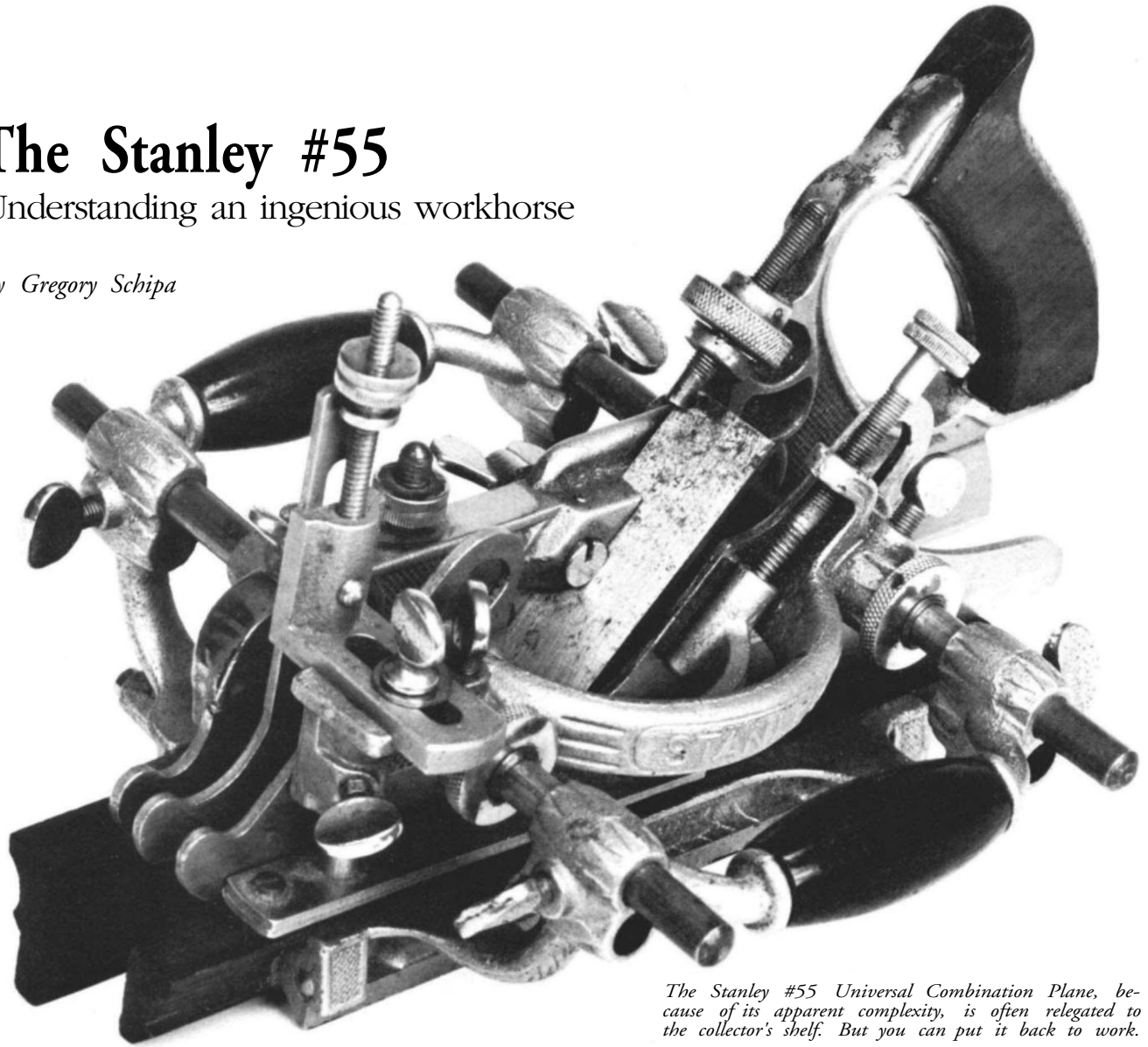


# The Stanley #55

Understanding an ingenious workhorse

by Gregory Schipa



*The Stanley #55 Universal Combination Plane, because of its apparent complexity, is often relegated to the collector's shelf. But you can put it back to work.*

Most people, when they first set eyes upon a Stanley #55 Universal Combination Plane, are sure they've discovered the ultimate contraption, though one undoubtedly too crazy to work. That's what I first thought, yet many years later the #55 has grown to be a part of me. As the Stanley Tool Company modestly described it in their 1897 catalog:

Combining as it does all the so-called 'Fancy' Planes, its scope of work is practically unlimited, making the Stanley #55 literally 'A planing mill within itself.'

