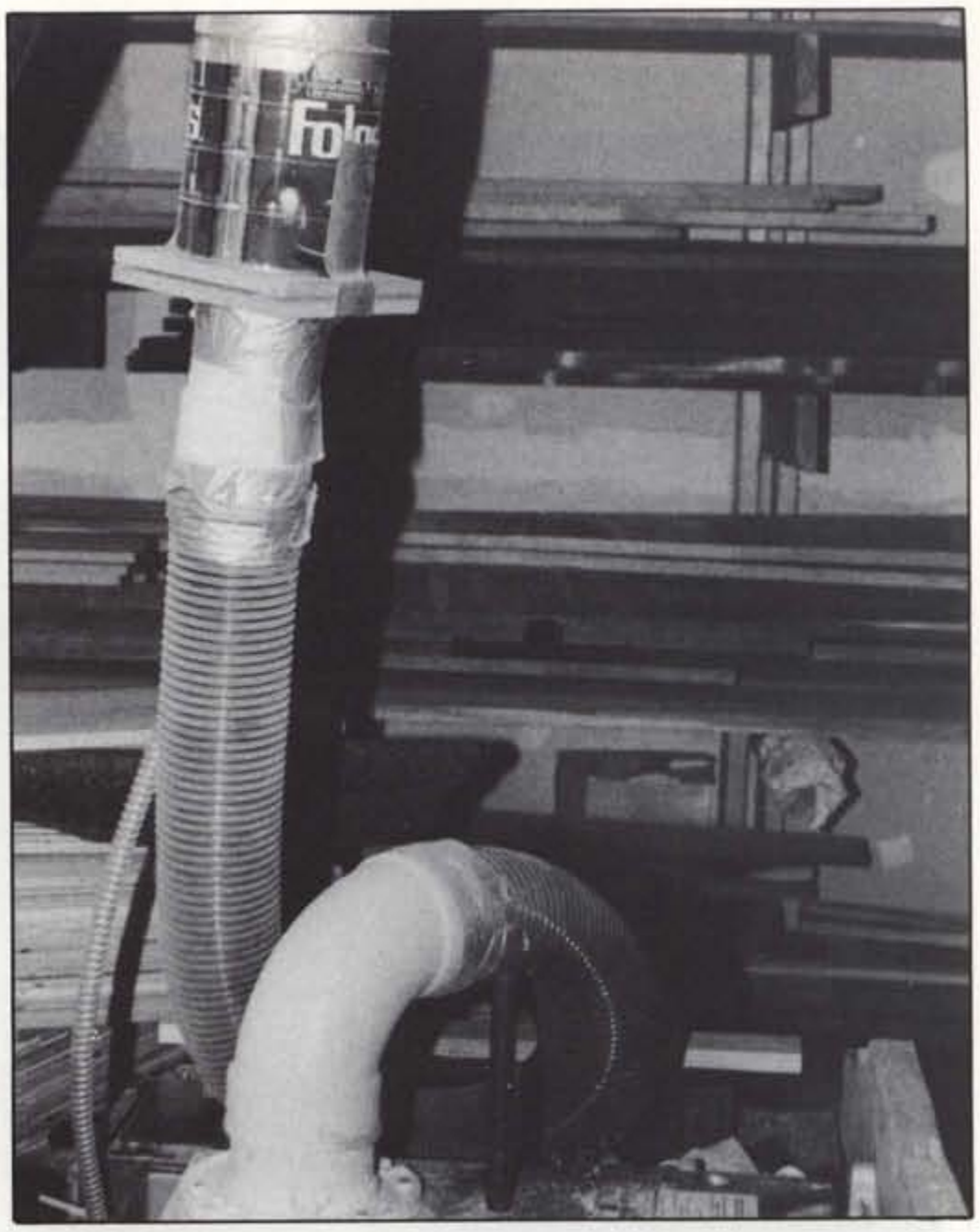
Close-up showing a homemade shut-off valve.

cubic yards of dust and shavings. We have come close, but never filled a bag in one day. Usually we only need to change the bags once or twice a week.

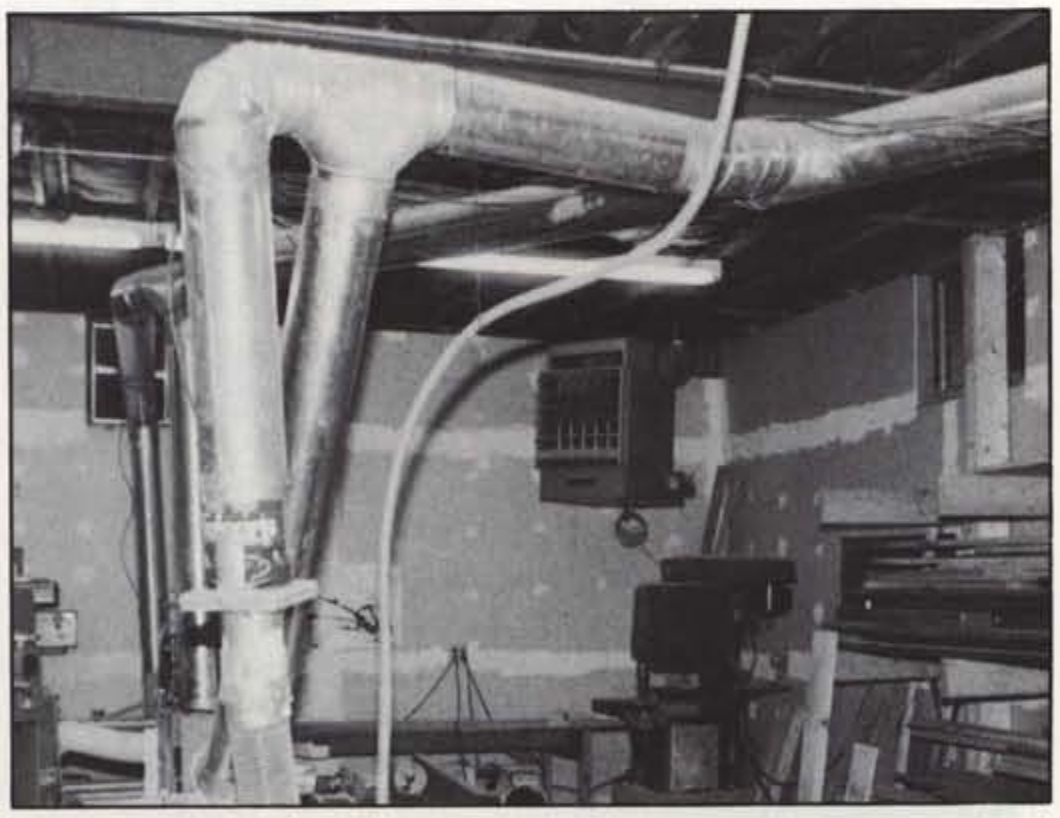
As the bag fills with dust it will progressively decrease the amount of filter surface available to the system. This causes an increase in the static pressure inside the bag. Increased static pressure decreases air flow volume and thus system performance. It is best to empty the bag on a regular basis and not wait until the bag is completely full, and performance downgraded.

Once you have a blower and a bag you need to have a place to put it and a way to get it hooked up to the machines. I placed mine in the least useful corner of the shop. It takes about 16 square feet of floor space. Since it is some distance from the machinery, I wired it with a double pole single throw 24V/240V relay and wired the low voltage circuit to two three way switches which are located in fairly handy locations. To connect the machinery to the blower the least expensive thing I could find was 6'' galvanized duct. Most important in your layout is to make sure to restrict air flow as little as possible from each input point. Avoid unnecessary turns and reductions in hose size as these will downgrade performance of the system. Each opening in the system must be able to be closed off when not in use to optimize performance at the machines which are in use. The principle shut off method we used in our system was made from scraps of plywood about 8'' square with 6'' diameter holes in their centers. The two pieces are placed face to face with their holes aligned, and shims about 1/8'' thick to hold them apart enough so that a piece of plastic laminate can be easily slid between them to block the holes. The pieces are then nailed together on opposite edges through the shims. A flange can then be attached on opposite sides and the valve inserted in line, wherever it is needed.

