

# 200 Years of Woodworking

**T**HE history of the wood industry is, to a large extent, the history of the United States. From the time of the landing of the first settlers in Virginia and Massachusetts (in wooden ships), lumber was a vital and profitable product.

The nation's first sawmill is variously reported at Jamestown, VA in 1625, or in Berwick, ME in 1631, both operated by a water wheel and single sash-saw producing only a few hundred board feet a day. Whichever was first, the early date shows the importance of wood to the colonists, for export as well as their own use.

Although the water wheel was used in making lumber, hand labor still turned out the lion's share of lumber. Using what we today would consider primitive tools, early-day Americans produced remarkably well-made objects. Bark spuds, chisels, or irons removed bark, and the adze, beveled on the inside, cut a smooth surface. Instead of sawing, pioneers often split a log in half with a froe and then squared off the halves into flat, four-sided boards. A variety of saws, of course, was used as well as many other ingenious tools.

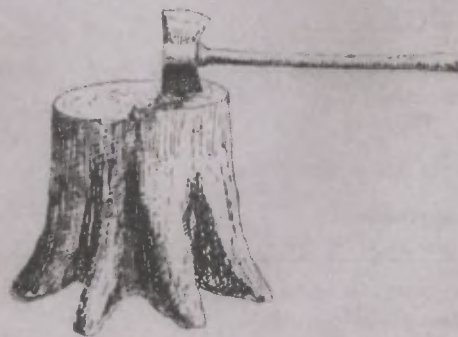
Wooden conestogas and prairie schooners carried the settlers further westward. Their children went to school

in wooden products, and they traveled in, sat on, ate from, and lived in wooden products.

The industrial revolution was ushered in by the introduction of steam power in the early 1800's, soon followed by electrically powered machines that could do the work of many men, boosting lumber production and providing a myriad of wood products for a bustling, expanding nation. Wood, indeed, was a partner in the development of the nation.

**W**OOD still plays a major role in the life of the United States. In the mid-1960's (the latest date for such a figure), 5% of the Gross National Product was related to timber. Now wood products manufacturing is a \$28.4 billion industry, according to the latest available statistics from the U.S. Census of Manufactures.

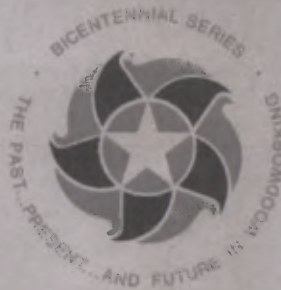
What follows are glimpses from our past, photographs and sketches illustrating how jobs once were done and how backbreaking they must have been for both man and animal. Some early tools and machines are there, too. We don't pretend to present a complete history of the wood industry in 15 pages but we do hope our pictorial essay will show where we've been and how far we've come.



Illustrations from *A Museum of Early American Tools*, © 1964 by Wilfred Funk, used by permission of Funk & Wagnalls Publishing Co.  
Illustrations from *Old Ways of Working Wood*, © 1972 by Alex W. Bealer, used by permission of Crown Publishers Inc.



