

Starting a Portable Sawmill Business

Introduction

Observations of a Beginner

Nearly all sawyers I know have grown up around the lumber business, so it is good to hear a success story from someone who started from scratch. George Tremblay lays out an excellent blueprint for entering the business. A methodical approach to buying and operating a mill is the best way to stay in business. Remember, however, that not everyone has the same goals and income requirements, and you must come up with a plan that meets your specific needs.

— Dave Boyt, *Sawmill & Woodlot* author

BY GEORGE TREMBLAY
I was nearing retirement and looking forward to a change from working at a desk to working with my hands, preferably out-of-doors. A few years earlier, I had taken custody of my son's woodworking tools while he went off on a new venture. At his offhand suggestion that I might learn to do something with wood other than split and burn it, I took up woodworking as a hobby. It was the woodworking that got me interested in owning a sawmill. Access to boards with matching grains and wood from native species not usually harvested for lumber should

offer a greater range of design opportunities. Also, owning a portable sawmill would break up shop work with outside work. With a little luck, I might even supplement my retirement income. It seemed an idyllic arrangement, mainly because I knew so little about either enterprise.

Finding the Right Sawmill

At the urging of a prospective sawmilling partner, also nearing retirement and eager to try something new, I took the plunge. With no sawmill experience between us, we watched videos provided by manufacturers. It took two of us to be sure

someone was awake throughout each presentation; a monologue accompanied by elevator music and the background hum of a sawmill making repeated runs through a log makes for a minimalist action film. We grew partial to the Wood-Mizer mills, in part because of name recognition, or as likely because of their bright orange color. We anticipated spending about \$7,000 for a bottom-of-the-line mill, but within seconds after watching a strapping young fellow manually coax a log up a ramp onto the mill, we opted for a fully hydraulic \$23,000 Wood-Mizer Model LT40HD25 band mill with a 25-hp twin-cylinder Kohler gas engine, computer networks, and debarker (was Tim Allen on the soundtrack?).

We were lucky, given how little we knew at the time of purchase. After 2,100 hours on the machine over six years, I am grateful to be able to say that the mill is very well engineered for both function and safety, has required little in the way of repair beyond routine maintenance, and that customer support service has been excellent.

Given What I Know Now . . .

I would begin my selection of a sawmill by attending a good-sized trade show where manufacturers demonstrate their machines. Major manufacturers will advise you of the next trade show in your area and, if you're reading this magazine, you know how to reach them. Watch how the mills operate to learn how well they are suited to the work you intend to do. Take advantage of the eagerness of the demonstrators to strut their stuff. If you're a beginner, let the demonstrators know that, tell them how you intend to use the mill, and ask them what makes their mill particularly suited to the task. I've found that these folks like their work and like being helpful.

If you anticipate sawing mostly high-end hardwoods for the best possible grades of lumber, pay particular attention to mills that allow

frequent turning of the log, have adjustable shims (toe boards) to raise the narrow end of the log to allow the blade to cut parallel to the bark, and use thin blades to minimize loss to sawdust. Band mills with log turners and toe boards are well suited to this job. If you expect to be manufacturing primarily timbers, structural lumber, and sheathing, a swing-blade circular sawmill might well meet your needs for half the initial investment. If you plan to market your services as a traveling sawyer, you will need a sawmill suited to all of the above tasks, which in my opinion would be the portable band mill with the log-turner and toe boards not available on the portable swing-blade mills.

The bed of band mills equipped with log turners and toe boards is about 32 inches off the ground with fairly unrestricted access, which facilitates removal of slabs and lumber, without bending over. Portable swing-blade mills are operated in a cage set over the log sitting on or near the ground, requiring a bit more effort to remove slabs and lumber. Blades for the portable band mill cost about \$20 compared with \$150 for blades for common portable swing-blade mills, but those for the swing-blade mill are easily sharpened in place in minutes, a convenience and saving on sharpening worth considering. Also, band-blades tend to wander in woods that resist sawing, whereas the circular saw blades of swing-blade mills do not. I've used both types of mill, and enjoy the challenge resulting from the different milling strategies required by each. Working alone, I achieve significantly greater production rates with the band mill, but I also have much more experience with the band mill.

