Beyond The Edge

A Newsletter for Woodworkers from The Luthierie

Volume 1 No. 2 **Summer, 1987** **$3.00**

THE PLANE TRUTH

The following is an excerpt from our forthcoming Booklet of the same name. This is a small portion of the booklet, which also contains material on the initial conditioning of the blade and sub-blade, tapping out and tensioning both blades, conditioning the sole of the plane for rough, truing and finish planing configurations, and the process of truing and finish planing a board. The booklet contains many pictures and drawings to clearly illustrate its content. Also included are instructions for making winding sticks to test a plane or board for twist and contour. The booklet is available from The Luthierie for $14.95. You may use the order form on page 8.

A Japanese finish plane can leave a mirror surface on even the hardest, most figured woods. The results are better than anything you can do with sandpaper, and when everything is just right, finish planing can be both efficient and exhilarating. Getting "everything just right," means being aware of the implications of each stage of the set-up, from shaping and sharpening the blade, to fitting the blade to the body and shaping the sole.

Fitting the blade to the body

The body will have shrunk since it was made in Japan. The blade will be too tight side to side, and too tight in back. As the body dries, the annual rings try to straighten out so the body pushes up in the middle. Remove the pin that goes across the blade and sub-blade, as well as the blades themselves. The first step is to mark out the width of the main blade centered on the top of the body, using a pencil. Both cheeks

Planing Curly Maple.

Contents

Fragments...

If you like hearing from us...please let us know if you move. We try to keep up with your moves via the Postal Service returns, but this method is costly and delays the delivery of your newsletter.

We welcome your visits to look at tools. We have the full gamut on display, and most of the tools are in use in the shop as well. However, if you do want to come for a look, please call ahead to let us know you're coming. Although we're here most of the time, we'd hate for you to travel a long way to discover you've come on the one day when we're off doing a trade show or even (could it be possible?) taking the day off. The number is (914) 246-5207.

Beyond The Edge is a quarterly publication of The Luthierie.

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THE PLANE TRUTH

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should be the same width. Mark out the width just a little wider than blade, about 1/32" on each side of the blade. This is to leave room for lateral adjustment. On the bottom side of the plane, the width of the blade is marked at the mouth, centered. This should be a snug fit, so mark exactly here. Next mark out the sub-blade with the same tolerances as the main blade. The width of the sub-blade determines the width of the throat opening.

Using a 1/16" or 1/8" chisel, make straight and flat surfaces between the marks for the main blade. Be sure to get all the chips out of the corners so nothing throws the fit off.

The sides of the blade should fit so that there is enough room for lateral adjustment at the top, and just barely fit at the bottom. How tight you fit the sides and back should also reflect the climate you are fitting it in, the climate it will be used in and the season of the year. Fit it looser if you are setting up the plane in the summer, tighter in the winter. Generally, leave the fit a little tight at first, as it will probably loosen up as time goes on. You can always open it up more later. It the blade mushrooms at the back when you tap it into the body, the fit is too tight.

The blade is centered and held in place by the way the back of the blade is fit to the body. The back of the blade is curved, as is the surface it rests on. The alignment of these curves determines the fit: centered, off-center or askew. The blade will be pulled towards the area that is too tight. You can determine where wood needs to be removed by observing whether the whole length of the blade is pulled to one side or if the blade is askew. Another help is to cover the back of the blade with pencil and tap in the blade until the tone quits rising. When you remove the blade, marks will be left which give you an indication of where the blade is making contact. Your observations of which way the blade is being pulled off center will help you determine which of thes pencil marks to pare off. You may have to repeat the process of penciling, tapping in and paring a few times until you find all the places the blade gets hung up. It's good to remember that if you fit the blade tight in the body the curve of the blade will be straightened out just a bit. Also, when you set the plane down on the bench, do it gently. If you set it on its side heavily, you can knock the blade out of center, causing the blade to dig in on the side the next time you take a cut.

Fitting the sub-blade

The upper corners of the sub-blade are bent down to tension the sub-blade and exert pressure at the edge down onto the main blade. These ears, as they are called, should be hammered over following the same principles of support as in tapping out. If you are getting a thicker shaving planing against the grain than with the grain, the tension of the sub-blade needs to be increased. A sub-blade that is too loose can cause the plane to dig in or tear out. The sub-blade should sit firmly when it is placed on the main blade. If the ears are unevenly bent over, the sub-blade will rock.

Some people recommend using planes with different angles for hardwood versus softwood. While it is true that the higher angles will resist the pulling down effect which is stronger in hardwoods, I find it too expensive and time consuming to keep two full sets of rough, truing and finish planes in condition. Instead, I adjust the sub-blade to suit my situation. By bending the ears over more, I can increase the tension of the sub-blade on the main blade, which helps it resist the tendency to pull down into the wood. This can also have the effect of deforming the edge of the sub-blade unless it has been tapped out to help increase the tension at the edge. The wider micro-bevel used for hard-woods serves to accomodate this increase in tension. Here's another little trick. When planing difficult grain or end grain, I wipe on a solution of glycerine and water (1:16); this softens the wood and makes it less resistant. You must be sure to allow the wood to dry before planing, because the moisture would cause the plane to go out of condition. As the body of the plane swells, the shaving will get thicker.

Once the main blade and sub-blade are fitted, you should take a look at the throat opening. You want to clean up this opening without enlarging it any more than necessary. An opening of larger than 1/8" will render the plane more sens-itive to changes in grain and hardness. Again, you are deal-ing with resisting the pull down into the wood as the cut is taken. The most crucial point of support on the sole is right there at the throat opening. The closer this point is to the point of cut, the more control you will have.

From The Bench of Robert Meadow

SHARPENING PLANES AND CHISELS

If you're using a plane or a chisel, you are going to plane, to pare, or to chop. Both planes and chisels need to cut wood, but how and in what way they do so should effect the geometry you choose when you sharpen them. Each situation requires a different combination of characteristics in regard to penetration, stiffness and toughness.

First some definitions of terms. (see drawing below) The edge of a tool is the intersection of two surfaces. A keen edge is a clean intersection, with the edge itself polished and flawless. This will improve the cut of any tool. The edge angle is that which is formed by the hollow ground face and the first 1/16-3/16" behind the edge. The bevel angle is that which is formed between the hollow face and the rest of the bevel.