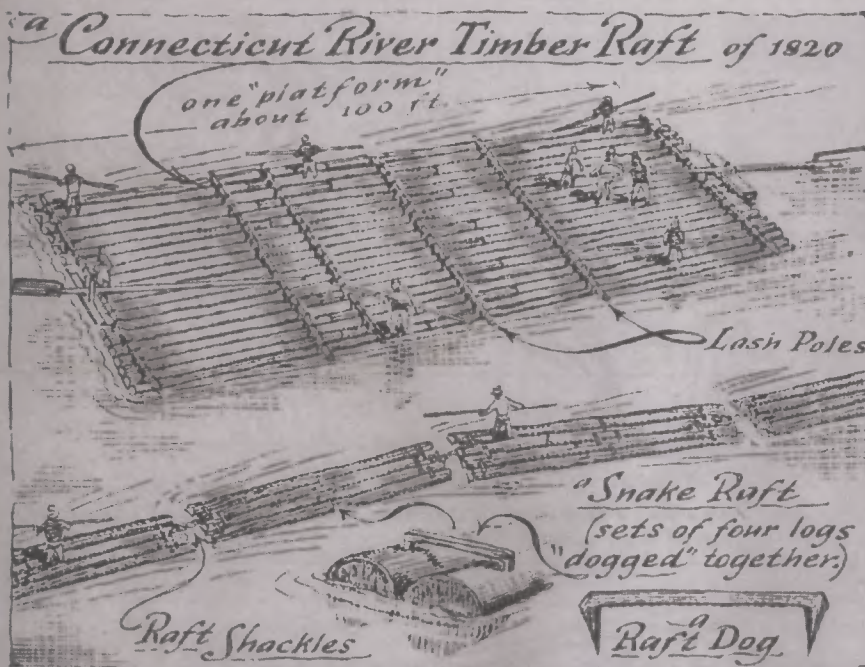
# Important dates in woodworking



- 1776—James Watt invented the separate-condenser steam engine, which powered early overhead-belt woodworking plants.
- 1790—Sir Samuel Bentham, engineer, English naval architect, invented rotary cutting.
- 1799—Sir Marc Isambard Brunel, a royalist refugee from the French revolution, became chief engineer of New York and invented a method of making wooden pulleys for ships by mechanical means.
- 1800—Planing machine and circular veneer cutting saw patented in England.
- 1808—William Newberry patented the bandsaw, though it was not much used until Swedish steel became available in the 1870's. The bandsaw created a special era in American architecture known as "American Carpenter Renaissance." The age of gingerbread was born.
- 1814—Large circular saws introduced in U.S.A.
- 1840—First lathe-type veneer cutting machine patented by John Dresser.
- 1846—First practical cylinder planing machine built.
- 1849—California gold rush stimulated development of special machines to build wagon wheels.
- 1860—Circular saw in general use.
- 1866—First double end tenoner patented by H. B. Smith Machine Co.
- 1869—Completion of first transcontinental railroad and expansion of rail system led to development of railway cutoff saws, multiple-spindle borers, and hollow-chisel mortisers for car building.
- 1869—First practical large log band mill built.
- 1875—First veneer slicer operating in U.S.A.
- 1881—Double surfacer with endless-bed infeed and power-driven top and bottom outfeed rolls patented in U.S.A.
- 1885—Band mill with 9-ft. wheels put into service.
- 1890—Silicon carbide abrasives first produced experimentally.
- 1896—First band mill driven by electricity. It had a 14-in. saw, 9-ft. wheels, and a 100-h.p. electric motor.
- 1899—George Stetson developed the "Ready Sizer" to meet the demand for surfaced lumber to build flumes for the Alaska gold rush.
- 1900—Endless-bed, triple-drum sander patented.
- 1906—DC motors begin to replace belted drives.
- 1907—George Stetson and Harry Ross market their planer-matcher.
- 1908—Ball bearings used in woodworking machines.
- 1909—Thin high-speed steel knives in round heads replace thick knives in square cutterheads.
- 1910—Heyday of wooden automobile frames, using special glue joints and specialized machinery.
- 1919—Alternating current motor comes into use. Mounted on the same arbor as a ball-bearing cutterhead, it gave machine designers great flexibility.
- 1924—William H. Mason forgets to turn off the press heat at lunch time—discovers hardboard.
- 1926—Strauss' patent rights on tungsten carbide cutting tools acquired by Krupp Works of Germany.
- 1930—V-belts begin replacing flat belts, permitting more compact designs.
- 1930—Laminating industry begins to develop wide market for board products.
- 1949—Lee Sherrill and Raymond Pendergast, who founded Timesavers, develop the widebelt sander.
- 1950—Nicholson of Seattle and Soderhamn of Sweden invent the ring debarker separately and almost simultaneously.
- 1962—Slicing and rotary cutting of thick (1/4 in. and thicker) veneer developed by John Lutz of the Forest Products Laboratory.
- 1963—Demonstrations that lasers and water jets can cut wood.
- 1963—Feasibility of chipping headrig demonstrated by Peter Koch of the Southern Forest Experiment Station. First commercial model in use a year later.
- 1963—Shaping lathe headrig developed by Peter Koch.
- 1966—Introduction of tape-controlled routing and shaping machine by Ekstrom Carlson.
- 1976—First commercial use of Peter Koch's shaping lathe headrig on hardwoods.



# Log handling



SKETCH: A MUSEUM OF EARLY AMERICAN TOOLS



PHOTO: WEYERHAEUSER



PHOTO: OREGON STATE UNIVERSITY

Left: For many farmers living in wooded areas in the 1700's and 1800's, crops were raised for home use and timber was sold for cash. Logs were fastened together into rafts and floated downstream—usually in winter when there was high water. Steering was done with long oars. Largest recorded raft measured 215 ft. long, with 120,000 ft. of wood.

Middle left: Logging railroads were prime movers of men, machinery, and logs in early-day America. In this logging scene from the Northwest, a woods crew and steam donkey are being hauled by flatcar from one logging site to the next.