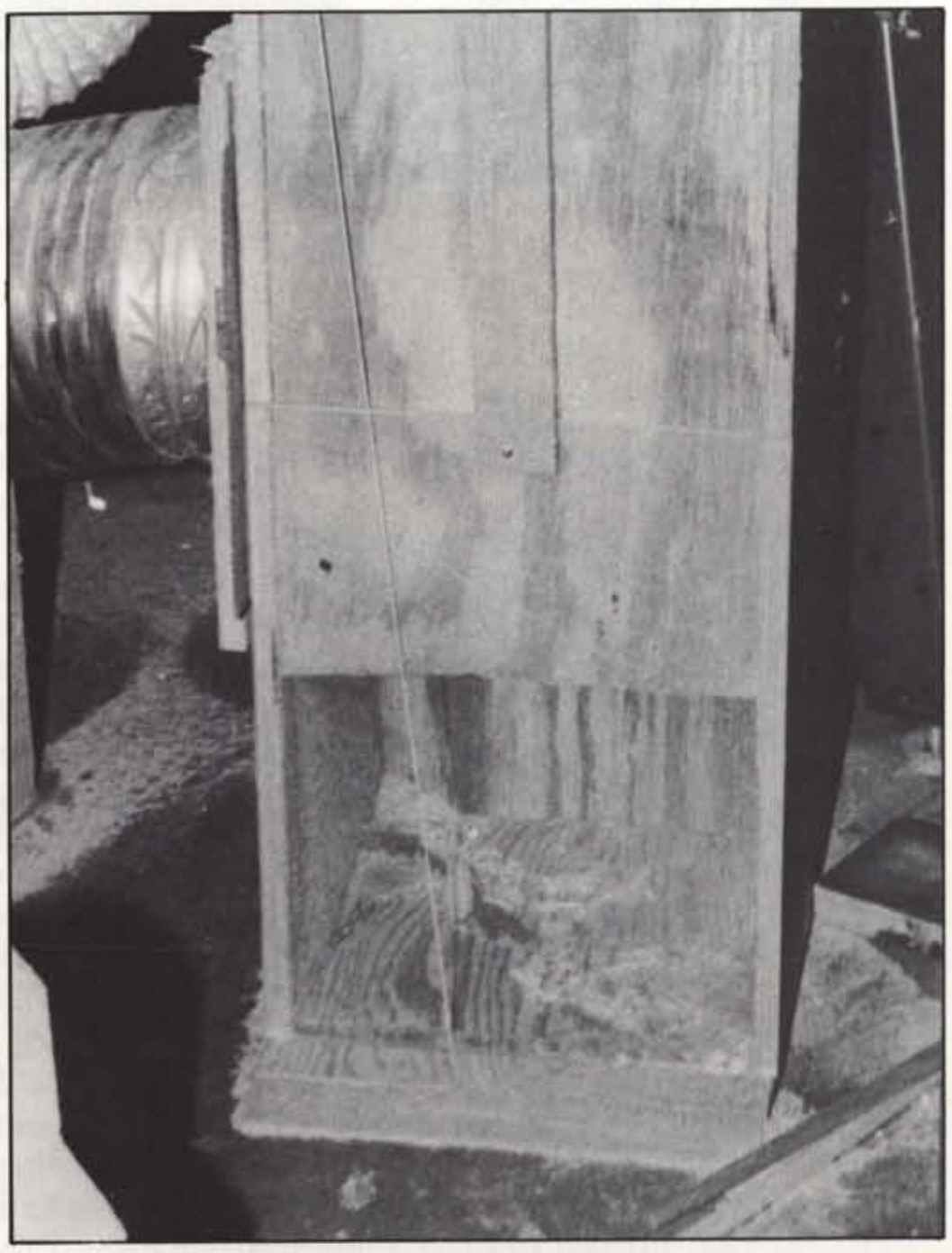
My machines are grouped together in clusters based on usage and required space. We built a wooden box about 4' tall and ran several gates off of it. We also incorporated a floor sweep trap into its base. It has since been dubbed R2D2 by my brother-in-law. As far as individual machine hook-ups go, if there is a factory hook-up available, use it. If not, use your imagination, tin snips, pop rivits, scrap wood, duct tape and plastic plumbing parts. The most important thing to make sure of is that you do not interfere with the operation of the machine or any of its safety equipment.



A combination of parts including the shut-off valve, flexible hose, plastic tubing and galvanized tubing.

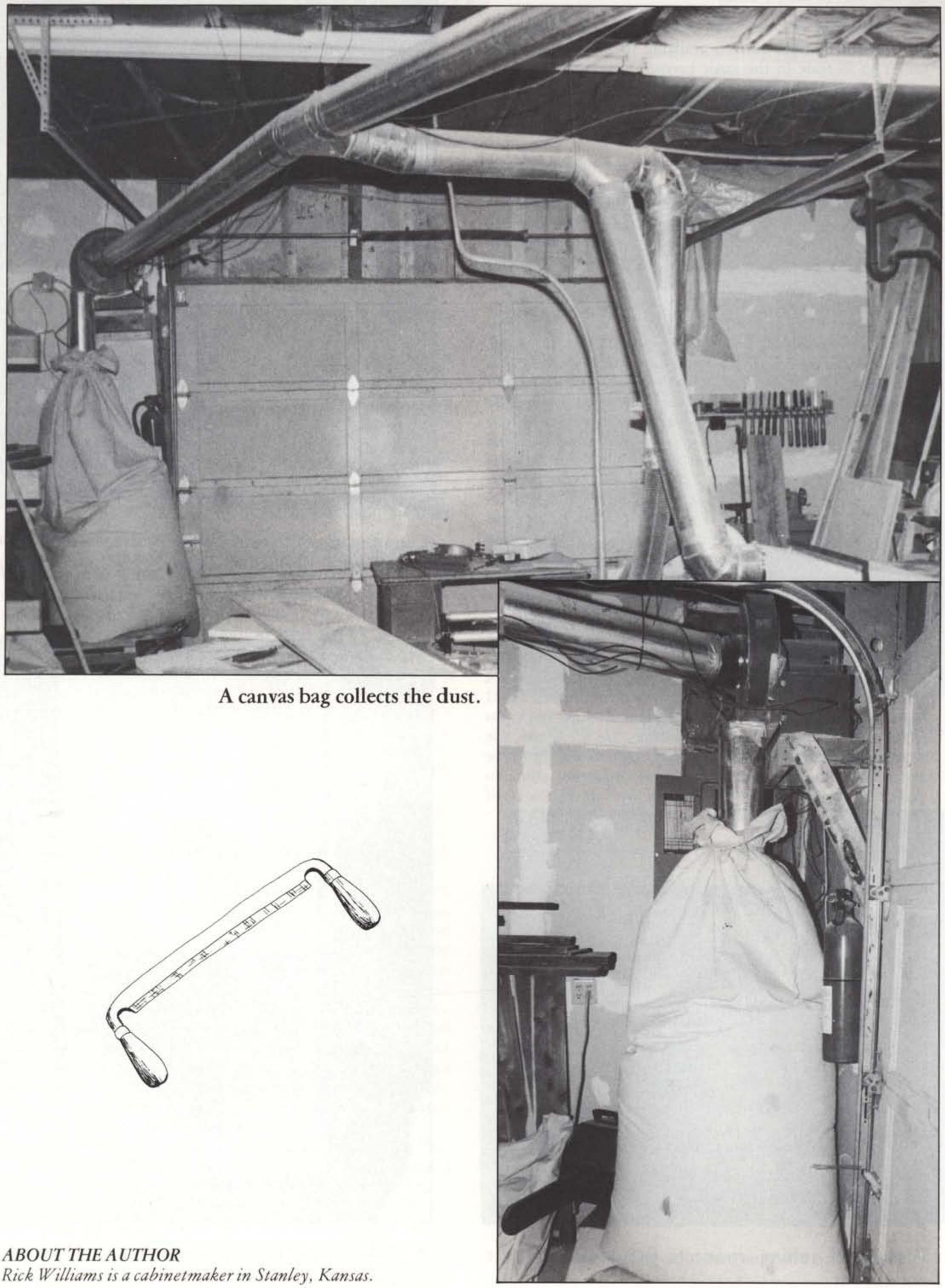


Galvanized tubing connects the blower to the equipment.



A floor sweep trap incorporated into the dust system.

The collection system can be placed in an "out of the way" location.



A canvas bag collects the dust.

ABOUT THE AUTHOR
Rick Williams is a cabinetmaker in Stanley, Kansas.

SHOP SAFETY

By Bill Marsella

To the homeworkshop enthusiast the shop is probably the one place in the world where stress of the business day stops at the shop door and a period of contentment awaits inside. The one place in the world where a man or woman can create, maturate, and do the things that they want to do, not what the community expects them to do. But with all its attributes the homeworkshop can be a most dangerous place. The machinery and tools that it contains can cause severe lacerations and the environment can be laden with toxic fumes, dust, etc.

Certainly we are cautious. We depend upon both training and diligence to avoid injury and one would imagine that this would suffice. Yet accidents happen anyway. How? A little investigation will reveal that the accidents that threaten us are many times built into the shop when we put it together. These facets will be discussed here.