You can consider 25° as a good starting point for both the edge angle and the bevel angle of planes and chisels. Let's look at each cutting situation to discover in what ways you might have to modify this norm for the best results.

In planing, you want to take a cut that does not penetrate too deeply into the wood. The tendency of a blade which is not stiff enough, is to deflect downward. As the shaving that is being taken emerges, it exerts pressure on the blade that makes it tend to pull downward, creating a thicker shaving, which exerts more pressure and so on. The result is tear-out. To counter this effect, you want to make the blade as stiff as possible. One way to stiffen the blade is to tap it out. Tapping out is the process by which metal is moved toward the hollow ground side of the blade to restore or even out the land. (Further explanation of tapping out is given in our new booklet on planes. See page 1) One of the most beneficial by-products of this process is that the direction of the grain of the steel is changed as the metal is moved, resulting in a stiffer blade. This is the reason I recommend tapping out both the blade and the sub-blade of a plane. The other way to ensure the stiffest possible blade is to make the bevel perfectly flat; the edge angle and bevel angle should be one and the same. For softwoods, an angle smaller than 25° (as small as 22 and 1/2°) is better because the soft fibers of the wood will be crushed by a more obtuse angle. In hardwoods the more acute angles will generally cause the blade to chip.

A paring chisel will tend to lift out of the wood in the same way that a plane blade will tend to pull down into it. As you lift the handle of the chisel to pare into the wood, the pressure of the surface of the wood under the hollow face pushes the blade out of the wood. A bit of a paradox. The paring chisel too needs to be stiff to resist this deflection. Tapping out and a perfectly flat hollow face are the key here. However, a chisel is not held in a body like a plane blade, and paring cuts penetrate deeper into the wood than planing cuts. Therefore, a chisel that is sharpened at an angle of 25° with a perfectly flat bevel will chip more readily

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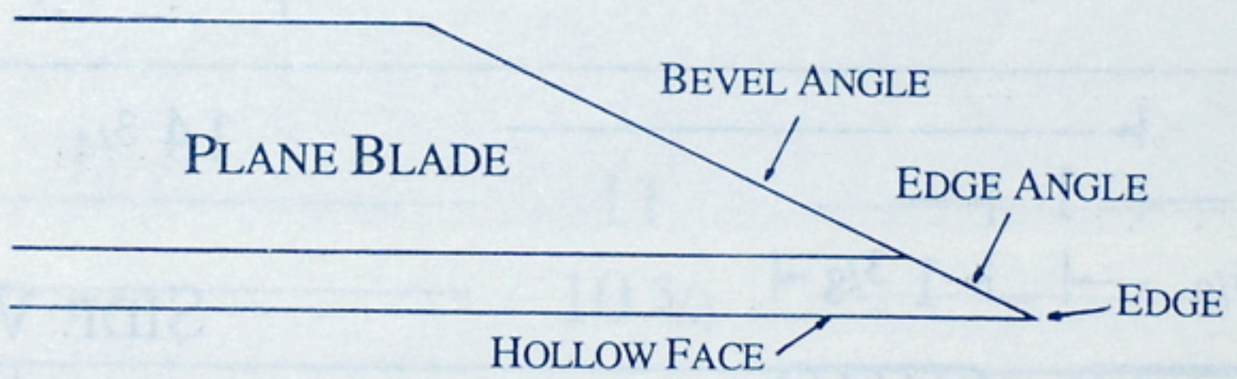

