# The Workbench Book Scott Landis



# A CRAFTSMAN'S GUIDE TO WORKBENCHES FOR EVERY TYPE OF WOODWORKING

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Scott Landis





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To Gerald Bannatyne, who uses no workbench at all. With wisdom and grace, he taught me more than he'll ever know.



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## Foreword



don't believe I saw an honest-to-goodness workbench until I picked up a copy of *The Workbench Book* by Scott Landis (Taunton Press, 1987).

At my first woodworking jobbuilding entryway doors-we worked on sawhorses. When I graduated to building folding tables, it was worse than that-our work was

all done on an assembly line.

And when I landed as an editor at *Popular Woodworking Magazine* in 1996, the shop there was equipped with benches that were basically kitchen cabinets that had an old door for the benchtop and a quick-release vise.

But the magazine did have a library.

One night when I was working late, I spied *The Workbench Book* on the shelf. I was amused. An entire book about workbenches? That seemed a stretch. I flipped through the book, and the rest is history.

I borrowed the book and read it several times over. I couldn't afford to buy a new copy on my salary, but I talked one of my fellow editors into selling me his for \$5, as he had sliced the cover off for photography. I wore that book out.

The Workbench Book is the first and only survey of the entire world of woodworking workbenches, from Roman times to the present. It covers Japanese benches, country brakes and shaving horses, commercial workbenches, and benches for specialized trades, such as boatbuilding, lutherie and carving.

Though the book is only 248 pages, it is densely packed with an astonishing amount of information, including complete plans for a Shaker bench, Frank Klausz's bench, Michael Fortune's bench and Ian Kirby's bench. Every page overflows with technical drawings, historical images and contemporary photos of workbenches in use.

Despite its technical nature, *The Workbench Book* is written in an intimate, conversational style, almost like a travelogue-but instead of visiting different countries, Landis visits different workbenches, along with the people who built and use them every day.

As far as I am concerned, *The Workbench Book* has yet to be eclipsed as the definitive work about the most important tool in the woodworker's shop.

Though I know almost every chapter of *The Workbench Book* like an old friend, I have a special place in my heart for Chapter 2, which is about Roubo's 18th-century workbench. In this chapter, Landis offers a translation of a critical section of Roubo's text on workbenches. And he profiles Rob Tarule's version of the Roubo bench, which was built with a massive maple slab for the top and the curious sliding-dovetail/tenon joints that fasten it to the legs.

I had so many questions about that bench. What was it like to build? What was it like to work on? How did that leg vise and the *crochet* work? Could you really build furniture on this beautiful beast? A few years later-in 2005–I built my first Roubo workbench, and have since built 50 more during woodworking classes and for customers across the country. I've used the same materials, joints and processes shown in Roubo's volume but also employed modern machinery, construction-grade lumber and new vises. This bench, and its contemporary English cousin, inspired me to write dozens of articles and four books on benches.

None of that would have happened without the direct and nearly divine inspiration from Landis's *The Workbench Book*.

In 2020, I learned that *The Workbench Book* had gone out of print, and the rights had reverted to Landis. Thanks to an introduction by Robin Lee at Lee Valley Tools, Landis and I began talking about how to get *The Workbench Book* (and its companion, *The Workshop Book*) back in print. There were lots of technical problems-these books were printed during an awkward phase of the desktop publishing revolution. But thanks to Landis's persistence and great patience, we've been able to bring this book back into print with technical specifications that meet or exceed the original hardback volume.

The book you are holding is produced entirely in the United States. It is printed on premium 100-percent recycled paper. Its pages are sewn, glued and affixed with a fiber tape to keep it together. And the whole thing is wrapped with heavy, cloth-covered boards and a sturdy dust jacket.

The Workbench Book is a title that deserves to be in print for as long as woodworkers need workbenches. The new edition is extremely durable and should survive having its cover sliced off-just in case some impoverished, low-level magazine editor in the far-flung future needs a jolt of inspiration.

Christopher Schwarz Covington, Kentucky October 2020

# Contents

	Introduction	1
Chapter 1	The Evolution of the Workbench	4
Chapter 2	18th Century: The Roubo Bench	18
Chapter 3	19th Century: The Shaker Bench	32
Chapter 4	An Old-Fashioned Workhorse	48
Chapter 5	A Modern Hybrid	62
Chapter 6	A Basic Bench	80
Chapter 7	A Workbench Sampler	90
Chapter 8	Benches to Market	114
Chapter 9	Shop-Built Vises	120
Chapter 10	Off-the-Shelf Vises	136
Chapter 11	Japanese Beams and Trestles	150
Chapter 12	Country Shaves and Brakes	164
Chapter 13	Boatbuilding	180
Chapter 14	Lutherie	190
Chapter 15	Carving	200
Chapter 16	The Workmate®	210
	Appendices	
	Bench Plans	222
	Bibliography	242
	Credits	244
	Sources of Supply	245
	Index	246

# Introduction



hy a book about workbenches?

This book grew, in part, out of my personal attachment to tools. I'm one of those fanatics who can spend more time building a canoe than paddling it. Regarding most subjects, I relish the journey at least as much as the arrival. The workbench is no exception. It is the foundation tool of the wood-

working trade, upon which all handwork is performed and without which we would have difficulty completing a single project. Although the bench takes different forms, it is perhaps the only tool that is common to every branch of the craft—from country chairmaking to urban cabinetmaking. That it is ubiquitous is partly the cause of its neglect. Library shelves are crammed with books about furniture, and to a lesser extent about the tools that are used to make it. But none attach more than a passing interest to the workbench.

Still, the bench had been a source of inspiration to my own work, and I was convinced that other craftsmen felt the same way. The workbench is to the dedicated woodworker what an instrument is to the virtuoso musician. In the hands of a master, the bench can be made to produce works of brilliance; it can be 'played' with an almost audible clarity. Like a musical instrument, however, the bench is no better than the person using it. At the same time, even the most skilled craftsman with the finest tools will be limited by a poorly made or illconceived workbench. This intimate relationship—between the maker, his tools and his bench—suffuses our working life. Experienced craftsmen can navigate around their benches (and the inner recesses of their shops) blindfolded as easily as some of us can find our way around the inside of a dark refrigerator.

Such rapport does not come overnight, and is not easily severed. I've heard several stories that illustrate the bond that can develop between craftsman and bench. According to one story, an aircraft pattern shop preserves its benches even though they have been made obsolete by modern machinery. The shop retains one workbench per man, paying homage to the handtool tradition, although the workers now only sit upon their benches to eat their lunch. Another tale about a deceased Lithuanian cabinetmaker in New York City tells how his cremated ashes are stored in a box on the shelf beneath his bench. And every Christmas his former co-workers fondly toast his memory by dumping a shot of vodka into the box.

It's no coincidence that antique benches are finding their way into homes around the country, as sideboards, kitchen counters or simply for display. In a turbulent modern world, the workbench is a reminder (real or imagined) of a time when men were measured by, in the words of the merchant John Wanamaker, "...the plumb of honor, the level of truth and the square of integrity, education, courtesy and mutuality."

