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This book is dedicated to my first woodworking teacher, Küfermeister Ruedi Kohler.

Spoons and a bowl carved from freshly cut green wood
PREFACE

An Adventure
In Woodworking

This book was originally published in 1987 titled Green Woodworking. This new, revised edition brings many details up to date, such as changes in my preferred types of sharpening equipment and the methods used in making tenons. These changes are the result of seven additional years in the workshop.

Although I am not a production craftsman, I do put in many full weeks each year teaching traditional woodworking at Country Workshops. (I also take orders for Windsor and ladderback chairs, in addition to making much of the furnishings and some tableware for our home.) While production work leads to perfecting specialized skills, I find that teaching always presents new challenges as different students come to our courses. As a teacher, I do not work in the generally isolated environment of a production workshop. To explain concepts and to achieve good, quick results, I am constantly innovating and trying new approaches. I'm also faced with questions (and mistakes) that I would probably not deal with in a production situation. In addition, I will gladly acknowledge that my students have often contributed ideas and information that is new and useful to me. The best teaching inevitably includes learning on the part of the instructor.

Throughout this book you will find many uses of two related (and invented) terms, these being "green woodworking" and "green woodworker." Green woodworking is a conceptual bit of nomenclature originally coined by my friend and colleague Baltimore chairmaker and joiner John Alexander. Green woodworking refers to a wide range of traditional woodworking methods that generally involve the craftsperson dealing directly with a log from a freshly felled tree.

A green woodworker often begins a task by riving stock using methods similar to splitting firewood. Historically this was done with certain types of wood because riving is fast and (depending on quality of the wood) potentially very economical in that there is little waste. Only a few, simple tools are required. Riving is much easier than rip sawing with hand tools. While some cross cut sawing is generally part of the work, riven stock frees one from dependence on a sawmill and all of the expensive, energy consuming technology that goes along with producing manufactured lumber.

For a green woodworker, riven stock is also often superior to the materials produced by more advanced technology. Riving divides wood fibers, whereas sawing inevitably severs the fibers. A piece of wood with no fiber "runout" along its length is much stronger than a board where fiber runout occurs willy-nilly along its length. Compared to kiln dried lumber, green riven stock is much easier to shape with hand tools. With a properly sharpened drawknife, freshly cut oak seems to shave like slicing butter. Green, rived stock also bends much easier and with far fewer failures than sawed lumber.

But you may be thinking that using green wood will lead to many woodworking disasters. A cabinet made out of (even partially) green wood will inevitably dry, shrink, and fall apart. True. Green woodworkers are well aware that wood changes shape. Most often we see the results of shrinkage as it dries out, but wood can expand also. In fact, we pay far more attention to wood movement than most other woodworkers. We rive, shape, and bend green wood whenever possible; working green wood is easier, more fun, and less likely to fail. But when it comes to assembly and many other tasks that woodworking involves, we pay great attention to the moisture content of wood and even the growth ring orientation of parts in relationship to one another.

This is a book about working green wood, starting with a living tree. I'll show you how to harvest wood from a log and even how to use bark and limbs. We'll hew wood with an axe or split it with wedges into sections called billets. We'll use saws, too, but mainly for crosscuts. Then we'll shape the pieces with hand tools. The end result will be objects that are strong, functional, and beautiful.
Your first greenwood projects will probably turn out nicely enough, but it takes practice and alert observation to become skilled with these crafts. After my first ten weeks of apprenticeship with a Swiss cooper, Ruedi Kohler, I could struggle through all the steps of making a simple wooden-hooped container on my own. But Ruedi chuckled to himself for a full day when I asked about making an oval milking bucket with sculpted staves. I’ve found that just learning the fine points of sharpening band tools is an unending challenge. As you gain expertise, you’ll discover that the subtle refinements of handwork are virtually unlimited.

Most green woodworking crafts and methods were developed before those of mechanization and mass marketing. However, throughout this book, I’ll show how technology has also refined, clarified, and occasionally disregarded, some of the woodlore handed down through the generations.

The green woodworker gets to know a piece of wood intimately, because the traditional techniques are dependent on the nature of wood—fiber direction, texture, and relative hardness. When wood grain is ornery, you’ll know it, because the work will be a struggle. Using the appropriate species and quality of wood results in a smooth partnership of material and woodworker.

In conventional woodworking, a premium is paid for the stability of kiln-dried lumber. Green-sawn lumber, particularly if one of the hardwoods, is notorious for twisting, bending, cupping, and checking during seasoning. But green woodworkers covet wet wood. It is much easier to work. With sharp tools, even hardwoods such as oak, maple, and hickory are easily worked. Good riving wood splits even more quickly and precisely when green. And green wood bends with a minimum of trouble.