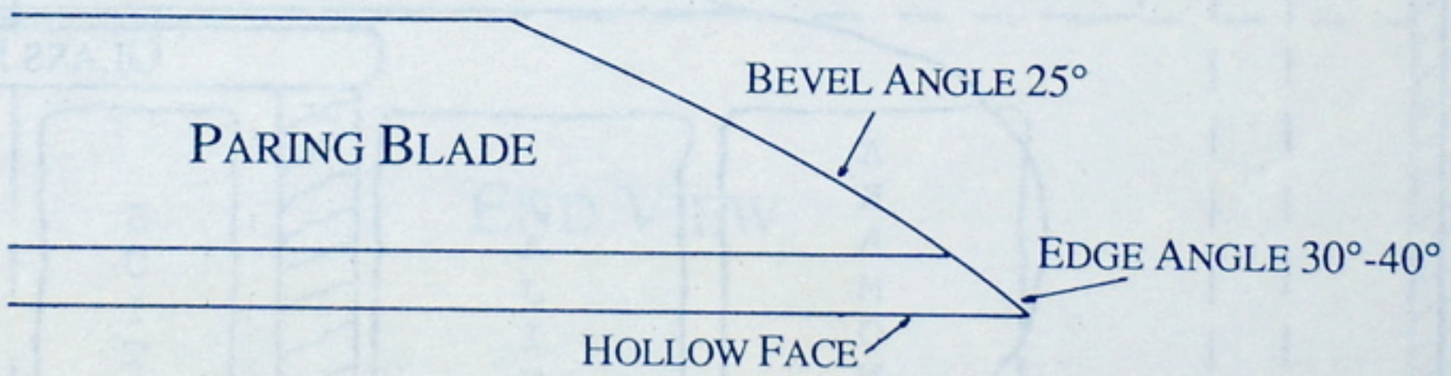

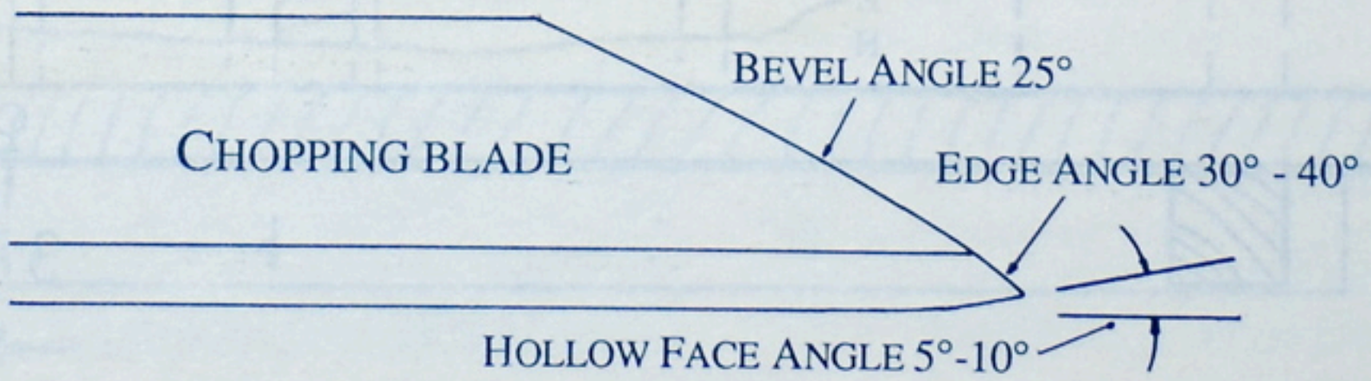

TOP VIEW

℄

3 1/2

19

14 3/4

1

2 5/8

1 3/8

SIDE VIEW

GLASS PLATE

AKAMONZEN

TAJIMA

SUITA

HONYAMA

1200 AQUA

1200 AQUA

℄

3 1/2

THE LUTHIERIE

2449 WEST SAUGERTIES ROAD, SAUGERTIES, NY 12477

STONE BOX PG. 1 OF 1 4-22-87 1/2"=1" GY

SPECIFICATIONS:

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MATERIALS:

TWO (2) SIDES	3 3/4	X	18 3/4	X	1/2
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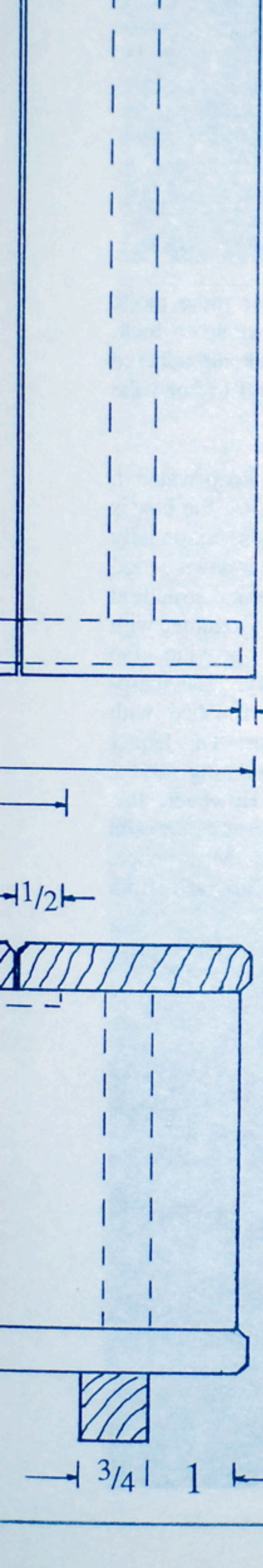
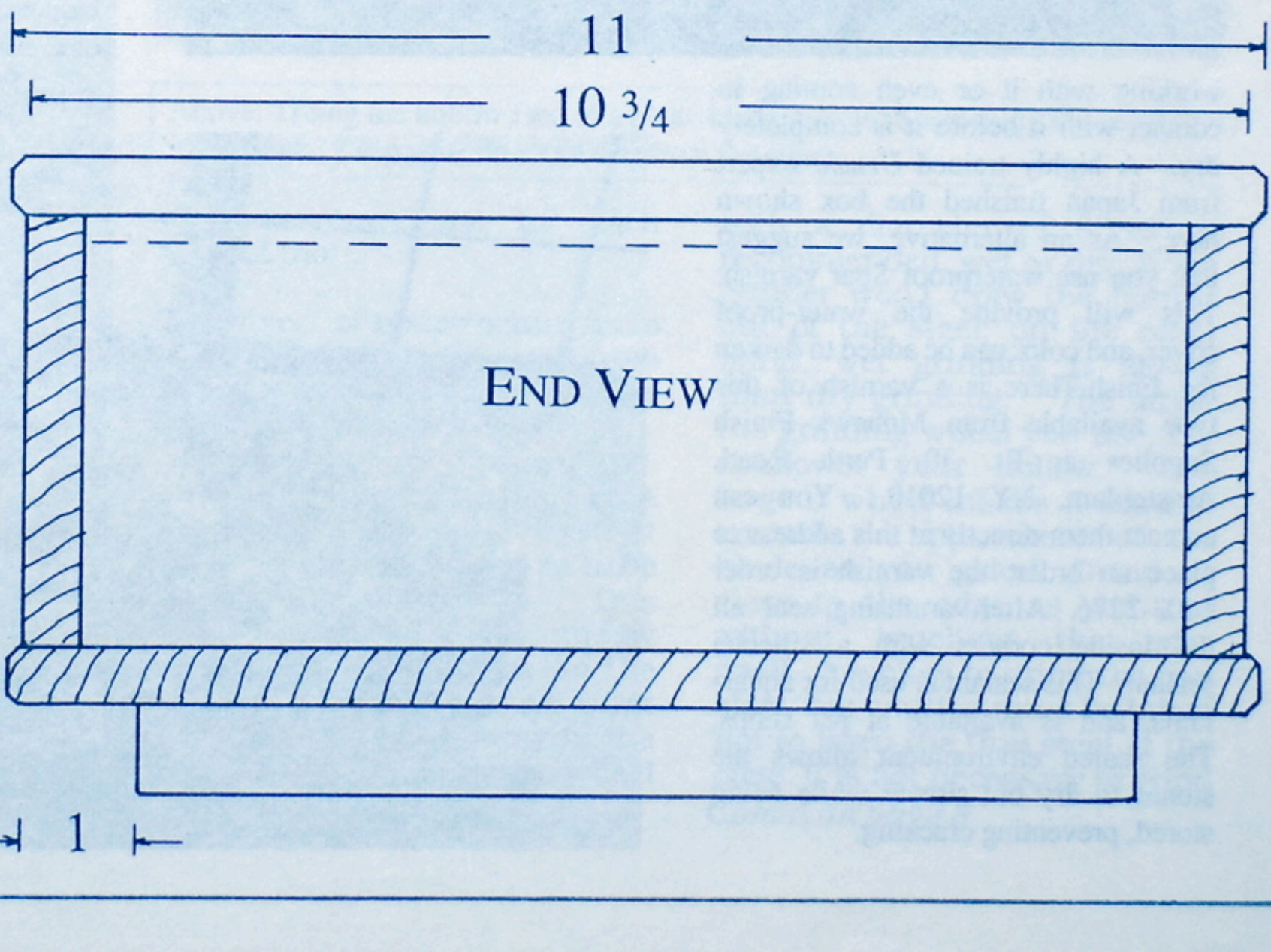
ONE (1) BOTTOM	11	X	19	X	1/2
TWO (2) FEET	8 3/4	X	3/4	X	3/4
TWO (2) DIVIDERS	9 3/4	X	3	X	1/2
TWO (2) RAILS	2 5/8	X	11	X	1/2
ONE (1) LID	9 3/4	X	14 3/4	X	3/16
TWO (2) RAILS (FOR LID)	1 3/8	X	11	X	1/2
ONE (1) PLATE OF GLASS	9 5/8	X	5	X	3/8 (+ - .125)

