

MARKETING POSTS, POLES AND PILING
IN THE NORTH CENTRAL REGION

Thesis for the Degree of M. S.
MICHIGAN STATE UNIVERSITY
Robert S. Manthy
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ABSTRACT

MARKETING POSTS, POLES AND PILING

IN THE NORTH CENTRAL REGION

by Robert S. Manthy

This report is an analysis of the marketing of posts, poles and piling in selected areas of the North Central region. It is based on a portion of the field data collected during the year 1960 for the North Central Regional Research Project NCM-27, "Timber Products Marketing in Selected Areas of the North Central Region."

Study areas were selected in nine cooperating states -- Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Ohio and Wisconsin -- to cover an area of active timber production. Detailed interviews were held with representatives of firms at three levels of the marketing chain -- producer, intermediate agent and primary manufacturer.

Data collected, due to the variable importance of posts, poles and piling production and the accidents of area sampling within states, do not permit a thorough region-wide analysis. Cedar posts and poles in the Lake States are treated as one industry group. Pine posts and poles in Missouri and Illinois are treated as a second industry group. A third group includes locust posts and oak or pine highway posts in Ohio. Piling can be discussed only for the region as a whole.

The cedar post and pole industry is highly competitive. Large numbers of producers, most of them unspecialized; the mixing of marketing roles; the lack of preservative treatment; and the wide variations in channeling wood from producer to final consumer combine to deny strong market control to any group involved in marketing cedar.

ROBERT S. MANTHY

Producers sell largely to dealers and to retailers. Dealers sell to secondary intermediate market agents (wholesalers), retailers and to various manufacturers, mainly fence companies.

The market outlets available to individual producers and intermediate market agents strongly affect opportunities for profitable operations. Producers selling to dealers or primary manufacturers cover their costs of operation but get little return for risk and profit. Similarly, dealers do not realize a substantial profit from sales to manufacturers or other intermediate agents. In general, profits are increased by sales made closer to the consumer stage.

Pine is the major post and pole species handled in the Missouri and Illinois study areas. Production is centered in Missouri, but wood preservation plants to which wood moves are located in other states as well as Missouri. Illinois plants receive much of the Missouri posts and poles output, but draw substantial amounts of their wood supply from other states. All pine posts and poles are treated at wood preservation plants.

Since all posts and poles are sold to treating plants, either directly by producers or through intermediate market agents, treating plants are a strong force in setting market prices for posts and poles.

The fact that dealers do not receive price recognition for their services indicates their weakness in competition with larger producers who sell directly to wood preservation plants. However, dealers perform a needed service for small local producers by concentrating posts and poles, peeling the bark, and locating treating plant outlets.

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The marketing chain for locust fence posts in Ohio is similar to that of cedar in the Lake States. Both dealers and producers sell to "roving post buyers" and farmers. As in the pine and cedar post industries, services performed by dealers are more valuable to producers than to consumers.

Highway post marketing in Ohio somewhat parallels that of pine in Missouri and Illinois -- highway posts pass through treating plants before reaching consumers. In Ohio, however, producers generally sell directly to treating plants.

The marketing chain for piling produced within the region is relatively short. Intermediate market agents are uncommon and producers and wood preservation plants generally handle piling only to fill special orders.

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by

Robert S. Manthy

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FOREWORD

This report is based on a portion of the field data collected during the year 1960 by the North Central Regional Technical Committee as part of the Cooperative Regional Research Project, NCM-27, "Timber Products Marketing in Selected Areas of the North Central Region."

Nine state agricultural experiment stations -- Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Ohio, and Wisconsin -- participated in the project. The Central States Forest Experiment Station and the Lake States Forest Experiment Station of the U. S. Forest Service cooperated.

The project was supported in part by regional funds provided under Title I, section 9b3, of the Bankhead-Jones Act, as amended August 14, 1946, and the Hatch Act, as amended August 11, 1955.

Objectives of the regional project are as follows: (1) To evaluate how effectively present marketing practices reflect wood-use demands backward to wood processors and timber producers, and producers' supplies forward to primary manufacturers or concentrators; (2) to determine the costs and margins of moving forest products from the woods to primary manufacturers or concentrators; and (3) to determine the changes in marketing practices which might raise marketing efficiencies and strengthen working relations among landowners, producers, processors and market agents.

In carrying out the project objectives, the cooperating states followed a uniform approach. Localized study areas were selected in each state. Standardized interview schedules were developed for use at each market stage considered in the study -- producer, intermediate market

agent, and primary manufacturer. Definitions and procedures including sampling were standardized. Agreement was reached to obtain regional coverage of the following wood-products industries; lumber, face veneer, container veneer, cooperage, wood pulp, and posts, poles and piling.

This report is limited to an analysis of posts, poles and piling.

The author wishes to express his gratitude to the members of the North Central Region Technical Committee who contributed the field data used in this report. The writer is particularly indebted to Dr. Lee M. James for the immeasurable amounts of encouragement, advice and guidance given so freely during the preparation of this manuscript. The writer also wishes to thank his wife, Carol, for her help in the preparation of this report and for her seemingly endless patience.

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MARKETING POSTS, POLES AND PILING

IN THE NORTH CENTRAL REGION

INTRODUCTION

Posts, poles and piling are a minor product group in the perspective of total timber products, but they do have importance in localized forest areas and timber types. Within the North Central region, posts, poles and piling account for some 5 percent of total timber-products output (as compared to less than 3 percent nationally).

Distinctions among posts, poles and piling are not always easy to draw. These products are distinguished partly by use and partly by size. Posts and poles are placed only far enough into the ground to give them stability. Posts are associated mainly with the construction of fences; poles, with the support of power, telephone and telegraph lines.

In terms of size, posts are smaller than poles. Post sizes range from 4 to 10 inches in diameter at the small end and from 6 to 9 feet in length. Poles range upward in size from 4 inches in diameter and 10 feet in length. Piling is similar to poles in size, but differs in use. Piling is driven deep into the earth and used to support structures such as buildings, piers, breakwaters, dams, bridges, jetties and channel control works.

Posts and poles are treated together in this study, partly because the volume of poles produced in the North Central region is negligible alongside the volume of posts, and partly because there is no basic distinction between producers of posts and poles within the region or in marketing procedures. Piling lends itself to separate treatment and is discussed as a distinct product.

Study Areas

Study areas were delineated within each state participating in the regional project (Figure 1). They were selected, not to provide a statistical sampling of the region as a whole, but to provide coverage in each state of an area of active timber production. Attention was given to scattering the study areas so that a diversity of market conditions would be sampled.

Boundary lines of study areas were not considered to be rigid. Market agents outside the delineated areas were included in the sampling when their activities were found to be heavily influenced by marketing within a study area or if they, in turn, exerted a substantial influence on marketing activities within a study area.

Procedure

Detailed interviews were held in 1960 with representatives of firms at three levels of the marketing chain -- producer, intermediate market agent, and primary manufacturer. Interview schedules were standardized for each market level, and identical schedules were used in all states. Interest was focused on data for the year 1959.

A 100-percent sample of primary manufacturers and intermediate market agents was sought. In the case of producers, the objective was more variable and it was affected by the product under investigation. For posts, poles and piling, producers were sampled in each study area only to the extent that the investigator felt was necessary for a reasonable cross-section of producers.

