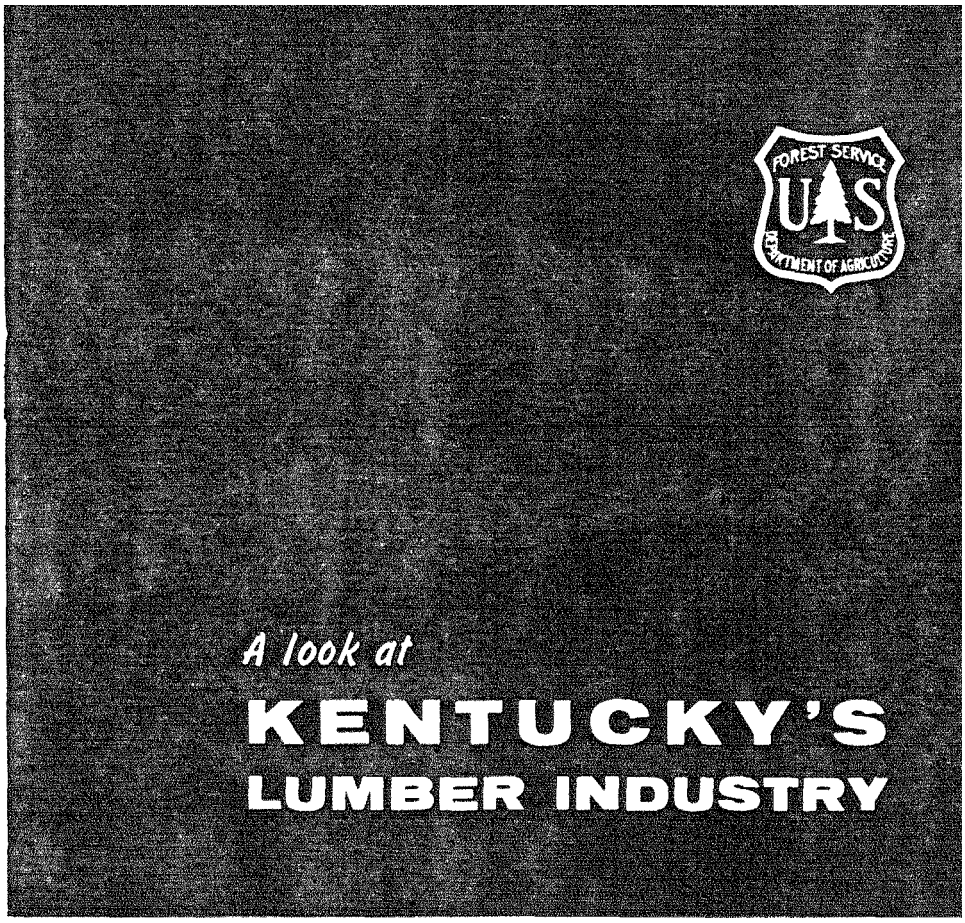

A look at

KENTUCKY'S LUMBER INDUSTRY

by Owen W. Herrick

U. S. FOREST SERVICE RESEARCH PAPER NE-63
1967

NORTHEASTERN FOREST EXPERIMENT STATION, UPPER DARBY, PA.
FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE
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OWEN W. HERRICK received his Bachelor of Science degree at Iowa State University and a Master's degree in forestry at Yale University. He joined the staff of the former Central State Forest Experiment Station in 1963, after 7 years of industrial-forestry experience in the Southeast, and served as a research forester in the Station's timber-products processing and marketing project at Berea, Kentucky, which is maintained in cooperation with Berea College. At present he is serving as a research forester in the Division of Forest Economics, Recreation, and Wildlife Habitat at the Northeastern Forest Experiment Station, Upper Darby, Pa.

A look at

KENTUCKY'S LUMBER INDUSTRY

THIS report provides a look at Kentucky's lumber industry as it was in 1962. The influences of sawmill size and geographic location were analyzed to explain differences in operating and marketing practices.

Three geographic regions of the State were recognized: the Eastern Highlands, the Western Plateau, and the Bluegrass region (fig. 1). These regions are distinguished by physiographic features ranging from the heavily forested and rugged topography of the Highlands to the gentle terrain and lightly forested farmland of the Bluegrass.

For analysis, sawmills were classified according to annual lumber production as small (0 to 499 thousand board feet), medium (500 to 2,999 thousand board feet), or large (3 million + board feet).