The shop as a recreational facility — The shop is the one place in our daily life that offers us respite from the stresses that most of us have to tolerate in our daily lives. We seem to react then in a manner that suggests that since this area can be the oasis of contentment that we are therefore, safe. We then tend to relax our defenses and it is this insidious mentality that leaves us prone to injury. The frequency of accidents tends to attest to this.

Further, the average craftsman gravitates to his shop at the end of the day, a time when he is normally fatigued and this certainly is not the time to face challenging situations. As a comparison, the accident rate in the commercial sector increases with the hours worked (as men tire) and this we can understand, yet in a like situation, the homeworkshop, we seem to overlook the same measure when applied to our own activities. As we become more fatigued we have to depend more heavily upon our reflexes to maintain a margin of safety in the face of the situation wherein the machinery that we use is just as unforgiving as that utilized in the commercial sector. So just as in the commercial sector, the possibility of an accident increases proportionately with the degree of fatigue that we sustain.

Training and experience — When dealing with a recreational facility it seems that "if we can afford it, we can do it." This makes no sense of a ski slope, for instance, and makes even less sense in the home workshop. We have been raised in a mechanized society and anything that can be done, can be done on a machine. To the veteran woodworker the fallacy of this statement is clear but not everyone has attained that degree of expertise. This classification of craftsmen chooses tools and machines carefully and knows the difference between tools that are labeled "craftsman" or "home utility." Tools are designed to perform definite levels of performance and they should be used accordingly. If a tool is used in the manner in which its designer intended, it is usually a safe implement but this can also apply to an automobile. Few of us have to be reminded of the consequences of the misuse of this machine; the same view can be assumed for the tools in the home workshop. Lacking experience and training, the home workshop enthusiast sometimes pushes his tools and machines past the designed safety parameters and an accident is the result. The accompanying photographs (using the table saw) are an example. This machine is found in almost every shop, is extremely versatile and a safe tool to use when used properly. The pictures illustrate how (too often) expediency and lack of training over-rides good sense.

Our author in his shop.

To begin with, the guard (blade) has not been used for such a long time that it can no longer be found. Not only will this safeguard protect the operator from lacerations or dismemberment but kick-backs and material thrown in the face of the operator as well. As an example, when carbide blades are misused they heat (as any blade will that is not sharp or used properly) and the brazing that holds the tips to the blade can fail. These tips can leave the edge of the blade with the speed of a bullet. I grind many of these blades for carpenters and many times the carbide tips are missing! On the shop bench saw, one with the glade guard missing, this blade damage could have resulted in a serious, if not fatal, accident.

Another important thing, a safety precaution, is that blades on a bench saw must be sharp and properly set all the time. Saws, for the operation and material worked, must be in perfect condition, otherwise they tend to get hot. An overheated blade can fracture at any time. Now maybe it will, and then again maybe it won't, but why take the risk?

Without the blade guard and splitter assembly (the kickback claw is usually part of this assembly) kickbacks are guaranteed! On narrow pieces, the slightest misalignment at the

end of the cut and the teeth of the blade will grab the work and send it directly into the direction of the operator. The velocity of this is so violent that it is comparable to the speed of a hunting arrow. The work will easily pierce aprons and clothes, burying itself into the groin of the operator. It does not require a large commercial machine to do this, an 8'' blade will do nicely. In the photograph you will notice that the operator is standing on the side of the centerline of the blade. Standing in this position is the only safe way to use this machine. What can happen — will!

The lathe is a wonderful machine and since I was a teenager I must have spent hundreds of hours working on it. It is truly a fascinating machine, yet used in a careless manner it is extremely dangerous. Heavy pieces, larger than what the machine was designed for, have a habit of leaving the machine without permission! The tail stock tears out of the work first and the part comes flying out of the machine in the direction of the operator. On a small machine this is like being hit with a baseball bat, but on an over-taxed large machine this accident could be fatal. Not too long ago I was turning some picture frames (outboard) and the work fractured in the machine; one piece took out an eight foot fluorescent light and the other crushed itself against the wall. No notice of impending diaster — just an explosion-like sound, instantly! This reminded me of an accident that I had on my first lathe when I was a teenager. I had yet to learn that when turning slender pieces that the work must be supported at the center to eliminate whipping and bowing of the piece being worked. My lesson was quick and decisive — the piece was thrown from the machine and hit me square across the forehead, knocking me to the floor! I was fortunate on this one, the only thing that was hurt was my pride. No idler (mid-centers), no face mask, probably dull chisels, and the minimum of training — the perfect prescription for an accident.

The economics of the shop — Notwithstanding experience, it seems that the amount of money that we have to equip a shop is another facet that reflects itself on the hazards of the shop. In order to save money, too often tools and machines are used or altered to perform tasks that they never were designed to do. Years of experience in my shop have taught me that each tool is designed for a particular purpose and to alter (jury-rig) any machine is inviting disaster. We seem to be quick to demand that the commercial sector maintain strict conformance to safety standards, while creating conditions quite the opposite in the home workshop.

We buy machinery, the best that we can afford, and then tend to use it as if it was industrial quality machinery for a large furniture factory. The worst offense that we are prone to is to under-power our machinery. We don't deliberately do so, but we do anyway because that is all the power that we have to use. When a saw, for instance, is under-powered, a series of complications occur. Lead in wiring becomes hot, this heat increases the resistance in the wire, the power requirement is then heightened further. If we do not burn out, or shorten the life of the windings, we encourage the possibility of a fire. How often do you turn on your saw and the lights flicker or dim momentarily (nearly always!) When a motor labors it turns at a slower RPM and consequently the periphery speed of the blade is reduced. The blade, taking longer to get through the cut heats up, inviting a possible mechanical failure (fracture) of the blade, dulling, and possibly the loss of the carbide tips. But we have found a way to compensate for this — we 'tease' our way through the cut before we blow a fuse and this does work (it's done every day) but we have to spend so much attention to get the piece cut that our attention is divided from the care that is required to use the saw in the first place. One moment of lost concentration and — the rest is hind sight!

Shop space and location is another factor that seems to build hazards into the workshop. Again, we do not do this by design, we use all the space that we can afford but machines are not known for their charity. Unless there is sufficient room to operate them safely, they stand ready to remind us at any time. For example, setting a machine near a water pipe is sheer suicide. Unless the machine is perfectly grounded, and I've seen few that are, particularly direct drive saws, any connection (you for instance) between the machine top and the water pipe provides a perfect ground. I saw a home owner prove this one day when he was using a skill-saw while framing an attic room. He was standing near the vent stack that ran from the first floor through the attic and the roof and inadvertantly bumped against the stack as he was cutting a piece of framing material. He almost went into cardiac arrest, instantly, and can thank the EMT who came in sufficient time to save his life.

The third prong on outlet plugs is there for a reason — yet more are cut off than are left intact because an adapter is not handy. Incidentally, an adapter is of limited use unless the pig tail on it is mechanically grounded to an outlet box that is itself grounded to the system.

Fire is always waiting in the wings when it comes to the work place and no where is it more prevalent than in the home workshop. Again, in industry we demand that fire exits, extinguishers, prompt fire protection, fire blankets, etc. exist, yet how many home workshops have even a fire extinguisher in the shop? When a shop is in the basement (usually near a boiler room) the hazards waiting are considerable.

The commercial sector has particular problems that don't exist in the home workshop—don't that is, if furniture stripping and lacquer is not used. In one wood shop in which I was the shop superintendent, I instructed the finishing foreman to discard all rags and waste that were used for filler and lacquer each day in a drum outside of the plant. I was concerned about spontaneous combustion and a plant fire. The foreman methodically conformed to this order each day and each night there was a fire in the drum in the yard. There was adequate ventilation and we were careful to leave the cover off the drum to be certain that there would be no build-up of fumes, but we had fires anyway. The only way that we solved this problem was to flood the drum with water over the level of the waste material inside. How many home workshops could withstand the scrutiny of a Fire Marshall.

Unauthorized personnel — The home workshop is suspect to a hazard rarely found elsewhere — people who shouldn't be there, are. Children seem to be the worst offenders. Some machines (radial arm saws is one example) have a switch that can be locked in the off position with a key but many machines do not have this safety feature (assuming of course that this feature is used *every time*). A router is a good example to use. Small enough to be handled by a child and designed to run at least 25,000 RPM it provides an attractive hazard for many. A regular 3/8'' drill is even a better example. Small, ''harmless,'' and convenient, yet it has been the source of many electrocutions when used ungrounded and where conditions are damp or wet.

