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The Use of Lumber by New Hampshire's Wood-Using Industries

by O. P. Wallace

Station Bulletin 474

AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEW HAMPSHIRE
DURHAM, NEW HAMPSHIRE

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New Hampshire's wood-using industries were surveyed to determine the volume, quality and species of lumber being purchased. There are three major parts: product characteristics, industry characteristics and marketing practices.

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This publication is a summarization of the findings resulting from New Hampshire's contributory project to the Regional Research Project NEM-24, Marketing of Lumber Produced by Sawmills in the Northeast. Cooperating or participating in this regional project are Northeastern States Agricultural Experiment Stations, and the Northeastern Forest Experiment Station of the U. S. Forest Service.

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Summary

New Hampshire wood-using industries purchased nearly 56 million board feet of lumber for use in manufacturing in 1960. Of this volume 32 percent was hardwoods, 24 percent western softwoods and the balance eastern softwoods. Only 47 percent was actually purchased "in state." While 65 percent was reported purchased directly from sawmill owners, the latter, in New Hampshire, reported selling only 21 percent directly to manufacturers.

These industries use top grade lumber which New Hampshire's sawmill operators have not been producing. Sash and door and millwork industries use 98 percent western lumber because of the lack of quality in volume of New Hampshire's production. Sawmill operators are selling mainly air dried hardwood lumber, but the wood-using industries buy green hardwood lumber. Sawmill owners accumulate small amounts of hardwoods due mainly to the emphasis placed on softwoods. The lumber then sits in the yard until sufficient volume is accumulated for a sale. By then it is usually air-dried.

Sawmill operators cannot avoid buying small logs because all trees have these, but they can avoid buying small trees. Large trees cost less to produce in all operations from felling to sawing and are more likely to contain high grade wood.

Box and shoox plants used 43 percent of the total lumber purchases reported. They bought eastern, in-state softwoods. This represents a market for low grade trees; however, it has been rapidly diminishing as the largest box plants in New England are now out of business or heavily curtailed in volume. Furniture, parts, and turning industries buy mainly hardwoods but not from New Hampshire.

These wood-using industries are usually small businesses although they have been in operation a long time, an average of 27-60 years. Of the 53 plants surveyed only eight employed more than 100 people regularly; the maximum number was 289 employees. Twenty-four plants had less than 25 employees on their rolls regularly. Despite their small size they represent a continual market for wood and lumber.

These industries have purchasing staffs which regularly contact sawmill operators seeking wood suitable to their needs. They also purchase lumber from those who try to sell to them. However, the sawmill owner who does not have the time for one reason or another to expend on sales efforts will find that three buyers are likely to visit him about purchasing his yard or specific volumes. He can expect that the purchasers will set the price two out of four times; once will be by compromise and once his price will be accepted. Prices will be by grade or will take grade into account and will generally be close to market quotations. Small industries are more inclined to "shop around" than larger plants but are more likely to accept the seller's prices.

The Use of Lumber by New Hampshire's Wood-Using Industries

Introduction

Three-fourths or more of the total wood cut in New Hampshire forests is manufactured into lumber yearly. It is produced by sawmills numbering at one time more than 700 but now 200 and still decreasing. A study of the marketing of eastern white pine lumber by sawmill operators was made in 1957.¹

In 1960 a study of the marketing of lumber, its purchase and market channels from sawmill to wood-using industry, was undertaken by the University of New Hampshire Agricultural Experiment Station. This was part of a Northeast Regional Research Project, NEM - 24. The initial phase resurveyed sawmill operator marketing practices for all lumber cut and purchased by sawmills. Only the hardwood sales of these operators are reported because they had not been previously covered. The second phase of the project was a survey of procedures and channels through which New Hampshire's wood-using industries obtained their lumber. (Wood not classed as lumber was excluded.) Only those industries purchasing lumber were included.

A graduate research assistant² conducted all the field work and assisted in the data analysis. Field schedules were prepared by a sub-committee of the Regional Technical Committee and approved by the whole committee. These were filled in during field interviews with company personnel.

Ninety-three sawmill owners and 53 wood-using industries were interviewed. The latter were stratified by number of employees and the former by volume production. All wood-using industries contacted purchased some lumber.