I have my reservations about that sweeping claim, but there is no doubt that for the cabinetmaker, house joiner or restorationist, the #55 is a most useful and even addictive tool. With a little patience, you can set it up to do the job of any one of a hundred specialty planes, and it will duplicate period moldings you simply cannot find in the lumberyards, nor even mill with a spindle shaper.

**History**—Although the #55 seems to have landed from space, it is actually the product of a gradual, rational evolution. In the 19th century, single-purpose wooden planes, basically the same design as had been used in ancient Egypt and Rome, had multiplied until a cabinetmaker or housewright might have needed a hundred of them to fashion all the moldings in style, an expensive and weighty collection to store and transport. These beautiful wooden planes were also un-

stable, liable to check and warp.

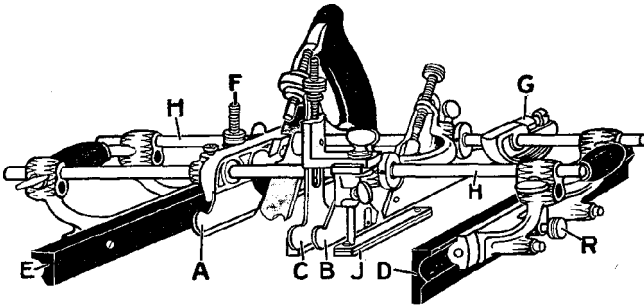
The Industrial Revolution provided a metal technology that avoided wood's drawbacks. In 1871, after successfully marketing a series of cast-iron bench planes, Stanley introduced the "Miller Combination Plane" as a replacement for the carpenters' plow—it employed metal screw threads instead of wood, and a sole that "would not warp or swell." Within a few years Stanley came out with the #45, which replaced a boxful of plows, fillisters and beaders. Meanwhile, improvements in machinery resulted in abundant, newly available mill-run moldings, which reduced the need for handwork and hastened the decline of the wooden molding planes. It was only a matter of time until the #55 came along and claimed to be able to take over all molding functions.

My crew and I have four of the contraptions, and they are invaluable for the restoration work we do. It's curious how we came to discover them. I had been using old wooden planes to duplicate moldings, and had even had a few new ones made for me by Norman Vandal (*FWW* #37, p. 72). I'd picked up some old metal planes, too, including a Stanley #45 with interchangeable cutters. I remember musing to myself that the #45 would be able to do just about anything if only it had sole runners that could be adjusted vertically as well as horizontally. And then I discovered the #55, which has exactly this feature. In my own day-to-day work, I'd gone

through the same evolution as had a generation of 19th-century housewrights.

The Stanley #55 Universal Combination Plane was developed by Justus A. Traut and Edmund A. Schade, who patented it in 1895. It was first marketed by the Stanley Tool Company in 1897, with 52 cutters (the number gradually climbed to 55), and remained relatively unchanged until it went out of production in 1962. There were 41 optional cutters as well, which are now quite rare. In addition, a craftsman could grind cutters of his own design out of flat tool stock. The catalog listed it as a "molding, match, sash, beading, reeding, fluting, hollow, round, plow, rabbet and fillet-ster, dado, slitting, and chamfer plane." It is 10 in. long and weighs 15¾ lb., including all parts and cutters. The body is nickel-plated, and the fences and handles are rosewood. As much as the following description (quoted from the 1897 Stanley catalog) is a tangle of terminology, to a craftsman who could use this versatility in his daily work it must have been engaging reading:

This plane consists of: A Main Stock (A) with transverse sliding arms (H), a Depth Gauge (F) adjusted by a screw, and a Slitting Cutter with stop. A Sliding Section (B) with a vertically adjustable bottom. The auxiliary Center Bottom (C) is to be placed in front of the cutter as an extra support, or stop, when needed. This bottom is adjustable both vertically and laterally. Fences (D) and (E). Fence (D) has a lateral adjustment



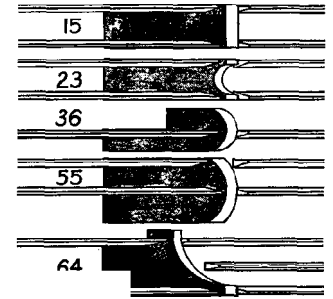
by means of a screw, for extra fine work. The Fences can be used on either side of the plane, and the rosewood guides can be tilted to any desired angle up to 45°, by loosening the screws on the face. Fence (E) can be reversed for center beading wide boards. An adjustable stop (J) to be used in beading the edges of matched boards is inserted on left hand side of sliding section (B). A cam rest (G) aids stability.

The #55 with all its cutters fits in a case the size of a shoebox, and it will produce handmade moldings of considerable depth and classic shape. It was never intended that the combination plane should outperform all individual molding planes, but rather that it should allow the craftsman at the job site to match whatever profile he might need. A #55, trimmed for work, weighs at least 3½ awkward pounds, whereas a small beading or molding plane weighs a balanced and comfortable 10 oz. to 14 oz. Over the course of a day, the difference is significant.

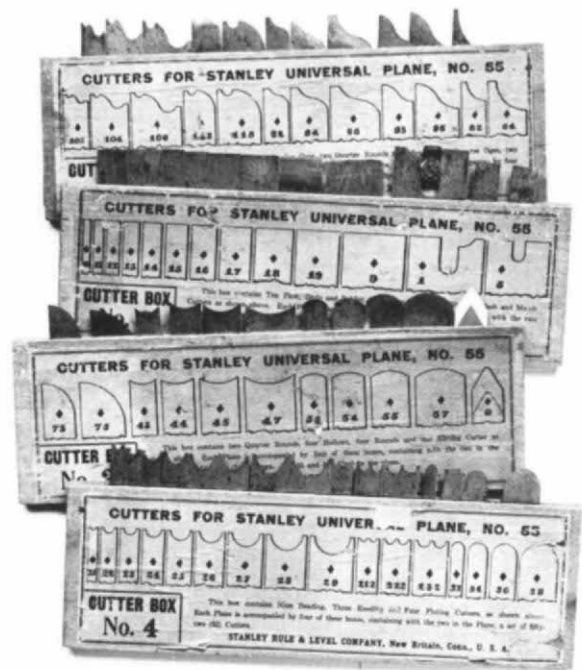
Also, even though the #55 is more straightforward than it at first looks, setting it up takes time. After setting three runners, the blade, two fences, spurs and perhaps the cam rest, you would certainly hesitate before disassembling everything to cut a plain rabbet. You'd grab the nearest rabbet plane—or an electric router—instead.

Despite its complexity, the Stanley #55 becomes easy to understand when you examine its relationship to some of the

planes it replaces. In the drawing on the facing page, for instance, we see three old planes. The first, one of a pair, is a single-purpose plane that makes a groove on the edge of a ⅞-in. thick board (the other plane in the set makes a tongue). The next, a more versatile plow plane, has an adjustable depth stop and a fence on adjustable arms. The fillister plane has features that allow it to cut cross-grain rabbets. Both the grooving plane and the plow plane, instead of requiring a broad, flat sole like a bench plane, have a single, thin metal runner that limits the depth of cut on each pass. The main stock of the #55 has a similar runner. With one of its fences attached to the metal arms, the main stock of the #55 would closely resemble a plow plane, as shown at A, and, with none of its other parts attached, could be used to plow a narrow groove. A wider iron, however, such as cutter no. 15 in the small drawing below, would be difficult to use with a single runner, because if the plane tilted at all, the cutter would dig in. The #55 therefore has a second runner that can support the other side of the iron, as shown at B on the facing page. These two runners suffice for most of the #55's cutters. By designing this sliding-section runner to be vertically adjustable, Stanley made the plane capable of reproducing wide flutes (cutter no. 55) and thumb-nails (no. 64), as shown at C. An auxiliary half-runner is used to support the middle of the wider cutters when necessary.