Space here does not provide the opportunity for a complete discussion on the dangers inherent in the home workshop; I have only concerned this writing with a few of the implements that are found there. Those of us with experience in this facility and who own fully equipped shops are infinitely concerned with the limitations of the equipment that we use constantly and even further, our own limitations; the latter may well be the more important of the two. We have worked in our shops (many of us since we were children) and consider ourselves fortunate to have this outlet of self-satisfaction. But with

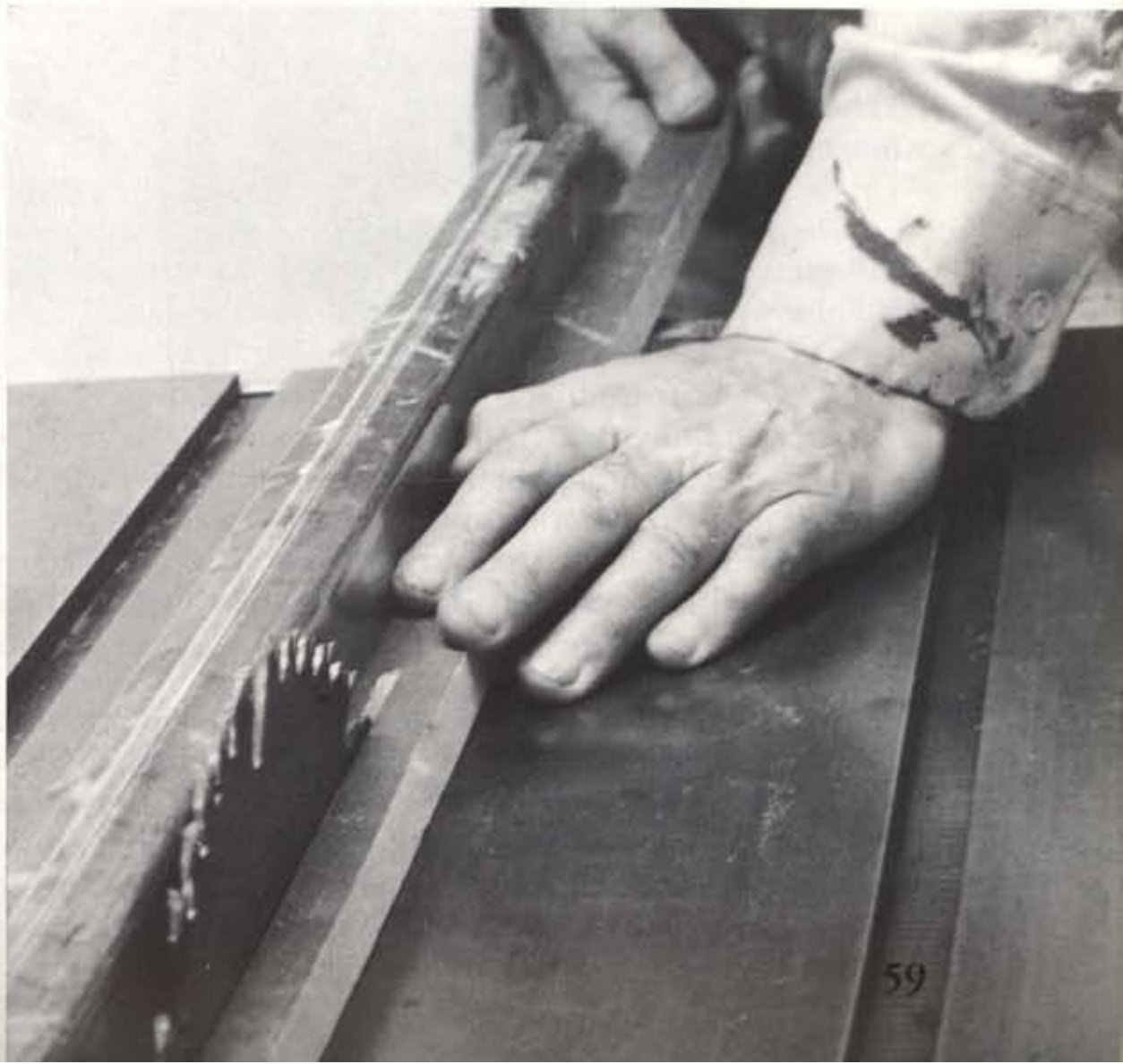
Standing to one side of the center line of the blade is the only safe way to operate this machine.

each benefit there goes responsibility, care, training. It is these facets that will assure us of even more years of enjoyment in the home workshop.

The home workshop is probably the one place where a person can exercise the most freedom; freedom from the stress of the world around us, but unless care is exercised it can also be a very hazardous place to enter at the same time.

ABOUT THE AUTHOR

Bill Marsella is an Industrial Designer and woodworker living in Lynbrook, New York.



The slightest misalignment of the part in the cut will guarantee that this part will be thrown into the operators body.

Woodworking Associations

Does Your Area Need One?

The following stories describe two different woodworking associations in different parts of the country. Although written separately without any collaboration, they each contain elements common to both. If your area is considering any type of organization, whether it be called a club, an association, a guild, etc., it may be wise to consult the experienced before proceeding. The following is a story of two such experienced associations.

Society of Philadelphia Woodworkers

Its purpose, how it all began, where it is and the future.

By John Basinski and Abbott Shilling

It was a warm late Spring evening, Friday, May 20, 1983. Daylight reflected on the Delaware River at Penn's Landing, Philadelphia, when the doors of the Port of History Museum opened for the gala reception of "Furniture by Philadelphia Woodworkers, 1983." This event, the first major juried furniture show in Philadelphia history, was the culmination of a lot of hard work by the fledgling Society of Philadelphia Woodworkers (SPW) in a co-sponsorship with the City of Philadelphia.

Over 750 people attended the opening night reception, in dress ranging from formal cutaways to crisply clean bib overalls. A small orchestra played and guests enjoyed hors d'oeuvres, contributed by the city's finest restaurants, wines, champagne, and light refreshments. The 54 furniture pieces displayed were selected by a blue ribbon jury from 125 Delaware valley entries. That first week-end drew an additional 1,100 visitors and in the six week run of the show over 15,000 visited the display. What they saw was a stunning anthology of Philadelphia's contemporary woodworkers, woodworkers whose in-kind ancestors established the City of Brotherly Love as a seat of furniture making in Colonial America.

The idea for this show began in January 1982 when a small group of young professional woodworkers gathered in the Fishtown section of Philadelphia to share a dream. That dream was to develop a showcase for the current generation of Philadelphia craftspeople, a meeting ground of woodworkers of all ages and interests. Applications were available to SPW members and non-members alike. Furniture on display ranged from designer and contemporary to traditionally inspired. The show itself received both public accolades and critical acclaim, and was featured on the rear cover of *Fine Woodworking* magazine.

A nucleus of professional woodworkers, who attended the *Wood '79* conference in Purchase, NY, established SPW early in 1982. It was legally incorporated as a non-profit group in July of that year and in its brief history has grown steadily from only a few people to over 120 members. Early in its development, the decision was made to make it a society, as compared to a guild. Membership was open to all woodworkers without regard to skills. Hence, the composition of the membership runs the gamut from highly skilled to novice, professional to amateur. Beyond a strong interest in woodworking, the other criteria for membership is payment of $25 annual dues.

Open membership is of obvious advantage to the lesser skilled; they have the opportunity to benefit and learn from their professional and highly skilled co-members. There are less obvious, but equally important skills the amateur members bring to the organization: experience in marketing, communications, law, accounting and finance, teaching and, yes, even medicine, which is certainly applicable to safety.

The overall goal of SPW is to provide a forum to nurture the woodworking knowledge of all the members through regular meetings, seminars, workshops, shows and exhibits. Through a recognized community of craftspeople, SPW establishes a network that offers welcome assistance to members and fosters an interest in the strong woodworking tradition of the region. Moreover, the Society strives to increase the public's awareness of skills, services and offerings available to them.

Toward this end, SPW sponsors a number of events for members and non-members alike. Many of these events are on a fee basis and, as a rule, cost more for non-members. Fees are set with the objective of being reasonable while generating a modest profit. Proceeds are deposited to the coffers of the group to fund other educational activities. Past events include seminars on techniques of joinery, marquetry, woodturning and the lathe, the shaper, spray finishing, museum visits and tours of master craftspersons' shops. The Port of History Museum show was merely the "public tip" of SPW's educational iceberg.

Officers and committee chairpersons form the Board of Directors. In a free and open interchange they chart the organization's direction and formulate policy. The Board meets every other month, alternating with bimonthly general membership meetings. Typically about 25% to 30% of the members attend general meetings. Meeting sites shift between members' shops and homes in the area. Establishment of a centrally located headquarters is a high priority for the current administration. Officers are President, Treasurer and Secretary with, in addition, Committee heads for Finance, Education, Publicity and Communication, and Membership.