(OPTIONAL MAY SUBSTITUTE OTHER MATERIAL)

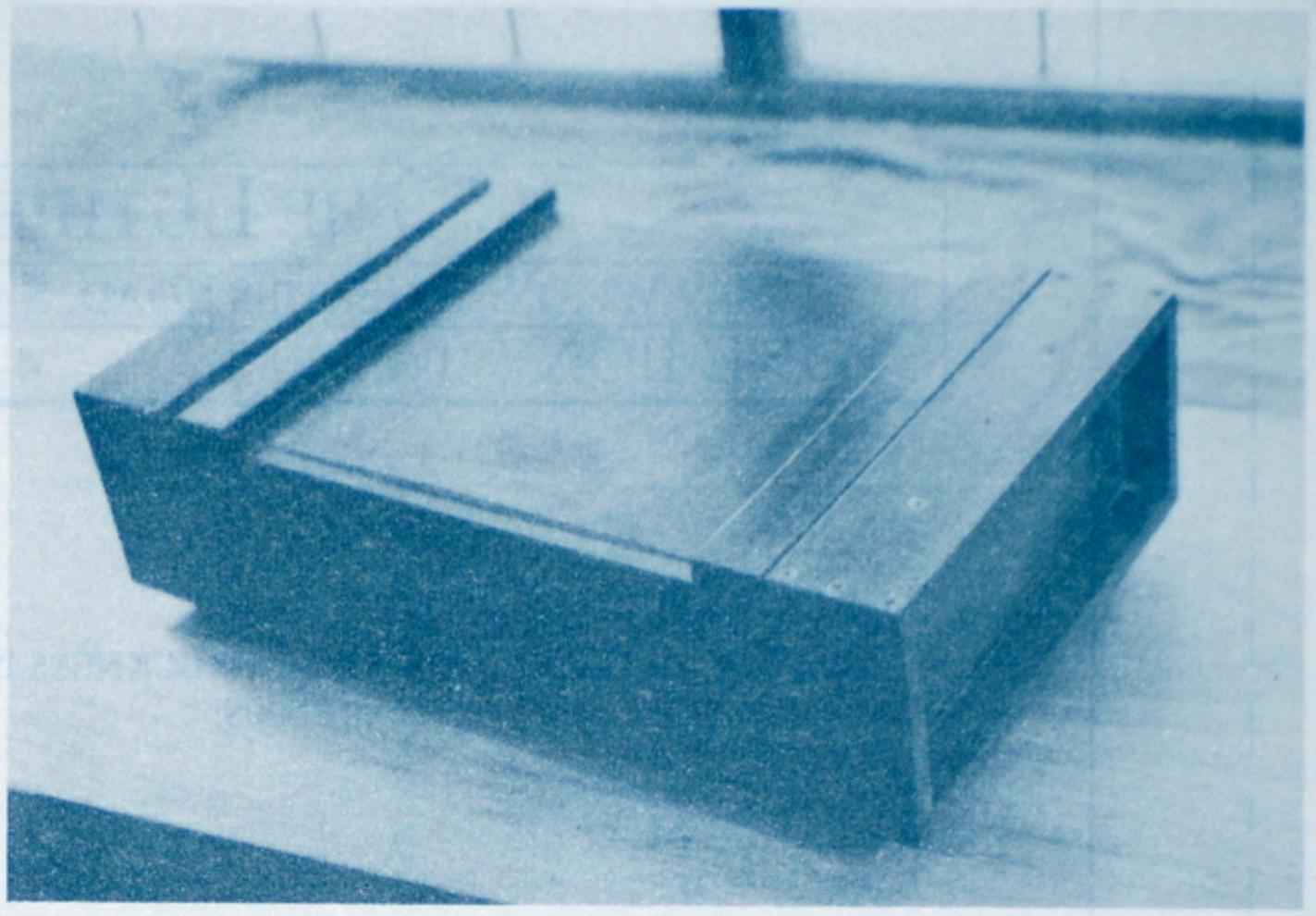




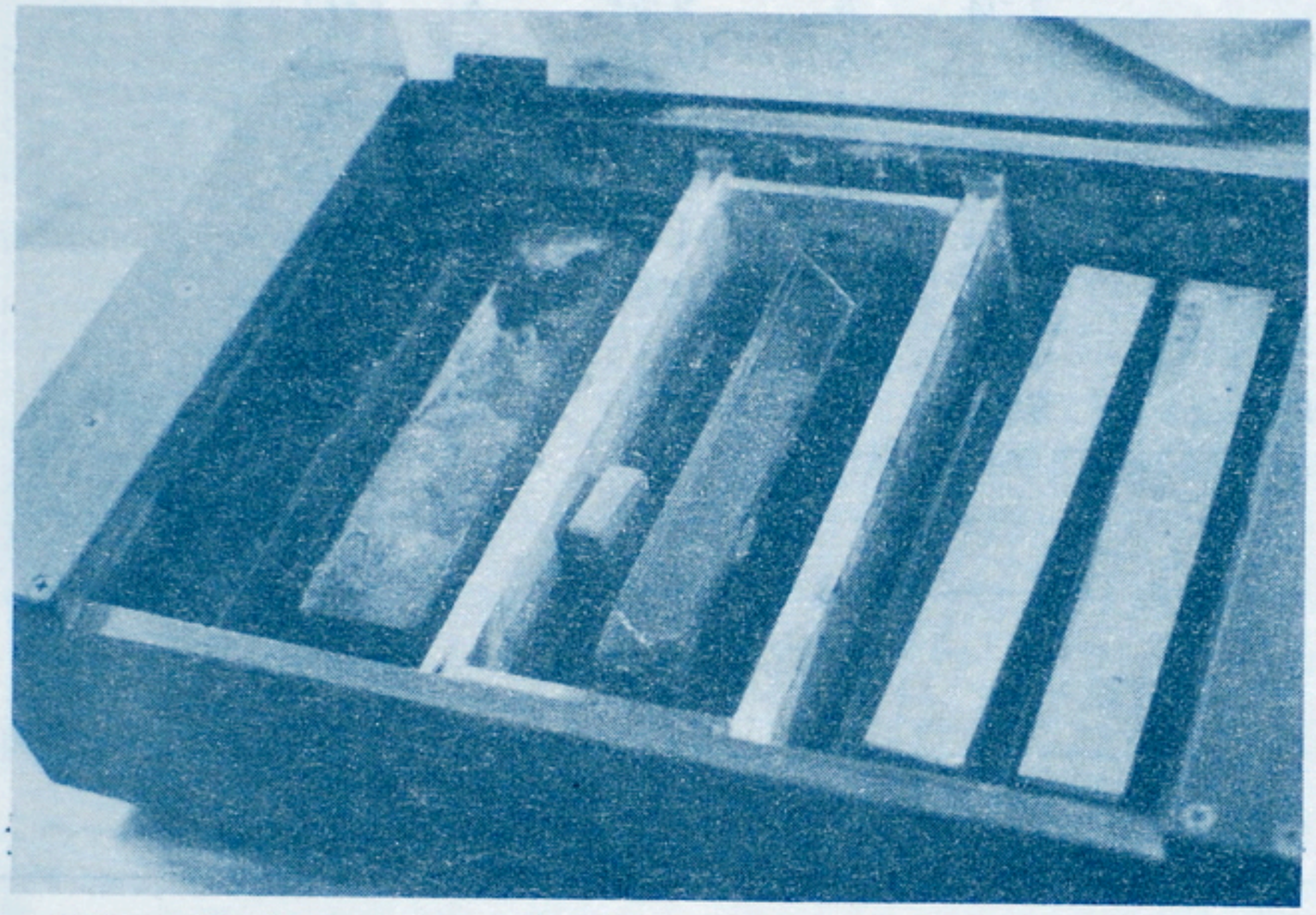
END VIEW

Stone Box

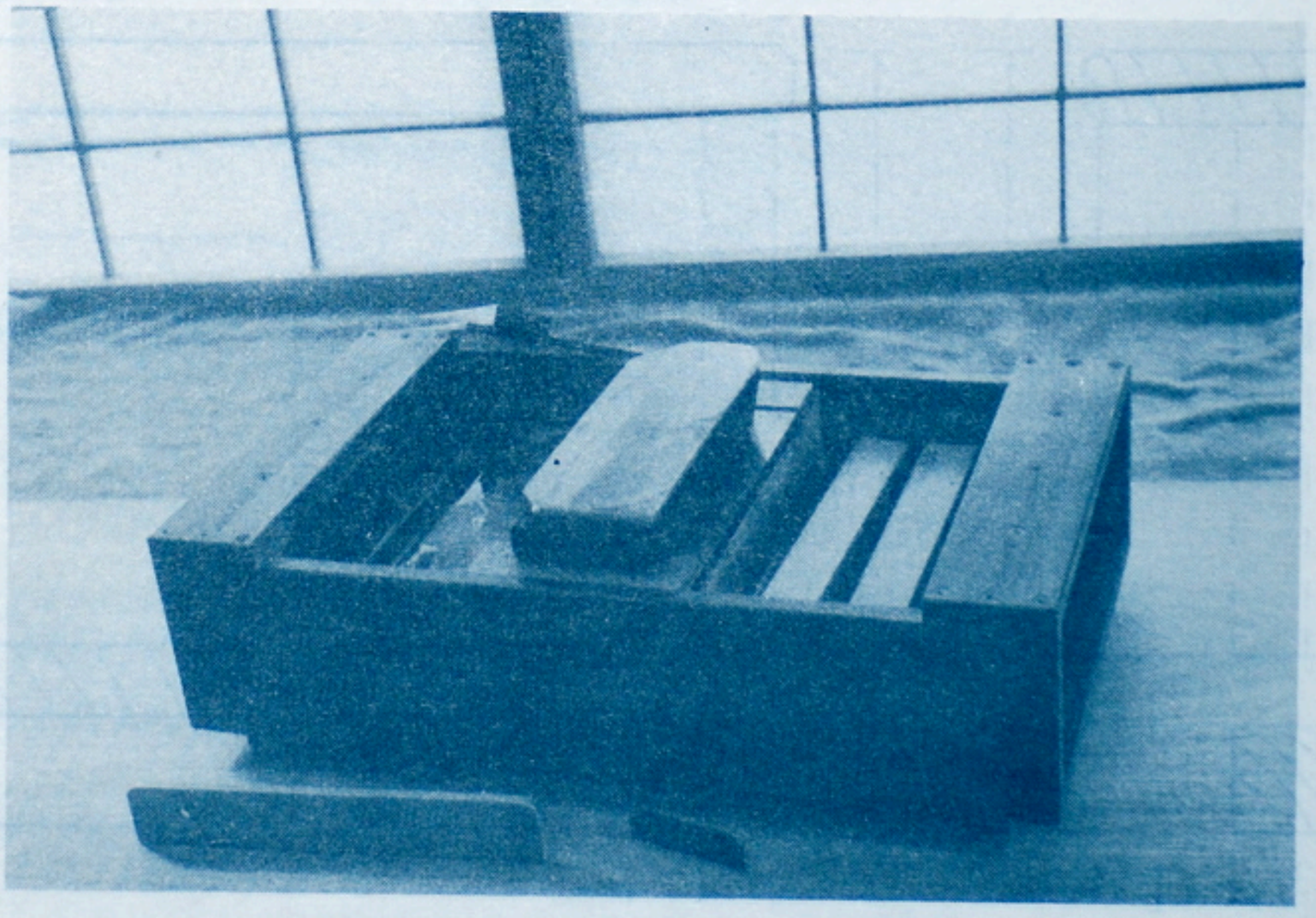
This handy box is designed to be used as a sharpening bench as well as a storage unit. Whether you sharpen on the bench or on the floor, this box will serve as a tidy work area as well as a carrying case, when you need to bring your stones to a job site.