Below: Hand chopped undercuts were needed to direct the fall of the tree in the old days. In this photo, the axeman is standing on a pole driven into the tree.



PHOTO: WEYERHAEUSER

Left: Animals helped transport timber, too. This load of logs on a sled is being pulled by two faithful workhorses in a photo identified only as A. Mason's Camp, March 23, 1903.



# Sawmilling

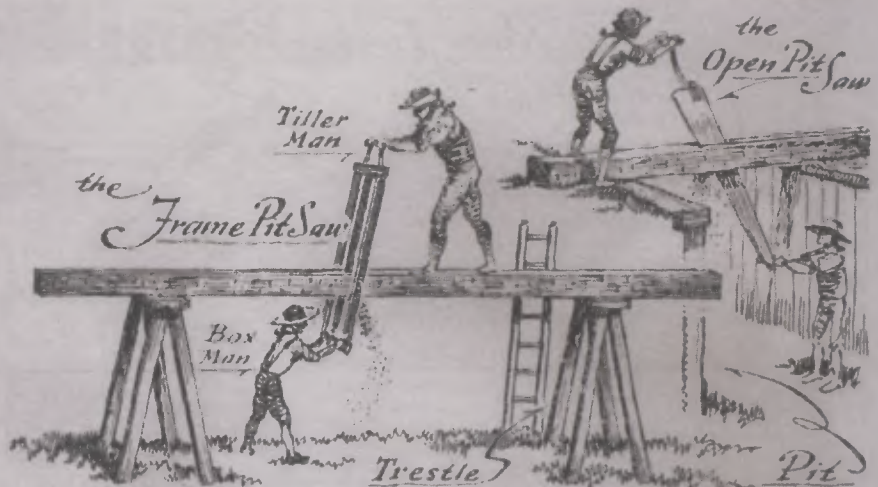


Top right: Most early plank sawing was done with pit saws in a pit or on a trestle. The open pit saw, which was built in a factory, remained in use until the late 1800's. One of the characteristics of the pit saw was fine, diagonal marks rather than coarse up and down marks.

Middle right: Waste utilization isn't new. Early Americans ground up bark and poured cold water over it to make tannin for tanning hides. The bark on the log was split and ringed with a barking axe, then removed with a peeling chisel, bark spud or similar tool. Oak bark was the most common source of tannin.

Left: This steam tractor for transporting wagon loads of lumber was built by the Best Manufacturing Co., San Leandro, CA.

Bottom left: An early straddle lift is shown off by an operator in a lumber yard.



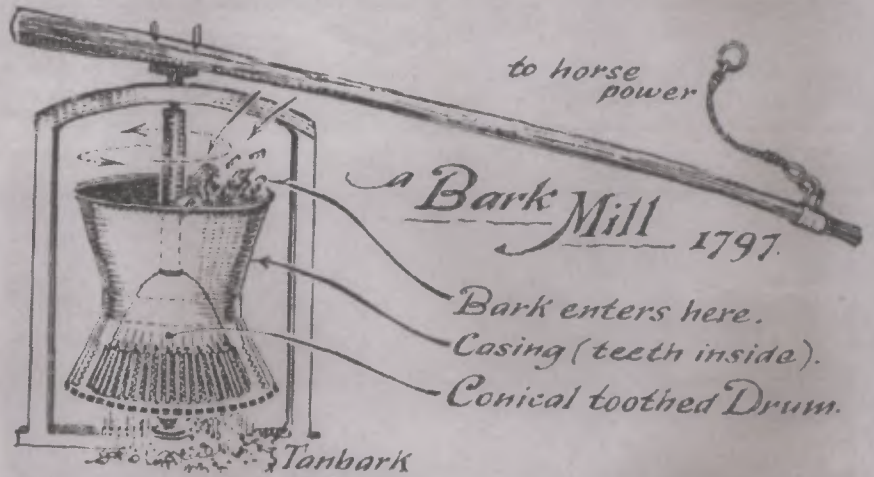
*the box man wore a big hat because of the shower of sawdust*  
 SKETCH: A MUSEUM OF EARLY AMERICAN TOOLS



PHOTO: OREGON STATE UNIVERSITY



PHOTO: OREGON STATE UNIVERSITY



SKETCH: A MUSEUM OF EARLY AMERICAN TOOLS



PHOTO: OREGON HISTORICAL SOCIETY

Right: A mammoth log goes through an early-day Northwest sawmill, which was quite an improvement over the water-powered sawmills of the 1800's.