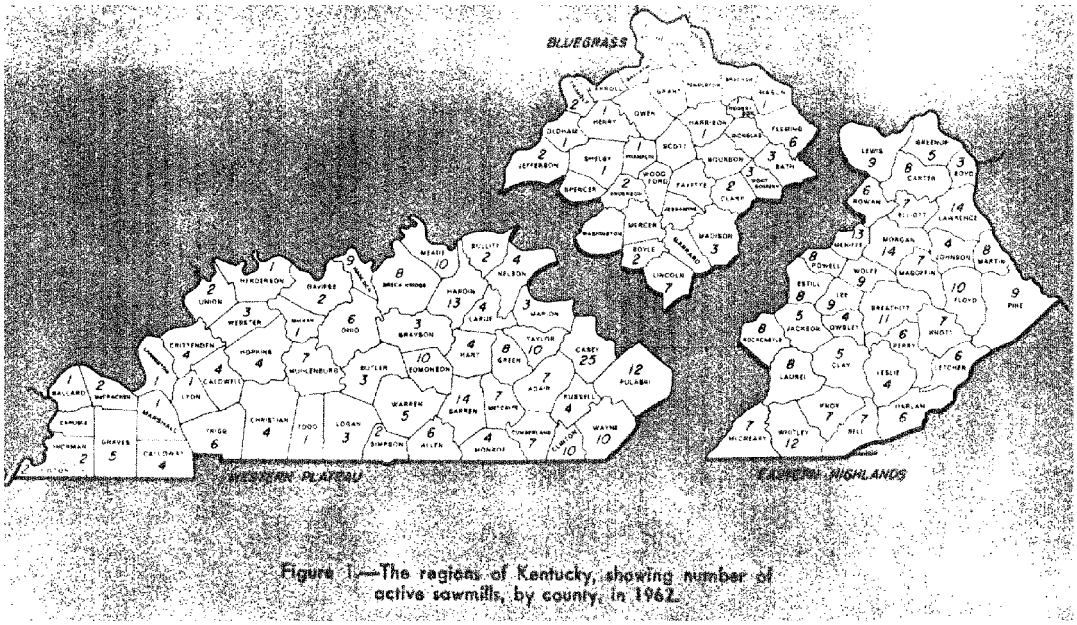


Figure 1.—The regions of Kentucky, showing number of active sawmills, by county, in 1962.

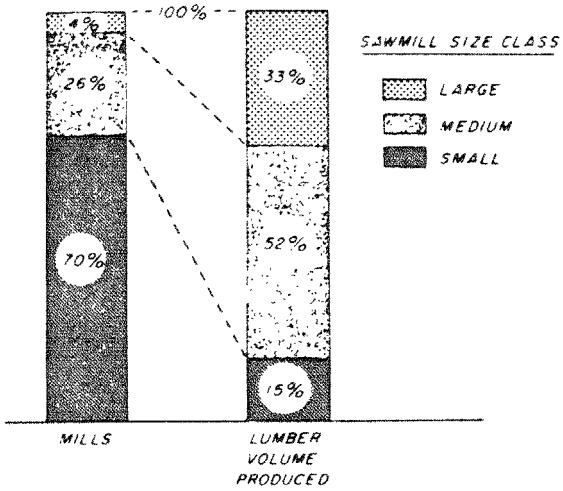


Figure 2.—Percentage distribution of sawmill firms and lumber output in Kentucky, by sawmill size-class, 1962.