Problems of definition required arbitrary decisions. Agreement was reached as to the distinctions among producer, intermediate market

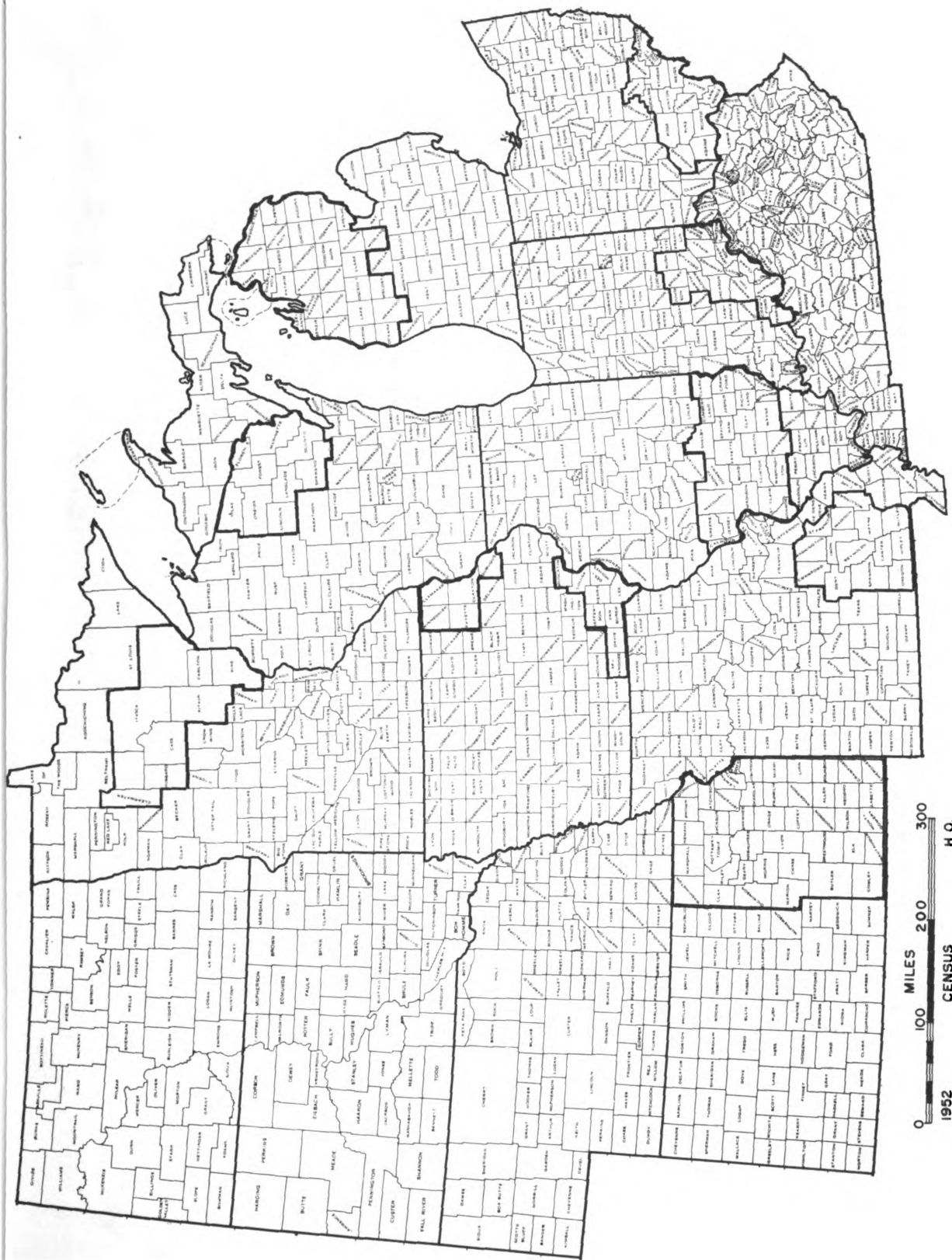


Figure 1. Location of study areas in the North Central Region.

agent and primary manufacturer, and the treatment of firms which exercised more than one role in the market.

A producer was defined as an individual (or firm) who harvests purchased stumpage or stumpage from his own land and sells the cut product roadside or delivered to a designated point without substantially changing its form. For posts, poles and piling, bark peeling or modification of shape by sawing would not be considered a substantial change of the round product.

Two types of intermediate market agents were recognized. These were first- and second-stage intermediate market agents. Few active second-stage intermediate market agents handling posts, poles or piling were found within the region.

A first-stage intermediate market agent was defined as an individual (or firm) who purchases cut products from a producer and sells them without substantially changing their form. For posts, poles and piling, the products purchased may be round or sawed; bark peeling, or modification of shape by sawing, would not be considered a substantial change of form. These firms sell their products to second-stage intermediate agents, primary manufacturers, retailers or consumers. First-stage intermediate agents are referred to as "dealers" in the post, pole and piling industries.

Second-stage intermediage market agents are individuals (or firms) who purchase products from other intermediate market agents and sell to retailers, primary manufacturers or consumers.

A primary manufacturer or processor was defined as a firm that sells its products only after performing some type of processing operation which substantially changes their original form. Wood preservation

plants usually constitute the primary stage of manufacture for posts, poles and piling.

Only one type of dual role was associated with interviewed market agents in the posts, poles and piling industries. Many of the sampled producers of posts and poles also act as dealers. These "producer-dealers" purchase cut products from other independent producers and sell these products along with material that they have harvested as producers. Producer-dealers were interviewed both as producers and as dealers.

For example, a firm purchasing 1,000 posts as a dealer and harvesting 2,000 posts from his own or purchased stumpage was sampled both as a producer and as a dealer. The firm would be recorded as a dealer in regard to its activities associated with the purchase and sale of the 1,000 cut posts. The firm would also be recorded as a producer in regard to its activities associated with the 2,000 posts harvested from stumpage.

Primary manufacturers were not classified as producers of the product they process if they obtained their raw material by harvesting their own or purchased stumpage.

Sample Size

Table 1 shows the total regional sample of firms handling posts, poles and piling. Fourteen treating plants -- representing about 26 percent of the treating plants operating within the North Central region -- were interviewed. These plants treated approximately 59 percent of the posts, 20 percent of the poles, and 12 percent of all the piling treated in the region in 1959.¹

¹Merrick, Gordon D. Wood preservation statistics, 1959 (U.S. Forest Service, 1960), p. 9.

Table 1. Total regional sample of firms handling posts, poles and piling, by states and market role, 1959.

State	Primary manufacturer	Dealer	Producer	Producer- dealer
Wisconsin	1	5	7	2
Michigan	4 ^a	5	16	5
Minnesota	2	1	6	
Ohio	4	5	16	1
Indiana				
Illinois	3		1	
Missouri	3	2	7	3
Kansas			2	
Iowa			3	
	—	—	—	—
Total	17	18	58	11

^aOnly one wood preservation plant, which is the type of firm recognized as a primary manufacturer in the posts, poles and piling industries, was located in the Michigan study area. Three fence companies, which are a market for Michigan cedar posts, were sampled as a special case of primary manufacturer.

Eighteen dealers, 56 producers and 11 producer-dealers were interviewed. By separating producer from dealer activities, it was possible to add the 11 producer-dealers to both the producer and dealer samples.

Table 1 is a composite of all interviewed firms handling posts, poles and piling. It makes no distinctions as to geographic and species groupings within the overall industry, but these distinctions will be made in subsequent analysis.

Although posts and poles are discussed together, they cannot be viewed as uniform products throughout the region. Geographic differences and species distinctions which affect the need for preservative treatment make it desirable to consider several market groupings separately. One grouping is that of cedar posts and poles in the Lake States. A second group is that of pine posts and poles in Missouri and Illinois. A third group includes locust fence posts and oak or pine highway posts in Ohio. Other possible groupings of species and locations which might deserve coverage in a study blanketing the region did not come under scrutiny because of the accidents of sampling -- only a portion of each state was sampled.

REVIEW OF THE LITERATURE

Research in the marketing of forest products has generally taken one of three broad forms. These are: (1) a description of the marketing of a particular commodity in which the movement of the commodity in question is followed from the stump to the primary or final consumer; (2) a general description of the markets for and the marketing chains of a number of products, usually within a given geographic area; and (3) a description of one of the marketing institutions operating within the marketing chain for one or more commodities.

Marketing research in posts, poles and piling has generally been confined to the first two of the above classes. Few publications, however, have been devoted exclusively to a description of the marketing system for posts, poles and piling. Most of the research in the marketing of these products occurs in general descriptions of the markets and marketing of forest products within a particular geographic area.

The first portion of this literature review will be concerned with research in the marketing of posts, poles and piling in the United States. A review of the literature concerned with general descriptions of the marketing of a number of forest products (including posts, poles and piling) within the North Central region will follow.

Marketing of Posts, Poles and Piling

An early attempt to describe the marketing of poles and piling within a given area was made in central North Carolina.¹ The objective

¹Brabec, Joe M. Production and marketing of poles and piling for preservation treatment from central North Carolina (unpublished Master's thesis, Duke University, Durham, 1941), 48 pp.

of this study was to describe the methods of production and the marketing of southern pine poles and piling. It was shown that most forest landowners in central North Carolina were unfamiliar with potential markets for pine stumpage as poles and piling. Buyers were usually forced to assume the initiative in locating suitable stumpage for poles and piling and often acted as an intermediate between landowners and producers.

A more recent study by Ostrander describes the production and marketing of poles and piling in the Northeast.¹ The author shows that northeastern piling producers are generally part-time operators who cut piling only as a sideline; usually to fill special orders. Two types of pole producers are found in the northeast -- small, year-round producers and seasonal producers who harvest large numbers of poles during the winter months.