A Word of Caution

You don't need a mill that works faster than you can (or wish to), and you shouldn't be overly impressed with production rates achieved at sawmill contests. These rates are

generated during short bursts of milling by teams of highly skilled sawyers under conditions you are not likely to encounter at a job site. Also note that production rates published in the literature provided by manufacturers are generally a measure of the upper limitations of the machine, not the output of the operator. If production rates are important to you, specify whether you plan to have a one- or two-person operation, and ask the demonstrator what a reasonable expectation for routine production rates under those conditions might be. I think you'll get an honest answer.

Who and What to Ask

As your interest gravitates toward a particular mill, ask about customer service. Is there a representative you can turn to for advice and technical support in your area, or via toll-free telephone communication? Available technical support was critical to me in learning how to adjust and maintain my sawmill (those support folks at Wood-Mizer must feel like they just got another kid to raise every time the company sells a new machine).

Also ask about sharpening services. Many experienced sawyers running band mills sharpen their own blades according to the species of tree they are milling, but I'm not there yet. I use a generic profile for hardwoods and another for softwoods, and I happily ship my band blades back to the manufacturer for resharpening. This, for my business, is a terrific service at a bargain price. I don't want to drag my aching (and aging) bones home at the end of the day, only

to face a backlog of blades in need of sharpening. I keep an adequate inventory to avoid running out of blades. For me, that's 30 to 45 blades of each profile, 60 to 90 blades in all. Dulled blades are shipped in boxes of 15 to Wood-Mizer's Resharp service, which sharpens the blades with a 7 to 10 day turnaround time at about \$7.50 each, including shipping, and replaces rejects with new blades at a 10% discount (currently \$17.55 each). Most often, blades are rejected because of damage from hitting hardware, or because they have been resharpened so often that too little cutting metal remains. By automatically replacing rejects, the service helps me maintain my inventory.

People often ask how long a blade lasts, and that is a question for which there is no single answer. A dulled band saw blade is easy enough to detect. It cuts noticeably more slowly, the cut surface might start to resem-



The expense of a second pair of hands has to be offset by improved production rates.



Setting up boards for edging.

ble a washboard, blade tension drops and is more difficult to maintain, and sighting down the edge shows the board to be wavy. In my experience, blade life is shortened by cutting extremely hard woods, frozen wood, exceptionally wide boards, wood with large knots or spiral grain, and logs with bits of gravel or ice in the bark. Excluding such conditions, I am happy to get 700 board feet of 1-inch pine or red oak boards from a single blade. By way of comparison, I recently milled a couple of large walnut logs by making a series of parallel cuts from top to bottom (through-and-through cutting, also called "live sawing," which produces log-wide lumber), and had to change the blade after generating only 350 board feet of lumber. There is no economy in running a dull blade, especially through a high-grade log.

Finally, there is the question of an appropriate vehicle to transport the sawmill. Swing-blade mills are relatively light in weight (about 1,000 pounds) and dismantle for easy transport in the bed of a small pickup truck. My hand mill weighs around 3,600 pounds, has a single-axle towing package, and requires a wiring hookup for lights and electric brakes.

On the advice of a mechanic I respect, I traded in my F-150 for an F-350. It is also worth considering that you might be hauling green lumber. I had my truck weighed before and after loading 422 board feet of freshly cut black walnut to learn that the wood weighed 2,560 pounds, or a little over 6 pounds per board foot. It's good to know how much wood your vehicle can carry. With such figures in mind (mill weight and configuration as well as anticipated load weights), it might be wise to consult a truck dealer for a recommendation on an appropriate vehicle and drive train.