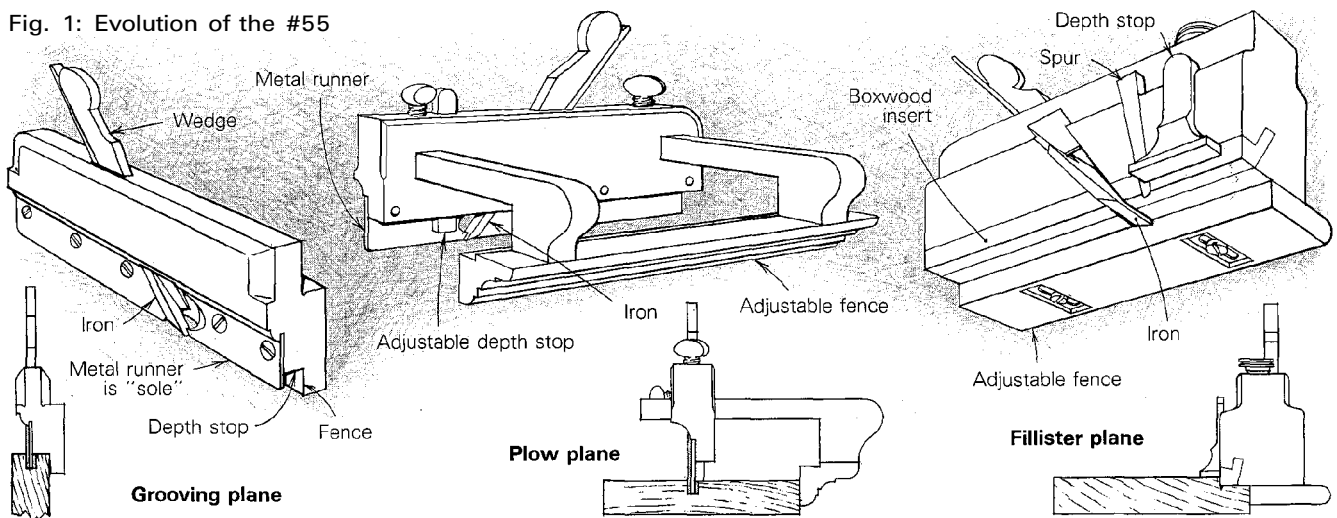


**How it works**—Setting the heights and locations of the runners is the key to setting up the plane. Two pairs of arms



*Stanley's 52 (later 55) standard cutters were originally packed in flat wooden boxes. There were 41 additional cutters available, wider and narrower versions of the basic shapes.*

Fig. 1: Evolution of the #55

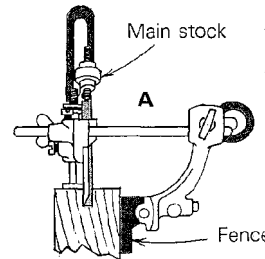
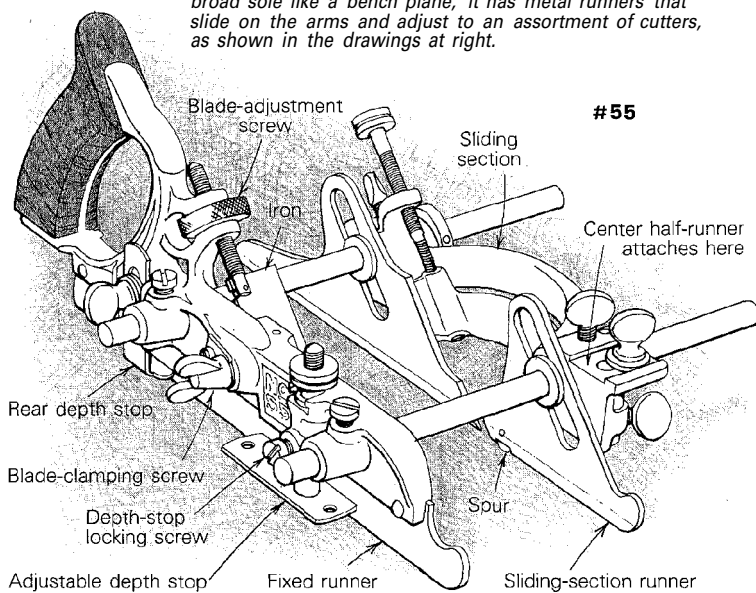