Ostrander also found that market agents handling poles generally maintain sizeable inventories of this product; market agents handling piling do not accumulate inventories. Piling is not stock-piled for several reasons, including: (1) market agents' desires to keep handling costs to a minimum; (2) the unsteady market for piling that varies with construction and building activity; (3) the specific species and size requirements of most buyers; and (4) the fact that many users of untreated piling prefer piling to be driven when green.

Two studies conducted by the United States Steel Corporation, one concerning the marketing, and the other, the merchandising, of

¹Ostrander, Myron D. Production and marketing of wood piling and poles in the Northeast (Northeastern Forest Experiment Station, Station Paper 52, 1953), 23 pp.

pressure-creosoted posts have been described by Reynolds.¹ The marketing study was designed to estimate and evaluate the size and location of the wooden fence post market in the United States. Basic information was obtained from questionnaires sent to state extension foresters in the 48 states.

Some general conclusions reached by this study were: (1) fence posts are the fifth most important use of wood in the United States; (2) approximately 260 million wood fence posts are used annually; (3) total post production and consumption are approximately equal, with the South being the only net exporting region; and (4) the South and states bordering the Great Lakes appear to show the greatest potential for future sales.

The merchandising study, designed to evaluate opportunities to sell preserved wood posts, took the form of a field survey in the 28 states east of the Rocky Mountains. These states consume approximately 90 percent of total national post production. Interviews were conducted with hardware and lumber associations, extension foresters, agricultural engineers, agricultural economists and others. Data concerning farm income, number of farms, type of farming practiced, post consumption, types of posts available and distribution outlets were obtained.

State summaries of merchandising opportunities were prepared for each of the survey states and were divided into three areas -- northern, southern, and central. Merchandising conditions in the southern area, represented by Texas and the Gulf and Atlantic Coastal Plains, were

¹Reynolds, Frank L. The farm market for pressure-creosoted wood (Proceedings, American Wood-Preservers' Association 1954), pp. 247-250.

judged to be fair. Merchandising conditions in the northern area, bounded by northern Texas, Oklahoma, Kansas, the Dakotas and the Prairie States, were classified as good; those in the central states were classed poor.

In 1951 Quigley and Clark investigated the potential markets for fence posts in the cornbelt areas of Missouri, Kansas, Nebraska and Southern Ohio.¹ This study concluded that the demand for treated fence posts in northern Missouri and the other cornbelt areas was increasing. It was suggested that pine timber in the Missouri Ozarks could profitably be used to supply these growing needs.

In a later study Quigley pointed out that some 5½ million posts could be harvested annually in thinning operations on the 3 million acres of pine in the Missouri Ozarks.² In 1955 Quigley and Nelson reported that some 2½ million fence posts and 25,000 poles were produced in Missouri in 1954 and that 16 post concentration yards were operating in the Ozarks.³ It was also shown that approximately 75 percent of the treated posts produced in the Missouri Ozarks were distributed in Illinois, Iowa, Indiana, Kansas, Nebraska, and Oklahoma.

¹Quigley, Kenneth L. and Clark, F. B. Fence posts, a potential market for Missouri pine timber (Missouri State Division of Resources and Development, 1951), 14 pp.

²Quigley, Kenneth L. Pine resources in the Missouri Ozarks (Missouri State Division of Resources and Development, 1952), 17 pp.

³Quigley, Kenneth L. and Rogers, Nelson F. Teamwork builds post and pole industry in Missouri Ozark pine forests, (Wood Preservation News 33: 11, pp. 10-11, 1955).

Incidental Studies of Posts, Poles and Piling Marketing

Data describing the forest resources, production statistics and markets for forest products have been published in each of the 9 states within the North Central region. Most of these have been primarily concerned with timber resources and forest landownership patterns.

Reports based upon forest surveys carried out by the Lake States and Central States Forest Experiment Stations generally include short descriptions of the production and markets for forest products.

A report on Michigan's forest resources shows that approximately 85 percent of the posts produced in Michigan are cedar; a large portion of these go into rustic fences.¹ In a study of Wisconsin's forest resources, Stone and Thorne report that the production of posts, poles and piling have declined since 1940.² The increasing use of steel, the trend toward larger farm fields and the use of electric fences are cited as factors contributing to the reduction in post production. Similar reasons are cited for a downward production trend in Minnesota.³

¹Findell, Virgil E. et al. Michigan's forest resources (Lake States Forest Experiment Station, Station Paper 82, 1960), 46 pp.

²Stone, Robert N. and Thorne, Harry W. Wisconsin's forest resources (Lake States Forest Experiment Station, Station Paper 90, 1961), 52 pp.

³Cunningham, R. N. et al. Minnesota's forest resources (Lake States Forest Experiment Station, Forest Resource Report 13, 1958), 52 pp.

Other reports have been prepared for Indiana,¹ Illinois,² Iowa,³ and Missouri.⁴ Poles and piling were not produced or were produced in insignificant numbers at the time of these reports. Posts were also considered as minor products. Most of these reports indicate that posts are usually harvested by farmers for their own use.

State agricultural experiment stations and the U.S. Forest Service experiment stations within the North Central region have also been interested in the marketing problems encountered by farm woodland owners.

A study conducted by Hutchinson and Winters showed that no established market exists for poles and piling produced on southern Illinois farms.⁵ Posts are generally produced by farmers for their own use. Similar results were reported in studies of the marketing of farm woodland

¹Hutchison, O. Keith. Indiana's forest resources and industries (Central States Forest Experiment Station, Forest Resources Report 10, 1956), 21 pp.

²King, D. B. and Winters, R. K. Forest resources and industries of Illinois (Central States Forest Experiment Station, Bulletin 562, 1952), 95 pp.

³Thornton, Philip L. and Morgan, James T. The forest resources of Iowa (Central States Forest Experiment Station, Forest Survey Release 22, 1959), 46 pp.

⁴King, D. B. et al. Forest resources and industries of Missouri (Central States Forest Experiment Station, Research Bulletin 452, 1949), 89 pp.

⁵Hutchison, Keith O. and Winters, Robert K. Marketing the farm forest products of southern Illinois (Central States Forest Experiment Station, Technical Paper 123, 1951), 39 pp.

products in Iowa,¹ southern Ohio² and the Missouri Ozarks.³

Neetzel's study of the use of native woods and other building materials on southern Minnesota farms describes the farm post market in somewhat more detail.⁴ Most of the posts sold in southern Minnesota are shipped in from other areas. Neetzel explains that before 1940 posts were one of the most important products of farm woodlots. By 1940, however, naturally durable post species had been cut over and farmers began purchasing steel posts. The author concludes that the habitual use of steel posts by farmers, combined with a reduced demand, have limited the market for posts from farm woodlands.

¹Quigley, Kenneth L. and Yoho, James G. Marketing timber from Iowa farm woodlands (Iowa State College Cooperative Extension Service, F-122, 1957), 8 pp.

²Turner, Michael S. and Mitchell, Glen H. Farmer marketing of timber in eight southeastern Ohio counties (Ohio Agricultural Experiment Station, A.E. 316, 1950), 23 pp.

³Quigley, Kenneth L. Marketing farm woodland products in the Missouri Ozarks (Central States Forest Experiment Station, Technical Paper 116, 1950), 41 pp.

⁴Neetzel, John R. A survey of the use of native woods and other building materials on southern Minnesota farms (Lake States Forest Experiment Station, Miscellaneous Report 12, 1950), 29 pp.

PRODUCTION TRENDS

The volume of poles and piling produced in the North Central region has long lagged far behind the volume of posts produced. In 1958, for example, 38.5 million posts were produced in the region as compared to 294,000 poles and 25,000 pieces of piling.

Posts

The total number of posts produced within the North Central region has declined from over 66 million posts in 1950 to less than 39 million posts in 1958. A decline in total farm demand plus the increased use of steel, concrete and other competing materials for posts have contributed to this drop in output.

The trend toward larger farms, modern farming methods and rotation of field crops requires periodic moving of fences. Because of the ease with which steel posts can be driven, pulled and wired, many farmers prefer this type of fence post for temporary fences. The increased use of electric fencing and the decreased use of horses have also led to a reduction in farm demand for posts.¹

Only one state within the North Central region -- Missouri -- has experienced an increase in post production over the past decade. Total production has increased by more than 2 million posts from 1950 to 1958 (Table 2). This increase in output reflects mainly an increased demand for Missouri shortleaf pine wood by preservation plants within and adjacent to the region.

¹Neetzel, op. cit., p. 11.

Table 2. Estimated post production in the Central States, for selected years, 1950-58.