Buying Your Sawmill

Once you've decided on the mill you want to buy, call the manufacturer for an invitation to visit a nearby sawyer who has volunteered to

demonstrate that particular sawmill. This may seem to be a duplication of what you've already accomplished at the trade show, but it's not. Watching a mill in production is quite different from watching it at a trade show. Be prepared to observe how logs are fed to the mill, how slabs and sawdust are disposed of, how lumber is edged, off-loaded, and stacked, and how these various activities are mapped around the mill for efficiency of operation.

You should watch (and ask) how well the mill is suited for a one-person operation, or whether it really requires a second pair of hands. The need for a second pair of hands has a big impact on costs that must be offset by higher production rates. There is much to be gained from seeking out a volunteer demonstrator sawyer in your area before you buy a sawmill. My contact was kind enough to provide his pricing structure, to review and comment on my first attempts at drawing up a pricing list, and to show me how to save time and reduce costs for a particular milling operation. I haven't met a sawyer yet who won't share information.

Certainly worth considering is the option of purchasing a used sawmill. Some manufacturers take used sawmills in trade and recondition them for resale. There are also Internet sites for retailing used sawmills (for example, www.sawmillexchange.com). Sawmills tend to hold their value, which makes it less certain that buying used is a bargain. I was recently advised by the sales department at Wood-Mizer that the retail value of my 6-year-old sawmill with 2,100 hours on it is 62% to 75% of its original purchase price. On the other hand, there are somewhat older mills advertised in the same price range with very few hours on them that might be a great bargain. Obvi-



George Tremblay at the saw-head controls.

ously, the buyer inadequately prepared to judge the condition of a used machine is at greater risk in estimating its value. If you decide to buy new, you might buy at a discount by arranging transfer of ownership after the mill is used as a demonstrator at a nearby trade show. It's always wise to call the manufacturer to inquire.

Learning to Operate Your Sawmill

Once you have a sawmill, how do you learn to use it? Start where everyone hates to start: Read the manual. Take all shrouds and shields off the mill, identify the parts described in the manual, and try to figure out how they work. If you don't see yourself as a mechanic, you will soon enough.

When you're ready for a road test, move the sawmill to as secluded a location as you can find and put a fairly decent 8-foot-long log in place (you don't need to contend with the large knots and sweeping shape of a low-grade log yet). Load the log with the smaller end facing you. The smaller end limits what you can get out of the log, and it is easier to plan your cutting strategy with the smaller end facing you at the start of the cut. Take off a light slab, and then a 1/2-inch-thick flitch or two, simply to get the feel of the machine. Next, use a lumber crayon to mark out the cuts you intend to make to get the most out of the rest of the log, and proceed to try to achieve your cutting strategy. This is a useful exer-

cise to employ until you can see your options without the crayon markings. After you've milled a few logs and feel comfortable operating the mill, move on to cutting strategies that achieve high quality as well as high yield. Study source materials on what constitutes a quality product (minimal slope-of-grain, symmetrical annual rings on end-grain, minimal knots on edges, wane restrictions, when and how to avoid spike knots, distinctions between weak vs. strong structural lumber, recognizing reaction wood and its limitations, and more). In the absence of an apprenticeship, reading becomes your essential source of knowledge and training.

For me, helpful source materials included the instructional guide that came with my sawmill as well as several publications by *Fine Woodworking* (The Taunton Press), including *Wood, Wood and How to Dry It*, and *Understanding Wood* by Bruce Hoadley (one day, I hope to have learned enough to write a book titled *Understanding Hoadley*). But most helpful to me have been the many articles on various aspects of the small sawmill operation that have appeared in *Sawmill & Woodlot* magazine, and I owe special thanks to the "wood doctor," Gene Wengert, for his regular contributions on milling and drying lumber. I feel fortunate to have discovered this resource shortly after purchasing my sawmill.