The SPW *Newsletter* provides a valuable bimonthly communication link for the entire membership, issuing 3-4 weeks prior to each general meeting. Each issue identifies the upcoming meeting site, date, and time; commments on the program of the previous meeting; presents the President's message and general editorial material of interest to the membership. Regular features spotlight a special topic — hardwood grading and sources, for example. A question and answer column resolves insoluble problems, and a calendar tracks upcoming events nationwide. Safety issues and idea exchanges appear regularly, and a classified section is open to members and non-members as a free service. The Newsletter is the most expensive single item in the Society's annual budget. Printing and postage for a typical issue cost about $150. In addition to members, it is distributed to about 50 various individuals, organizations, schools and publications for its informational value. Newsletter staff consists of a managing editor and a features editor; the former pulls it all together and the latter writes an article on a specific subject for each issue.

The membership list for SPW is on two computers. One is used for mailings and is programmed to print addresses on pressure sensitive labels for the Newsletter. In addition, the mailing list is offered, on a rental basis, for direct advertising mailings by suppliers to woodworkers. The rental fee is $50 per use and the list is "salted" as a control to monitor any misuse such as unauthorized duplication. Again, proceeds fund activities.

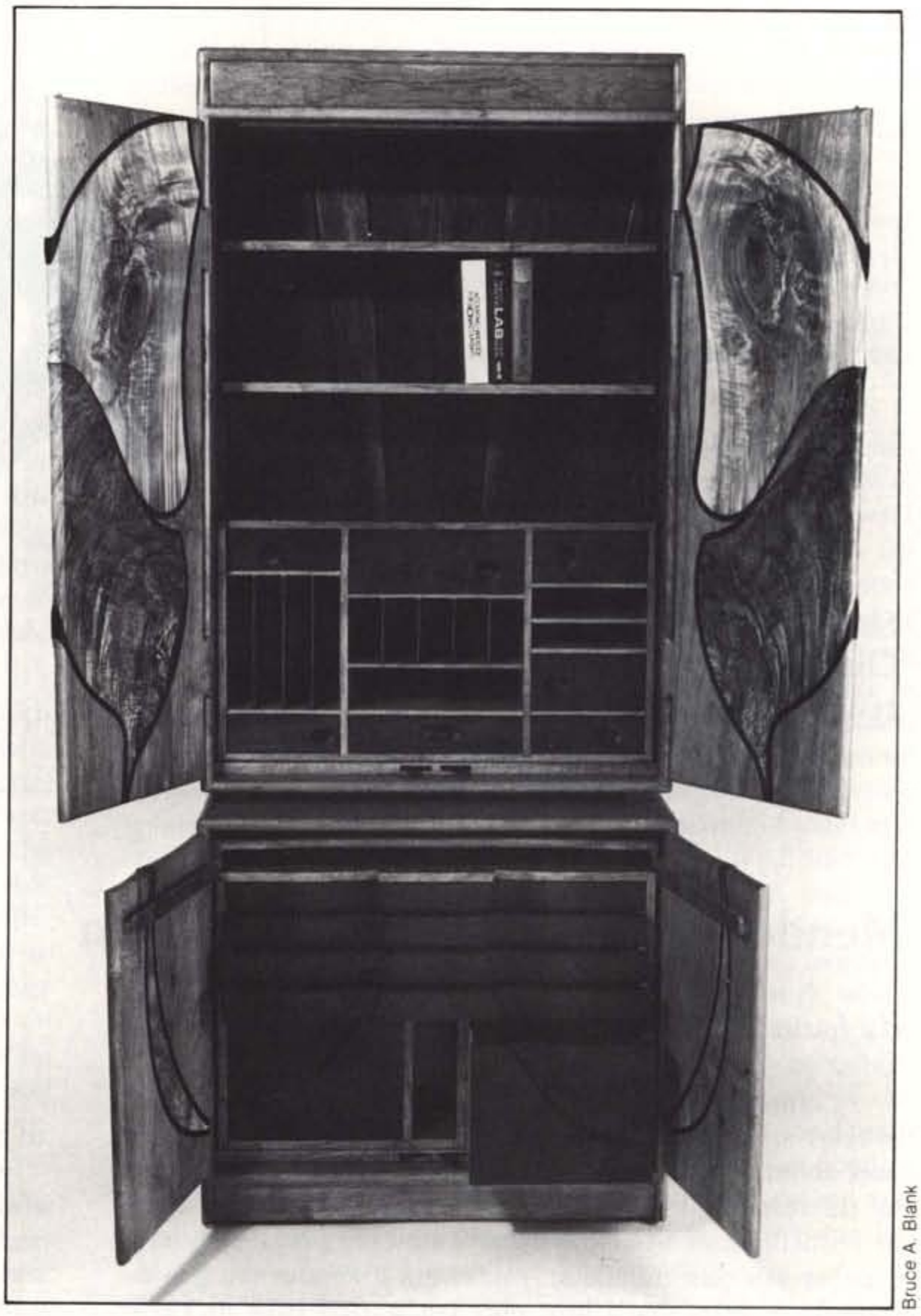
The other computer is programmed for demographics of the membership. Included in that is anniversary of membership to aid in notification of annual dues. Also, occupation and special interests of members are recorded. In that way, if a specific skill is required to assist in a project — say publicity — it is possible to identify members with special expertise. This data bank also makes it possible to tailor the educational program to member interests.

Have there been growing pains and changes: The answer is an assured "yes". The original nucleus was a relatively small group of highly skilled professional woodworkers. A primary and very important objective for them was the development and execution of the show, "Furniture by Philadelphia Woodworkers, 1983." With the realization of that dream a number of them found the crippling demands of their time unbearable. They propelled SPW to unimagined heights by unselfish application of incredible amounts of energy and vision. With great regret a number of them resigned their Board and Committee posts to follow their own pursuits. The bottom line being the need to keep bread on the table.

There is nothing so constant as change and change there has been. The result is a new mix of officers in SPW and a natural evolution in the composition of the membership evidenced by those attending general meetings. There is a greater spectrum of representation by the semi-pros, journeymen and merely aspiring woodworkers and a smaller number of the truly professional woodworkers.

This transition brought about a quiet time for SPW. The reason was undefined focus and direction for an organization going through metamorphisis. At that time it was entirely possible SPW could have simply faded away. That has not happened nor will it. Fresh energies have been infused by a second wave of woodworkers, both professional and amateur, who have capabilities equal to the original cadre. The incumbent President remains as does the Chairman of the Education Committee; new horses are in the traces of Newsletter editorship, meeting programs and sites, treasury and finance, and secretary. New talents and energies have replaced the founding fathers, and ensure the Society's continuing vitality.

The future for SPW looks robust. Treasurer Ed Graves summarizes the Society's goal aptly: If a group enters a room and simply exchanges dollar bills, no one leaves enriched; if, however, they exchange ideas and share talents they all leave with far more than they brought. This is what the Society of Philadelphia Woodworkers is all about.



Bruce A. Blank

Secretary, 87"H x 35"W x 21"D. Cherry, Walnut, Spalted Curly Maple, Cottonwood. Dovetail construction, spline router joinery.

RAY KELSO

Bob Robinson

Chest of Drawers, 32''H x 46''W x 20''D. Black Walnut; Multiple spline-miter, Mortise and tenon, and Dovetail joints. Lent by: Claude Lieber & Ursala Seinige, Lieber.

By RICHARD KAGAN

Lee Feldstein

Siamese, 24''H x 33''W x 18''D. Cherry Wood; Stacking, Mortise and tenon. Hand shaping.

RICHARD P. FELDSTEIN

Mendocino Woodworkers Association

By John Birchard

Combine two or more enthusiastic, unselfish woodworkers and put them in a warm dry place (preferably the back room of the local watering hole). Allow several hours for the resulting mixture of passion, skill, and business sense to ferment, and what have you got? No, not a bunch of drunken saw dust monkeys; you've got a woodworking association. At least that's how ours got started back in 1975, and from the reports I've heard and some of the letters I've read from other new associations across the country, it seems to be a common scenario. The need to buy at a reasonable price, and to sell at a profit are common to all who would make a living with their craft. Camaraderie and education are also needs that can be filled when craftspeople get together. But, as we found out, there are pitfalls on the path to success at this sharing game. We have recently survived a nearly terminal "mid-life crisis," so perhaps an account of our ups and downs can help other associations avoid similar mistakes.

Way back when, a few far sighted local trades folk, tired of working just to make a living, and unable to sell their "fine work" in galleries because of lack of public interest and prohibitive mark-ups, decided that the only thing to do was rent a hall and have a show of their own. The word went out, a hall was rented for the coming Thanksgiving weekend, a few sheetrock and 2x4 partitions were constructed, and in a matter of hours the pieces were moved in and set up. There was no judging, no jurying, and not a lot of sales, but the show was a raging success. Timing and carefully crafted publicity paid off. The several thousand people who viewed the show loved it, and the word spread that the woodworkers up in Mendocino had a good thing going. That first unjuried show included everything from redwood planters to museum quality scupture; but after the show, several of those who were most committed to high quality work got together and formed the nucleus of the group which became the Mendocino Woodworkers Association.