INDUSTRY TRENDS

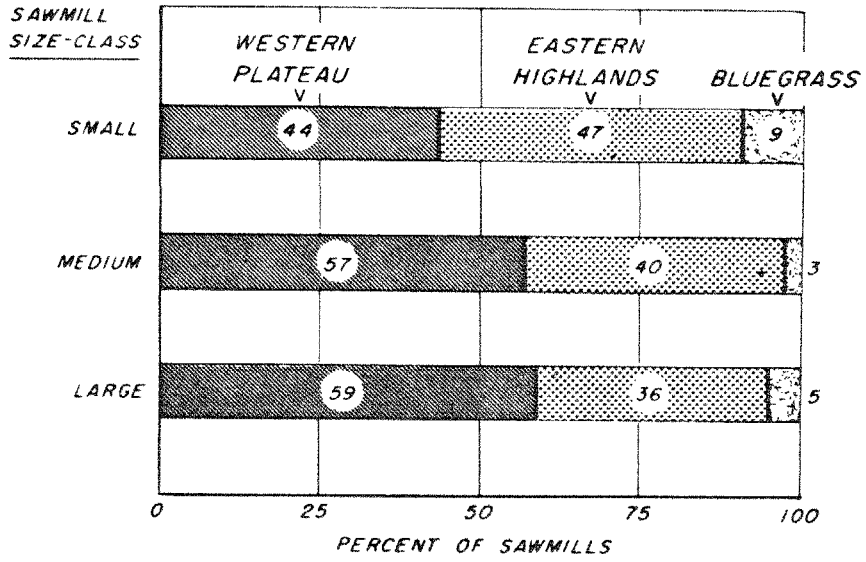
Between 1942 and 1962, the number of active sawmills in Kentucky decreased 70 percent—from 1,863 mills to 566. Decline was greatest among small sawmills (almost 75 percent); and the proportion of small mills among all mills in the State is now 17 percent less than before. Medium and large sawmills also declined in number, but their proportion of the total more than doubled. This parallels a general sawmill industry trend toward concentration of lumber production at fewer but larger mills.

Large sawmills comprised only 4 percent of the 566 operating mills in the State, yet they produced one-third of Kentucky's 1962 lumber output(fig. 2). By contrast, small sawmills comprised 70 percent of all the firms but produced only 15 percent of the total lumber output.

This same production pattern was found in all three regions of the State. In each region small sawmills represented a major portion of firms, but accounted for a minor portion of lumber output —ranging from a low of 12 percent of total lumber output in the Western Plateau to a high of 25 percent in the Bluegrass region.

The distribution of sawmills by size-class differed across the State. The Eastern Highlands region had more small sawmills than other regions, while medium and large sawmills were most numerous in the Western Plateau region (fig. 3).

Figure 3.—Sawmill size-class composition in Kentucky, by region, 1962.



ANNUAL OPERATING PERIOD

The average number of days operated annually differed between sawmill size-classes in each region by about the same proportion. For each day that small sawmills operated, medium mills operated about 3 days and large mills operated 4½ days (table 1). In many cases crews at the small mills not only operated the mill but also harvested the sawlogs, thereby limiting the number of days that the mill itself was active.

Sawmills in the Eastern Highlands operated fewer days during the year than mills in the other regions. Traditional work habits, firm-management characteristics, and weather probably contributed most to regional differences in the annual operation period.

TIMBERLAND OWNERSHIP

Almost 40 percent of the sawmill operators in Kentucky owned timberland in 1962. More operators of medium sawmills owned timberland than did owners of sawmills of other sizes. Acreage owned increased with sawmill size-class, from an average of 210

Table 1.—*Average number of days operated per year, by region and sawmill size-class*

Region	Sawmill size-class		
	Small	Medium	Large
Western Plateau	55	181	250
Eastern Highlands	46	139	205
Bluegrass	57	187	—
All regions	51	165	230

acres for small mills to 2,994 acres for large mills. The average ownership was 405 acres.

A higher percentage of sawmill operators in the heavily forested Eastern Highlands owned timberland than did operators in the other regions. However, the average acreage held by one individual was greatest in the less-timbered Bluegrass region.

RAW-MATERIAL PROCUREMENT

Source of Raw Material

More than half the sawlogs used by Kentucky sawmills were purchased on the stump. Sawlog purchase from a timberland owner or logger was the other important form of raw material procurement. Together these two sources provided 95 percent of the industry's raw material. Although important to certain sawmills, other wood sources, including sawlogs cut from timberland owned by mill operators and logs brought to mills for custom sawing, were minor in the total industry supply. A similar procurement pattern occurred in the Eastern Highlands and Western Plateau regions of the State (fig. 4). However, in the less-timbered Bluegrass region less than one-third of the raw material was purchased on the stump and about half was purchased as sawlogs.

Raw-material procurement was about evenly divided between stumpage and sawlog purchases at the medium and large mills. However, at small mills stumpage accounted for almost two-thirds of raw material procurement; sawlog purchases, one fourth.