Grooving plane has only one function, hence no adjustments except for the wedge that locks the iron at the correct depth. The metal runner acts as the sole, preventing the iron from digging in. Fence and depth stop are built-in.

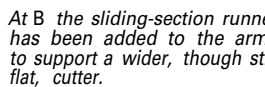
Plow plane, with adjustable fence and depth stop, makes grooves on the face of a board. Some plows have assorted blades of different widths; with others you plow grooves side by side if you need one wider than the iron.

Fillister plane's fence and depth stop are adjustable. A sharp spur severs the wood fibers ahead of the iron, allowing the plane to work cross-grain. For efficiency, the iron is wider than the cut: the fence adjusts beneath it.

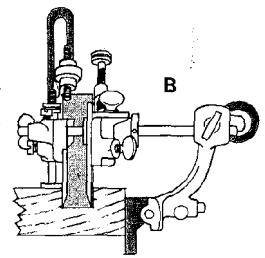
The "main stock" of the #55 has features derived from the wooden planes shown above. Instead of having a single, broad sole like a bench plane, it has metal runners that slide on the arms and adjust to an assortment of cutters, as shown in the drawings at right.



At A is the main stock of the #55, with fence attached, performing the function of the grooving plane shown above. If limited to this single function, the plane would need no adjusting screws except those that set the cutter's depth.



At B the sliding-section runner has been added to the arms to support a wider, though still flat, cutter.

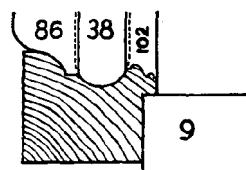


At C the #55 performs as a molding plane. The sliding-section runner and the center half-runner are horizontally and vertically adjustable, and support various cutter profiles at the points where the cutter would tend to dig in.

come with the #55: one set is  $4\frac{1}{2}$  in. long, the other is  $8\frac{1}{4}$  in. long. To adjust the plane for different cutters, you simply slide the runner sections you need onto the arms, then clamp them in place by tightening the wing nuts. Runners, when you are using them at the outside edges of a cutter, should be set as close inside each edge as possible, so that they can bear against the sides of the groove being cut. To set the proper exposure of the cutter, I find it simplest to set all the runners exactly flush with the cutting edge, then to lower the cutter. This is easily done by turning a single, knurled nut—it tracks the iron up and down with almost no play.

**The cutters:** The 96 factory-made cutters, shown in the photo at the bottom of the facing page, are used one at a time in the #55. When a combination molding must be made, a series of shapes can be planed next to each other

until the profile is complete. You usually plane the part of the profile farthest from the fence first, working progressively toward the edge of the stock on which the fence rides. Also, you must plane each shape on all your sticks before you



change the cutter for the next part of the profile. It is tricky to maintain consistency, and a slip in any one of the operations means that you've ruined your molding. You need to plan for a lot of wasted sticks. I find that the moldings cre-

ated this way are the least effective use of the #55 plane. Stanley liked to think that there were virtually unlimited options and combinations, and technically there are. Most combinations of cutters on a single piece, however, take consider-

able sawing and rabbeting in combination with the actual molding cuts. This is extremely time-consuming. Combined moldings usually come out a bit inconsistent as well. Instead, it is more practical to make a series of separate moldings, then combine them, such as by nailing on a cove-and-bead below a reverse ogee to form a nice cornice molding.