# Grading

## Astoria Box Co's Lumber Price List.

\* MARCH 1, 1897. \*

AT THE MILL:

	Per 1000 Feet
Common Rough, up to 14x14 in. 40 feet	\$ 7 10
" " " " " 42 to 48 feet	9 50
" " " " " 50 to 58 feet	12 50
" " " " " 60 to 64 feet	17 50
For every additional 2 inches in width or part thereof, add	1 00
Lengths over 64 feet—special rate	
Clear Rough, to 38 feet, not over 14 inches wide	16 00
Planing 1, 2, 3 or 4 sides, common, up to 2x12 in.	1 50
Planing 1, 2, 3 or 4 sides over 6x12 inches	2 00
No. 1 Flooring, Ceiling, Rustic	17 50
No. 2 Flooring, Ceiling, Rustic	13 00
No. 3 Flooring, Ceiling, Rustic	9 00
Stepping, No. 1, vertical grain	25 00
Fit Casings, Door and Window Jambs	28 00
Clear Spruce Boat Lumber, Dressed, up to 14 in.	25 00
Clear Spruce Boat Lumber, Dressed, 14 in. and over	30 00
No. 2 Spruce Boat Lumber, Dressed	20 00
Good Mortarable Square 1, 2, 3 or 4 sides	16 00
Common Rough Spruce and Cedar	10 00
Lath	
Lath, lots less than 1000	
Lattice, Square Prickets, Blind Stops, per lineal foot	3/4 ct.
Grounds, and 1x2 Furring, per lineal foot	3/4 ct.
Shingles	

ILLUSTRATION: OREGON STATE UNIVERSITY

Many a buyer today wishes he could purchase lumber at the prices shown in this price list from 1897.



PHOTO: WEST COAST LUMBER INSPECTION BUREAU

Lumber inspection is relatively recent. The first recorded classification of lumber was published in Sweden in 1764, but early mills used their own grading systems. In 1830, a Maine law established four official grades of white pine and authorized inspection and enforcement. In 1890, manufacturer associations were formed chiefly to agree on uniform grading.

# Veneers



ILLUSTRATION: THE BETTMANN ARCHIVE

Use of veneers goes back in history as far as the Egyptians, whose thin layers of face wood glued onto cores have endured thousands of years of time. In early America, Chippendale, Georgian and other styles of furniture were reproduced with materials turned out by veneer factories such as this one.



PHOTO: COE MANUFACTURING CO.

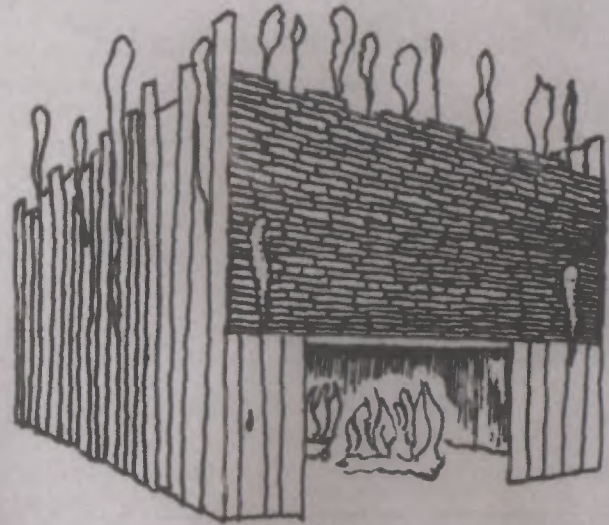
The rotary type lathe allowed successful cutting of thin stock, as shown in this early western plant. One use of veneer in the late 1800's was for wooden splints impregnated with chemicals to ignite street lamps.



# Drying



Right: The smoke kiln, a crude sort of smokehouse, was used until the late 1800's to dry lumber. Burning slabs underneath the lumber created heat and smoke which dried the wood—if it didn't burn first.



SKETCH: MOORE OREGON

Below: Steam later took over the job of seasoning wood. The first steam dry kilns used tall stacks as high as 60 ft. to remove moisture and promote circulation but they caused excessive checking. The need for stacks disappeared with the development of automatic ventilating valves, and inside fans.



PHOTO: MOORE OREGON

Bottom left: The early 1900's saw the improvement of circulation, graduation of heat and humidity, and longitudinal circulation, which permitted the drying of many hardwood species green from the saw.

Below: As veneer became more important in the manufacture of boxes, crates, battery separators and other items, low-temperature high-humidity kilns were developed. This photo shows furniture veneer drying at Timber Products Co., Buchannon, WV.



PHOTO: MOORE OREGON



PHOTO: MOORE OREGON