"The whole earth is full of monuments to nameless inventors." -Otis T. Mason, The Origins of Invention **On another level**, this book was inspired by a failed business. Several years ago I was a partner in a bench-building venture in Toronto, Ontario. We set forth (our naiveté matching our enthusiasm) to design and manufacture a workbench that would take into account all that a workbench should be. (The making of this bench is described in Chapter 5.) We built into our benches the quality and detail you would expect to find in a bench you built for yourself.

I trucked a demonstration model to trade shows around the Northeast to gain exposure. It drew many compliments but few sales. In one instance, I eavesdropped on a revealing conversation that took place between a woodworker and his wife at what they thought was a respectable distance away from the booth: "Nice bench," said he. "You can make that," said she. "Pretty pricey," he admitted. "It's only wood," she added. He returned later for a brochure and to check a few dimensions, even crawling underneath to mentally record the vise mechanics. (It would have been unseemly to pull out a tape measure.) I wasn't surprised to see the same fellow cross the aisle and plunk down a thousand dollars on a gleaming tablesaw.

I gained two lessons from that scenario. The first is that the bench is taken for granted. There's a common misconception that it is somehow less of a tool than the tablesaw or jointer. To many woodworkers, metal is an alien material that calls for a specialist; wood is our birthright. We hobble along, using a pair of rickety sawhorses or a glue-spattered plywood table, while we demand accuracy of our tablesaw within 0.001 in.

The corollary is that, because the bench is made of wood and built like a piece of furniture, the woodworker knows he can build it himself. What's more, many of us feel an obligation to do so. This notion is rooted in a centuries-old European tradition that has served the trade well. Bench-building has long been a testing ground for the old-world novice. In modern workshops around the country, however, I found that woodworkers have been tripping over stacks of bench lumber and rusting hardware for years, waiting to find the time and the inspiration to get started.

I began researching this book by looking at benchesthe old and new, the big and small, the elaborate and simple. I was on the trail of the custom-built (more than the commercial) bench, and I was looking for quality-either of design or of construction. The benches I found were often unique. Over the space of a year, I traveled the country to interview benchmakers and bench users, writing about and photographing the results. I spent days touring New England, plumbing the innards of Shaker benches, hunting for signatures, dates and salient features. In Northern California, I spent a comfortable night on top of a sturdy plywood and angle-iron bench built into a 1958 Chevy step van that had been converted to a rolling workshop. My travels took me back to Canada and once, briefly, to Great Britain. My guides and hosts were stockbrokers, farmers, retired motorcycle mechanics, antique dealers-most of them woodworkers, both amateurs and professionals.

With regard to their workbenches, the craftsmen I met were of two distinct schools. For some, the bench was a lifeline to a cherished tradition. They copied its design from one they had learned on, or failing that, from an adopted traditional form. Members of the second group usually prefaced our first meeting with a disclaimer: "The bench works for me..." The implication being that it might not work for anyone else. In either case, I found that craftsmen often were surprised by my interest. After all, they protested, the bench was built to do a job. Comparing their own bench to some imagined paragon of 'benchness,' they assumed theirs was too crude or too ordinary to be of interest. They were usually wrong, but sometimes it happened that the workbench I went to see was not the one that intrigued me. I might stumble upon the most interesting detail elsewhere in the same shop or perhaps across town in the mind of another craftsman. Word of mouth led me from bench to bench and shop to shop, from one end of the country to the other.

What began as a search for fine benches soon became much more. Craftsmen are used to talking about their work, their design aesthetic, even their planes and chisels, but not about their bench. Once encouraged, however, they embraced the subject passionately, as though discussing their own children. They were glad to share their knowledge, but they were just as eager to find out what others had to offer. Like the traveling 'drummer' of another era, I was pumped for information about the treasures I'd seen and the people I'd met along the way. At these moments I felt most richly rewarded. Beyond anything this book might contribute to the design, construction and lore of the workbench, I was delighted to find that the process also could bring together the craftsmen who build and use them. The story that unfolds in these pages is as much about the people as about the benches themselves.

When any extended project nears completion, I suppose it's natural to regret the things left unsaid. Faced with the inevitable limitations of time and space, I have had to omit some fine examples of creativity, and skip lightly over others. Even as friends marvel at the range of benches I've been able to muster, I receive another call or letter to remind me that there is so much left to discover. There are old benches that raise (and perhaps answer) important questions about the history of tools, habits of work and patterns of trade and cultural migration. There is much to be gleaned from a broader study of tool and bench use around the world. And I've surely missed many new benches that have been built to reflect the specific needs of their makers or the continuing evolution of the woodworking trades.

While not being the last word on the subject, and certainly not the first, this book will, I hope, inspire a renewed interest in and a broader appreciation of the workbench. If you decide to build your own—and I hope you will—I encourage you to look forward and back in the process and to enjoy it. Keep in mind that a workbench should be custom-fitted to its user. Accordingly, the drawings that appear throughout the text are intended to show how things go together—not to be reproduced verbatim. If you already have a bench, you will discover more accessories and ways to improve it than you ever dreamed of. And if you have no interest in building a bench at all, but you enjoy the makers' stories as much as I did, you might want to skim the technical details and get on with the fun.

Early in my journey someone suggested that the workbench is not a project for beginners. It's far too complicated, he argued, and how is the beginner to know what he needs until he's got enough experience to understand what a bench can and should do for him?

Fair enough, I thought, but how can you get that experience without a workbench? I also recalled that building my own first bench about 15 years ago provided me with a short but intense course in modern woodworking. In the space of a few weeks making the bench in a friend's shop, I gained an understanding of (and an immense respect for) the jointer, thickness planer, tablesaw and drill press—all tools I had previously kept at arm's length. On later benches, I was introduced to the hollow-chisel and horizontal mortiser and the router. I also learned that truing a maple benchtop is one of the best handplaning exercises around. At least as important as the tool handling skills was the foundation I laid for my understanding of clamping and gluing, dovetail and mortise-and-tenon joinery, and basic wood technology. These lessons could be applied to building houses as well as to building cabinets. I was truly being educated by my bench—what other project could offer as much?

If a novice were to ask me now, "Should I build the workbench of my dreams?", my response would be one of qualified encouragement-qualified in only two respects. It will take much longer than you expect, and by the time it is built, you may have different dreams. A workbench need not be forever. It can be modified, sold or given to a friend. As your needs and skills change, so may your workbench-I know one fellow who has survived five generations of benches.

Finally, remember that a good workbench won't make you a better woodworker, but it sure helps.





Workbenches for all seasons. Top right: Michael Fortune's modern bench. Above: Turn-of-the-century Swedish benches; No. 2 in a series of 11 educational posters, distributed by Gleerup's University Bookshop, Lund, Sweden.



This 12-ft.-long, 19th-century workbench is located in the Tan House at Hancock Shaker Village, Pittsfield, Massachusetts.

# **19th Century: The Shaker Bench**

Chapter 3



n several centuries of new-world furnituremaking, perhaps no other style of furniture has become more identifiably 'American' than that of the Shakers. Their simple ladderback chairs, case pieces and nesting oval boxes are as distinctive and familiar as far more elaborate colonial furniture. The Shakers somehow stand apart from

the mainstream of American woodworking while, simultaneously, they set a standard for its design and construction. Even the common dovetail joint and the turned wooden drawerpull were employed with such skill and frequency by Shaker woodworkers that they have very nearly been usurped as Shaker trademarks. Indeed, as a measure of the success of these craftsmen, the very word Shaker has become synonymous with quality and simplicity, two of the founding tenets of the faith.