**The fences:** The #55's fences can be adjusted up and down—by means of alternative holes for the arms—as well as in and out. They also tilt to 45° for making chamfers. There are two major fences that come with the #55. The larger one has adjustment screws that help in setting the fence vertically parallel to the side of the cutter. Keeping the fence flat against the work is the best way to keep the plane perpendicular. If the fence is not parallel to the side of the cutter, the plane will run either into or away from the work, binding and cutting poorly. Stanley suggests using both fences whenever possible (one on each edge of the stock), but I find that this causes the plane to bind, and mostly I just use the smaller one.

When you use the plane, keep pressure toward the work, so the fence won't ride off (especially on coves and thumbnail moldings). Also, to keep the plane running straight, push the #55 with your right hand only—use your left hand to keep inward pressure on the fence.

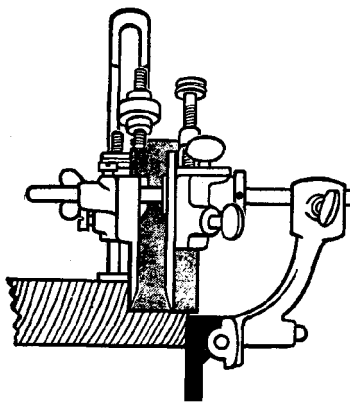
**Depth stops:** The main depth stop adjusts with a single knurled nut. It works the same as the depth stop on the fillister plane in the drawing on p. 91, eventually contacting the top surface of the work and preventing the plane from cutting too deeply. There is another depth stop, located on the main stock behind the blade, which should be used whenever it can make contact. When you use the front depth stop alone, the plane tends to tip back. In addition, some of the cutters accept a little, built-in depth stop that can be adjusted with a screwdriver (note cutter no. 1 in the photo on p. 90).

**The spurs:** The main-stock runner and the sliding-section runner both have adjustable spurs located just in front of the blade. As in the fillister plane, these sever the fibers ahead of the iron for a cleaner cut, and they must be kept sharp.

**The slitting cutter:** A knife-blade-like cutter can be set into a holder located behind the usual blade location. It is used to split strips off the edge of boards—similar to the Japanese splitting gauge in *FWW* #34, p. 52—and works faster and more neatly than a saw on thin stock.

**Primary functions**—Perhaps the function for which the #55 is best suited (or at least most easily applied) is beading, the creation of a small half-round with a groove (called a quirk) on the edge of a board, or occasionally in the middle. A bead was most often applied to embellish the joint (and to disguise wood movement) between two matched boards, or as the inside edge of window and door casings. If the cutter, depth gauge and fence are set properly, the bead will be perfectly shaped. A flat-topped bead means the depth is set too shallow; a flat-sided bead means the fence is too close to the blade. If there is a flat on the outside of the bead, the fence is too far from the cutter (you have created an astragal). The most common mistake in beading is letting the fence ride away from the work, which results in an enlarged quirk, and a shrinking bead.

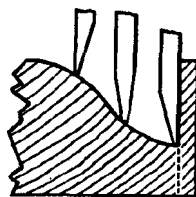
Rabbets and grooves are simple with the #55. It is always easiest when rabbeting to use a cutter wider than the rabbet.



The smaller fence can be adjusted so it bears on the edge of the stock below the blade, as shown at left. The plow function is accomplished very handily as well, although the narrower cutters are best.

Of the "fancier" moldings, the #55 cuts some well, but it makes others only with difficulty. The Grecian ogees (cutters no. 102-106) seem to work most easily, because the plane has less tendency to ride

off the piece. On these and all fancy moldings, however, you must take care not to roll the plane out, or the moldings will be uneven and impossible to join on the same work without carving. Profiles that drop off away from the work tend to encourage this riding-off. Covens, Roman ogees and reverse ogees fall into this category, and the simple "thumbnail" or ovolo cut on the edge of a stile is the most difficult (the cutter is referred to as a quarter hollow). These cuts all call for a



very shallow blade setting, and strong pressure toward the work. On many, Stanley recommends that you leave some stock uncut on the outside edge, as shown at left, to be trimmed off later. This traps the bottom runner and prevents it from sliding off the work.