Starting an association is as easy as publishing a ficticious name statement in your local newspaper, setting up a bank account, and adopting a set of by-laws. Once that is done, the key elements are energy, committment, and communication. A sense of direction is also crucial to the continued well-being of the group, but this is the most elusive element in the mix. It only comes with experience and can't be forced on the group by a few of its members. In our case, the first three elements were originally provided in admirable portion by Brian and Kieta Lee, Gary Church, Crispin Hollinshead, Tom McFadden, Jim Sandberg, and, as time went on, many others. For several years, Brian and Kieta put out a newsletter that was always full of information and inspiration, spelling errors, and exhortations to pay your dues and get ready for the next show. It came out intermittenly but was always a joy to read. Besides show and seminar news, it included a want ads section and lots of interesting facts that Brian had dug out of some government publication or trade journal. Brian also organized group buying efforts, got us discounts at local stores, and organized tours and events. There were Saturday morning seminars once a month by various craftspeople skilled in certain areas like finishes, shaper work, and sculpting, and everyone pitched in to make each show the best ever.

The Association now included a "guild" or select group of members who were elected by the entrants in each show to recognize those who everyone felt were the most outstanding craftspeople of that show. A jurying procedure was also instituted because the association felt responsible to protect its customers from faulty construction. At first it was agreed that no one would ever be juried completely out of a show. If someone wanted to show their work but the association didn't want to be responsible for selling it, they could still enter a piece with a "not for sale" tag. Even so, jurying caused a lot of hard feelings and bruised egos. Later show committees tended toward even more rigid standards of acceptability, and eventually even the "not for sale" rule was unfortunately forgotten.

The shows became increasingly well known through those first several years, and though our original hall soon became unavailable, a new one opened when Clyde Jones started the Artisan's Guild Store. Clyde saw a need for a year round outlet for MWA, and being a woodworker himself, he made every effort to keep his mark-ups for local craftspeople as low as possible. Over the years, he and his wife, Tigerlilly, have done a lot of footwork and licked reems of stamps to make the gallery a continuing success. They now show many different types of craft work, though the emphasis is still on woodworking. Clyde's advice to anyone considering a similar undertaking is to be realistic about the percentages you charge. An artisan can't expect a gallery to properly represent him unless he is willing to pay for it.

Sales at the MWA shows were never outstanding. The most a show ever brought in was a little over $4,000, and the average was about $2,000, but the publicity and goodwill which they brought to the local woodworking scene made the effort worthwhile. In the July/August issue of 1981, *Fine Woodworking* magazine did a front page feature on Woodworking in Mendocino, and in 1982 when the governing board of the American Crafts Council came to Mendocino, we hosted a joint show with several other California associations. The show was held at both the old Heeser House and the Artisan's Guild Store, and occasioned a weekend of gallery hopping, wine tasting and seminar going that will not soon be forgotten. The newsletter and seminars, often with well known masters, continued to enrich the local educational opportunities during this time, and when the Krenov school was set up by the College of the Redwoods in Ft. Bragg in 1981, it seemed to us that Mendocino had truly become the woodworking Mecca of the Western world. Some may disagree, but never did it seem to me that too many woodworkers were vying for too small a market. The more who came here to work, the bigger and more far reaching the market seemed to get.

Still, woodworking associations, like trees, have their time to grow, and their time to wither. The Heeser House/Guild Store show of 1982 marked the peak of that first spurt of growth. Though there were other shows to follow, some very fine seminars, and continued production of chips and shavings (not to mention fine woodcraft), there was also an increasing dissatisfaction in the ranks. The tendency to put quality on a pedestal and worship it as the perfect master left the work-a-day craftsman at a loss. Sales at shows were slow at best, so how could Joe cabinetmaker who was too busy already and whose kids needed a set of bunkbeds, set aside a month or even a week to make a museum quality speculation piece for the show? There were now several galleries vying for the right to represent the best known of the fine woodworkers, and those craftspeople were developing their own followings and doing their own shows. The association had lost relevancy for them as well. Many of the founding members let their support lapse around this time, costs went up, sales down, and eveything got so complicated. Meetings were a hassle, and often ended with frayed nerves. After one particularly intense meeting, the attendance sank from 25 to 6 at the next meeting. Serious consideration was given to dissolving the MWA.

Still, woodworkers are social creatures, and the tendency to get together and chew the fat is natural. The MWA eventually came back from its roots as alive as ever. Several old members hung in there and new faces began to show up in increasing numbers. The new strategy according to current president Jim Marquardt, is to keep it simple and keep it relevant. He feels that the association should be a service organization for all local woodworkers and that, like a chamber of commerce, it has a responsibility to support local woodworking through publicity and promotion. But more important than that, it should provide a forum and a meeting place for the enjoyable and enlightening mixing of ideas and information. To avoid the depressing meeting syndrome, our meeting format has been stretched to bi-monthly, and each includes a seminar on some subject related to the craft. Seminars are short, to the point, and about topics like cold bending, bookkeeping, and photographing your work, which are of interest to many, but not so basic as to be boring. The association buys a case of beer and soft drinks to encourage socializing after the seminar and business portions of the meeting. Responsibilities are evenly distributed, and each meeting is at a different person's shop or house. Cooperative buying occurs when enough people have the same need and can get organized, and there is even talk of doing another MWA show, unjuried again like the first one.

So, if you are starting an association, or involved in one that is feeling its first bloom of popularity, avoid the pitfalls of divisiveness and an overly critical attitude toward the multiplicity of woodworking styles and you may well avoid an early burn out. Don't let the responsiblities fall into the hands of too few people. Bind it together with the one thread we all share — a love of wood and the creativity of work. Keep it light and enjoyable and everyone will profit from the sharing.

Variable Jig for Cutting Tapers

By W. Curtis Johnson

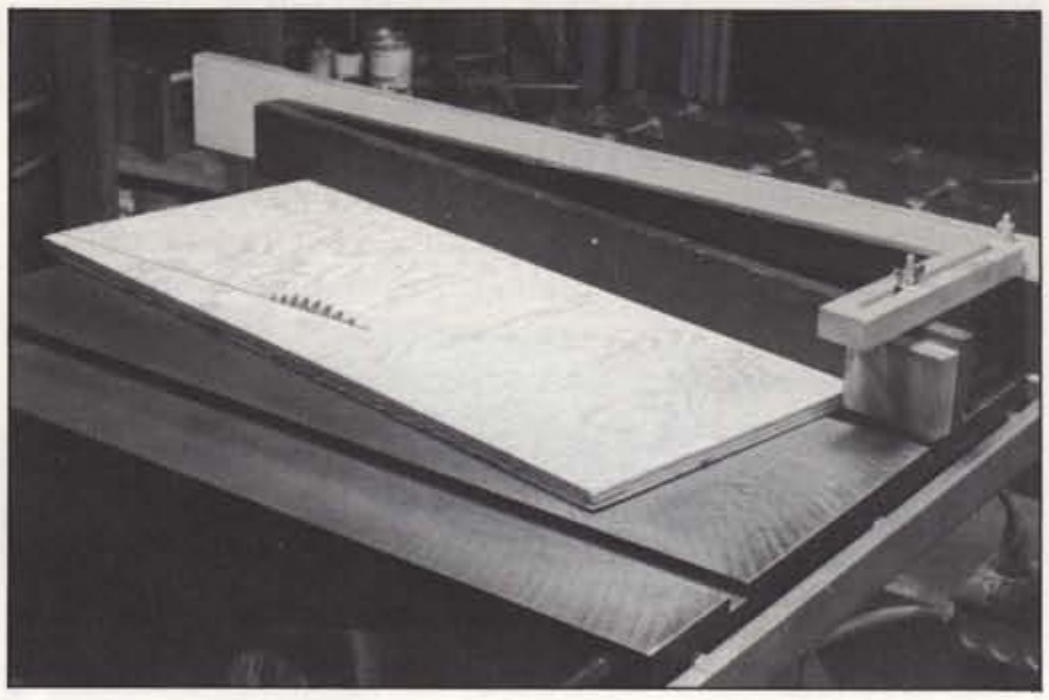
Whenever you need two nonparallel rip cuts, the variable taper-cutting device will come in handy. It is probably most useful for sawing tapered table legs, but it can also be used to make jigs for sawing the pins and tails of through dovetails. To make the device you will need two pieces of 1 x 3 at least 24 inches long, a narrow two inch hinge with screws, two 1/4 by 4 inch carriage bolts, two washers, two nuts, a wing nut, and some scrap hardwood. The two pieces of 1 x 3 must be dry, straight, dressed smooth, and cut to equal lengths. Construction is illustrated in the figure.