Not surprisingly, the Shaker workbench also stands apart from other benches of the period. This became apparent to me through some correspondence I had with a cabinetmaker in Stockholm, Sweden. After describing the European workbenches of his own experience, he added that the most beautiful workbench he had ever seen was at a Shaker museum in New England. It was similar, he said, to an old workbench he had known during his apprenticeship. Although his English was halting and his description vague, I felt certain that the bench he referred to was one of two I had seen at Hancock, Massachusetts, and, a few miles away over the Taconic hills, at Mount Lebanon, New York. Both Hancock and Mount Lebanon (known as New Lebanon prior to 1861) are former Shaker communities, now museums.

By virtue of their size alone-the Hancock bench is almost 12 ft. long, the Mount Lebanon bench just over 15 ft.-they are both extraordinary. That much is obvious to someone like me who had previously considered a 7-ft. benchtop long. But there is something more special than that. Over 100 years old and in disrepair (the Lebanon bench is incomplete and had been carelessly used and partially cannibalized), these benches possess a certain presence. Every important detail seems intentional, not the haphazard whim of a rough-hewn rural craftsman. The builders of these benches cared. While I am not a Shaker scholar, it seems to me that these benches are distinctly Shaker, at once related to the makers of those delicate chairs and to the monumental built-in cupboards that line the cavernous Shaker dwellings.

Before examining the Shaker workbench, it is important to understand that the Shaker workshop—and everything within it—was a logical extension of the moral and spiritual order that was the touchstone of the faith. The Shakers, officially known as The United Society of Believers in Christ's Second Appearing, grew out of the turmoil and urban poverty of the

"That which has in itself the highest use possesses the greatest beauty." –Unnamed Shaker Industrial Revolution. It is an austere, fundamentalist brand of Christianity, with roots in 17th- and 18th-century French and English enthusiastic sects. (The name Shaker is a conjunction of 'Shaking Quaker,' denoting the frenetic 'dancing' worship for which the sect was well known.) The Society's founder and spiritual leader, Ann Lee, a millworker in Manchester, England, in the 18th century, was believed to have been the prophesied reincarnation of the Christ spirit come back to earth to lead her followers into the Millennium.

Acting upon divine revelation, Mother Ann led a loyal band of eight Believers to America in 1774. Preaching a radical gospel of celibacy, equality of the sexes, separation from the world and spiritual purity, Ann Lee launched an evangelizing tour of the Northeast. She faced great hardship in that first decade in America and died in 1784, but not before her efforts had begun to bear fruit. Riding a wave of religious revivalism at the end of the Revolution, working-class people joined the Shakers in droves. Within ten years after Ann Lee's death, ten communities had been established from Maine to New York.

At the height of its popularity, around 1840, the Society of Believers comprised an estimated four to six thousand members in eighteen principal communities and eight states, spreading as far west as Kentucky. The communities were organized into 'Orders,' or 'Families,' each supervised by two Elders and two Eldresses, appointed by other members of the ministry. The role of these four leaders combined parental and ministerial functions, while Deacons and Deaconesses in each Order were responsible for the conduct of the temporal concerns. The income provided by the community's activities seed and herb sales, broom making, farming, chairmaking, etc.—was more than enough to support the Shakers' largely self-sufficient, Spartan lifestyle, with funds left over to acquire additional property. (The average land holdings of each Shaker community were estimated at about 2700 acres in 1875.) Consistent with the religion's working-class origins, Shakers considered work a form of worship, their skills a divine gift. Mother Ann said, "Put your hands to work, and your hearts to God..." and the *Millennial Laws*, revised and circulated to the 18 communities in 1845, eventually prescribed in rigorous detail how that was to be accomplished. Every activity of Shaker life was delineated, from the burying of the dead to the folding of ones hands and the segregated climbing of stairs.

Father Joseph Meacham (the Shaker Elder who, along with Mother Lucy Wright, was responsible for molding the first Shaker institutions) helped establish early guidelines for manufacturing: "All work...ought to be faithfully and well done, but plain and without superfluity." Meacham meant *all* work. The Shakers did not apply different standards to furnishings made for workshops and those made for dwellings. It was thus established—almost in scripture—that the Shaker workbench would be as well made as a cupboard or chair.

Equally scrupulous in their relations with the world, brothers and sisters were told by the Millennial Laws not to "manufacture for sale, any article...which would have a tendency to feed the pride and vanity of man, or such as would not be admissible to use among themselves." (Chairs were the only furniture made for sale outside the communities.) Even items deemed acceptable to purchase from the world had to meet certain standards. The early Shakers expected their communities to survive and flourish through the Millennium, so they were not about to be seduced by discount merchandise or slipshod construction. Planned obsolescence would have been blasphemy.

While this attitude was abundantly expressed in the work of later Shaker craftsmen, it is very difficult to distinguish the earliest Shaker woodwork from that of their contemporaries. Many Shaker craftsmen came to the Society after having been apprenticed or established in cabinet shops in 'the world.' This was especially true at the close of the 18th century and in the



The Church Family buildings at Hancock Shaker Village were occupied from 1790 until 1960. In the foreground is the Sisters' Shop. Immediately behind it are the Round Stone Barn and the Tan House, which currently houses the workbench and cabinet shop described in this chapter. Photo by Linda Butler. first quarter of the 19th, when the young communities were gathering converts. In later years, 'second-generation' woodworkers trained in the Shaker faith and the craft would have been better equipped to conform to the design standards of the community. In addition, when new converts arrived, they brought with them the furnishings of their former existence; what furniture they did require would, out of necessity, have been built quickly and simply.

The Shakers may not have originated the notion that 'form follows function,' but in their craft they unwittingly developed it to a fine art. Stylistically, mature Shaker furniture might be described as stripped-down country furniture of the Federal period. While their worldly counterparts experimented with reeding, beading and rope turning, Shaker cabinetmakers preferred clean, simple lines and delicate, attenuated proportion. They used solid native woods—mainly cherry, maple, birch, beech, pine, butternut and walnut—and studiously avoided imported mahoganies and exotic veneers and inlays. Again, the Millennial Laws were specific: "Beadings, mouldings and cornices, which are merely for fancy may not be made by Believers...." Veneering was considered an adulteration.

It is a common misconception that the Shakers did not paint or finish their work. (Perhaps our perceptions have been distorted by too many years of black-and-white publications.) One look at their multicolored oval boxes or carriers, and even their most utilitarian casework (workbenches included) demonstrates that the Shakers were capable of manipulating color. But even more than applied color, the Shakers were sensitive to the infinite variation in the color and pattern of natural wood. Their fondness for bird's-eye and tiger maple and the more subtle combinations of different woods belies their monochromatic reputation. (The cabinet beneath one workbench at the Shaker Museum in Old Chatham, New York, has walnut frames surrounding tiger-maple panels.)

The reverence that today attends the craftsmanship of the Shakers is in part justified by the consistency with which both quality and simplicity were applied to Shaker work. But only in part. It is also fostered by the mystery and irony that have enshrouded this most successful American Utopian adventure almost since its inception.