**Availability**—Stanley's "miracle" tool is out of production. The combination planes that are on the market (the best two I've seen are the Record #405 Multi-plane and Stanley's #13-050 Combination) do not have the vertically adjustable fence and thus lose most of the functions that made the #55 so versatile. With the resurgent interest in hand-tool work, the popularity of the #55 is again growing. Unfortunately, these planes are usually found at the antique tool dealer's, where demand from the tool collectors, the nemesis of the joiner and cabinetmaker, has driven up the price. The planes seem to be harder to find each year, but the major dealers can usually come through with one for about \$200 to \$350, a price comparable to a new combination plane.

The number of cutters will vary according to the year that the plane was manufactured, but check to see that most of them are there and in good condition. Check the rest of the parts against a complete list (available from Stanley), and examine the castings for small hairline stress cracks, especially on the depth-gauge housing. Also check that the runners are not bent, but perfectly parallel. A hint: never put a #55 where it can fall from the bench—the results are disastrous. When you get your new/old plane home, keep it well oiled against rust, and spend some time sharpening and honing your cutters—they have to be perfectly sharp. □

*Gregory Schipa, of Waitsfield, Vt., is president of Weather Hill Restoration Co., which takes apart period houses and refurbishes them. The Stanley Tool Co. will supply instruction booklets to owners of the #55 (write R. West, Manager, Product Research Standards, Stanley Tool Co., 600 Myrtle St., New Britain, Conn. 06050). A 1980 reprint, The Complete Woodworker, edited by Bernard Jones (Ten Speed Press, PO Box 7123, Berkeley, Calif. 94707; \$7.95), has 16 pages on the fine points of the #55.*

# Putting an old #55 to work

by T.D. Culver

If you decide to buy a Stanley #55, first examine the plane body and all the parts for broken castings, bent runners and chipped cutters. A plane with bent or broken castings has been dropped and will be cranky. A "bargain" on a #55 may be no bargain. I would not buy one sight unseen.

If the plane is okay, check the cutters. Ideally, the bevels should still have the grind marks from the factory. If any of them have been badly honed, their profiles will be wrong. Count the cutters. My #55 came with 52 of the 55 regular cutters, including two sash cutters, and none of the 41 special cutters. I have yet to find a molding I cannot duplicate.

There are two positions for setting up the stock to be molded: on edge in the vise or flat on the bench. It is difficult to hold a piece narrower than about 2 in., so glue it temporarily to a waste piece. After molding the shape, saw it free.

If you are starting with a wide board and making narrow moldings, plane one edge, flip the board (paying attention to grain direction), and plane the other edge. Rip these moldings off, joint the edges and begin again. You can turn out a surprising amount of molding in a fairly short time.

The position of the stock determines how the fences will be set on the #55. When the stock is on edge, it is extremely useful to set up both fences, because then there is no worry of tilting the plane and spoiling the molding. Set the left-hand fence, place the #55 on the stock, and tighten the wing nuts

as you squeeze the fences together hard. When you begin planing, there will be quite a bit of resistance, but it soon eases.

When you're planing work flat on the bench, the dogs and vise may not hold it against the considerable side pressure you need to exert. Or the board may not be wide enough to be clamped in the dogs and still overhang the benchtop. A few finish nails through the work and into the bench will hold and will not foul the fence arms. You can support the ends of long stock on sawhorses.

Usually only one fence can be set when the work is laid flat, which allows the #55 to tip and ruin the molding. After five years of struggling, I finally acquired a cam rest and it is worth every penny I paid. Contra the instruction manual, I set it opposite the fence on the front arm. By adjusting the screw so that the cam rotates stiffly around the fence arm, I can set the bottom of the cam even with the edge of the cutter. Now the #55 rides on two points instead of one. As the cut progresses, the cam pivots and continues to hold up its end of the plane. Be sure to twist the cam back to its original position when you start to plane another stick.