Only 30 percent of the sawmill lumber went directly to wood-using industries; the balance, 63 percent, went primarily to wholesalers. However, these industries reported obtaining 65 percent of their lumber needs from sawmill production and 35 percent from wholesalers' stocks. Since these figures are not for the same year, exact volumes are not comparable.

This report has been divided into three major parts: product characteristics, industry characteristics and marketing practices. Both sawmill and wood industry operations are discussed under each major heading. The single product is lumber but it varies in quality and degree of manufacturing as well as in moisture content and species.

The Product — Lumber

The term lumber applies to piece of wood at least 6 feet long, 4 inches wide and three-quarters of an inch thick. If a customer asks for canned

¹ Wallace & Amidon. 1958. *Marketing of Eastern White Pine Lumber from Maine and New Hampshire*. New Hampshire Agricultural Experiment Station Bulletin 452.

² 1958-59 Raymond Woodbury; 1960-61 Michael Massie.

corn in a grocery store, he gets canned corn although there may be several brands from which to choose. If the same customer asks for lumber, he must specify the dimensions among at least 10 different widths, 8 or more different lengths, and 8 or more thicknesses. In addition there are over 30 different species of trees from which lumber is commonly manufactured. But this is not the end; he may buy it green (unseasoned), air-dried or kiln-dried. The boards may also be rough or finished; surfaced one side, two sides, or both sides and edges; or worked in various patterns. And yet more specifications are necessary, for the customer must also indicate the grade, a means of distinguishing quality and possible uses of boards. Many of these specifications came into common use because of the way trees grow, their form and quality. But they are also a reflection of our manufacturing process — sawmilling — which was developed to convert logs into usable form as for shelter and, earlier, for boats and ships.

Using air dried white pine as an example, a seller would have to carry in stock 3,200 boards, each of which would represent a specific grade and size, if he were to have a complete line in this category. If he duplicated his stock in unfinished, ungraded lumber, he would have to carry 640 more boards. All this would require 4,000 cubic feet of storage space and he would have only one board in each dimension.

Today lumber has competition from other wood products which are converted from trees into a form suited to production methods rather than the tree's form of growth (particle boards, plywood, chipboard, flakeboard, etc.)

Sawmills in New Hampshire are producing boards from most of the local species and are meeting the grade and size specifications. Ninety-nine percent of their hardwood lumber production is sold rough. Sixty-three percent is shipped air-dried and the balance green. No hardwood lumber was reported kiln-dried. This hardwood volume represents only 17 percent of the total lumber production; all the other is softwoods, mainly white pine.³ Principal species are red oak, white and yellow birch, red and sugar maple, and beech.

The specifications for the lumber reported by the wood-using industries depend upon the type of industry. Both softwoods and hardwoods are utilized. Twenty-two plants use only softwoods, 16 hardwoods only, and 15 use both. Of their total lumber purchases of 55.847,000 board feet, 32 percent was hardwoods, 24 percent western softwoods (Douglas fir and soft pines), and the remaining 44 percent was Eastern softwood (white pine mainly with some hemlock and spruce). Eastern softwoods and hardwoods were purchased as rough lumber; less than five percent was finished. Western softwoods were purchased dressed or finished except for one percent which was bought as rough lumber (Table 1) and all the volume was kiln-dried. Only six percent of all other lumber was kiln-dried (Table 2). Eastern softwoods were about 60 percent air-dried and 40 percent green while two-thirds of the hardwood was green.

Of the total volume nearly half was in grade one⁴, two percent was in the lower common grades, and the balance was ungraded — mostly the

³ Ibid. (Wallace & Amidon, 1958).

⁴ Hardwoods — No. 1 common and better.

Softwoods — No. 2 common and better, sterling, standard.

eastern softwoods (90 percent of which was used in the manufacture of wooden boxes). Excepting the lumber for box construction, the industries used the upper grades of all species or 85 percent in grade one (Table 3). Grade use by type of industry shows that when top quality softwood lumber is needed western species supply the demand. New Hampshire sawmill owners have two problems here, lack of trees large enough to cut into the wider widths and lack of quality.