Year	Missouri	Illinois	Ohio	Indiana	Iowa	Kansas
(millions)						
1950	14.0	8.0	9.0	4.3	5.0	a
1953	14.0	5.0	4.6	4.4	2.4	a
1958	16.3	2.5	3.5	3.6	1.2	a

^aNegligible.

Sources; 1950 and 1953 data from numerous Forest Service and Agriculture Experiment Station reports. 1958 data are unofficial estimates.

Post production in the Lake States, with the exception of 1949, shows little trend from 1946 to 1952 (Figure 2). Since 1954 the general trend has been downward. Michigan post production has declined steadily from 9 1/2 million posts in 1952 to approximately 3 million posts in 1959. Minnesota post production began a similar downward trend in 1954. Post production in Wisconsin decreased gradually from 1946 to 1952, then rose slightly until 1956, and declined abruptly from 1956 to 1959.

Poles

Significant numbers of poles are produced in only four states within the North Central region -- Missouri, Wisconsin, Minnesota and Michigan. Pole production did not come into its own in Missouri until 1950;¹ poles have been produced in the Lake States for more than 20

¹Quigley and Rogers, op. cit., p. 10.

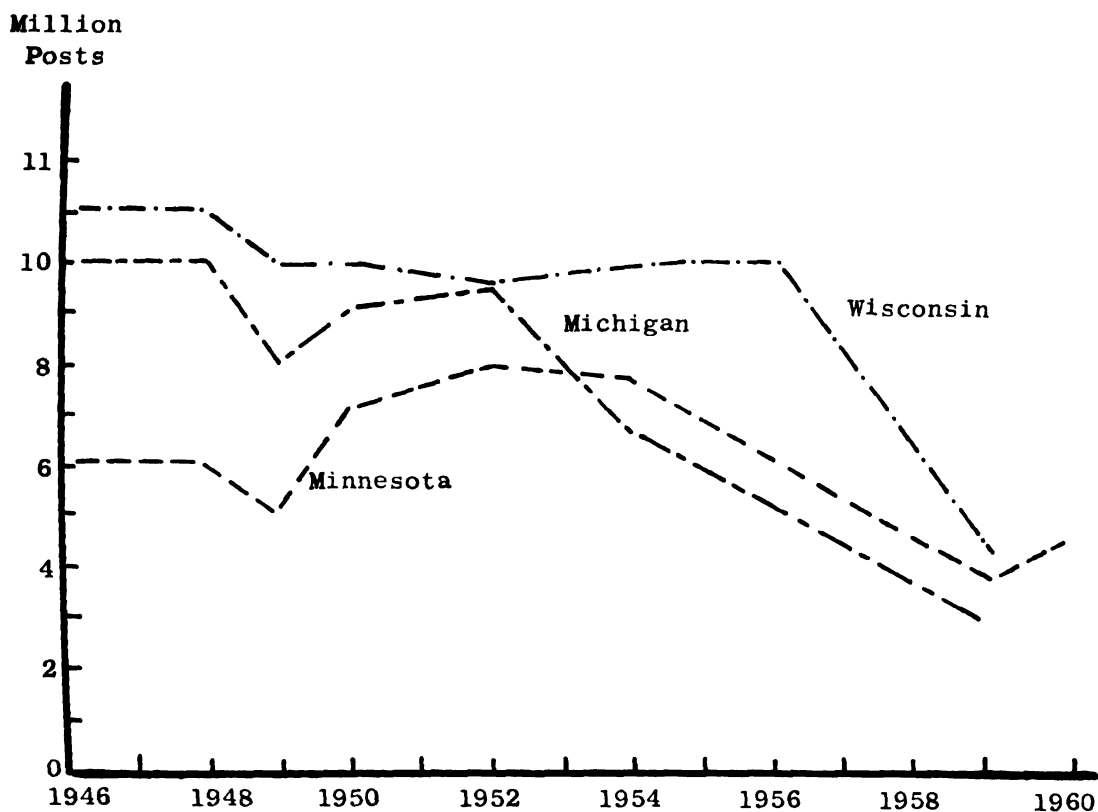


Figure 2. Lake States fence post production, 1946-1959. (Source: Data for 1946-1950 based on Lake States Forest Experiment Station reports. Data for subsequent years based on trends in farm fence post production shown by censuses of agriculture.)

years. Total pole production within the North Central region in 1958 was approximately 185 percent greater than 1950 output.

Shortly after the end of World War II, regional pole production declined rapidly until 1950 (Figure 3). From 1950 to 1956 pole production in Michigan, Wisconsin and Missouri remained relatively stable. The general acceptance and expanding use of pole-type building for farm and commercial use provided pole producers with a new and expanding market in recent years.¹

In 1956 Minnesota, the most important pole-producing state within the North Central region, increased its production substantially. Similar but less pronounced increases in production occurred in Wisconsin, Missouri and Michigan.

Piling

Figure 4 shows the production of piling within the Lake States from 1946 to 1960. Statistical data showing annual production of piling are not available for the Central States. Illinois produced an estimated 320,000 linear feet of piling in 1958, but only small amounts of piling are produced in Missouri, Ohio, Indiana, Iowa and Kansas. Most of the piling used in these states is imported from the South.

¹Essex, Burton L. Production of miscellaneous timber products -- Lake States, 1958 (Lake States Forest Experiment Station, Technical Note 573, 1959), p. 1.

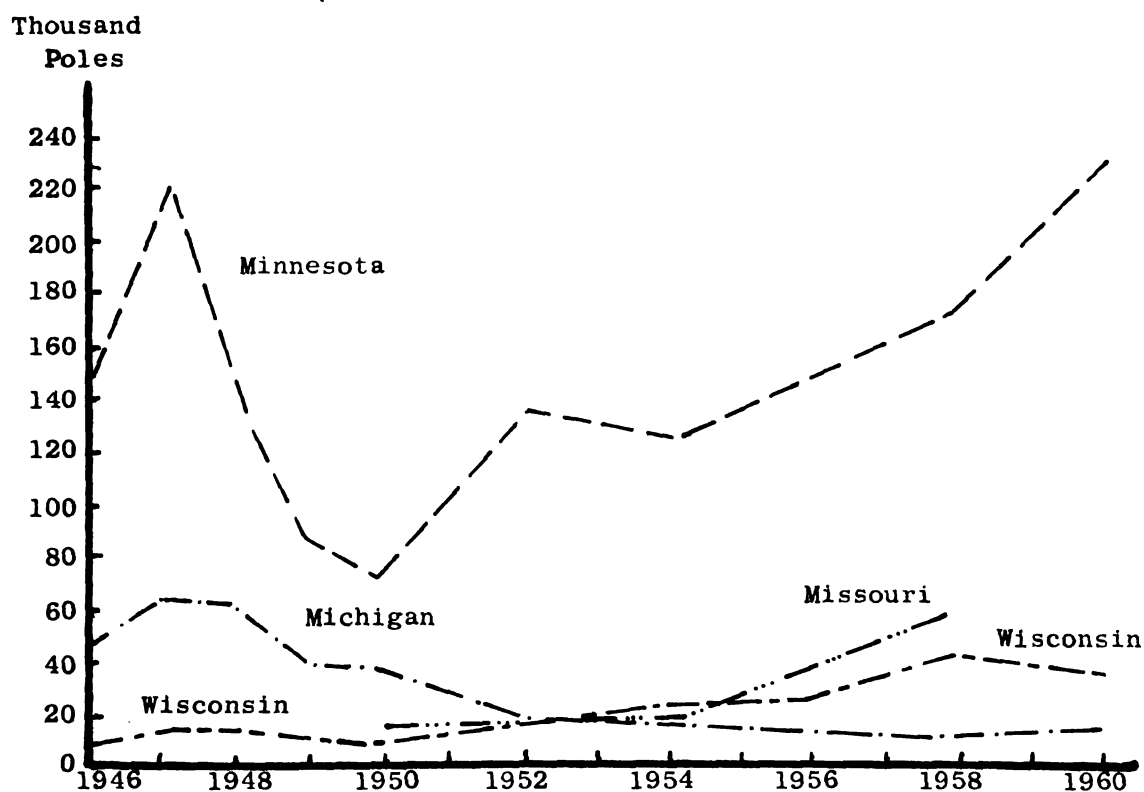


Figure 3. Pole production in the North Central region, by states, 1946-1960. (Source: Lake States Forest Experiment Station reports.)