Consider also the unique sight of freshly split or hewed wood, exposed to light and air for the first time. Like freshly picked sweet corn, this special quality can be appreciated only for a few moments, because light and oxidation change the wood immediately, even if a finish has been applied. (Of course, aged, finished, and well-used wood is beautiful too.) In addition, working with green wood involves other temporal experiences, of sound, smell, and touch, as body and tools collaborate to shape a piece of wood. These sensations are amplified because the workshop is an intimate, quiet place, in which power tools are used only for limited purposes, if at all. Through green woodworking, I feel a connection with worldwide craftspeople far back to unknown generations.

My Credentials

If memory serves correctly, my first glimpse of green woodworking as a process was an Eric Sloane drawing of a frontier craftsman sitting at a shaving horse, making something with a drawknife. At the time, I was building playground sculptures (later called “adventuro playgrounds”) with my friend Jay Beckwith. We were definitely modernists, using power tools, welders, steel, and concrete. I stared at that guy in the illustration. It was another world and one that attracted me.

I began to renew my previous interest in primitive and peasant cultures, with particular regard to their crafting and construction techniques. Vaguely inspired by books on folk architecture, we began to incorporate entire logs and rustic cabins made of bark slabs into our playgrounds.

This was also the time for another rite of passage, my transition from bachelorhood to marriage. And soon after with a few thousand dollars in wedding gifts and savings, Louise and I bought one-way tickets across the Atlantic. My intention was to travel in rural Europe and Asia and gather information for a book on folk dwellings and the people who lived in them. We were inexperienced travelers, and many of our plans never materialized. But we did learn to accept and appreciate the unexpected, which included some wonderful surprises. I’ll tell just one story—how I became an apprentice to a Swiss cooper, a maker of wooden alpine dairy containers.

We were traveling in a VW Beetle and had been tent camping in the Swiss Alps. I was particularly interested in the wonderful log and timber-frame farmhouses—Bauernhauser, called chalets in English. But to our dismay, we weren’t making much progress in getting to know Swiss farmers and their families. On top of that, the weather was depressing—rain every day—and we weren’t enthusiastic about another night in the wet tent.

Driving along a secondary highway, we saw a young hitchhiker. Louise suggested that we pick him up on the chance that this fellow might direct us to a dry place to sleep for a night. We didn’t know German, but Reas—the German short version of Andrew, which is also my name—spoke English. Reas said he was going to his parents’ home in Bern, the Swiss capital, but that if we didn’t mind hiking he knew of an Alpine barn where we could stay as long as we wished.

Following a map Reas had drawn for us, we parked at the end of a spur road, parked our rucksacks, and set out. It was early evening in June,
and yet it began to snow. The climb was steep, and we lost the trail several times before finding the cold, empty barn on a high ridge, well above any other habitations. There was one room for the cowherds, with a stone oven and straw strewn in one corner to sleep on. We started a small fire, ate a bit of dinner, and fell asleep.

In the morning we found a six-inch snowfall on the ground, a blue sky, and a beautiful vista. I explored the barn in detail, taking notes and photos and making drawings.

Later we hiked down to the nearest neighbor. This turned out to be an Alpenhütte, a special alpine barn where mountain cheese is made. The cheesemaker invited us inside. He was heating milk in a huge copper kettle suspended over an open fire. When the curd formed, he put it into a cheesecloth supported in a wooden hoop of about 16 inches in diameter. The cheese was pressed with stone weights and would be aged for a full year.

The cheesemaker’s kitchen, with its walls and ceiling blackened by soot from the open fire, was a fantastic place. For me, the most wonderful things in the Alpenhütte were the handcrafted wooden vats and milking buckets. Using improvised “pidgin German,” we asked where we could buy a milking bucket. The cheesemaker replied that his were over 100 years old but that there was an aging cooper across the valley who still made them.

The next day, we found Ruedi Kohler at work in his shop. He showed us his wares, including a milking bucket exactly like what I had hoped to find. We bought it. But I didn’t want to leave quite yet. Visiting this shop was like being in a dream. Herr Kohler was 71 years old but had the energy and enthusiasm of a boy. He did most of his work at a shaving horse, much like the one I had seen in the Eric Sloane drawing. On a wall hung a collection of drawknives, spokeshaves, reamers, augers, and other tools which I couldn’t identify.

An inner voice told me that this was a rare opportunity to learn something special about woodworking. With the help of Herr Kohler’s son-in-law, who spoke French, we asked about the possibility of
my learning cooperage. Ruedi Kohler said that the craft was difficult to learn but that he would be willing to try teaching me. Louise and I stayed on that mountain for ten weeks.

I worked Monday through Saturday. On Sundays we visited another traditional cheesemaker, Armin Erb, who also made furniture that combined Swiss traditional forms with his own fantasy.