In the effort to obtain quality, New Hampshire industries purchase Western kiln-dried lumber because local lumber lacks this treatment. Hardwoods are bought green or air-dried because the purchasers do have their own drying facilities.

Table 1. Kind of Lumber Purchased by Type of Industry
(Thousands of board feet)

Industry	Rough		Dressed	
	Eastern	Western	Eastern	Western
Wooden Boxes	23,928			150
Sash and Doors	29	397		6,735
Millwork	280	105	94	4,480
Furniture	13,233		232	
Reels, pails, and fixtures	818		4	398
Parts	3,274		128	20
	42,064	402	458	12,241
Percent	77%	1%	1%	22%

Table 2. Lumber Purchases by Type of Industry — Seasoning
(Thousands of board feet)

Industry	Eastern Softwood			Hardwood			Western*
	Green	Air-dried	Kiln-dried	Green	Air-dried	Kiln-dried	Kiln-dried
Wooden boxes	7,043	15,316			1,532	62	125
Sash and Doors		29					8,162
Mill work		93	62			219	4,585
Furniture	300	227	50	11,050	1,035	1,303	
Reels, Pails and fixtures		604	398	50		168	
Parts		813	40		2,459	110	5
	7,343	16,482	550	11,100	5,026	1,862	12,887
Percent	13%	30%	1%	20%	9%	3%	24%

* None purchased air-dried or green.

Table 3. Lumber Purchases by Type of Industry — Grade
(Thousands of board feet)

Industry	Grades		Ungraded
	I*	II†	
Wooden boxes	65	150	23,867
Sash and Doors	7,744	447	
Millwork	3,603	1,356	
Furniture	11,963	1,517	285
Reels, pails, and fixtures	620		600
Parts	1,227	550	1,652
	26,944	2,328	26,374

* Hardwoods — No. 1 common and better.

Softwoods — No. 2 common and better, sterling, standard.

† Hardwoods — No. 2 common and poorer.

Softwoods — No. 3 common and poorer, construction, utility.

The Industry

Sawmills have and do play a major part in converting New Hampshire's forest products into usable form. Their annual production varies with the lumber market situation. Only one-quarter of the 93 sawmills surveyed cut one million or more feet annually; of these, seven cut over three million feet (all production, both softwoods and hardwoods).

Sawmill owners were classified according to their marketing practices: (a) *producers* — those selling their product to whomever they could and usually not a finished product; (b) *manufacturers* — those whose lumber went directly to the parent plant or by contract directly to a wood using industry; (c) *wholesalers* — those selling products primarily to manufacturers but who purchased additional volumes for resale; and (d) *retailers* — those who sold a finished product directly to consumers, the sawmill being a part of their total plant.

Producers sawed the bulk of the hardwood lumber, 17 out of a total of 18 million board feet. One sawmill cut over half of this producer volume. The balance was cut at 36 other sawmills averaging 200 thousand board feet for the yearly cut.

Sawmill operators classed as retailers produced only 728 thousand board feet of hardwood lumber. Five hundred thousand feet was cut by one mill. The balance was sawed by ten other mills averaging only 23 thousand feet per mill. The remaining 350 thousand feet of hardwood lumber was cut at six sawmills in the other three classes. Thus it is evident that sawmill operators in New Hampshire produce only a small amount of hardwood lumber. It is sawed incidental to softwoods when a few good hardwood trees are found on the areas logged. It then becomes a marketing problem because of this small volume.

The 53 wood-using industries contacted employed 2,894 people. They used 55,847,000 board feet of lumber plus other wood not classed as lumber. They manufactured furniture, furniture parts, mill work, sash, doors, fixtures, toys, special parts, turnings, pails, reels, and boxes and shooks.