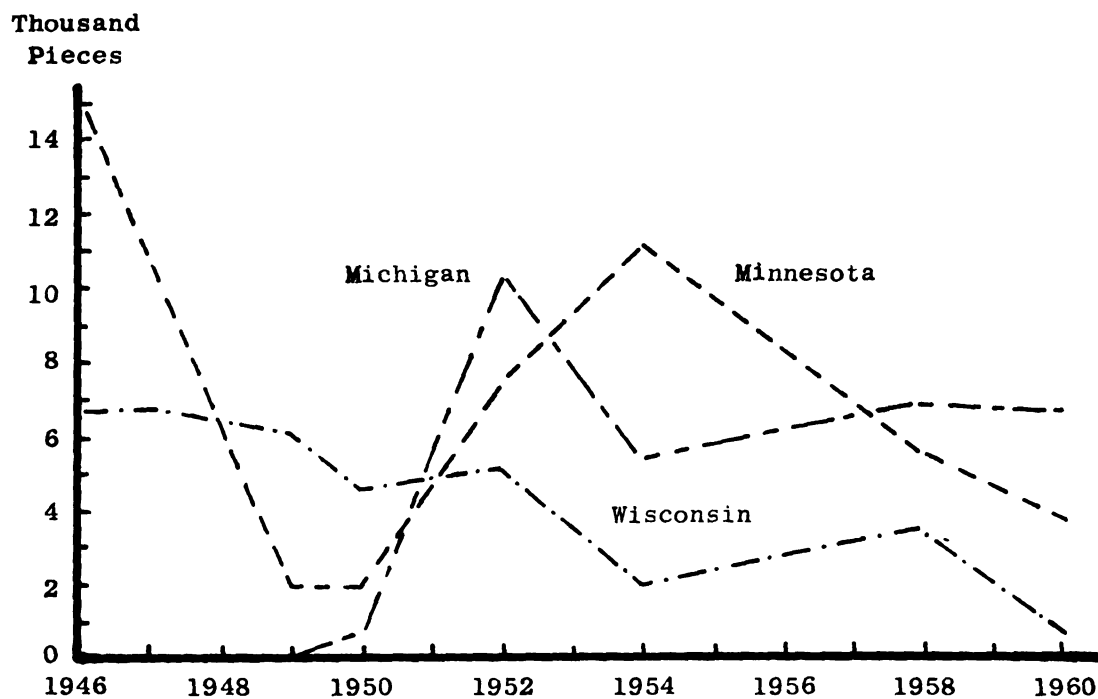


Figure 4. Lake States piling production, 1946-1960. (Source: Lake States Forest Experiment Station reports.)

Preservative Treatment of Posts, Poles and Piling

Post production in the North Central region is not closely tied to the wood preservation industry. Only about 10 percent of the posts produced in the region receive some type of preservative treatment before use. Moreover, many of the posts treated within the region are imported from the South and West.

Wood preservation statistics show that the North Central region is a net importer of poles and piling. In 1950, for example, wood preservation plants within the region treated about seven times the poles produced within the region. Since 1950 the trend has been toward the preservation of locally produced poles although most poles are still imported. In 1959, about 3 times as many poles were treated within the region as were produced; most of these poles came from the South and West.

The North Central region is also a net importer of piling. Generally treating plants in the region handle 2-1/2 to 3 times as many pieces of piling as are produced within the region. From 1946 to 1959 there has been a gradual increase in the volume of piling treated within the region (Figure 5).

Comparing Figure 5 with Figure 4, it can be seen that the total volume of piling produced within the region shows much greater annual variation than does the volumes of piling treated within the region. Apparently, piling imported from other areas and treated within the region provides users with the bulk of their requirements. When the demand for piling is higher than normal, local production increases rapidly. Conversely, a downward trend in construction activity is reflected in an abrupt decline in local production but affects regional preservation of imported piling only slightly.



Figure 5. Piling treated at wood preservation plants in the North Central region, 1946-1960. (Source: American Wood Preservers' Association reports.)

CEDAR POSTS AND POLES IN THE LAKE STATES

The northern white-cedar post and pole industry, like most forest industries, is oriented to raw materials. Northern white-cedar (Thuja occidentalis L.), occurs in three of the states in the study area: Michigan, Wisconsin, and Minnesota. In Michigan and Wisconsin this is the major post species. In Minnesota, however, oak, tamarack, pine and other species are more important.

Although total Lake States post production has fallen rather steadily since 1945, cedar post production in Wisconsin and Michigan has been somewhat more stable. The decline in farm demand for this species has been largely offset by an increased nonfarm demand. The increased demand for cedar rustic fencing and outdoor furniture coupled with accelerated highway and park construction programs have provided new and larger markets for cedar post producers.¹

Local consuming units utilize only a small portion of the posts produced in the northern Lake States. After concentration, most of the posts cut by firms within the Michigan, Wisconsin, and Minnesota study areas are sold to users in other parts of these states or in adjoining states.

Three firms manufacturing rustic cedar fences were sampled -- all in Michigan. These firms are located in areas where large volumes of cedar are produced. Thus, in Michigan, a much larger percentage of the posts produced is consumed locally. These fence manufacturers provide a market for large volumes of pickets -- cedar posts under 4 inches in diameter at the small end -- as well as a market for conventional cedar posts.

¹Stone and Thorne, op. cit. p. 24.

Cedar pole production has declined to a fairly low level in the Lake States. Old growth northern white-cedar with a large proportion of heartwood is an exceedingly durable pole species. However, as old-growth cedar has been replaced by second-growth, this species has become less desirable for poles. Second growth cedar has a much larger ratio of sapwood to heartwood, and it is considerably less durable than old-growth cedar. Many of the markets once open to cedar poles have been filled by treated pine poles.

The activities of producers are heavily weighted toward posts. Only 3 of the 31 producers interviewed cut poles. In each case the number of poles produced was negligible. Two of the pole producers were located in Minnesota; together they produced only 300 poles. The remaining firm cutting poles was located in Michigan; this firm cut only 25 poles.

Similarly, the dealers sampled handled few cedar poles. Two of the 18 dealers sampled handled a total of 8,300 poles, 0.5 percent of the number of posts (1,667,000) handled by these same firms.

Producers

The sample of cedar post and pole producers interviewed included 31 firms -- 19 in Michigan, 9 in Wisconsin, and 3 in Minnesota. Although the Minnesota sample is small, these firms operate in essentially the same manner as firms of similar size in Michigan and Wisconsin.

The 19 producers sampled in Michigan produced 333,700 cedar posts, 11 percent of the total number of posts produced in the state in 1959. The 9 Wisconsin producers interviewed cut 121,700 cedar posts, 3 percent of the posts produced in that state. The 3 producers interviewed in Minnesota produced 5,700 cedar posts in 1959, a negligible portion of the state's output.

Characteristics of Producers

Cedar post producers are a heterogeneous group. Some of them are full-time cedar producers. Some are seasonal woods workers who cut cedar during the winter months. Others are full-time timber producers who cut posts only when the demand for their other products has slackened off. Still others are timber producers who never concentrate on cedar posts, but they cut cedar when it occurs with other species and products in which they are primarily interested.

Table 3 indicates that relatively few producers account for the major part of post production. In Michigan, for example, three producers cut 82 percent of the posts produced by the 19 interviewed producers. Three Wisconsin firms produced 91 percent of the posts cut by the 9 Wisconsin producers sampled.

The "larger" firms¹ producing cedar posts have been operating their post businesses for an average of 20 years (in contrast to 10 years for smaller firms). These larger firms generally specialize in the production of cedar products as full-time producers. Some of them, particularly in Michigan, also act as dealers who purchase large numbers of cut posts from other producers.

Smaller producers are usually seasonal operators who cut cedar posts in the winter months. Some of those sampled in Wisconsin and Minnesota are full-time timber producers (who cut cedar along with sawlogs or pulpwood in which they are primarily interested), but all of the smaller producers sampled in Michigan are seasonal operators. They are mainly store operators, farmers, sawmill operators, and wage earners.

¹Arbitrarily, "larger" producers will be defined as those producing at least 60,000 posts in Michigan and 25,000 posts in Wisconsin. Only small producers were sampled in Minnesota.

Table 3. Size class of sampled cedar post producers, 1959.

Size class	Number of producers		
	Michigan	Wisconsin	Minnesota
(Number of posts)			
1,000 or less	7	3	2
1,001 - 5,000	6	2	1
5,001 - 10,000	2	1	
10,001 - 25,000	1	1	
25,001 - 50,000		2	
50,001 - 100,000	2		
100,001 or more	1		
	—	—	—
Total	19	9	3

In general, the smaller producers in Michigan handle more posts than the Wisconsin and Minnesota producers. The average number of posts produced in 1959 by the "small" producer was 3,300 in Michigan, 1,800 in Wisconsin and 400 in Minnesota.