Working Radius

Larger sawmills tended to bring logs from greater distances. For example, operators of medium sawmills covered twice the

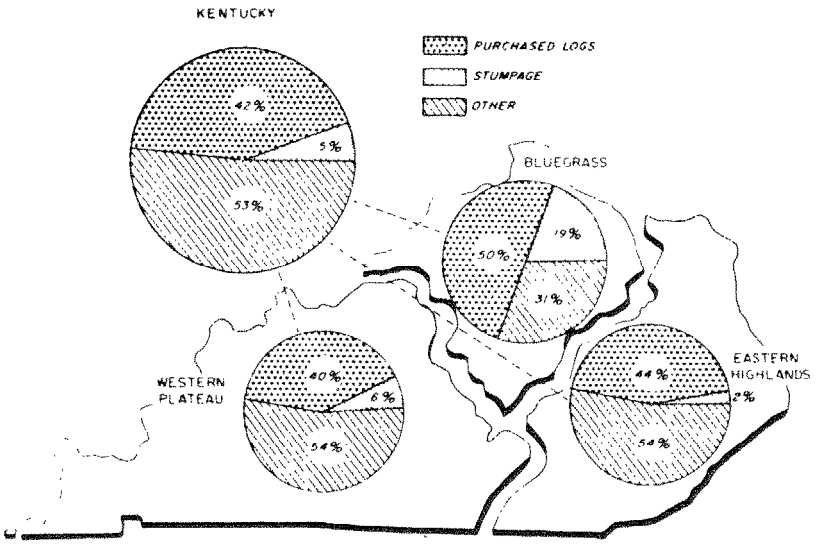


Figure 4.—Percent of raw-material volume by procurement method, for Kentucky and regions, 1962.

working radius of small mills, and large mills extended this distance more than 3½ times (table 2).

Working radius also differed by region, averaging 17 miles in the Eastern Highlands, 24 miles in the Western Plateau, and 32 miles in the Bluegrass region. As would be expected, hauling distances were shorter in heavily forested rugged terrain such as the Eastern Highlands than in lightly forested areas with gentle terrain favorable to hauling as in the Bluegrass.

Sawlog Measurement

The Doyle log rule was used most commonly throughout the State, but the International ¼-inch rule was used at some mills in the Eastern Highlands and Bluegrass regions (table 3). Timber sales from the Daniel Boone National Forest, which specify use of International ¼-inch log rule, undoubtedly influenced its use in these regions. Other measures, including mill or lumber tally and the cedar log scale, were used in the Western Plateau region and at small sawmills (table 3).

PRODUCTS MANUFACTURED

The principal income-producing product of most Kentucky sawmills is either graded lumber or local-use lumber. Graded lumber is inspected and sold according to accepted lumber-grade rules, such as those of the National Hardwood Lumber Association, and the Southern Pine Association. Selling lumber graded under these rules provides access to national markets. Ungraded or local-use lumber, on the other hand, is normally sold in small quantities directly to local users. In 1962 more than four-fifths of all Kentucky sawmill firms obtained a major portion of their annual income from these products. The remainder received the major part of their income from (1) pallet, blocking, and crating lumber; (2) mining material; or (3) sawed posts, ties, and treating material (fig. 5).

Because of local markets, regional differences occurred in the percentage of firms obtaining their major income from certain sawmill products. For example, local-use lumber was the principal income-producing product at sawmills in the Bluegrass region. And graded lumber was the main product at mills in the other

Table 2.—*Percent of sawmills drawing wood from various distances, by sawmill size-class*

Sawmill size-class	Working radius (miles)					Average distance
	0-4	5-24	25-49	50+	Total	
			Percent			*Miles*
Small	12	73	11	4	100	15
Medium	2	36	44	18	100	30
Large	0	13	25	62	100	53

Table 3.—*Percent of sawmills using various log rules, by sawmill size-class*

Sawmill size-class	Log rule		
	International ¼-inch	Doyle	Other
Small	7	82	11
Medium	8	89	3
Large	11	89	—
All mills	8	84	8