The three compartments correspond to the three types of stones, coarse, middle and finish. Keeping the stones separated prevents contamination of finer stones with coarser grit. The finish stones are kept in the middle under a cover so that the water will not be contaminated during sharpening. The stones rest on a glass plate while you sharpen. Glass is used because wood would warp under these moist conditions causing the stone to rock. Strips of cork, 1/16" thick, are adhered with silicone at each end to keep the stone from sliding.



Since you will need to keep water in the box to soak the stones, the box is designed to withstand these continually wet conditions. Quarter-sawn wood should be used to minimize structural tensions. The box is put together with sheetrock screws to provide the strength that is necessary. The sharpening box pictured is finished with *urushi*, a Japanese laquer. This laquer provides a waterproof coating for the box, inside and out. However, this laquer is made from a variety of poison oak, and is highly toxic. Most people will develop a dreadful rash from working with it or even coming in contact with it before it is completely dry. A highly trained *Urushi* expert from Japan finished the box shown here. As an alternative, we suggest that you use waterproof Spar varnish. This will provide the water-proof cover, and color can be added to darken the finish.There is a varnish of this type available from Mohawk Finish Supplies at Rt. 30, Perth Road, Amsterdam, NY 12010. You can contact them directly at this address to place an order; the varnish is order #603-2276. After varnihsing, seal all the inside corners with a silicone sealant. This sealant is used for aquariums, and is available at pet shops. The sealed environment allows the stones to dry out slowly while being stored, preventing cracking.