The type of industry probably influences lumber volume use more than employment size classes. However, since some of these industries converted wood other than lumber, plus various other resources, the number

of employees is a useful measure of industry size (total product output was not obtained). The species utilized are directly related to type of industry. Box and shook manufacturers use eastern softwoods; furniture plants use hardwoods; and millwork, sash and door plants use mainly western species. No particular type of industry is limited by size as the distribution shows in Table 4C. Twenty-four small plants use only 12

Table 4. Number of Industries Based on Employment Size Classes

	<i>Employment Size Classes</i>			
	<i>1-25</i>	<i>26-100</i>	<i>101 over</i>	<i>Totals</i>
<i>A. General</i>				
Number in class	24	21	8	53
Total employees	267	1,169	1,458	2,894
Average number of employees	11	56	182	
<i>B. Use of Lumber by species classes.</i>				
Plants using softwoods only	10	10	2	22
Plants using hardwoods only	6	6	4	16
Plants using both	8	5	2	15
<i>C. Kinds of Plants by employment size classes.</i>				
Box and shook	3	6	1	10
Furniture	7	4	4	15
Millwork	4	2	1	7
Sash and door	2	4	1	7
Reels, pails, fixtures	1	2	1	4
Parts, toys, turnings	7	3		10
<i>D. Volume of lumber used by employment size classes.</i>				
		<i>M. bd. ft.</i>		
Eastern species	3,599	20,689	200	24,488
Western species	1,055	7,438	4,878	13,371
Hardwoods	2,224	4,749	11,015	17,988
Totals	6,878	32,876	16,093	55,847
<i>Percent of total</i>	<i>12%</i>	<i>59%</i>	<i>29%</i>	

percent of the total volume of lumber, while 21 medium-sized plants use 59 percent and eight large plants use 29 percent.

As Table 5 shows, box and shook manufacturers are the largest users of lumber, all of which is eastern softwoods. However, it should be em-

Table 5. Volume of Lumber Used by Industries

	<i>Volume</i> <i>M. bd. ft.</i>	<i>Number of Plants</i>	<i>Average Volume Used</i> <i>M. bd. ft.</i>
Boxes	24,078	10	2,408
Sash and Doors	8,191	7	1,170
Millwork	4,959	7	707
Furniture	13,965	15	930
Reels, etc.	1,220	10	122
Parts, etc.	3,427	4	860
	55,840	53	

phasized that they are not the largest wood-using industries in the state since this study was only a determination of lumber use. Only one box

plant employed over 100 persons while four furniture plants did so, with one plant having nearly 300 employees. Pulp and paper mills are the largest in terms of employment and product value out-turn.

These wood using industries represent long term businesses. Of the 53 plants only five were in business less than seven years; one had been operating less than a year (Table 6). Their long term of business perhaps reflects the renewable resource upon which they depend. Forests renew themselves when protected adequately, as they have been in New Hampshire.

Table 6. Number of Years in Business by Employment Size Classes

	1-25	26-100	100 plus employees
Average years in business	26.9 yrs.	32.2 yrs.	60 yrs.
Minimum years in business	9 mo.	6 yrs.	30 yrs.

Marketing Practices

Sales outlets for lumber from sawmills follow a rather definite pattern. For example, a mill owner who is not part of a wood-using industry or marketing intermediary firm may contract to sell his output to a retailer for a period of time after which he may supply other users of lumber as he finds markets. Another mill owner may be a part of a wood-using industry under terms of a continuous contractual arrangement. Thus the sawmill owners sales depend upon his position in the lumber distribution system. Table 7 shows hardwood lumber destinations. This was sold

Table 7. Sawmill Sales Outlets for Hardwood Lumber

Marketing Classification*	Wholesaler	Outlets		
		Retailer	Manufacturer	Consumer
		<i>Percent of Volume</i>		
Producer (37 mills) †	66	0.1	28	6
Retailer (11 mills)	5.5	5.5	66	23
Wholesaler (4 mills)			100	
Manufacturer (1 mill)			100	
Unclassified (1 mill)	100			