Drill a hole for a carriage bolt in each board about two inches from one end and parallel to the end through the 3 inch width of the board. Cut a notch 1/4 inch deep on one side of each board and wide enough to accomodate the head of the carriage bolt. Put the two boards side by side with the notches together and attach the hinge to the other end.

The crossbar should be made of scrap hardwood about 1 and 1/2 inches wide and eight inches long. Drill a 1/4 inch hole 3/8 of an inch in from one end. Rout, or drill and file a 1/4 inch slot to within one inch of either end of the board. This slot will provide the adjustment.

The board riding against the fence will contain the fixed bolt and the other board will be variable. Glue a block of hardwood to the outside of the variable board to serve as the stop for the board to be cut. This stop must extend about 3 inches in from the end to avoid cutting the crossbar when the blade is high. Glueing is preferred over screws in case the blade cuts into the block. Actually, the block may have to be sacrificed for certain cuts and may have to be replaced from time to time.

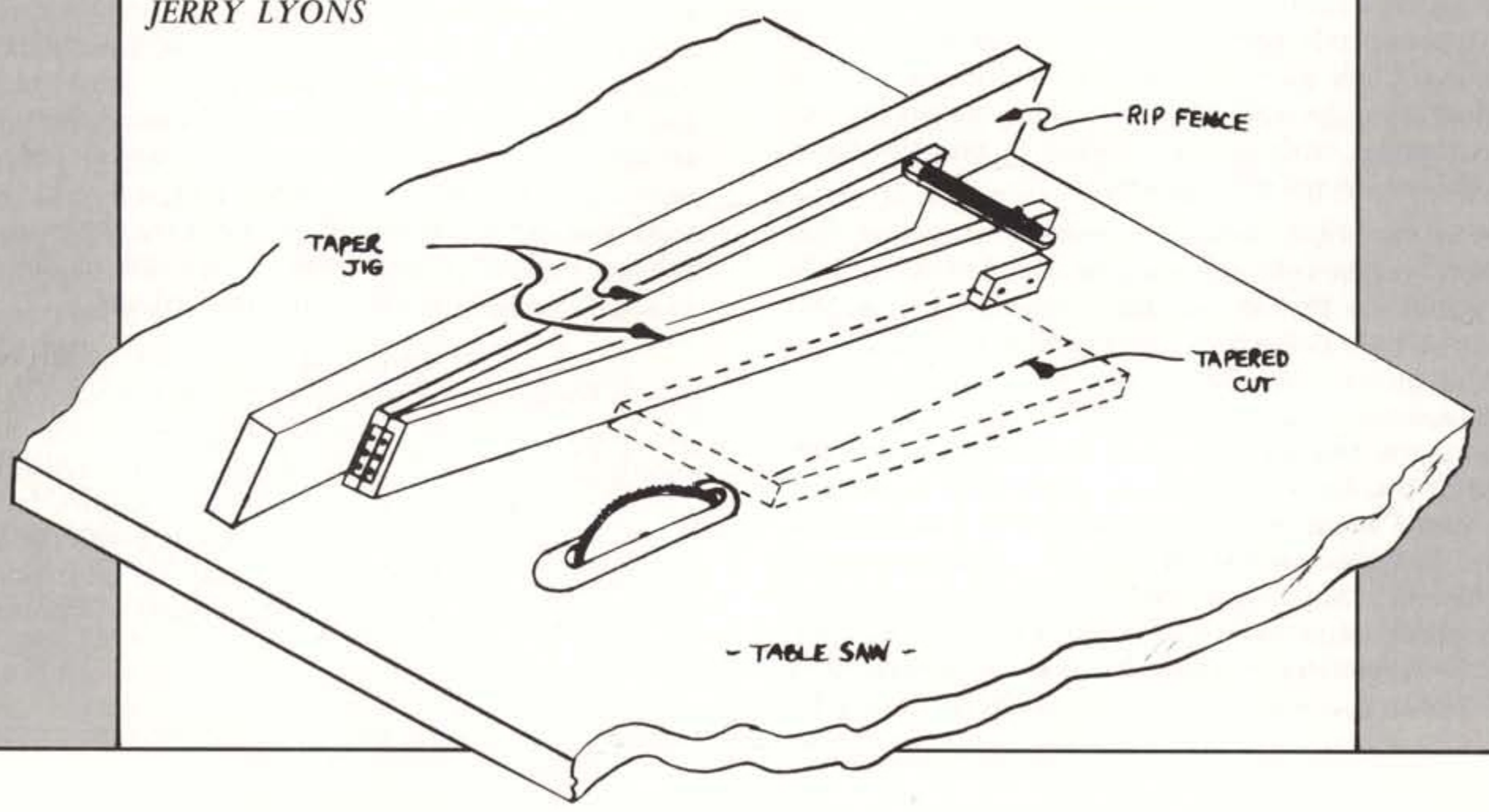
When the glue is dry, seat the two carriage bolts in their holes and add the crossbar. The crossbar will have to be rounded at the fixed end so it doesn't hit the fence. Put one washer on each carriage bolt and add the two nuts to the fixed bolt. When they are snug but still allow the crossbar to move, tighten the two nuts against each other. Put the wing nut on the adjustablt bolt. Adjust the device for the appropriate angle.



The photo shows the variable jig cutting a taper on a circular saw. The blade guard has been removed for clarity. The fixed side of the jig moves against the fence, and with one corner against the stop the work moves with the variable side.

Although I took the photo on my circular saw because it shows the use of the device more clearly, I really prefer to rip on my little band saw. If the blade is sharp the bandsaw consistently rips a straight line using the fence. Woodcraft bandsaw blades seem to come sharp. I've had to sharpen the few other bandsaw blades I've purchased to avoid wandering and having the blade lead the cut.

ILLUSTRATION BY JERRY LYONS



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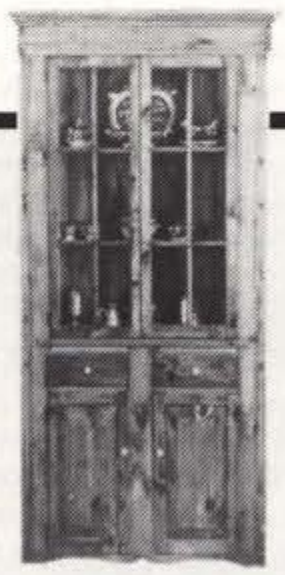

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Woodworker's Calendar

FOR FUTURE ISSUES:

We will be happy to list any future shows, demonstrations, club or guild meetings. Listings will be free of charge. They must pertain to woodworkers and be open to the public. The September issue will include September through December. The closing date is July 1. Closing date for the December issue is October 1.

Society of Philadelphia Woodworkers. Juried exhibition. Sidewalk sale and exhibition of Central Pennsylvania Festival of Arts, July 11-14. Write 4101 Lauriston St., Philadelphia, PA 19128.

The Woodworking Association of North America offers its members a magazine titled International Woodworking. Members also receive free classified advertising in the magazine. The association conducts shows and seminars across the country and in Canada. For more information write W.A.N.A., 35 Main Street, Suite 6, Plymouth, NH 03264.

The Guild of Oregon Woodworkers is seeking new members. Write them at P.O. Box 1866, Portland, OR 97207.

Haystack Mountain School of Crafts, Deer Isle, ME, 04627, offers summer workshops with the following woodworkers: Jon Brooks, June 23 - July 12; Jere Osgood, July 14 - 26; John Dunnigan, July 28 - August 16. Applications due April 15. Write for brochure.

Souris Valley Woodworkers Association is looking for new members. Their address is P.O. Box 3042, Minot, ND 58702.

Saskatchewan Craft Council, Box 7408, Saskatoon, Sask. S7K 4J3. Contemporary Furniture Design and Technique '85. A conference which will examine the current trends in furniture making today, through lecture and demonstration by some of North America's leading woodworkers. August 3-5. Registration fee: $150.00. Deadline: June 1. Phone: 653-3616.

The Woodworking Show for Craftsmen & Hobbyists. You are invited to exhibit in the shows or participate in the workshops and seminars. June 28-30, Merchandise Mart, Denver, CO; Sept. 13-15, Southfield Pavilion, Detroit, MI; Oct. 4-6, Santa Clara Fairgrounds, San Jose, CA. Contact The Woodworking Show, 1516 So. Pontius Ave., Los Angeles, CA 90025.