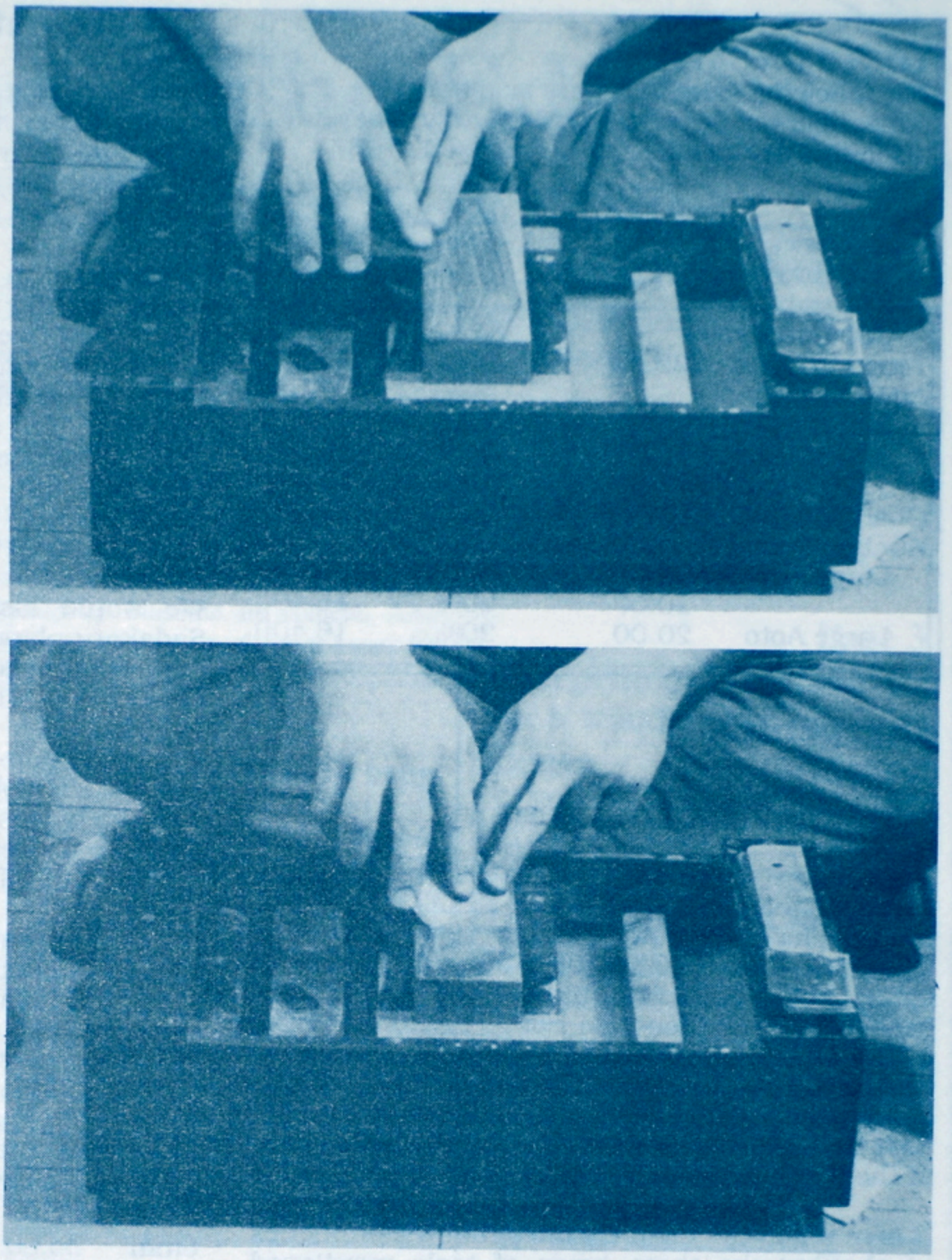
Sharpening

Cont'd. from page 3

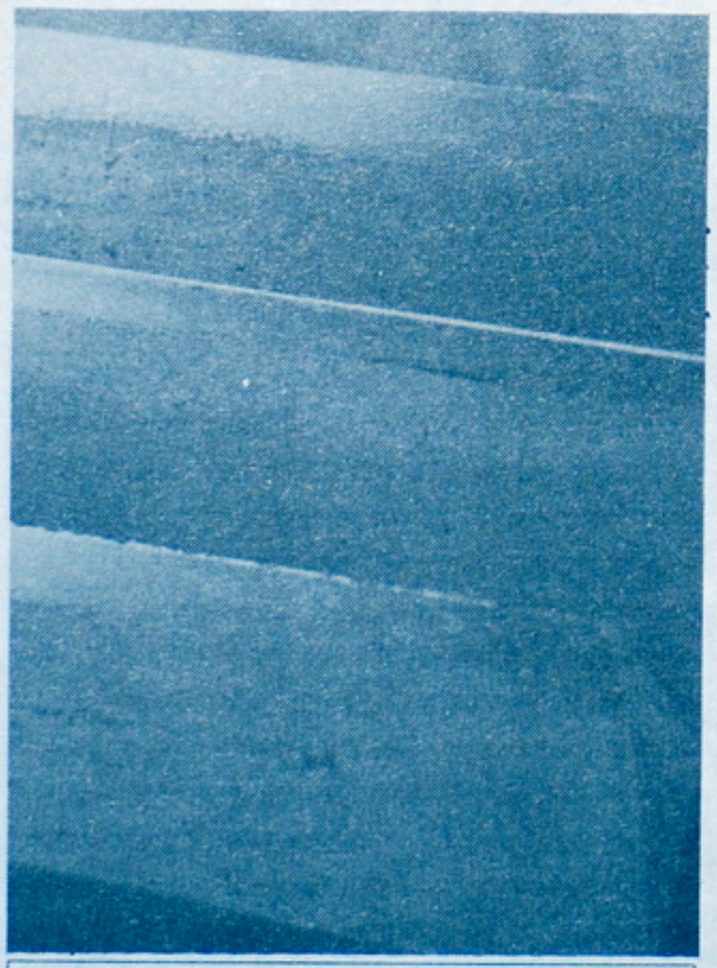
than a similar plane blade working with the same wood. Increasing the edge angle will give added strength to resist chipping. This is achieved by slightly rounding the bevel toward the edge. Just how much you increase the angle, and how far back, are judgements that must be based on the steel in the tool and the hardness of the wood you're paring. A more obtuse angle for a longer length gives more strength; a more acute angle for a shorter length gives better penetration.

In a chopping situation you are looking for maximum penetration and maximum strength. Deflection is not the same kind of problem as it is in paring and planing; there is pressure on both sides of the blade. The bevel side should be strengthened as for a paring chisel, but in a mortise chisel the lands on the hollow face should be somewhat rounded along the chisels length as well. If the mortise chisel is not rounded on both surfaces, it will not want to go straight down into the wood.

With these objectives in mind, let's examine the stages of the sharpening process, and the choices appropriate for each kind of tool.



Above: Truing the hollow face of a plane blade. Below: Sharpening the bevel of a plane blade. Keep your fingers away from the edge.



Front: Chipped blue steel blade; Middle: dull white steel blade; Back: sharp white steel blade.

The object of resharpening is to take away enough steel from the bevel to get past the dullness and/or chips generated at the edge during usage. On a plane iron this can be a slow process because the flat bevel presents a large area to be abraded by the stone. This process can be sped up by grinding a slight hollow on the bevel, no deeper than that which will be worn away in the sharpening process. A wheel with a diameter of 6"-10" is recommended, wet or dry. A wet grinder won't draw the temper out of the steel; on the other hand, wet grinding is slower than dry grinding. The larger the grinding wheel you use, the shallower your hollow. Too large a wheel makes it hard to control the placement of the blade as you grind. Grind as close to the edge as you can without touching the edge itself. It's okay to grind the tool steel, but caution must be taken not to burn the thin steel at the edge. It is not necessary to grind

Cont'd on page 8

TOOLS ON SALE

The following sale prices are available to subscribers of Beyond The Edge only. These discounts are in effect until August 1, 1987.

Item	Reg. Price	Discount	Sale
Chino Saws	$52.00	15%	44.20
240 mm crosscut Dozuki			
240 mm Ryoba			
300 mm Ryoba			
Tengu 10-sets	225.00	20%	180.00
Aqua Stones			
320 & 600	14.00	15%	11.90
800 & 1000	14.80	15%	12.55
1200 Deluxe	17.00	15%	14.45
Chamfer Plane	48.10	20%	38.45
Kitchen Quality Stones			
Large Akamonzen	20.00	20%	16.40
Large Aoto	20.00	20%	16.40

Sharpening

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a hollow on the bevel of a chisel.

The coarsest stone I use, of late, is the 1200 grit Deluxe Aquastone. This stone seems to cut fast enough for me, and doesn't leave the deep scratches that the coarser stones do. I am no longer using or distributing coarse King stones because I find them too soft. Aside from the messy aspect of this softness, it is also harder to control the shape of the blade with a soft, coarse stone. When you have removed enough steel to get past the dullness, you can turn to the hollow face of the blade to remove the burr on the 1200 stone.

It is in using the middle stones that the subtleties of shaping the three types of tools mentioned above must be kept in mind. The middle stones serve to remove the scratches left by the coarse stones. Synthetic middle stones such as the S-1 will polish the surface of the steel without really levelling the steel to the point where the scratches are removed. To remove scratches on any flat surface, such as the bevel of a plane iron or the hollow face of a paring chisel or a plane iron, you need a very hard stone, coupled with the mud from a softer natural middle stone or the 1200 grit Aquastone. The Binsui and Tajima stones are good hard stones to use, with the mud from either an Akamonzen or Aoto stone. These stone combinations will remove the scratches while keeping the surfaces flat. For the subtle rounding desired on the bevels of chisels and the hollow face of mortise chisels, you need to use the Akamonzen stone by itself. Its coarseness and softness will allow you to subtlely effect the desired shape. Because the radiused surface makes only a small contact area with the stone, you do not have the same levelling problem you

On Line at The Luthierie

We are always on the lookout quality tools at a good price to add to our line of Japanese hand tools. We have some new additions to the line-up of planes, as well as some special chisels to report.