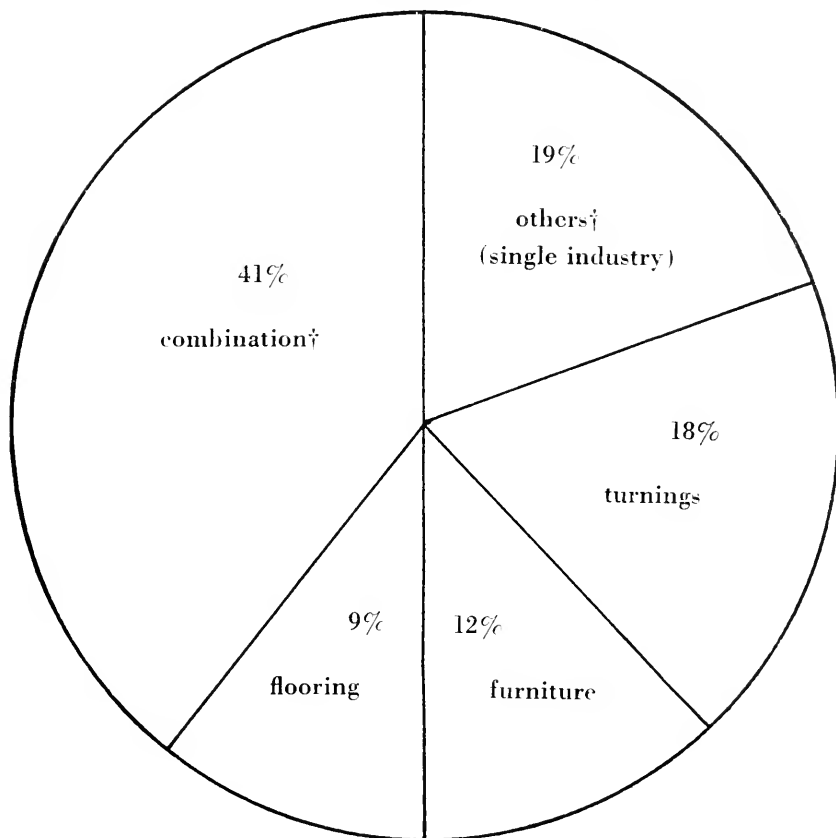
* Classification based on total sales, not hardwood only.

† Actual number mills producing some hardwoods.

graded with the exception of 18 percent, but buyers requested grading of over half the volume before they would purchase. Two-thirds of all hardwood sold was measured by the buyer's agent. This indicates an incomplete knowledge of the amount sold on the part of the sawmill operator but also reflects the small volumes handled.

Prices received varied according to the quality, extent of manufacturing, volume available, and size. The range in prices reported for yard-run hardwood lumber was much larger than expected. Oak price spread was \$60.00 per thousand board feet, maple and birch \$87.00, and mixed species \$32.00. Table 8 shows the average prices by grades and species.

Figure 1. Sales of Hardwood Lumber to Kinds of Industries*



* Percents are of the total volume sold by sawmill owners. A small amount was sold for wood containers and pallets by individual mills, one percent, and not included in diagram.

† Handles, toys, crutches, shanks, blocks, etc.

Table 8. Average Prices Reported Received for Hardwood Lumber per M. bd. ft.

Species	Grades			
	Select and Better	No. 1 Common	No. 2 Common and Poorer	Ungraded
Maple & Birch	\$170.00	\$131.00	\$67.00	\$79.00
Mixed species	175.00	124.00	62.00	62.00
Oak	126.00	89.00	69.00	81.00

Previous studies have indicated sawmill operators did not spend much time on sales efforts. This practice continues, as over half the volume was sold to buyer's agents who came to the sawmill. From one to six buyers could usually be expected although two mill owners reported far

more. The average number of buyers was three. Fifty-seven owners said no marketing efforts were needed. Some of these were due to their relationship with a manufacturing plant or because of retail selling. Fourteen producers averaged 18 hours per month on sales. No mills classed as producers had salesmen on their payrolls.

Yards (stocks of lumber on hand) are essential especially when small volumes are sawn, as with hardwoods. Nearly half their volume, 46 percent, was sold from yard stocks. These yards ranged in size (total volume of hardwoods and softwoods) from 50,000 bd. ft. to 2.5 million bd. ft. About 29 percent of their total sales were "on order" but only a very small percentage was hardwood lumber.

Over 80 percent of their sales consisted of single orders which may be renewed by the customer if he is satisfied. Cash sales are preferred and usually obtained. Producers reported that "buyers come to my mill" as a major reason for choosing particular buyers or customers. Other reasons in order of occurrence were: long standing business connection, buyer will take all grades, and best price offered. Thus lack of selling efforts by the operator is understandable. An owner's time is spent procuring stumpage and operating the sawmill.