In a pragmatic sense, The United Society of Believers formed a bridge between the rural, agrarian society of the 18th century and the industrialized America that followed. It erected a protective envelope in which to launch experiments in mass production and to seek a new balance between hand and machine—all within the context of a medieval system of apprenticeship and the seclusion of walled villages. Any failures or problems the group encountered were diminished by their communal society, their sheer strength in numbers and their agricultural base, which would still put food on the table.

The Civil War and the urban industrialization that followed changed the face of America and perhaps terminally depleted the Shakers' reservoir of converts. The network of Shaker villages has all but disappeared, leaving only a handful of 20th-century Shakers in two communities (Canterbury, New Hampshire, and Sabbathday Lake, Maine), but the Society is admirably survived by the legacy of its hands. Unlike many worldly craftsmen and designers, the Shakers valued their work not for its own sake, but as a reflection of their religious commitment. It is no small irony that this spiritual, non-materialist society is best remembered for its products rather than its beliefs.

## The workbench

As in a lot of other Shaker furniture, the distinctive features of a Shaker workbench are not always immediately obvious. As a utilitarian piece of equipment, the Shaker bench has to meet many of the same requirements as a worldly workbench. There is only so much room for variation and development before such a basic tool becomes over-specialized. Though the Shakers, like their contemporaries, distinguished between joiners or carpenters, who made architectural elements, and cabinetmakers, who made furniture and small goods, the workbenches of these craftsmen were probably quite similar. Chairmaking and boxmaking were separate industries with different workholding requirements. Shaker chairs were a production item, mainly comprised of interchangeable turned parts. Thus the lathe was the primary tool and workholding device. Chairs were clamped in a vise like the one shown below while their seats were woven. Shaker boxes were also mass-produced, and they were assembled on benches that were much smaller and less refined than the workbenches used for furnituremaking or joinery.



Sister Sarah Collins weaves a chair bottom at Mount Lebanon, New York, ca. 1930. Photo by William F. Winter, Jr.

The Shaker workbench, like others in the world, has many standard components: a tail vise and dogholes, a front vise, and room for tool storage beneath the top. Likewise, most of the same materials, hand tools and machinery available to the Shakers for workbench making were the same as those used by their worldly counterparts. As a result, similar woods may be found in both Shaker and non-Shaker benches, joined with the same mortise-and-tenon or dovetail joints.

It is unclear exactly when the Shakers began building workbenches. Perhaps a few were brought along when woodworkers joined the fold. (Gideon Turner, an early convert, became a member of New Lebanon in 1788 with "1 Set Carpenters tools & 1 Set Joiners Tools" valued at eight pounds.) Or, more likely, makeshift arrangements may have been employed until permanent workshops could be built and proper benches installed. In any case, journal entries and a couple of dated benches indicate that Shakers were building benches by the first or second quarter of the 19th century. This coincides with the period during which most Shaker furniture was built and the stylistic features that distinguish it today were firmly entrenched. Although Shaker life and work became increasingly codified at the same time, no precise description of the 'proper' workbench or its appropriate usage has yet been discovered. (The idea that such a description might exist is not as farfetched as it sounds, considering that the Millennial Laws mandated: "Floors in dwelling houses, if stained at all, should be of a reddish yellow, and shop floors should be of a yellowish red.")

Since my first introduction to those two Shaker benches, I have looked at a dozen benches in other Shaker museums— Fruitlands in Harvard, Massachusetts, and the Shaker Museum in Old Chatham, New York—as well as a few in private collections. While these represent only a fraction of the total number of Shaker workbenches that must have been made (every Shaker family had a woodworking shop, and the large families, such as the New Lebanon Church Family, had both a joiner's and a cabinetmaker's shop), certain patterns begin to emerge.

I chose to focus my attention on the Shaker workbench at Hancock Shaker Village, shown on p. 32, for several reasons. It



is well made and in good condition and does not appear to have been materially altered. In its dimensions and construction, it is as fine an example of a Shaker bench as any I have seen. And it is the only such bench I am aware of that remains in everyday use in a working, Shaker-style cabinet shop, albeit in an interpretive museum. I will describe details of other Shaker benches I have seen as they differ from the Hancock bench or further an understanding of it.

As my first impression suggested, Shaker benches tend to be massive. The Hancock benchtop is 11 ft. 9 in. long and 38 in. wide. The main body of the top is  $3\frac{3}{4}$  in. thick. The smallest Shaker bench I found (at Fruitlands) is *only* 8 ft. 1 in. long. The largest (at Old Chatham) is 16 ft. 7 in. Most of the others are between 12 ft. and 15 ft. long. Indeed, it would seem that a small Shaker bench would be anything under 10 ft. long–several feet longer than what would be considered a large workbench today. (This may not have been unusual at the time, given the 18th-century Dominy workbenches [p. 13] and the French workbenches described by Roubo [p. 21].)

The top of the Hancock bench is comprised of three separate sections (as shown in the drawing on the facing page), built stoutly and purposefully. The front section is 16 in. wide and laminated from four pieces of  $3^3/_4$ -in.-wide maple or birch and a 1-in. strip of pine, glued and bolted together with four hand-forged bolts. (The  $3^3/_4$ -in.-square laminates would have been convenient to work with.) This area houses the dogholes and vises, and functions as the primary worksurface; maple or birch was used on this part of the bench, as it was on all the others I've seen. (Due to the age and patina of the bench, it is often difficult to determine the exact species of wood used; the woods I describe should be considered 'educated guesses.')

The midsection of the top is a single chunk of  $9\frac{1}{4}$ -in.-wide chestnut or oak. Although hard and dense, the open-grained wood provides a rougher benchtop texture than that of the front portion, and was presumably acceptable for a secondary worksurface. The  $12\frac{3}{4}$ -in.-wide back section of the top is made of knotty, hard pine. Both the middle and back sections are  $1\frac{3}{4}$  in. thick, supported by spacers that rest on the base frame. Both ends are covered by simple, bolt-on end caps with captured nuts fed from the underside of the top. No tongue-andgroove or splined joints were used to attach the end caps. They were merely intended to conceal the end grain on the benchtop and, in the case of the end cap on the right end of the bench, to serve as the nut for the tail-vise benchscrew.

The very size of the enormous top offers some interesting clues to Shaker woodworking. "It's never big enough," according to Joel Seaman, the cabinetmaker who has been making restoration Shaker furniture on the Hancock bench for over ten years. Seaman could lay out all the parts of a cabinet on the top and still have room to use the vises.

The order and cleanliness of the Shakers is legendary, however, and it's unlikely that the benches were built large to accommodate such expansive work habits. (Even the woodshed and tool room of a Shaker brother in Union Village, Ohio, was impeccably organized: "...every stick of wood was exact in its place.... His little work shop exhibited the same care.") In part, bench size may be explained by the institutional nature of the Shaker dwellings and the size of the joinery and furnishings required for them. In every community these buildings are imposing structures, with high ceilings and wide hallways. As shown in the photo below, some of the most remarkable case pieces stand over 8 ft. tall; built-in cupboards, housing dozens of drawers and cabinets, may run floor-to-ceil-



Members of the Shaker Village, Canterbury, New Hampshire, stored their off-season clothing in the more than 80 drawers and seven walk-in closets that line the walls of the New Attic' of the Dwelling House. Photo by Linda Butler.