The Nature of a Portable Sawmill Business

Large stationary sawmills are production-oriented enterprises occupied with lumber sales as well as lumber manufacture. In my experience, the typical customer for the portable sawmill operator is the "do-it-yourself" type who has harvested a few logs from his property and wants to do something creative with the wood. Large sawmills won't take yard trees because of the risk of buried hardware and the high costs of blade damage. On the other hand, blades for portable band mills are relatively inexpensive, and customers readily

agree to pay the costs for damage caused by hardware in the log (my worst finds include electrical insulators and an entire clothesline reel buried deep within the log; you know when you've hit them).

In addition, customers for the portable sawmill are often looking for a service as well as a product. Not only do we bring our sawmill to the customer, we are often asked for advice on the best use of logs (boards or dimensional lumber? firewood of timbers?) and of the lumber pro-

duced (post or beam?). As an example, I was asked to walk the property of a customer to identify oak trees suitable for construction of a timber-frame home. His oaks were of very poor quality, but he had a spectacular stand of what we refer to locally as "monkey pine" (northern ridge pine, *Pinus rigida*). He ignored these trees because he knew they were of no commercial value. I turned to sourcebooks and learned that this is a species of hard pine that was widely used for construction in colonial

times, and that its strength compares favorably with the strength of southern yellow pines. It is of no present commercial value as a distinct species because of its scarcity. This information persuaded the customer to abandon oak and build with monkey pine. When I asked to visit to see his home a couple of years later, he proudly showed the posts and beams to have performed well, and to have added a beautiful deep honey color to the interior. Providing such services builds goodwill (and referrals), and adds satisfaction to the work.

These services indicate a niche for the portable sawmill business quite apart from that of the large volume stationary mills. But both are in competition when it comes to retailing lumber, which is a distinctly different activity. When we started, we logged and milled lumber for sale. Small-scale logging was fun for awhile, though we didn't manage minimum wage, and the better part of the lumber we generated some

four years ago is still sitting under the weather. In time, it became obvious we were not among the gifted when it came to marketing lumber, so I turned my attention to building the sawmilling service. I would advise the beginning sawyer also interested in selling lumber to start by locating a logger to provide logs as you need them, and to mill lumber for sale only on order. Let your market drive expansion. A standing inventory of lumber is perishable, to both the elements and the process of air drying. Also, be wary about buying logs more cheaply from landscapers and yard services; yard trees often have metal in the wood, and blade damage can eat up your profits.

Getting Started with Your Portable Sawmill Business

After learning to avoid sending the blade into a metal dog, or lifting a log up onto one side of the saw bed only to have it roll off the opposite side because I forgot to raise the stops, I imagined we had sufficiently

stemmed the fear of embarrassment to emerge from our secluded training place and go public. By then, word was out that we had a sawmill and we got started by milling pine logs into 1-inch boards on weekends (we were still employed elsewhere full-time; I retired in 2001). Milling logs to boards demands less of the sawyer's skills than grade-sawing someone's prized walnut log, and is a good way to start, but the work was sporadic and, after about a year, started to thin out, which brought us to the task of finding work.

Over the long haul, customer satisfaction provides the best advertis-



ing. But we needed a broader customer base to make that work. We did find work by advertising on the paper placemats used in local diners. We tried three diners, and one paid off. We learned not to advertise in diners frequented by lawyers, commercial fishermen, or college students. A diner in a rural area 20 miles northwest of the other two did the trick, with its mixed clientele of farmers, equestrians, tradesmen, and retired rural folks. In fact, I recently got a call from someone who had saved the placemat over the two years since we stopped advertising! In another effective strategy for



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Table 1. Example of Fee Breakdown for Mill Services

MILLING FEES:

- Milling charges are based on yield of lumber, not on estimates from scaling of logs.
- \$25 Setup fee for locating mill at each pile of logs.
- \$15 Damage fee for each blade dulled by hardware (nails, wire, other metal objects) in log.
- \$25 Damage fee for each blade destroyed by hardware in log.

SOFTWOODS:

- \$0.20 per board foot to mill logs to lumber of standard dimensions.
- \$0.20 per square foot to mill logs to lumber less than 1-inch thickness.