Because several buyers usually visit a mill the operator is not at a complete disadvantage in obtaining a favorable price for his stock. Sawmill operators are thus freed to put their efforts in other areas than selling. This reduces the need for additional overhead and results in cost benefits.

Industrial Purchasing of Lumber

This study of lumber purchasing practices reveals the potential of the industry as a market for locally produced lumber as well as that shipped

Table 9. Wood-using Industry Purchases by Kind of Industry and Source (Thousands of board feet)

<i>Industry</i>	<i>Sawmill</i>	<i>Market Intermediary</i>	<i>New Hampshire</i>	<i>Out-of-State</i>
Box and shook	23,635	493	20,370	3,572
Furniture	5,119	8,846	2,112	9,853
Millwork	109	3,730	113	4,804
Sash & door	4,119	4,072	229	3,162
Reels, pails, fixtures	655	565	732	488
Parts, etc.	1,749	1,712	2,231	1,191
	35,386	19,218	25,787	27,870
<i>Percent</i>	<i>65%</i>	<i>35%</i>	<i>47%</i>	<i>53%</i>

Table 10. Initiation of Purchases by Type of Industry (Percentage)

<i>Industry</i>	<i>Buyer</i>	<i>Seller</i>	<i>Both</i>
Box and shook	100		
Furniture	50	19	31
Millwork	30	70	
Sash and door	38	62	
Reels, pails, fixtures	50	17	33
Parts, etc.	36	36	28
<i>Average</i>	<i>48</i>	<i>36</i>	<i>11</i>

**Table 11. Initiation of Purchases by Species Class
(Percentage)**

<i>Species</i>	<i>Buyer</i>	<i>Sales Initiator</i>	
		<i>Seller</i>	<i>Both</i>
Eastern Softwoods	58	29	13
Hardwoods	45	29	26
Western Softwoods	40	60	0

**Table 12. Initiation of Purchases by Source
(Percentage)**

<i>Source</i>	<i>Buyer</i>	<i>Sales Initiator</i>	
		<i>Seller</i>	<i>Both</i>
Producer (sawmill)	60	20	20
Market Intermediary	45	54	
Both	35	33	32

from distant sources. Table 9 indicates how and where the wood-using industries of New Hampshire secured their raw material. With the exception of the box and shook industry, 82 percent of the lumber was purchased out-of-state. Even the furniture industry, using mostly hardwoods which are available in New Hampshire, purchased the bulk of its lumber out-of-state. Similarly excluding the box industry, other industries purchased 61 percent of their lumber requirements from market intermediaries. This is partly explained because western lumber is generally sold through wholesalers. The box and shook industry which at one time used 60 percent of the lumber cut in New Hampshire is still a substantial user of New Hampshire softwoods.

As might be expected eastern softwoods are transported to the plants entirely by truck. Hardwoods were also shipped by truck although six plants reported transporting some by railroad. In contrast, western lumber moved entirely by rail to these industries. It should be pointed out that the distance of western softwoods from eastern markets makes rail transportation imperative whereas rail transportation of hardwoods is usually associated with Vermont or New York producing centers. The ease of truck transportation should offer sawmill operators an opportunity to sell small volumes especially of hardwoods. However, the quality requirements are high and the small volumes sawed produce little high grade lumber unless from quality trees.

Wood-using industries report that they initiate 48 percent of their purchases thus choosing the source of supply. Thirty-six percent of their purchases are seller initiated and 11 percent are by both. Out-of-state purchases may be the result of selling efforts of those sawmill owners in contrast to the lack of such effort by New Hampshire mill owners.

Eastern species purchases were initiated by buyers more than by sellers. Western species were purchased as a result of sellers' efforts more than the buyers'. The large western producers have sales people and do aggressive selling.

It is evident that the industries initiate the major portion of their lumber purchases. This may be done to control the source of supply and other related factors. Market intermediaries also initiate nearly half of their purchases. Both reported about 250 lumber suppliers as being their

“principal sources.” This constitutes an average of four major suppliers for each utilization plant.