We have been carrying the Unryu (pronounced something like oon-jyew) 70mm. plane since last fall. Now we also carry their 65mm. joiner plane. The special feature of the Unryu joiner plane is that the right side is a bit thicker than the left. This allows you to true the side of the plane. This is so that you can run the plane on its side along the bench to true the edge of a board less than 3/4" thick. The Unryu joiner plane is a good buy at $101.75. (Order # PJU65)

We would also like to introduce you to the Sadakatu planes, which come in 70mm., 60mm., and 50mm. smoothing planes, and a 70mm. joiner plane. These planes feature main blades of wrought iron laminated to white steel, and laminated sub-blades. They are distinguished by their black hollow ground areas. This signifies that the blades did not need subsequent grinding after heat treatment; it is this grinding that replaces the black with shiny white on most blades.

Sadakatu 70mm.	$129.80
Sadakatu 60mm	115.50
Sadakatu 50mm.	99.00
70 mm. Joiner	148.50

We have a very few Kiku Hiromaru dovetail chisels in stock--get 'em while we got 'em! They have a side angle of 76°, an overall length of 8 & 1/2", and the same great quality of all Kiku Hiromaru chisels.

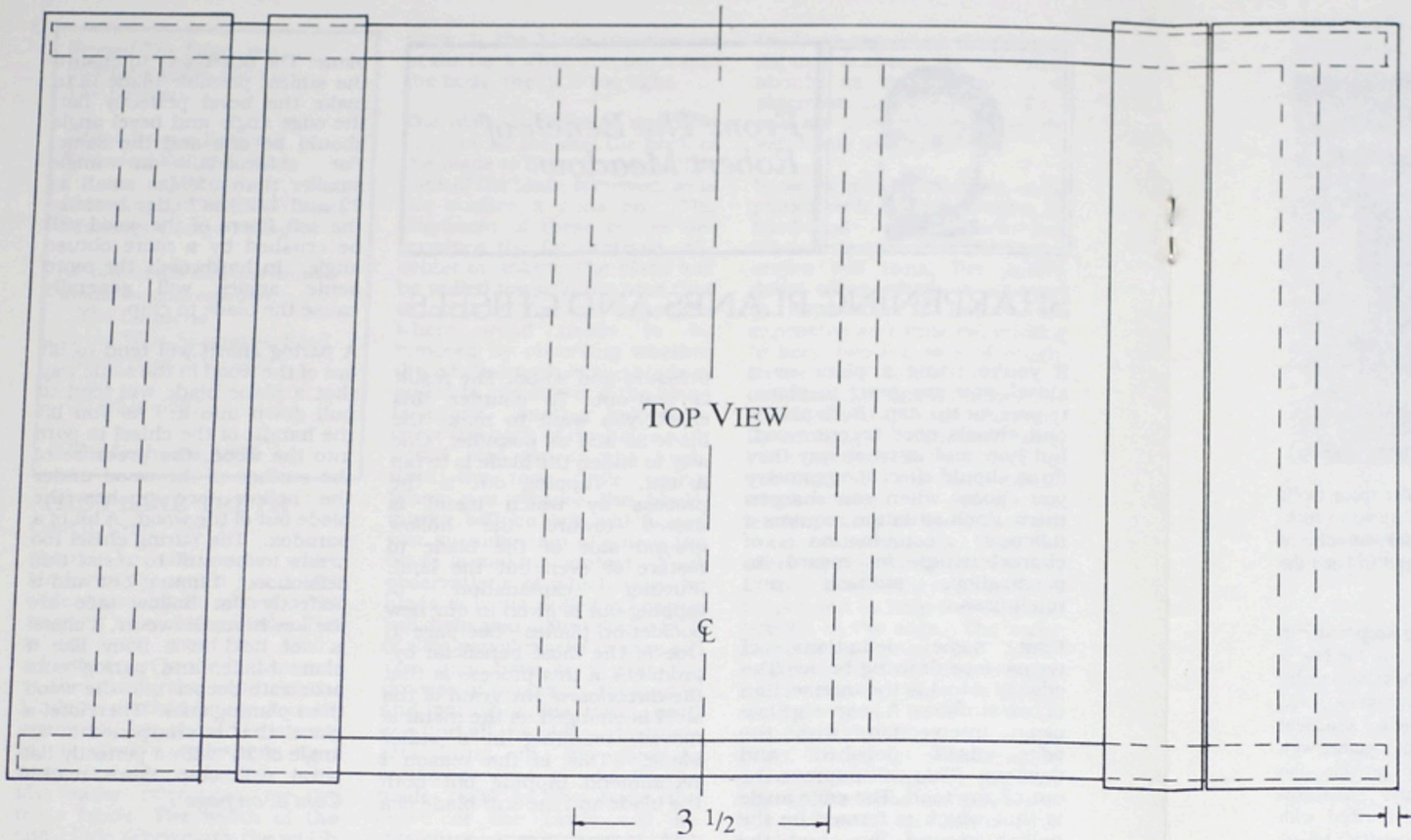
3mm	$35.00	4.5mm	$35.00
6mm	35.00	7.5mm	38.00
9mm	38.00		

Sharpening, Cont'd.

do with the flat surfaces.

The finish stage in sharpening is the same for all tools: polishing the surfaces and the edge itself. If you use synthetic stones, use a Gold stone, not Silver. Again, natural stones are superior. The best of all is the Honyama. It is a hard stone, which produces a keen edge. It cut quickly and leaves a high degree of polish. However, they are expensive and hard to get. Second best are Suita stones, some of the best of which are better than Honyama. The ideal situation is to use a Suita first, and the Honyama for the final polish. This preserves the expensive stone.

1Curved tools, such as carving tools will be dealt with in a future issue. This article deals with resharpening only; information on initial conditioning of a plane iron is available in our booklet on planes.



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