## Freegift Wells

The following notes are from the journal of Freegift Wells (Western Reserve Historical Collection, V:B-296), a respected Elder of Watervliet, New York. This excerpt begins in 1857, when Wells was 72 years old.

#### 1857

may 20 It is altogether probable that this will remain my permanent workshop, while I am capable of performing hand labor. I have fixed an acconunction on the front of my bench for holding boards & the like for jointing.

jul 22 Went to Albany, bought a small bench vice & other tools. The vice cost \$2.50.

nov 28 Been hewing out a couple of long screws, fixing up the lathe & ruff turning them.

dec 4 Been fileing up...our large screw auger which I made for cutting plates for vice screws perhaps 35 years ago, & I do not believe it has ever been filed up since till today....It cuts for 1<sup>3</sup>/<sub>4</sub> inch screws or nearly.

dec 30 I have finished my vice & lathe—So that I now have a vice bench, vice & lathe.

#### 1858

jan 1 ....Today I have made a pair of clams to fit the vice, for the pnrpose of holding saws to file &c...

jan 9 ...Oiled the new vice & vice bench also the lathe bench which is going to the mill.

mar 11 Dressed out stuff for a drawer to go under my vice bench—dove-tailed it & glued it together...

mar 17 Been making racks, or fixtures in one of the bench draws for keeping small files. apr 6 Been fixing my small iron vice...to screw on to the side or end of my bench.

apr 13 This morning the Elders gave me little Thomas Almond for an apprentice, & a fine boy he is to (he was born July 25th 1847). Made him a bench to stand on & set him to turning at my little lathe. jul 29 Altered over some fly nets & did other necessary chours, such as to learn Thomas to make mortises & saw tenons &c. With my instructions he framed 4 sticks together, which looked quite workman like.

## 1859

june 23 ...Turned & fitted in a screw for Thomas's end of the bench. jul 27 Repaired my vice at the head of my bench which had been out of order for a considerable time.

#### 1860

dec 17 Began to repair my work bench, plained off a part of the top...

dec 18 Plained off the iron plate & a part of the hook that composes my vice at the head of my bench.

dec 20 Finished dressing up my hook...so that it will pinch a piece of paper all around.

dec 29 Cut my screwplates in the south end of the bench for the purpose of forming a vice on the end to hold boards for marking out dovetails &c.

### 1861

jan 5 Been making a jaw for a hold fast on my bench. jan 8 Laid out 9 mortices on the front side of my bench bored them & morticed out 5. jan 9 Finished my mortices & made a dog, or hook, to go in them... jan 14 Made a beginning at Thomas's bench vice, plained & bored the hook shaft &c. jan 15 Worked out the big hole for the screw & bored the 4 holes for bolts & burned them out with a hot iron. jan 25 Finished my bench to day, got in the screw all complete, so that Thomas has

now got a complete head screw to his end of the bench.... He is 13 years & 6 month's old to day.

## 1865

mar 4 The care of the Saw mill is given up to Thomas Almond...he is a smart fellow, & I hope he will always do well, & honor his privilege by faithfully bearing his cross to the end of his days...my blessing will always remain with him, & he will receive a rich reward for all his labors. What have I been writing! Likely as not he will get a peep at it some time, surely I hope it will not do him any hurt.

On March 1, 1867, Thomas Almond (21 years old) eloped with one Ada Woods and left the Shakers. Wells died on April 15, 1871 in Watervliet, New York, a month before his 866h birthday. ing and the length of a long hallway. All this work, plus the miles of pegboard circumnavigating the rooms, would have been more easily hand-planed and joined on a long bench. While there was some specialization among Shaker woodworkers, records indicate that a typical woodworker's week would have been spent in a wide variety of pursuits. As the communities stabilized and eventually began to shrink, there would have been less new furniture (apart from chairs for sale) to build. At the same time, fewer craftsmen would have had to perform an even more varied range of tasks.

There is also reason to believe that more than one person worked at the bench at a time. Entries from the journals of Freegift Wells, an Elder and woodworker of considerable stature from Watervliet, New York, depict what was probably a typical relationship between a cabinetmaker and his apprentice. In these notes, excerpted at left, Wells tells us that he installed a vise at the opposite end of his own workbench for his apprentice, Thomas Almond. There are also frequent references in other Shaker letters and journals to projects undertaken by two or more craftsmen working together.

Without exception, all the Shaker benches I've seen have an enclosed base, which contributes substantial mass and storage space, while it restricts any clamping to the ends or the narrow overhang along the front edge of the top. One thing I have never seen on a Shaker bench, but which is common on other benches out in the world, is an open tool tray. This tray, whether built into the top or between the stretchers of the base, collects debris and allows tools to knock about, damaging their edges. To an early Shaker, an open tray would have seemed like an open sewer-seductively convenient, perhaps, but unsanitary and hazardous.

Mother Ann could have been lecturing her woodworking followers when she said: "... take good care of what you have. Provide places for your things, so that you may know where to find them at any time, day or by night...." Just as the walls of the Shakers' dormitories are lined with built-in cupboards, so their workbenches are equipped with substantial cabinets that fully occupy the area between the legs and beneath the top. They are also unique in that the drawers and cabinets are usually built into the base framework, a tedious and exacting process. It would have been much easier to support the top with a basic four-leg structure and to install an independent toolcabinet carcase between them. (Norm Vandal chose this approach when he built the Shaker-style bench shown on p. 43.) In the case of the Shaker workbenches I have seen, the members of the carcase itself-posts, drawer dividers and the frame-and-panel ends-generally function as the legs and stretchers of the workbench. This may have been preferred for aesthetic reasons, or simply to lend continuous support to such a large worksurface.

On the Hancock bench, like most of the others, the base is divided into a succession of drawers that progress in size from the smallest on the top to the largest on the bottom. A portion of the base consists of open shelves, which are reserved for storage of items that won't fit in the drawers (large tools or specially prepared stock, perhaps). These areas are always enclosed by doors. The insides of the door panels on the Hancock bench display remnants of different-color paint, indicating that they were borrowed from some other project and reincarnated in the workbench. The order and cleanliness provided by the enclosed base cabinet had many practical dividends for the workbench. The problems of racking and sliding, which are inherent in an open-frame base, are automatically resolved by the rigidity of the casework and the sheer weight of the structure. Loaded with tools, as it presumably was, the cabinet anchored the whole bench to the floor and to move it would have taken a small army. Workbench storage would have made it easier to keep track of tools in a large community. "No one should take tools, belonging in charge of others, without obtaining liberty for the same...," the Millennial Laws decreed. "The wicked borrow and never return."

If I had any doubts about the ability of the drawers to carry tools, these were quickly dispelled in examining the Hancock workbench. Joel Seaman keeps the largest of the lower drawers of the bench (32 in. wide by  $8\frac{1}{4}$  in. high) loaded with his collection of 54 wooden molding planes. It is so heavy that it takes two people to lift, yet slides smoothly without sticking on the runners in the carcase. These have become tracked with deep grooves over the more than a hundred years of the



The enclosed base of the Hancock bench, fitted with drawers and cupboards, is one of the hallmarks of a Shaker workbench.