Measurement of the volume purchased was made more frequently by the seller (45 percent) than the buyer (35 percent). Only four percent of the volume was measured by Association⁵ graders and 16 percent was measured by both buyer and seller. In contrast the purchasing company did most of the grading, 55 percent of the volume. Fifteen percent was Association graded and 30 percent was graded by the seller. Sawmill owners are not prepared to grade their lumber in New Hampshire but out-of-state mills are evidently doing some grading. Manufacturing practices are strongly influenced by lumber grade since poor quality processing shows up as grade defects. More grading of New Hampshire lumber could help improve the manufacturing quality.

Only 17 percent of the industrial plants determined the lumber price of their purchases. Seller's prices were accepted by 48 percent and compromise prices by 26 percent of all plants reporting. Nine percent said they used a price from published reports. When lumber was purchased from a sawmill owner the price was determined twice as often by the seller as by the purchaser. The same was true of purchases from market intermediaries.

Eight plant owners reported that they did considerable “shopping around” to obtain the lowest price for the desired quality. Two reported use of a bid system to some extent and several reported that price determination depended upon the seller. Some lots were bought in one manner whereas at another time the price might be determined in one of the other ways. Sawmill owners reported that they knew about the “going” price and sold accordingly. Generally they had a minimum below which they would not sell.

Table 15 shows that the small plants did most of the “shopping around” and less actual price determination. The largest plants usually set the price they would pay and were successful in obtaining desired lumber volume and grades. These latter plants represent a large steady market and thus a good selling opportunity for sawmill owners and marketing agencies.

Table 13. Determination of Price by Type of Industry
(Number of plants)

<i>Industry</i>	<i>Buyer</i>	<i>Price determined by:</i>		<i>Publication</i>
		<i>Seller</i>	<i>Compromise</i>	
Box and shook	3	3	3	2
Furniture	5	5	4	
Millwork	1	4	1	1
Sash and door		4	1	
Reels, pails, fixtures		1	2	1
Parts, etc.		7	2	1
Total	9	24	13	5

⁵ National Hardwood Lumber Association, Chicago 5, Illinois.

**Table 14. Price Determination by Source of Lumber
(Number of plants)**

<i>Source</i>	<i>Buyer</i>	<i>Seller</i>	<i>Compromise</i>	<i>Publication</i>
Producer (Sawmill)	5	12	6	2
Market Intermediary	4	12	6	2
	9	24	12	4

**Table 15. Price Determination by Plant Size Class
(Number of Plants)**

<i>Number of employees class</i>	<i>Buyer</i>	<i>Seller</i>	<i>Compromise</i>	<i>Publication</i>	<i>Shopping around*</i>
1- 25		13	3	1	4
26-100	4	5	5	3	1
101 plus	3	1	2	1	
	7	19	10	5	5

* Seller determined price actually.

Relation to Other Studies

A report published by the N. H. State Planning and Development Commission in 1961⁶ emphasized both the landowners problems and the need for new industry. Cooperative efforts were suggested for both these groups. A marketing cooperative such as the Independent Grocers was suggested, but the vitalizing force, now lacking, was not determined. In general, the present unused volume of hardwoods and the kinds of industry that might utilize this wood were of major concern.

A study of "Wood Use by Manufacturing Firms" in Minneapolis and St. Paul⁷ was made in 1957. These industries were found to be purchasing half their lumber directly from sawmill owners and the other half from wholesalers, brokers, and retailers. In New Hampshire 65 percent of the volume used by wood industries was obtained directly from sawmills. Among other factors there is considerable similarity in these two studies. In both, the use of the top grades of lumber are stressed; large purchases of western softwoods were made by millwork, cabinet and other softwood using plants. In New Hampshire the box and shook industry used 42 percent of the total lumber volume studied. In the Minnesota study the box industry used 32 percent of the lumber volume and the bulk of the in-state softwood lumber purchases went to box manufacturers as in New Hampshire. One strong difference occurred in furniture manufacturing. The Minnesota industries purchase about 77 percent of their lumber dry, either air-seasoned or kiln-dried.

Minneapolis and St. Paul industries reported that native species could not usually meet grade and volume needs. Some did not know what was

⁶ "Small Business in New Hampshire's Forestry and Forest Products Industries." House and Stoddard.