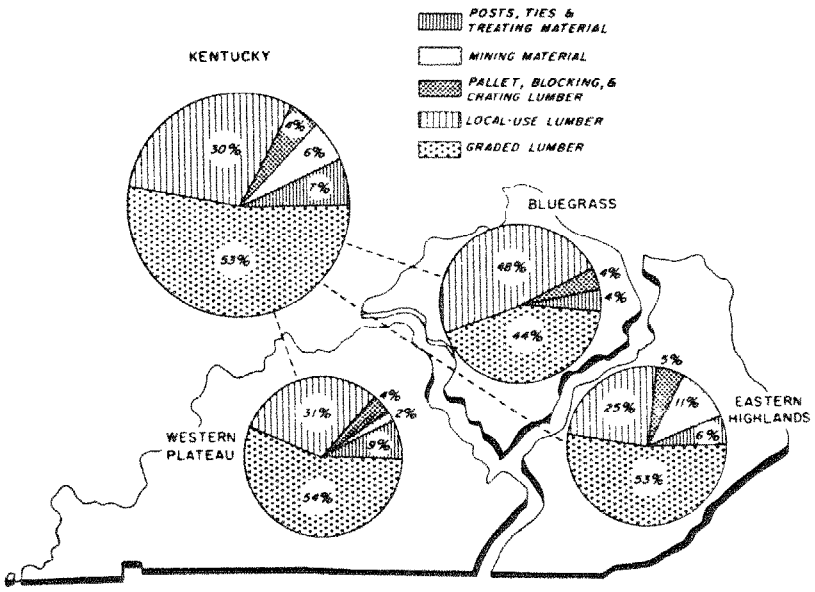


Figure 5.—Percent of sawmill firms according to principal income product, by regions and State, 1962.

two regions of the State. Income from production of mining material played a more important role in the Eastern Highlands, as did incomes from posts, poles, and treating material in the Western Plateau.

As expected, more of the larger mills produced graded lumber and pallet, blocking, and crating lumber than did smaller mills, which mainly produced local-use lumber (fig. 6). About the same portion of small and medium sawmills produced mining material; but as with posts, ties, and treating material, there was little direct relationship to mill size. For these products, the local demand situation was of greater influence than mill size.

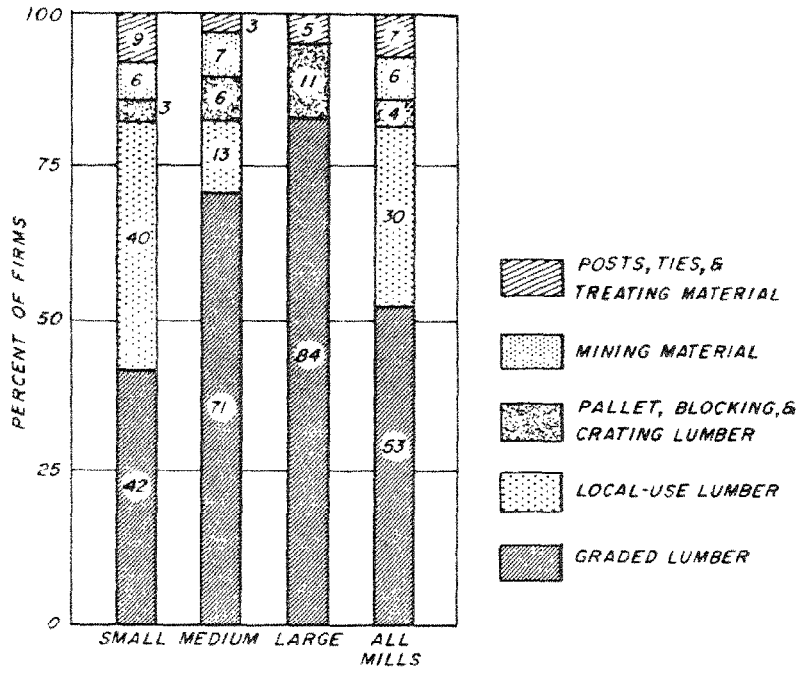
SAWMILL RESIDUES

Kentucky's sawmills utilized 40 percent of their mill residues (slabs, edgings, and trim waste). Some of this material was used for fuelwood, some for conversion into wood chips, and some for

miscellaneous uses such as mulch and fuel for tobacco-bed burning (fig. 7).

Utilization of sawmill residues depended largely upon local demand for such material and the size of the sawmill. Operators of small portable sawmills located on timber-sale areas had little opportunity to utilize residues profitably. Preventing the accumulation of wood waste from interfering with the mill operation was often their main concern. Furthermore, ease of public access to a sawmill appeared to influence consumption of wood residue for fuel and other local uses. Accordingly use of fuel wood and other local products was proportionately greater in the Bluegrass and Western Plateau regions, where sawmills are more accessible than in the Eastern Highlands. Wood chips were the main use for mill residue in the Eastern Highlands region, where the smallest proportion of sawmill residue was used.

Figure 6.—Sawmills classified by major income product according to mill size-class, 1962.



LUMBER MARKETING

Lumber output can be separated into (1) nonmarket production and (2) market production. Nonmarket production is lumber produced by the sawmill operator for his own use, or lumber that is custom sawed. These production activities involve no change in ownership of the lumber.