Despite the grooves worn in the runners and dividers of the carcase, the heavy drawers still slide smoothly.

bench's life. The upper drawers, which are only  $3\frac{3}{4}$  in. high, are perfect for keeping smaller tools safe, well-organized and readily accessible.

Although I have never found any dividers (or signs of there having been any) inside the drawers of a Shaker workbench, these would have been in keeping with the Shakers' strict sense of organization. The few wall-hung tool chests that I have seen are a rabbit warren of compartments and notched racks designed to hold specific tools. Fastidious half-blind dovetails on the drawer fronts (through dovetails on the drawer backs) and mushroom-shaped turned pulls are two typical hallmarks of a Shaker drawer. The Shakers felt so strongly about superfluity that on July 4, 1840, a New Lebanon Ministry sister's journal noted: "David Rowley [master cabinetmaker] has been employed for several days in taking out Brass knobs, and putting in their stead wood knobs or buttons. This is because brass ones are considered superfluous, thro spiritual communication."

While the drawer fronts of many Shaker cabinets overlap the carcase with a rabbeted stop, all of the drawer fronts I have found on these workbenches fit flush within the frame. A flush-fit drawer front must be carefully built into the frame to avoid any unsightly gaps, but it was probably preferred to the rabbeted drawer front because it is much simpler to make. Some of the drawers, such as the ones in the bench at the Fruitlands Museums, shown below, are exceptionally well crafted. Others, such as the ones in the Hancock bench at left, have had the edges of their fronts chamfered slightly, perhaps to allow the maker some leeway in their alignment.



This bench at Fruitlands Museums in Harvard, Massachusetts, is an extraordinary example of Shaker craftsmanship. The drawers are fitted flush with the front of the carcase.

In the absence of a rabbeted drawer front, the Hancock drawers are stopped directly against the backboards of the bench by projecting drawer-side dovetails, as shown at right. Their length would have been easily trimmed when the drawer was installed. (On the Hancock bench, it also allowed the maker to leave the overflow of crusty hide glue on the back of the drawer, without this interfering with its fit.) Otherwise, the drawers are typical of the period. The undersides of the drawer bottoms are planed to fit in grooves routed in the drawer sides and front; a few nails in the back hold the drawer bottoms in position. Over the years several of the grooves have split out, and these have been reinforced with nails.

Tracing the provenance of a Shaker workbench can be every bit as troublesome as tracing a Shaker chest. Benches changed hands frequently, were often made by one maker for another and were sometimes built by several men working together. These factors, in combination with the Shakers' philosophy of shared property, would lead one to believe that the workbench was just another piece of communal chattel. To a certain extent that may have been true. But in their journals, Shaker woodworkers often differentiate between "my workbench" and benches made for other craftsmen. Freegift Wells even had his bench shipped home to Watervliet, New York, when he returned from a temporary posting in Union Village, Ohio.

As might be expected, Shaker furniture was not commonly signed, and the workbench is no exception. The only examples extant are a dated workbench in a private collection and the workbench at Mount Lebanon, which has been signed and dated on the undersides of several drawers: "Moved to the Brick Shop Feb 9 1871 by the Maker. February 1853 Orren N. Haskins Maker." In lieu of a signature, a peculiar method of construction can sometimes provide a clue to the origin of a workbench. The workbench at the Fruitlands Museums, for example, has pine drawer sides tapered in thickness from  $\frac{3}{8}$  in. at the top to  $\frac{1}{2}$  in. at the bottom, as shown at far right. The drawer itself is squared up, so it fits tightly in the carcase; the inside faces of the drawer sides slope. It's possible this curious detail enabled the maker to lighten the drawers slightly without compromising the strength of the bottom groove, or they might be the result of splitting quartered stock from a billet. Regardless of their purpose, tapered drawer sides are a clue to the benchmaker's identity, as this feature is known to have been employed by several cabinetmakers of the Hancock Bishopric, which also included Tyringham, Massachusetts, and Enfield, Connecticut.

The cabinet of the Fruitlands bench has one other unique and practical feature—a lidded drawer that provides a clean surface on top, and dust-free storage within. Like the rest of the bench, this detail is neatly executed. The upper edges of the drawer sides are beveled, to leave room for one's fingers to lift the hinged cover. I can only surmise that the drawer may have been used as a writing surface and perhaps to store drawings or drafting tools. The only other similar feature I have discovered on a Shaker bench is a simple pull-out board, located directly below the top of the 16-ft. workbench at the Shaker Museum in Old Chatham, New York.

With one exception, the drawers on all the Shaker benches I have seen open from the front only, suggesting that the benches were commonly positioned against a wall. (Orren Haskins' bench at Mount Lebanon has seven drawers on the back side, indicating that it must have been freestanding.) The back of By placing the workbench against a wall, the Shaker woodworker was able to hang large tools, such as saws—or even complete tool cabinets—directly behind the bench within easy reach. The critical work areas of the bench—the vises—could be positioned under windows to improve visibility in an otherwise dark workshop. Furthermore, with the benches against the wall, the shop would have been less crowded, and the coveted Shaker order and cleanliness more easily maintained. (As was the custom in Federal-period homes, furniture lined the perimeter of a room and was brought out only when it was required. The Shakers took this one step further in their dwellings by actually hanging chairs and other furnishings on the wall, or going to great lengths to build in their cabinets.)



The dovetails on the ends of the Hancock drawer sides (above left) extend beyond the drawer back, stopping the drawer against the backboards of the bench. The sides on the Fruitlands drawer (above right) have been tapered—perhaps to lighten them without sacrificing strength in the bottom rabbet.



A hinged lid has been fitted to one of the top drawers of the Fruitlands bench. The lid protects the contents from dust and the drawer is at the right height to provide a convenient writing surface for a craftsman seated on a stool beside it.



The right end cap of the bench extends into the tail vise and is threaded for the benchscrew. A heavy guide bar slides through a notch in the end cap and along the underside of the bench to add stability. The rear jaw is fitted with a garter, which slides up through a tight-fitting mortise to engage a groove turned below the head of the benchscrew. Photo by Richard Starr. The Shakers may have been conservative in their religious and moral practices, but they were quick to adopt new technology where it proved expedient. (Early Shaker craftsmen frequently used 'buzzsaws' and planers in their shops, run off leather-belted line shafts and water-powered turbines.) Accordingly, every Shaker workbench I have seen includes a wellbuilt tail vise, a feature that probably had not been in common use for much more than a couple of decades before 1800.

The tail vise on the Hancock bench is typical. It is neatly dovetailed, houses a single benchdog in the front of the vise, and is operated by a large 2-in.-dia. beech screw with a turned hickory handle. The nut is tapped in the end cap of the bench itself, which extends into the cavity of the vise. A  $\frac{1}{2}$ -in.-thick maple top cap covers the screw cavity and is pinned into a rabbet at both ends with seven small pegs. One Shaker bench I've seen in a private collection has a removable top cap; its ends are cut at an angle so that it can be slid out from the front of the vise to ease lubrication of the screw. (The top cap on Norm Vandal's Shaker-style bench on the facing page is screwed down.)