When we returned to the United States, we decided to locate in a rural area where we could farm and do woodworking. In 1974, we moved to a mountain farmstead in western North Carolina. We chose the area for its climate, water, and wood, and for the subsistence farming methods still practiced there by the older generation.

I continued to investigate traditional woodworking. Many of the older farmers were skilled woodsmen, but there was little traditional woodworking still being done in our community. Our neighbors, Peter and Polly Gott, were the major exception. The Gotts had been homesteading for years and had been exploring greenwood crafts ranging from white oak basketry to log cabin building. Through their generosity, we learned many details about traditional crafts that would have taken a great deal of time to discover on our own. Books were a help, too, including Eliot Wigginton's first edition of Foxfire (New York: Doubleday & Company, 1972), Eric Sloane's books on early American woodworking, and books on conventional woodworking, especially R. Bruce Hoadley's excellent Understanding Wood (Newtown, Conn.: Taunton Press, 1980). Among the best resources were several English books on traditional woodland crafts.

My first income-producing project was the making of wooden hayforks based on an old Mennonite pattern from Pennsylvannia. I learned how to make them from a friend of a friend who was traveling through our area. After a few crude starters, I was making hayforks that were good enough to sell. I eventually made about 200 hayforks and would have continued if I hadn't started writing Country Woodcraft (Emmaus, Pa.: Rodale Press, 1978). In recent years, I've done small runs of ladder-back chairs, and I also make Windsors and do cooperage and carved bowls on order.

**How to Get Started**

Historically, green woodworking was learned through family tradition or an apprenticeship system. Today, an apprenticeship is generally impractical. It requires more time than most people have—even if you could find a master craftsman willing to teach over an extended period. Books and workshop courses can take the place of an apprenticeship, presenting a great deal of material in a short time.

Personal field study can be inspiring and useful, especially at “living history” museums that emphasize the traditions of local folk cultures. The large, well-known museums, like Sturbridge Village and Colonial Williamsburg, are very impressive, but smaller, more personal museums are popping up all over the country. One warning: Some museums tend to romanticize the past.

You can learn a great deal by visiting working craftspeople. Since crafts-workers tend to be busy,
you should write in advance. This allows them to refuse gracefully, whereas calling on the phone and asking to visit the same day can put a craftsperson in an uncomfortable position.

This book has been written to guide you by looking over your shoulder and taking your hands through each step of the projects. I don’t believe in secrets, but I’m not a living encyclopedia, and a single volume can’t contain everything about a subject. I have included a few areas of green woodworking where my own experience is limited. In such cases, I’ve been careful to credit my sources.

I’ve omitted commonly practiced hand woodworking skills, such as turning at a lathe, mortise-and-tenon joinery, and plane work. Many good books and magazine articles cover these subjects, and green wood techniques are basically the same as using sawn lumber. The main difference is that green wood is easier to work with than dry wood. But green wood is also somewhat weaker, causing unwanted vibration when thin spindles are turned on a lathe. And differential shrinkage (explained in chapter 5) causes green wood to distort as it dries; shaved green cylinders and turned bowls become oval, and special accommodations are needed for mortise-and-tenon joinery. Green wood is not suitable for building conventional cabinets or carcase furniture.

I also have not gone into detail on specialized crafts, such as basketry, log building, cooperage, and chair making. To pursue these crafts, refer to the books and periodicals listed in the bibliography.

Attending a week-long class, such as those we teach at Country Workshops, is often the best way to learn the fundamentals of a craft quickly.

Tools

Naturally, you’ll need green woodworking tools. You may have a few already, such as a drawknife, an axe, wedges, or a splitting maul. You can make some of the tools yourself. Plans for making a fave and other tools are included throughout this book.

But unless you’re a skilled toolmaker, you’ll need to purchase a few specialty tools, such as a drawknife, a broad hatchet, and a spokeshave. My advice is to get the best tools that you can afford, picking them up as needed. A good hardware store may have a few of them, and several dependable mail-order companies specialize in selling hand tools. It’s also possible to buy excellent used tools, but success here depends on where you live and your woodworking experience, bargaining expertise, and patience.

Warning: Woodworking is Dangerous

Serious accidents can happen when the human body, wood, and sharp tools get together. Ultimately, you are responsible for your safety. And when working with instructions, you run the added risk of misinterpreting them. Here are a few guidelines:

1. Do not use tools when you are fatigued or distracted. A study by Fine Woodworking magazine revealed that woodworkers are most accident-prone just after eating a filling meal.

2. Follow recommended safety precautions. Wear safety gear (such as eye and hearing protection) when using power saws, grinders, and impact tools (such as when striking steel wedges with a sledgehammer).

3. Chain saws are the most dangerous tools used by green woodworkers. It is especially important to read and follow safety instructions provided by the manufacturer.
Green woodworking often begins by splitting stock from a log. This red oak will be converted into ladder-back chair parts.