Most of the producers sampled hire either full-time or seasonal employees to help them harvest cedar, but because of the seasonal nature of much of the cedar industry, only a small number of employees are full-time workers.

Timber Handled

Cedar post producers are often specialists in producing cedar products. Of the 31 producers sampled, 11 confine their producing activities to cedar.

In Michigan, cedar post producers turn out as many cedar pickets as posts (Table 4). Other timber products are not produced in volume, except pulpwood, but pulpwood is usually the sideline product. The relative emphasis on cedar and on pulpwood production (mainly spruce and fir) depends in part on species associations in areas logged, but it is chiefly related to the size of operations. Larger producers who tend to be specialists in cedar products, cut relatively small amounts of pulpwood. Smaller producers of cedar products are often pulpwood producers who cut cedar incidentally in their pulpwood logging operations.

In Wisconsin and Minnesota, producers of cedar products tend to be mainly pulpwood producers. In these states, cedar is usually the sideline product, cut when it occurs in association with pulpwood species.

Table 4 reflects the output of firms as producers only. Five of the Michigan producers and two of the Wisconsin producers sampled also

Table 4. Timber handled by sampled cedar producers, by state, 1959.

Product	Unit of measure	Michigan	Wisconsin	Minnesota
Cedar posts	Thous. pcs.	333.7	121.7	5.7
Cedar poles	Thous. pcs.	a		.3
Other posts	Thous. pcs.			1.6
Cedar pickets	Thous. pcs.	350.0		
Piling	Thous. lin. ft.		8.0	7.5
Pulpwood	Cords	6,342	8,659	8,800
Veneer logs	Thous. bd. ft.		36	
Sawlogs	Thous. bd. ft.	155	93	3

^aNegligible.

act as dealers who purchase the output of other producers. These cut wood purchases are discussed elsewhere in connection with the activities of intermediate market agents.

Size of Wood Supply Area

The extent of a producer's timbershed is determined by a number of interrelated factors. These include (1) the geographic relationship of the producer's home both to suitable stands of timber and to available markets; (2) the degree of specialization in occupations, market roles, and species and products handled; and (3) the scale of the producer's operations. All of these influence the distance producers must travel to secure adequate amounts of raw material.

The small, seasonal producer of cedar posts does not have a very large timbershed. Generally, his radius of operations is less than 20 miles. Timbersheds of producers who specialize in the production and marketing of cedar as a year-round business and of full-time timber producers cutting a variety of products are much larger, ranging usually between 50 and 100 miles.

Wood Procurement Methods and Policies

Of the 31 cedar post producers interviewed, 7 cut stumpage on their own lands exclusively. These were seasonal workers, usually farmers, who cut small numbers of posts. The remaining 24 producers purchased all or most of the timber they harvested.

Methods of Stumpage Acquisition

About 70 percent of the producers who purchase stumpage report that they initiate their contracts with landowners. Other producers,

especially the larger ones, rely on landowners to initiate some or all of the stumpage contracts.

Most of the firms that initiate stumpage purchases are active in seeking out suitable stands of timber. After a desirable stand of timber is located, the landowner is contacted. This is done both on private and public lands.

Most producers feel that newspaper advertising is a poor method of obtaining stumpage. Only producers handling large volumes of posts report using this method of obtaining stumpage.

Stumpage contracts with private and public landowners are negotiated from a few days to a few years before the beginning of harvest operations. Large producers, who buy stumpage in large tracts, tend to negotiate for stumpage well in advance of harvest operations. Small producers usually negotiate for stumpage less than three months before harvest operations begin.

Only 2 of the 31 producers interviewed in the Lake States reported that they had contracts to sell their product before they made stumpage purchases. Both of these producers were located in Michigan.

Purchase Contracts

Almost all of the cedar posts purchased by producers are obtained under written contracts. Two producers reported relying entirely on oral contracts for stumpage purchases; four others reported making some small use of oral contracts. However, less than 3 percent of all the post stumpage purchases by cedar producers in 1959 was obtained under oral contract (Table 5).

Table 5. Cedar post stumpage purchased by sampled producers in the Lake States, by type of contract, 1959.

Type of contract	Michigan	Wisconsin	Minnesota	Total
(thousand posts)				
Written contract				
Public landowner	81.2	25.0	6.0	112.8
Private landowner	240.3	81.4		321.7
Oral contract	7.6	5.0		12.6
Total	329.1	121.0	6.0	447.1

In discussing the details of stumpage contracts, reference is made only to contracts made by Michigan producers with private landowners. Public stumpage sales are governed by standardized procedures which vary by agency. Contracts made by Wisconsin and Minnesota producers with private landowners were insufficiently covered in interviews to summarize here.

Contracts made by Michigan producers with private landowners usually specify the species, sizes and quality of timber to be cut. Cedar post timber sales usually specify that all cedar will be harvested that will yield a 7-foot stick with a minimum small-end diameter of 4 inches. When harvest is pointed to pickets as well as posts, the stated minimum diameter is usually one inch.

Contracts also specify method of payment. Smaller producers, cutting fewer than 10,000 posts, usually purchase by the piece. Prices are specified for different sizes of posts. Some smaller producers and all of the larger producers purchase cedar stumpage with a lump-sum payment in advance of logging operations.

The length of time in which logging must be completed is nearly always specified in written contracts. Many private landowners also

specify how logging is to be done. Private hunting clubs and some other landowners, for example, insist that cedar stands must be cut in strips.

Subcontracting of Logging and Hauling Operations

About a third of the interviewed cedar producers report that they subcontract some or all of their logging operations. Subcontracting is not common among seasonal producers. It is the full-time producer, handling two or more products, who subcontract logging operations. The usual explanation for such subcontracting is the physical inability to handle the volume of logging required. Only one producer subcontracted logging operations in 1959 because he felt that subcontracting was a cheaper method of harvesting timber.

Subcontracting of hauling operations is uncommon among Lake States cedar producers. Those firms that subcontract hauling operations are usually part-time, small volume timber producers who lack the necessary equipment for hauling posts.

Sales of Posts

The larger producers generally sell cedar posts year-round, but most cedar producers have sales periods which follow their logging operations closely. This means that sales are concentrated in the winter and early spring months. In Minnesota and Wisconsin, sales are largely completed by March; in Michigan, however, sales are concentrated in the period from April to June.

Producers usually make sales to more than one buyer, but in nearly all cases, the sales are made to one type of buyer. Of the 31 producers sampled in 1959, 14 sold to dealers, 5 to manufacturers, 4 to retailers, and 5 to final consumers. In terms of volume, 59 percent of the posts

were sold to dealers and 34 percent to retailers (Table 6). Only a small volume is sold by producers directly to manufacturers or to final consumers; these sales are usually made by small producers.

Table 6. Sales of cedar posts by sampled producers to different kinds of buyers, by states, 1959.

Type of buyer	Michigan	Wisconsin- Minnesota	Lake States
(percent of volume)			
Manufacturer	6	a	5
Dealer	55	72	59
Retailer	36	27	34
Consumer	3	1	2
Total	100	100	100

^aNegligible.

Intermediate Market Agents

Eighteen dealers in cedar posts were interviewed in the Lake States study areas -- 10 in Michigan, 7 in Wisconsin, and 1 in Minnesota. The ten dealers interviewed in Michigan handled 10 percent of the posts marketed by Michigan producers in 1959. Wisconsin dealers interviewed handled 19 percent of the posts produced in their state.

Characteristics of Dealers

The eight Wisconsin-Minnesota dealers sampled are well established, having been in business an average of 29 years. Michigan dealers have been buying and selling posts an average of 16 years, but the larger firms are usually older.

Dealer operations are usually, but not always, larger than producer operations. The average Wisconsin-Minnesota dealer handled well over 100,000 cedar posts in 1959 (in contrast to a producer average of 10,600 posts); the average Michigan dealer handled 31,000 cedar posts (in contrast to 17,500 for producers). The size distribution of dealer operations is summarized in Table 7. None of the Michigan dealers sampled handled more than 100,000 posts in 1959, but a majority of the Wisconsin-Minnesota dealers handled more than 100,000 cedar posts each.

Table 7. Size class of sampled dealers in cedar posts, 1959.