Ninety-four percent of all lumber produced in Kentucky in 1962 entered market outlets. This high proportion reflects the influence of the medium and large mills, which produced most of the State's lumber and placed almost all their lumber on the market (fig. 8).

Nonmarket lumber production was greatest in the Bluegrass region, where it accounted for almost one-fifth of the annual lumber output—reflecting the region's large proportion of small sawmills doing custom sawing primarily. In the Western Plateau and Eastern Highlands, nonmarket production represented only about 6 percent of total lumber output.

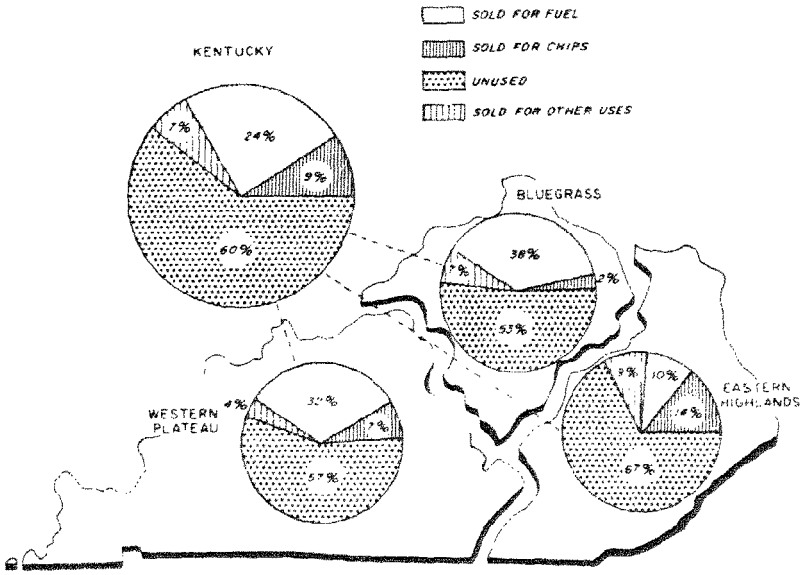
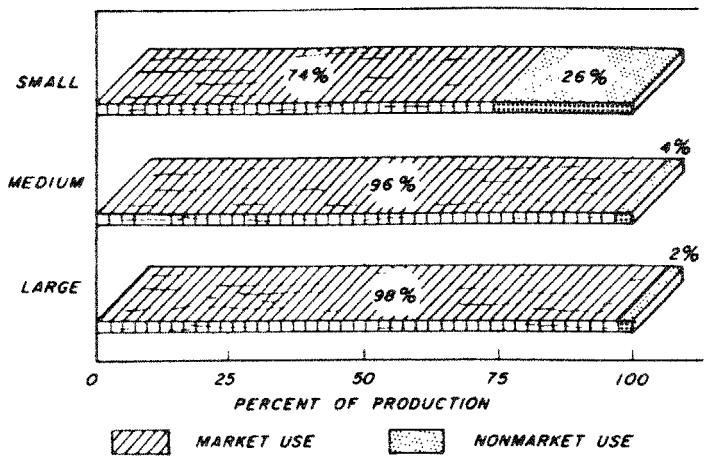


Figure 7.—Percent of sawmill residues utilized, by region and State, 1962.

Figure 8.—Percent of lumber production going to market and nonmarket use, by sawmill size-class, 1962.



CONCLUSIONS

If present trends continue, the number of small sawmills can be expected to decline. But continued demand for custom sawing suggests that they will not all disappear.

This predicted decline in the number of mills does not imply a decrease in Kentucky's lumber output. Rather, it suggests that the same amount or more lumber will come from fewer but larger firms. If this happens it is also likely that:

- Raw-material procurement will be feasible in areas more distant from sawmills.
- The amount of timberland owned by individual sawmill operators, as well as the number of sawmill operators owning timberland, will increase.
- The production of graded lumber will increase.
- Diversification into further manufacture and specialized products will increase.
- More sawmill residues will be used.

Such changes could lead to the growth of Kentucky's lumber industry and thus its entire economy.

Acknowledgment

THIS publication is based on data from a statewide timber utilization survey in 1962, conducted by the Kentucky Division of Forestry in cooperation with the former Central States Forest Experiment Station, U. S. Forest Service. All primary timber-product users in Kentucky were contacted by mail survey and by personal interview where necessary. Appreciation is expressed to the personnel of the Division of Forestry, Kentucky Department of Natural Resources, for collection of the data.