The Hancock tail vise is of typical Shaker construction: neat dovetails, a well-turned beech benchscrew and an iron benchdog. Photo by Richard Starr.

## A Shaker-inspired bench

"I wanted a bench that had storage space (and would keep dust off the tools) but that also looked decent," Norm Vandal says. "I didn't want something modern." Inspired by the bench at Hancock Shaker Village, Vandal decided to incorporate many of its features into his own workbench, but he amended them to suit his needs. He built an enclosed cabinet below the top, as on the Hancock bench, and he installed a tail vise and leg vise at opposite ends. But he also shrank the bench considerably. At 29 in. wide by 7 ft. 10 in. long, the bench is somewhat of a midget by Shaker standards, but then Norm Vandal is a reproduction furnituremaker in Vermont, not a Shaker. Vandal spread the construction of his Shakerstyle workbench over several months, finishing it in the fall of 1985. If he had started from scratch and worked flat out, he figures that it would have taken about  $3\frac{1}{2}$  weeks to build.



Norm Vandal adapted the main elements of the Hancock Shaker bench when he built his own scaled-down version.

The Hancock benchtop has 23 dogholes, spaced approximately on 5-in. centers and angled toward the tail vise. These holes are cut to fit large, hand-forged iron benchdogs-1 in. by  $\frac{7}{8}$  in. by  $11\frac{1}{4}$  in. long, with a  $\frac{1}{8}$ -in.-thick spring pinned at the bottom. A shallow shelf chopped at the top of each slot receives the larger head of the dog and prevents its dropping through the benchtop.

Like many other woodworkers of the period, the Shakers seem to have preferred metal benchdogs to wood. According to Joel Seaman, metal dogs on the Hancock bench are able to grip a thin piece of wood firmly with only the top  $\frac{1}{8}$  in. of the dog protruding. After more than a century of use, the springs on the Hancock dogs continue to work well and the dogs can be positioned at almost any height without slipping. Not surprisingly, Seaman estimates that he uses the dogs nearest the tail vise about five times as often as the rest of them, although the farthest dog (9 ft. away from the tail vise) is indispensable when it comes to working large case pieces or long architectural moldings.

The dogholes were undoubtedly bored first and then chopped square, either by hand or on a mortising machine. (From journal references, we know that the Shakers built and used mortising machines in their production work; these mortises would have required a tilted table to produce the angled doghole slots in the benchtop.) Near the left end of the Hancock bench, another mortise has been cut for the shaft of a toothed stop. This store-bought stop (Taylor patent 1846) is particularly interesting, as it appears to be a transitional development between the single stop used on earlier benches (such as the Roubo bench described in Chapter 2) and modern benchdogs, which are used in conjunction with a tail vise. The teeth grip the end grain of a board sufficiently to hold it for planing without requiring any clamping at the other end. For production planing, the stop would be very quick to use. Seaman objects to the marks left on the end of his work, however, and notes: "I'm a little too compulsive." So he uses it only occasionally where the tooth marks won't matter, as shown in the photo at far right on the facing page.

The cabinet below the bench measures 26 in. by 63 in. and was built independently, before the top and legs were installed. The pine carcase was assembled like a kitchen cabinet—as a separate unit, with a <sup>3</sup>/<sub>4</sub>-in.-plywood bottom resting on 2x4 braces on the floor. The back and ends of the cabinet have raised panels with a thumbnail molding run around the insides of the 1-in.-thick frames. (Vandal wasn't sure when he built the bench that it would end up against the wall, so he paneled the back.) The legs were erected around the finished case and lag-screwed from the inside, adding weight and rigidity to the structure. The rails of the side and back panels serve as stretchers between the bench legs. In addition, a maple stretcher is mortised into the front legs to carry the sliding board jack. The benchtop was then dropped down and fitted to tenons on the tops of three legs. (The left front leg extends above the top for the vise.) The back legs fit in enlarged tenons to allow for movement in the top.

Vandal chose this approach over the common Shaker practice of using the cabinet alone, without legs, for the base. It seemed an easy way to keep the whole unit square without relying too much on the carcase to carry the top's weight. It was also easier to cut the mortises on the underside of the top to match the tenons on the legs, rather than try to fit the carcase within a preconstructed frame.





The dogholes on the Hancock bench are designed for a heavy,  $\Pi^{\dagger}_{I'r}$ in.-long, wrought-iron dog. The dog's cross-hatched face helps grip the work, and a spring is riveted to one side so that the dog will maintain its position at any height.



The toothed stop is used for planing without the tail vise. Work is simply pushed against the stop; pressure against the serrated edge holds it in position.

The workbench resides against the wall in the far corner of Vandal's tidy shop under the warm glow of a bank of south-facing windows. The bulk of the top is made of two maple boards (about 10 in. and 15 in. wide), dressed down to about 1<sup>1</sup>/<sub>2</sub>-in. thickness and fitted with a long, sliding tenon to the end caps. A  $2\frac{1}{2}$ -in.-wide by 3-in.-thick front strip covers the dogholes cut in the top. All maple parts are coated with a pigmented oil stain (to add about a century to the bench's appearance) and finished with tung oil.

The benchdogs are quite small—only <sup>3</sup>/<sub>4</sub>-in.-square oak pegs-spaced 6 in. apart, and the bottoms of the dogholes are blocked by the cabinets below. Vandal tried to align them as closely as possible with the screw in the tail vise and didn't want them to drop through (there are no shoulders in the slots, or springs on the dogs). As a result, he has to blast the holes with compressed air on occasion to keep them from plugging.

The tail vise is constructed like its Shaker predecessor. A screwed-on top panel is easily removed to provide access to the 2-in.-dia. wooden screw, should it need future lubrication or attention. "I'm a WD-40 freak," Norm allows. The front leg vise is not of typical Shaker design, but it would certainly appeal to the Shakers' sense of distilled function. It has a selfparalleling scissors device, which Norm cannibalized from



The height of the vise jaws allows room for shaping (above), and the cast-iron scissors mechanism (left) keeps the jaws parallel.

another old workbench (although it could be fabricated from metal or wood parts). The mechanism, which is shown in the inset photo at left, is made of cast iron and permits the vise to be opened to a maximum of  $7\frac{1}{2}$  in., with the jaws held parallel in all positions. The top arms of the scissors are hinged to a pin housed in the bench leg and the matching face of the vise. The bottom arms slide on inlaid metal plates in both faces. After only a few months of operation Vandal has found that there's some slop in the vise action, although he says that it bothers him more than it actually affects the operation of the vise. The vise jaws are  $5\frac{1}{2}$ in. wide and extend  $6\frac{1}{2}$  in. above the surface of the top to provide plenty of room for three-dimensional shaping.

The screws in both vises are of yellow birch, which is easier to thread than maple. They were turned from 3-in.-square stock and cut with a 'reaming' tap. "The tap works fine," Vandal says, "but it's a bear to use because you need a hardened 'T-handle'" to withstand the torque that's required to rotate it. The sliding board jack runs in a groove located on the underside of the top and on a narrow spline on the bottom base stretcher. Vandal used a spline on the bottom instead of a groove to keep it from clogging with sawdust. The jack can be removed through a gap in the spline on the left end of the stretcher.