The cutter should protrude beyond the runners at the sides, just as it must at the bottom. Otherwise the runners will foul the molding. The depth of cut should be set very light for molding and slightly heavier for plowing. The runner on the sliding section may creep, causing the cutter to dig in, unless the thimble check-nuts are tightened. These are round, knurled nuts located on the out-

side of the sliding section through which the fence arms pass. Finger-tight is usually enough, though there are holes for a tommy bar. If the plane throat jams with shavings, you are taking too heavy a cut. Check that the sliding section hasn't crept up, or reset the cutter higher in the plane body.

You will find vernier calipers a great help in setting up the #55. Once the cutter is fixed, set the depth stop with the calipers, measuring to the cutter edge, not the runner. Then set the fence, measuring at both the front and the back, so that it is parallel to the runner. Be sure to square the bearing face of the fence to the fence arms.

It is especially important to plane through the work in one continuous stroke. Choppy strokes will choke the plane and damage the molding. Clear a space in front of the bench and walk through each stroke with firm pressure against the fence. Shavings will curl out like excelsior and wind around your wrist. Clean out the throat when you're walking back for the next stroke, so the plane won't jam.

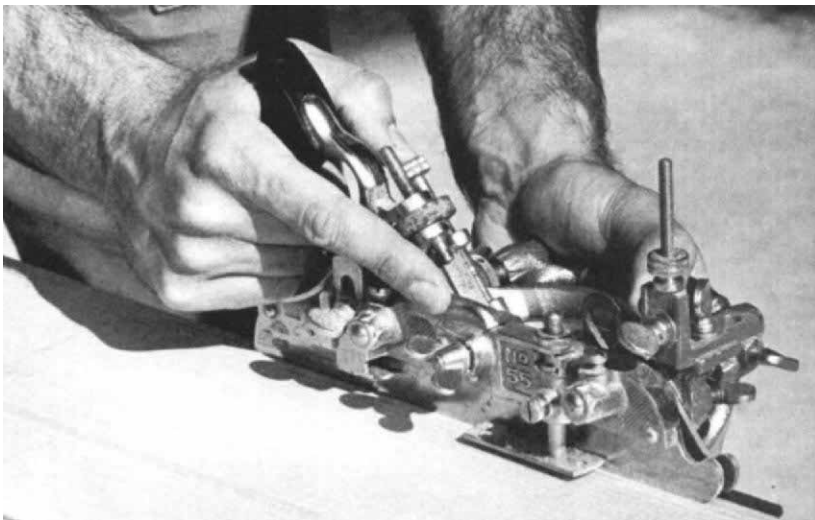
Clear wood is best, although very small, tight knots can be molded, with luck, in an easily worked wood such as walnut. Straight grain is helpful but not essential on many shapes.

The #55 is surprisingly effective in rabbeting and plowing plywood. Some split-out can be expected, but a heavy knife cut on the layout lines will minimize this. In desperate straits, costly hardwood plywood can be jointed, plowed and splined just like solid wood. The #55's no. 12 cutter makes a nice groove for ¼-in. fir-plywood splines.

The major problem with any antique plane is finding parts, although some parts for the Record No. 405 Multi-plane do fit the #55. Cutters for the Multi-plane fit both the #45 and #55, but the selection is not as vast as the original Stanley cutters. The fence arms are the easiest to replace—pieces of ⅜-in. mild steel rod work just fine.

I've had my #55 for six years, and every year it seems to work better and better. It is a complex tool, and it takes some time to learn well. That time will be amply rewarded one day, when you stand ankle deep in shavings and hold up to the light a crisp molding fresh from the plane. □

*T.D. Culver is a carpenter and cabinetmaker living in Cleveland, Ohio.*



*The #55 in full array, geared up to plane a quirked bead on a pine board.*