HARDWOODS:

- Add 10% to corresponding milling fees for softwoods.

LOGS OF UNCOMMON DIMENSIONS:

- \$35 per hour for logs shorter than 8 feet or less than 9 inches in diameter at the narrow end, and logs longer than

16 feet and larger than 30 inches in diameter at the wide end.

CUSTOM CUTTING OF HARDWOODS (resawing, grade-sawing, quartersawing):

- \$25 Setup fee and \$35 per hour.

STICKER STACKING:

- For air drying of lumber, customer should prepare a base of cement blocks 2½ feet apart for the length and width of the pile, connected across the width by 4x4s, leveled along the length of the pile. Add 10% for sticker stacking by mill operator.

CONDITIONS:

- Mill requires about 30 feet of fairly level ground for set-up.
- Logs should be in one pile, parallel and level, or slightly uphill from the mill site (logs are rolled by hand onto the mill loading arm).
- Slabs, sawdust, and any other wood trimmings remain on-site, for disposal by customer.



A forklift speeds the flow of materials to and from the sawmill.

bringing attention to our business, I would hook up the sawmill to my truck and tow it to a popular rural business site, such as a diner at lunchtime, or a package store at the end of the workday. A portable sawmill draws gawkers like a steam calliope at a circus, and I was asked for business cards every time I used this tactic. But it was the magnetic sign on my truck that brought the job that occupies me most. A timber-framer saw the sign and followed my truck into a parking lot to offer work. I have been milling primarily for his construction business ever since. I should add that, in my area, large stationary sawmills sometimes hire portable sawmills to cut their inventory of undersized logs, which affords another opportunity for employment.

Milling Fees

How does the beginner know what to charge for his services? Portable sawmill rates are generally higher than those of a stationary sawmill. The customer is paying you to transport your mill to the logs, rather than paying a trucker to haul the logs to a mill. Also, there is a premium attached to working with smaller volumes, as is the case with most portable mill jobs. In my area (Rhode Island), base rates for portable sawmill work are \$0.20 per board foot for softwoods and \$0.22 per board foot for hardwoods. Be sure to investigate the going rates in your area. In one of my first jobs, I unknowingly underbid a sawyer who depended on

Table 2. A Sample Invoice

Customer:	Name _____
	Address _____
Invoice for Lumber Milled	
	from _____
	to _____
Setup Fee	\$25.00
5043 board feet of softwood @ \$0.20/bd.ft.	\$1,008.60
3820 board feet of hardwood @ \$0.22/bd.ft.	\$840.40
Labor @ \$35/hr.:	
2 1/4 hours for log longer than 16 ft./larger than 30 in. diameter	\$ 78.75
10 hours for gradesawing hardwoods	\$350.00
0 hours for custom cutting or resawing	00
2 3/4 hours for salvaging logs with hardware	\$96.25
3 1/2 hours for yard work	\$122.50
8 blades damaged by hardware in logs @ \$15 each	\$120.00
2 blades destroyed by hardware in logs @ \$25 each	\$50.00
Other Charges:	
Fuel for yard machine	\$20.00
Total Amount Due	\$ 2,711.50

his portable sawmill business for his livelihood. When I became aware of it, I withdrew that bid and lost the job. I'm not apologetic about landing work as a part-timer, but I won't underbid regional rates to do it.

In addition to the above rates, I charge a \$25 set-up fee, \$15 per blade damaged, and \$25 per blade destroyed by hardware in the log. The surcharge of about \$7.50 per blade over my costs reflects the downtime for a change of blades. These fees are given on my price list, which I go over with the customer before work begins. The list also specifies job-site conditions and responsibility for waste disposal.