Size class (number of posts)	Number of dealers	
	Michigan	Wisconsin- Minnesota
5,000 or less	2	2
5,001 - 25,000	2	1
25,001 - 100,000	6	
100,001 - 200,000		3
200,001 or more		2
Total	10	8

Because of the seasonal nature of cedar-post production, few dealers are full-time post dealers. Those who are classed as full-time dealers (about a fourth of all dealers) often handle other timber products, particularly pulpwood, in addition to cedar posts. Producer-dealers (7 firms out of the 18 sampled act as producers as well as dealers) also work full time in timber products, but they generally obtain most of their

gross revenues from timber products like pulpwood rather than cedar posts.

Timber Handled

Except for pulpwood, which is handled in larger volumes than cedar posts, dealers handle relatively small amounts of other products (Table 8). Despite the obvious concentration on few products, most dealers are primarily interested in pulpwood; cedar is a sideline activity of seasonal interest. There are a few conspicuous exceptions to this generalization. Four of the 18 dealers interviewed (including the 3 largest in Michigan) handled cedar posts exclusively in 1959.

Table 8. Timber handled by sampled dealers in cedar products, by state, 1959.

Product	Unit of measure	Michigan	Wisconsin-Minnesota
Cedar posts	Thous. pcs.	309.0	857.9
Cedar pickets	Thous. pcs.	10.0	
Cedar poles	Thous. pcs.		8.3
Cedar sawlogs	Thous. bd. ft.	15.5	
Pulpwood	Cords	31,000	143,500
Ties	Thous. bd. ft.		37.0
Mining timbers			a

^aData withheld to avoid disclosure of individual firm.

Size of Wood Supply Area

Despite the large volumes of posts handled by some post dealers, wood supply areas are usually restricted in size. The usual radius of operations is 50 to 60 miles. This pattern does not appear to vary by states. Although the average Wisconsin-Minnesota dealer handles 3 times as many posts as his Michigan counterpart, he maintains about the same size of supply area.

Wood Procurement Methods and Policies

Purchase contracts

In 1959, most of the wood purchases made by sampled dealers were initiated by sellers -- 85 percent in Wisconsin-Minnesota and 60 percent in Michigan.

Few post dealers use a formal written contract with suppliers. Most dealers prefer a loose oral agreement, and some of them purchase posts only when producers offer them for sale at their yards -- no agreements are made prior to delivery.

Generally, the main distinction between oral and written contracts, when both are used by a dealer, is the time or period of delivery. Written contracts are usually drawn up several months in advance of deliveries. Oral contracts, on the average, are negotiated less than a month before wood is delivered.

Contracts, whether oral or written, usually specify the species to be delivered, the quantity, quality, time period of delivery and the method and time of payment. Despite the reference to quantity in the contracts, Michigan dealers will usually accept as much cedar as producers will deliver. These firms report they are frequently unable to purchase as many posts as they are able to sell.

Producers are paid by the piece, receiving different prices for different sizes of posts. Posts are usually paid for when delivered, but dealers anxious to increase the volume of their purchases often pay producers in advance of deliveries.

Points of Purchase

More than three-fourths of the cedar posts purchased by dealers in 1959 were purchased delivered to dealers' post yards. Some 7 percent was bought roadside, and 10 percent, f.o.b. railroad.

Of the 18 firms sampled, 11 bought on a delivered basis only. Three firms purchased posts roadside only, and 1 firm, f.o.b. railroad. The remaining 3 firms purchased both on a roadside and delivered basis.

Loans to Wood Suppliers

Cedar post dealers generally offer loans to producers in advance of the time of payment specified in their standard contracts. Specifically, all of the Wisconsin-Minnesota dealers and about half of the dealers sampled in Michigan offered loans to producers in 1959. Loans are interest free.

The size of the loans or prepayments varies. Some firms do not set a limit on the amount offered; others limit loans to some specific percentage of the value of posts that are likely to be produced. Most firms report that the upper limit to the amount offered depends on the reputation and reliability of the producer.

Sales of Posts

Small numbers of posts are sold by dealers throughout the year, but in general sales are seasonal. Posts are accumulated in dealers'

yards during the cedar logging season in the winter and early spring. Inventories generally reach a peak in April, by which time dealers begin to concentrate upon selling. The peak sales period occurs from April through July. Sales continue through the summer, but they decline as inventories decline. Usually, inventories reach a minimum in October.

Since most buyers other than manufacturers are small firms, individual dealers frequently make as many as 40 or 50 separate sales. The tendency, however, is to restrict sales to one type of buyer. Two of the 18 dealers sampled restricted sales to manufacturers in 1959, 4 to wholesalers, and 6 to retailers. The remaining 6 dealers sold to more than one type of buyer.

In terms of volume, 22 percent of the posts were sold to manufacturers, 42 percent to wholesalers and 32 percent to retailers (Table 9). The pattern varies strongly by states. Michigan dealers sold mainly to retailers, while Wisconsin-Minnesota dealers sold mainly to wholesalers.

Table 9. Sales of cedar posts by sampled dealers to different kinds of buyers, by states, 1959.

Type of buyer	Michigan	Wisconsin-Minnesota	Lake States
(percent of volume)			
Manufacturer	23	22	22
Wholesaler	6	55	42
Retailer	58	22	32
Industrial user	1		a
Other ^b	12	1	4
Total	100	100	100

^a Negligible.

^b Includes consumers, other dealers, and highway departments.

Michigan dealers, who are usually smaller than their Wisconsin-Minnesota counterparts, tend to have more restricted sales areas. The smaller Michigan firms sell their product locally. Larger Michigan firms concentrate their sales in the Detroit area, and only 3 of the 10 sampled firms in Michigan extended their sales areas in 1959 out-of-state -- to Ohio and Indiana. Most Wisconsin-Minnesota firms have sales areas in 3 or more states including Illinois, Iowa, Minnesota and the Dakotas. Wisconsin dealers also sell large numbers of posts in Minnesota and Michigan's Upper Peninsula.

Primary Manufacturers

Primary manufacturers in the posts, poles and piling industries are usually visualized to be treating plants which, through a preservation process, alter the character of the raw timber treated.

This conventional type of manufacture has little importance in the Lake States cedar post and pole industry, since most cedar posts and poles are utilized in untreated form. Moreover, the two treating plants sampled in this study which handle cedar products produce nearly all their cedar from their own lands. Since they purchase only a minute fraction of their wood supply, they are not an integral part of the marketing chain -- from producer to manufacturer -- of interest to this study.

However, the three fence companies sampled in Michigan purchase a large portion of the posts produced in Michigan. They are not manufactured in the conventional sense, but they can be regarded as a special case of primary manufacturer.

This section will be concerned only with the activities of the three fence companies sampled in Michigan.

Characteristics of Michigan Fence Companies

Sampled fence companies in Michigan have been operating their plants for an average of more than 20 years. The youngest of the firms, which is the largest of the three sampled, has been assembling fences for 9 years.

Two companies assemble fences in the study area. The third, which is the smallest of the three, maintains a concentration yard within the study area and ships cedar posts and pickets to Detroit where fences are assembled. This firm also maintains a retail sales yard in Detroit.

In 1959 the interviewed fence companies purchased a total of 587,000 posts and 1,713,000 pickets. All of these purchases were northern white-cedar. Each of the three firms purchased about three times as many pickets as posts.

Seasonal Nature of Operations

Although each of the interviewed manufacturers of rustic cedar fencing operates on a year-round basis, both purchasing and sales activities are seasonal.

Cedar posts and pickets, the raw materials of fence manufacturers, are usually purchased during the winter months, the period when logging is concentrated. Inventories build up rapidly in the yards, reaching a peak in late March and in April.

As the demand for fences gets under way in early spring, fence manufacture begins in earnest, but post and picket purchases drop off sharply. The heavy sales period extends from April to September

(with the peak in July and August), and production keeps pace with sales. Production relies on the accumulated raw material inventories. By the end of the fence sales season in September, raw material inventories are near a minimum. The actual minimum in inventories is not reached until November or December when cedar logging gets under way again and posts and pickets begin to move into fence company yards.

Not all fence manufacture is suspended during the winter, but sales are few in this period. Fencing constructed in the winter is usually stored until spring when the market for fences opens up.

Since the accumulation of large inventories of posts and pickets represents a cost to the fence companies, they would prefer (other factors being equal) to eliminate them by timing raw wood purchases to coincide with the seasonal curve for fence manufacture and sales. However, other factors are not equal, and fence companies accept the practice of accumulating winter inventories as their best alternative. Cedar is produced more cheaply in the winter; if produced in the warmer months it would be at a higher price to the fence companies. Moreover, cedar cut during the winter has a more rustic and appealing appearance to fence buyers.