⁷ Lake States Forest Experiment Station Paper No. 75, 1959.

available, indicating some lack of selling effort by local sawmill operators. Both studies point to good markets for lumber which are now being supplied by out-of-state species.

Table 16. Minneapolis and St. Paul Lumber Use by Wood Industries*

<i>Industry</i>	<i>M bd. ft.</i>	<i>Percent</i>
Box and Crate	13,281	32
Millwork	13,073	32
Sporting goods [†]	6,278	12
Pattern, toys, etc.	5,483	9
Framing	2,307	5
Cabinets	2,182	4
Furniture	2,105	4
Caskets [‡]	1,371	2
	56,080 [‡]	100

* Lakes States Forest Experimental Station.

[†] Not found or included in New Hampshire study.

[‡] N. H. study volume 55,847 M.bd.ft.

Two-thirds of the lumber purchased by the wood-using industries studied was softwoods. A New Hampshire Agricultural Experiment Station study⁸ covered marketing practices of sawmills from Maine and New Hampshire. Eastern white pine was found to be available as a properly graded, air-dried, well manufactured product. However, quality white pine lumber was a limited commodity as only 17 percent of the volume was found to grade number two common and better. The 1960 sawmill marketing study showed only 12 percent of New Hampshire softwoods available in grade two common and better. These studies indicate the difficulty that millwork, sash and door, and other softwood-using industries face if they try to purchase local lumber of the quality they need. One other difference was evident from discussions but was not pin-pointed by specific details. The sawmill owners are producing boards primarily while these industries desire their quality lumber in dimension form.

In general sawmills were found to be selling up to 49 percent of their total volume out-of-state equally to wholesalers and wood-using industries. Both studies showed that a sawmill operator could expect an average of three buyers to come to his mill. Thus, this opportunity to sell to buyers is a continuing one and helps to explain the apparent lack of selling efforts by sawmill operators. In fact, this opportunity and the "direct contract for the entire year's output" type of sale show a favorable selling situation for lumber producers. A major problem is thus shown to be the lack of quality in the timber resource. The improvement of timber stands for quality has not been a major concern to the New Hampshire lumber producing or purchasing industries. The Agricultural Conservation Program section for timber stand improvement is the only sustained present effort to improve the quality of the New Hampshire softwood resource. Increasing research efforts by the State Forestry Department, U. S. Forest Service and the University of New Hampshire Agricultural

⁸ *Marketing of Eastern White Pine from Maine and New Hampshire*. New Hampshire Agricultural Experiment Station Bulletin, 452, 1958. Wallace and Amidon.

Experiment Station are providing sound practices for developing high quality timber stands.

Appendix

Table A. S. I. C. Numbers and Industry

<i>S. I. C. No.</i>	<i>Industry</i>
2426	Hardwood dimension and flooring mills
2431	Millwork plants
2433	Prefabricated wooden buildings and structural members
2441	Nailed and lock corner wooden boxes and shooks
2442	Wirebound boxes and crates
2445	Slack and tight cooperage
2511	Wood household furniture, except upholstered
2512	Wood household furniture, upholstered
2521	Wood office furniture
2541	Wood partitions, shelving, lockers, and office and store fixtures
2499	Wood products not elsewhere classified (pallets)

Table B. A Breakdown of the Timber Cut in New Hampshire by Various Industries for 1959*

	<i>M. bd. ft.</i>
Sawlogs { Hardwood	27,034
{ Softwood	170,212
Cooperage logs	3,353
Turning bolts	4,551
Veneer logs	11,546
Handle stock	384
Box shooks logs†	588
Reels	1,534
Furniture	2,758
Baskets	25
Ladders	361
Excelsior bolts	(Cords) 858

* Latest available figures.

† Box lumber included under sawlogs.



WALLACE, OLIVER P.

1962. *The Use of Lumber by New Hampshire's Wood-using Industries*. New Hampshire Agricultural Experiment Station Bulletin 474. Durham.

New Hampshire's wood-using industries were surveyed to determine the volume, quality and species of lumber being purchased. There are three major parts: product characteristics, industry characteristics and marketing practices.