**One of the distinctive features** of the Hancock bench is the vertical fruitwood leg vise, installed near the left front corner. It is neatly shaped, with heavy chamfers on both edges. It's good for clamping small work or, with one end of a board or molding held in the vise and the other supported by the sliding board jack, for all manner of edge-jointing. It's also useful for members requiring three-dimensional carving, such as the leg of a candlestand or the arm of a chair.

As far as Seaman is concerned, the leg vise has only two drawbacks. Being flush with the top of the bench  $(32^{1}/_{4}$  in. high), it's a few inches too low for comfort, so he often pulls up a stool and works sitting down. In addition, because the screw is in the middle of the narrow jaw, there's not much room to hold a board vertically for dovetailing. The board must be clamped either to one side of or above the screw, neither of which is very secure. When he's cutting dovetails in a wide board, Seaman prefers to use a homemade wooden vise (see p. 134).

The Hancock leg vise has an unconventional mechanism for keeping the jaws parallel, a constant problem with leg vises. Most leg vises have a horizontal beam at the bottom of the vise that fits a mortise in the front leg of the bench. A pin is inserted in one of several drilled holes in the beam and may be moved to accommodate larger or smaller work. On the Hancock vise, a large octagonal nut turns on a  $1\frac{1}{2}$ -in.-dia. wooden screw, as shown at right below, to provide an infinite range of adjustment. I suspect that with some practice a craftsman could operate the large nut with his foot while simultaneously opening or closing the main screw with his hand.

The threads on both the upper and lower screws are in remarkable condition. While they have been chipped in several places, the actual threading surfaces are nearly pristine. Seaman explains the damage: "I go by the theory that when benches were abused it wasn't by the maker, but it was a hundred years later." Knowing what we know about the Shakers, I suspect he's right. One last, typical feature of the Hancock bench is the board jack, which slides in two grooves—one on the underside of the top, the other at the base of the bench. (Not all the surviving Shaker benches I've seen still have the jack, but all have the grooves.) The sliding jack is an almost indispensable method of supporting one end of a board while the other is clamped in the face vise. The curved design of the Hancock jack allows it to slide the length of the bench unhindered by the drawer pulls.

Most of the Shaker benches I've seen have vertical leg vises. A few of them have a face vise, which, in operation, is quite similar to a modern, bolt-on iron vise. This type of vise may be built of either metal or wood—both work the same way. The jaw is attached to a square, hollow beam that slides in a box lag-bolted to the underside of the benchtop. The vise screw passes through the jaw and runs the length of the beam, exiting at the other end through a nut fastened in the box.

I've seen this vise on several Shaker benches that also display the worn holes of a previous leg vise, so it appears that the horizontal face vise was a later 'improvement.' Not requiring parallel adjustment, it is quicker to operate than the leg vise. The screw is also completely encased and protected from clogging with sawdust or accidental damage. Some of the normal stress exerted on a vise screw is absorbed by the beam, which serves the same functions as the parallel guide rods on a modern face vise. The square corners of the beam register in the corners of the box to strengthen the vise and keep the jaw level with the benchtop.

Finally, in true Shaker fashion, the base of the Hancock bench was painted in two colors—blue on the end panels, door panels and drawer fronts, and a darker color on parts of the carcase frame and drawer dividers. Both colors are so faded now as to be almost indistinguishable from patina, but when freshly painted they would have been striking. According to guidelines set forth in the Millennial Laws, the workbench top and vise were probably either oiled or varnished.



The leg vise works well at holding curved chair parts that must be carved in three dimensions. Used in conjunction with the sliding board jack, at right, the leg vise is also good at holding boards for edge-jointing.



Parallel adjustment is achieved by turning the octagonal nut on the threaded shaft at the bottom of the vise. Photo by Richard Starr.

The range of furniture that Joel Seaman builds at the Hancock bench is probably not a whole lot different from that of the original Shakers. Like some of his Shaker predecessors, Seaman has also worked with two or three other people at the bench at once–sometimes his partner in the shop, Seth Reed, or students who have attended the workshops he occasionally conducts. Seaman builds everything from small production runs of pegboards to elaborate sewing desks, trestle tables and chairs of curly maple. All of his benchwork is performed using hand tools, working from sawn and jointed stock. He surfaces the wood with a hand plane, and cuts and chops dovetails with a saw and chisel. If the bench seems low to Seaman (as it would to most other modern woodworkers), it has a certain practicality for intensive hand-tool operations that require pressure from above.

During most of the ten years that Seaman has spent at the bench, he didn't give it much thought. "I guess I just accepted it for the beast that it is," he says. But in that decade, several of its characteristics have insinuated their way into his work habits—the large worksurface, the bank of drawers, the tail vise and dogs. When Seaman gets around to building his own bench—"it might be in the next century," he admits—these features will probably be incorporated. Instead of a massive, onepiece Shaker workstation, though, Seaman thinks in terms of component parts in a knockdown frame, perhaps with a removable tool chest in the base. He has an Emmert patternmaker's vise that would be more flexible than the leg vise. "I'm more interested in some hybrid solution than in being a traditional, 19th-century cabinetmaker," Seaman says.

Seaman likes to point out that the Shakers were not really that different. Despite the mystique that currently surrounds their woodwork, they were essentially pragmatic craftsmen. While the Shakers paid close attention to proportion and dimension in their furniture, Seaman argues that they often used what woods they had available and they were not averse to employing filler strips, blocks or shims where they had to. "Today we're so used to precise measurements," he says, "that some people consider this shoddy workmanship. But it's not, really. The Shakers were just trying to make good, functional furniture by 19th-century standards."

At 5:00 p.m., when the last visitors have left the grounds of the Hancock museum, Seaman sweeps off the old Shaker bench, walks to the back of the shop, swings open a heavy door that leads to another workroom and flips on the power. There, surrounded by tablesaw, jointer, and a leviathan 20-in. thickness planer that would bring an approving smile to the lips of even the most taciturn Shaker woodworker, he prepares the stock he will assemble and finish on the bench the next day. "For the public I do handwork," Seaman says. "What I should do is machine work...this was, after all, an industrial, agricultural community."

When I look back at the features that distinguish a Shaker workbench-size, cabinets, dovetailed tail vise, sliding board jack, etc.-it's clear that any one (or even several together) might be found on a worldly workbench of the same period. Indeed, I have come across a few benches outside of Shaker domain with banks of enclosed drawers and cabinets, or an occasional long top. It is not the individual characteristic, however, that makes a Shaker workbench-any more than a single Shaker comprises a community. As Robert Meader writes in the introduction to his *Illustrated Guide to Shaker Furniture*, "...it is very often not an *individual* feature that will identify a piece as Shaker, but rather the *totality* of features." The piece either "'feels' right or does not."

Anyone making a workbench in the Shaker style would do well to consider the advice that Brother Thomas Damon offered in his letter to George Wilcox on December 23, 1846, regarding the construction of his desk: "You will please suit yourself as to size and formation, 'For where there is no law there is no transgression.'"



In this wooden face vise, the beam and jaw are cut from a single fruitwood knee. The benchscrew hole is capped with a wooden plate where it exits the jaw.