Charging by the Board Foot

Charging by the board foot is the best way to start; the customer pays for the lumber generated, without stress over the time it takes the sawyer to do the job. Upon the advice of a more experienced sawyer, I attached a 25% surcharge for logs shorter than 8 feet, longer than 16 feet, smaller than a 9-inch diameter on the narrow end, and larger than a 30-inch diameter on the wide end. I also charged higher rates for gradesawing and quartersawing hardwoods. These surcharges reflect the added time it takes to manipulate such logs for the lumber produced.

Charging by the Hour

Once experience tells you you've hit your stride, it's time to consider the advantages of charging an appropriate hourly rate. Recently, I determined my hourly rate by keeping track of the time it took me to mill 25 logs typically encountered in my current work. I calculated the milling fee based on board feet of lumber produced, and divided that fee by the hours it took me to do the job. Working alone at my pace and site conditions, my rate calculated out at \$35/hour. Now, when I encounter nonconforming logs or do custom cutting such as grade-sawing, quarter-sawing, or resawing, I charge this hourly rate (see Table 1).

To be treated fairly, the customer should end up with the same bill whether charged by the board foot, with surcharges as specified for nonconforming logs and custom cutting, or by the hour. That is, the surcharges reflect the fee adjustment necessary to achieve the hourly rate established by milling conforming logs. The hourly rate simply avoids the need to specify a tedious set of surcharges for logs that are more work to mill. I also offer the hourly rate for small jobs because it encourages the customer to arrange for a more efficient operation, and to help with the milling. The customer gets his non-

ey's worth with higher production rates, and I get better working conditions at my standard wage.

It is also important to take into account time spent preparing the job site. Work done to clear the site for the mill operation, to get logs in position, or to prepare a suitable bed to stack lumber all takes time, and if I have to commit more than 15 to 20 minutes to do it, I charge my hourly rate for the work. Similarly, if milling is delayed significantly in order to remove hardware to salvage a log, I charge by the hour.

When I reviewed bills submitted over the past two years, I found that an average of 9% of the amount due was charged to the combination of yard work and the salvaging of logs containing hardware. A sample billing is shown in Table 2.

When it's necessary to maintain a tally of lumber produced, I keep a clipboard on the mill with a chart of expected widths across the top of the page, and expected lengths down the left side (see Table 3). As lumber is taken off the mill, I record it in the appropriate box created by drawing vertical and horizontal lines through the dimensions listed on the chart. I find customers often appreciate a copy of this inventory at billing.

Business Expenses and Net Income

Business expenses fall into two categories: those that accrue from running the sawmill (operating expenses), and those that accrue whether or not the sawmill is working (fixed expenses). My operating expenses for the past two tax years are given as a percentage of gross sawmill income in Table 4. Fixed expenses are given in the legend to Table 4. Taking all these expenses into account, my rate of \$35/hour translates to a net income of \$21.25/hour. Bear in mind that I bill no time for looking for work during this period, a luxury that could change tomorrow. If I had to spend a third of my time looking for work, my net income would fall below \$14/hour. Also, my income-

Table 3. Lumber Tally

Date:					
Ft.	1x6	1x8	1x10	1x12	other
8	—	—	—	—	—
10	—	—	—	—	—
12	—	—	—	—	—
14	—	—	—	—	—
16	—	—	—	—	—
2x4	2x6	2x8	2x10	2x12	other
8	—	—	—	—	—
10	—	—	—	—	—
12	—	—	—	—	—
14	—	—	—	—	—
16	—	—	—	—	—
Blades damaged: _____ destroyed: _____					
Other: _____					

Table 4. Operating Expenses as Percent of Gross Income

Expense Item	2002	2003	Average
Fuel	3.0	3.3	3.2
Towing @ \$0.345/mi.	4.0	3.0	3.5
Mill Repair and Maintenance	1.6	2.1	1.9
Unreimbursed Time @\$20/hr*	11.4	11.4	11.4
Blade Sharpening**	10.9	7.3	9.1
Other Tools and Supplies	1.5	1.7	1.6
TOTAL	32.4	28.8	30.7

* I estimate a loss equivalent to about 20% milling time (about 1 hr. per 5 of work) to labor for maintenance of the mill, downtime for other no-fee activities at the job site, and book-keeping. At \$20/hr., this translates to 11.4% of a gross income of \$35/hr.