2nd Art of Crafts Festival, July 25-28. Denver Art Museum. Application deadline Feb. 22. Contact The Art of Crafts, P.O. Box 38223, Denver, CO 80238. (303) 592-7238.

6th Annual Fountain Square Arts Festival, June 29-30. Fountain Square, Evanston, IL. Deadline April 12. Contact Chamber of Commerce, 807 Davis St., Evanston, IL 60201. (312) 328-1500.

New England Craft Program. Workshops - high school age, summer. Kent Hills. Contact New England Craft Program, J. Sinauer, 374 Old Montague Rd., Amherst, ME. (413) 549-4841.

Scent Bottle Invitational, July 5 - August 31. Signature galleries in Boston and Hyannis. Deadline March 1. Contact Signature, Dock Square, North St., Boston, MA 02109. (617) 227-4885.

Violin Craftsmanship Institute. Workshops - various violin and bow making and repair, June 17 - August 23. University of New Hampshire, Durham, NH. Contact Violin Craftsmanship Institute, Univ. of N.H., Div. of Continuing Education, Brook House, 24 Rosemary La., Durham, NH 03824. (603) 862-1088.

The American Precision Museum, Windsor, VT. Exhibition - rare tools and machines, ongoing exhibit. (802) 674-5781.

Vermont State Craft Center, Frog Hollow, Middlebury, VT 05753. Series of workshops. (802) 388-3177.

Conover Workshops. Sack-Back Windsor Chairmaking, June 17-21. Continuous-Arm Windsor Chairmaking, June 24-28. Handtool Techniques and Joinery, June 17-21 and June 24-28. Turning, June 17-21. For more information contact Conover Workshops, 18125 Madison Road, Parkman, OH 44080. (216) 548-3481.

The Appalachian Center for Crafts announces it's 1985 schedule. The center is different in that it offers college credit towards BFA and BS degrees. It is located on 600 acres in Middle Tennessee. On-campus housing and food is available. Its unique location allows for all types of leisure outdoor activities such as fishing, boating and water skiing. Workshops are as follows: July 1-5, Sid Birt, Damascus Steel; July 15-19, Randy McDaniel, Hot Forging Non-Ferrous Metals; July 29 - Aug. 2, Bruce LePage, Gunsmithing; Aug. 5-9, Phillip Baldwin, Bladesmithing; June 17-21, Drew Langsner, Greenwood Chairmaking; July 1-5, John Wilson, Shaker Oval Boxes; July 8-12, Ron Puckett, Tables: Design and Construction; July 15-26, Michael Pierschalla, Machine Joinery; July 22-26, Giles Gilson, Woodturning; July 20 - Aug. 2, Del Stubbs, Woodturning Techniques. For more information contact A.C.C., Route 3, Box 347-A1, Smithville, TN 37166, (615) 597-6801.

Anderson Ranch Arts Center is hosting a week long Woodworkers Symposium August 5-9. Some of the country's finest woodworkers will be there for slide shows, demonstrations, lectures, and hands-on activities. Also scheduled for this summer are: June 17-28, Richie Marks, Basic Woodworking; June 17-21, Bob Unger, Turning; July 1-12, Simon Watts, Furniture Techniques and Construction; July 15-19, Silas Kopf, Veneering, Marquetry and Inlay; July 15-19, Bill Walden, Carving; July 22 - Aug. 2, Tage Frid, Furniture Techniques and Construction. For more information contact Anderson Ranch Arts Center, Box 5598, Snowmass Village, CO 81615 (303) 923-3181.

The Luthierie. June 8-14; workshops on traditional timber frame construction with Makoto Imai. July 13-14, August 3-4; workshops on Shoji Screens with Robert Meadow. July 27-28, August 10-11, 5-day August 5-9; Japanese hand tool techniques with Robert Meadow. For more information, contact The Luthierie, 2449 W. Saugerties Rd., Saugerties, NY 12477 (914) 246-5207.

Society of Philadelphia Woodworkers. Workshop-Turning, lecture and hands-on demonstrations, June 15. Auction, Sept. 21, furniture and other finished objects, tools, machines, wood, etc. Contact SPW, 4101 Lauriston St., Philadelphia, PA 19128 no later than July 15 to make the deadline for the sale catalog.

The Woodworker. Sept. 20-22. Philadelphia Armory (Drexel Campus). Contact: Craftmarket America, Box 30, Sugarloaf, NY 10981 (914) 469-2158.

12th Annual Pennsylvania Designer Craftsmen. July 31 - August 2, Franklin and Marshall College, Lancaster, PA. Contact: Janet Goloub (215) 691-5300.

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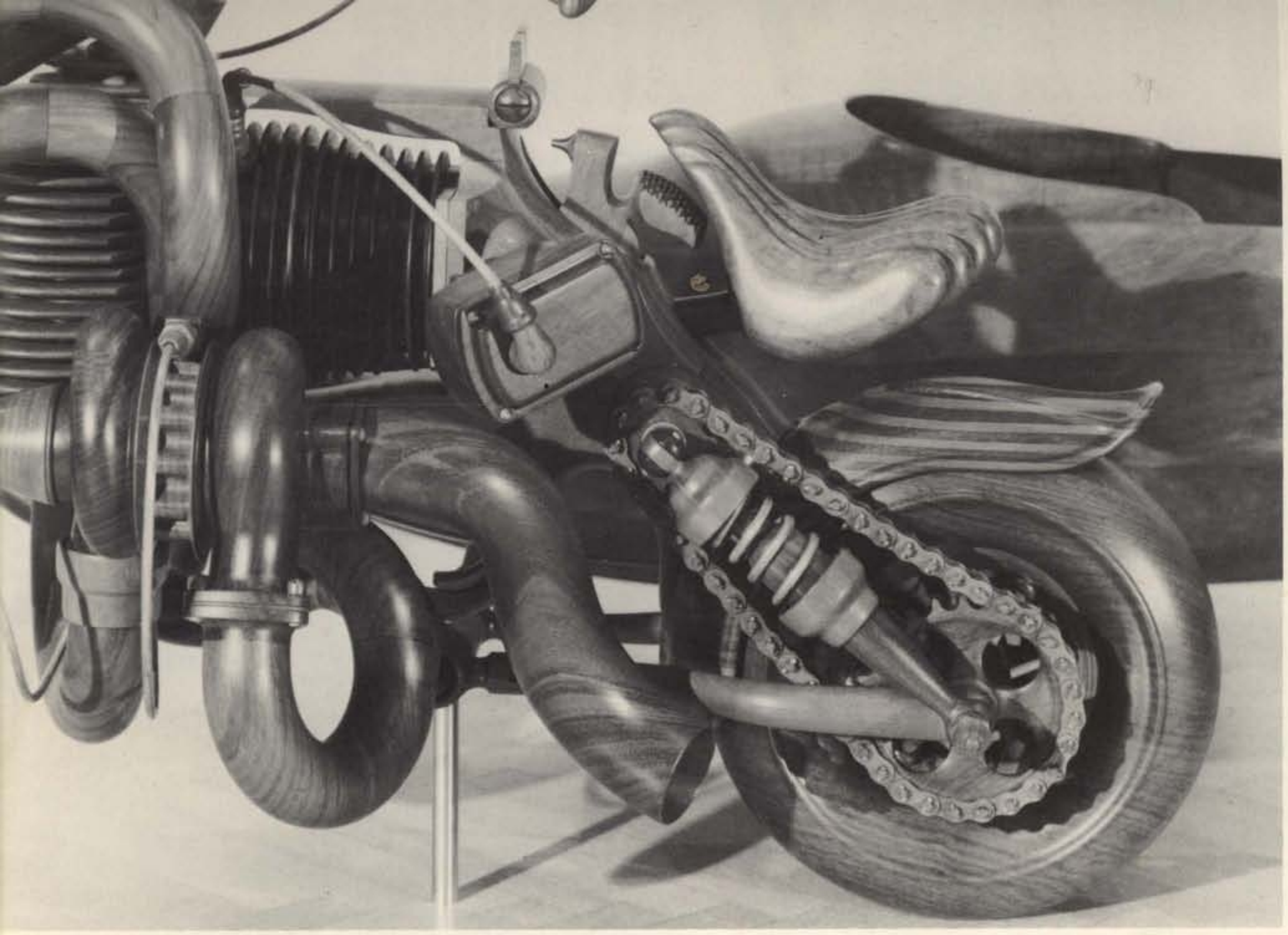

by MICHAEL I. COOPER

Constructed entirely of Jarrah, a pink through red brown hardwood found only in western Australia, the small motorcycle and side car are on a base measuring approximately 6 feet long and 3 feet 6 inches wide of australian silver ash. The sculpture is comprised of over 3000 pieces completed in three and one-half months.