Costs for parts and supplies for mill repair and maintenance are listed above separately.

**Includes costs for new blades to replace those rejected for sharpening.

Fixed Expenses: My half-share for registration and insurance averaged \$523 and for mill depreciation averaged \$750, per year, for the years shown. Mill depreciation is the average annual decline from purchase price over six years to the lowest estimate of current retail value provided upon request by the sales department at Wood-Mizer.

generating hobby is subsidized; as a retiree, the government pays my health insurance. If I had to add health insurance to my business expenses, I would be working more for Blue Cross than for myself. With an awareness of these variables, the data shown should provide the reader with useful information from which to estimate potential income from a small sawmill business. And with a greater commitment to marketing lumber, the earnings potential would no doubt improve (below).

How It Turned Out

We started out with the expectation that lumber sales would supplement sawmill income, and I thought that the sawmill operation would fuel my attempt at establishing a woodworking business—the idyllic arrange-

ment alluded to earlier. I don't doubt that some folks with a bit more energy could make this work. But in both cases my interests are still focused on the technical aspects of the work, at the expense of marketing. The neglect shown for marketing lumber carried over to marketing products from my woodworking shop, so I had to redefine my concept of an idyllic retirement. I turned my attention to building the sawmilling service. When we realized some three years ago that production rates didn't justify working as a team, we worked at sharing the sawmill to build separate businesses about 70 miles apart.

For the past 2 1/2 years I have been employed on alternating months, primarily milling logs to dimensional lumber, timbers, and

sheathing for a local post-and-beam builder of barns and sheds. Since the smaller buildings are constructed on the builder's premises, and materials for larger buildings are often precut there, my sawmill is set up at that single location. I run the sawmill alone. Heavy timbers are easily transferred by raising them above the mill bed with the hydraulically operated toe boards and sliding the timbers down an inclined plane of three removable oak 2x4s, secured to the mill with cleats.

When the pile of timbers parallel to the sawmill rises to the point that the plane is no longer inclined, the pile is transferred to a storage site with a Bobcat forklift. The forklift is also used to move logs to the mill site, and is made available by the builder-customer.

Recently, through our collaboration, the builder expanded his construction business to include marketing of lumber as a sideline. His customer base of woodworkers de-

rives from clients and suppliers for his barns and sheds, some of whom have watched the sawmill operate and sought particular products. Most of the interest has been in grade-sawn hardwoods, primarily red oak, cherry, and black walnut. Although it is too early to say with precision, it appears he can sell lumber in this market at more than double his costs for the logs and milling. He has shown that marketing lumber can bring a hefty supplement to the income of a small sawmill business.

The variety of the cut-list and milling objectives keeps the work interesting, and there is also satisfaction drawn from having my work integrated with that of a small team of good-natured craftsmen. I recently bought my partner out, and on the months away from the builder's job site, I can now take on more of the small milling jobs in keeping with the niche described above. The steep learning curve and broad mix of people that I encounter have

been rejuvenating. I haven't had an unpleasant experience with a customer yet. Instead, I find customers make an effort to maintain contact, sometimes through repeat business, and other times through referrals. The "do-it-yourself" crowd has been a pleasure to accommodate. Working out-of-doors has the stronger pull in all but the worst of weather, and I spend much less time woodworking than initially anticipated. I mostly give away the stuff I make in my shop to family, hoping it is received with greater enthusiasm than the Christmas fruitcake. ■

George Tremblay taught biochemistry and was active in biomedical research at the University of Rhode Island for 34 years before retiring as professor of biochemistry in December 2000. He lives with his wife and two dogs on 28 acres of woodland in Charlestown, Rhode Island, near enough to the ocean to dig his own clams and satisfy the family's penchant for fresh seafood.