Size of Wood Supply Area

The timbersheds of the sampled fence companies vary in size. The largest of the companies, purchasing well over a million posts and pickets, reports that its supply area covers 11 counties in the Lower Peninsula and several Upper Peninsula counties. The two smaller manufacturers limit their purchases to small timbersheds of about 3 counties each.

Wood Procurement Methods and Policies

Agent Source of Wood Supply

Fence companies assemble their posts and pickets from large numbers of suppliers. In order of decreasing volume of purchases, the Michigan companies sampled report that their 1959 purchases came from 400, 250, and 50 suppliers respectively.

The fence companies refer to all of their suppliers as producers. This is inexact reference, since it is clear that dealers are prominent among fence company suppliers. Producers sampled in Michigan reported that 6 percent of their 1959 sales went to primary manufacturers, while dealers reported 23 percent of their sales going to primary manufacturers. So far as the fence companies are concerned, the distinction between producers and dealers is unimportant since there is no price recognition of the dealers' special function. Fence companies usually pay the same prices for posts and pickets to all suppliers for equal sizes and quantities of wood.

Purchase Contracts

Each of the interviewed fence companies uses a different type of contract or agreement with its wood suppliers. One firm uses both oral agreements and written contracts. Another uses only oral agreements, while the third merely publishes and distributes a price list stating that posts and pickets will be purchased upon delivery.

The two firms that make prior contracts with suppliers use essentially the same type of purchase agreement. Contracts are usually negotiated in October or November, well in advance of the peak production months of producers. These contracts specify species, quantity, quality,

time or period of delivery, method and time of payment and price.

Only one species, northern white-cedar, is accepted. Unlimited quantities of most sizes of posts and pickets are accepted as long as they are straight and free from decay. Contracts specify that delivery should be made "at any convenient time." Posts and pickets are usually paid for when they are delivered.

The two larger fence companies make special efforts to encourage production by large and reliable suppliers. Both companies offer a retro-active price bonus to suppliers after a specified volume of deliveries, usually 10,000 pieces, is reached. One of the companies also offers a price bonus to suppliers who sort posts and pickets by sizes and deliver loads consisting of one size only.

Contracts are not enforced. No legal claim is made against suppliers who, for a variety of reasons, do not deliver the volume of posts and pickets agreed to. Fence companies, on the other hand, reserve the right to stop purchasing at any time.

Loans to Wood Suppliers

Fence companies offer loans in advance of wood deliveries by suppliers. One firm does this regularly; the other two do so when requested by their more reliable suppliers, but they prefer not to make money advances as a general rule.

The size of the loans offered is limited by the value of the cedar cut and ready for delivery. A fence manufacturer seldom advances more money than the value of the cut products. Since these advances are actually for work already performed, interest is not charged.

Sales of Finished Product

Sales areas of the sampled fence companies differ greatly. One firm sells its product in 28 states; another sells in 10 states; the third firm (located in Detroit) confines its sales to the Detroit area.

This wide range in sales areas is geared partly to the volume of output, but mainly it reflects the nature of the markets that fence companies try to serve. The largest firm aims wholly at the wholesale market; its sales went to some 300 wholesalers throughout the country in 1959. The second firm had 25 wholesaler customers in 1959, but retailers are its chief market (735 retailers in 1959). The smallest firm is wholly local in its orientation; it sold fences in 1959 to some 30 retailers and more than 500 individual consumers in the Detroit area.

Most fences are manufactured to order, but again, the sampled companies vary in their practices. The largest company manufactures fences only to fill orders previously obtained from its buyers. The smallest company has advance orders for most of its output -- 90 percent in 1959. The intermediate-size firm, however, manufactures 75 percent of its product without advance orders.

A buyer's order can usually be filled in less than two weeks, but the time period varies. During the peak sales months of June and July it sometimes takes fence companies 5 or 6 weeks to fill orders. During slack periods such as the winter months, orders can be filled within a few days.

Landownership Sources of Wood

Almost three-fourths of the cedar posts handled by firms sampled in the Michigan study area came from privately owned forest land (Table 10). This pattern is in accord with landownership

area¹. Farm woods account for 21 percent of the forest land and 21 percent of the cedar posts. Other private forests account for 44 percent of the forest land and 52 percent of the cedar posts. Public lands, with 35 percent of the forest area, are the source of 27 percent of the cedar posts.

Table 10. Landownership sources of cedar posts and poles produced in study areas, by states, 1959.

Landownership	Michigan	Wisconsin	Minnesota
	(percent of volume)		
Own land	a	6	5
Farmer	21	33	6
Other private	52	27	3
National forest	2	8	69
State forest	24	14	14
Other public	1	12	3
	—	—	—
Total	100	100	100

^a Negligible.

In the Wisconsin study area, the relationship between landownership and cedar post output is not as close as it is in Michigan. Forest land is distributed by ownership as follows: farm, 21 percent; other private, 34 percent; national forest, 15 percent; state forest, 5 percent; other public, 25 percent.² These percentages vary more or less from the

¹Data on forest landownership were obtained from Findell, Virgil E. et al. Michigan's forest resources (Lake States Forest Experiment Station, Station Paper 82, 1960), pp. 38-39.

²Stone and Thorne, op. cit., p. 40.

cedar post output percentages shown in Table 10. Farm woods and state forest lands yield relatively more cedar posts than would be expected from the areas in these classes of ownership. Other private lands yield cedar posts in proportion to area, but national forest and other public forests yield relatively fewer posts than might be expected from the area statistics.

In the Minnesota study area, the landownership pattern¹ is a completely misleading indication of the sources of cedar post production. National forests, with 15 percent of the forest land, are the source of 69 percent of the cedar posts. In contrast, all other public lands account for 51 percent of the area but only 17 percent of the posts. Private lands, too, are a meager source of posts -- they include 34 percent of the forest land but account for only 14 percent of the posts.

Costs and Prices

Production costs, prices received and returns to market agents handling cedar posts are examined in this section.

Data were obtained from sampled producers, dealers and fence companies. Cost and price data supplied by the firms interviewed in Minnesota and Wisconsin were too limited to be considered reliable. This section, therefore, is restricted to a discussion of the data supplied by Michigan firms.

¹Cunningham, op. cit., p. 10.

Costs of Production

Production costs represent a composite of three more or less independent costs. These are: (1) stumpage costs; (2) logging costs; and (3) hauling costs.¹ The range and average cost of these items to Michigan producers are shown in Table 11. Estimated costs are related to a standard, unpeeled 7-foot post with a 4-inch top diameter.

Table 11. Costs of producing an unpeeled 7-foot post (4-inch top) in Michigan, 1959.

Cost	Range	Average
(cents per post)		
Stumpage	3 - 10	6
Logging ^a	7 - 15	10
Hauling	2 - 17	5
Total	12 - 42	21

^aPeeling adds 7 cents per post to the logging costs shown.

The range in estimated costs is quite large at each stage of production. The minimum total under ideal conditions, is 12 cents per post. The maximum is 42 cents, but this is highly theoretical since no one would produce if he encountered maximum costs at each stage (stumpage, logging and hauling). Average costs, totaling 21 cents per unpeeled post (or 28 cents per peeled post) can be considered fairly representative. They are based on data supplied by 25 firms.

¹Logging costs include the cost of felling, bucking and skidding; the cost of peeling is not included.

Michigan producers generally peel the posts that they sell and include the cost of this operation (estimated at 7 cents per 7-foot post) as a logging cost.

Prices

Typical prices paid by dealers and fence companies in 1959 are summarized in Table 12. These are typical prices, not standardized prices. Some dealers and fence companies offer somewhat higher price scales; some offer less.

Table 12. Typical price list of Michigan dealers and fence companies for fence posts, 1959.

	Dealer prices for unpeeled posts	Fence company prices	
Post size		Peeled posts	Unpeeled posts
(cents per post)			
7' x 3"	12		11½ ^a
8' x 3"	14		14½ ^a
7' x 4"	21	27	20
7' x 5"	24	32	25
7' x 6"	24	32	25
8' x 4"	25	35	27
8' x 5"	30	39	31
8' x 6"	40	55	45
8' x 7"	50	60	55
10' x 4"	45	60 ^b	50 ^b
10' x 5"	50	65 ^b	55 ^b

^aOne-half cent more when quantity is 10,000 posts or more.

^bThree cents more when quantity is 10,000 posts or more.

Prices paid for peeled posts are higher than for unpeeled posts. Depending on size, the premium for peeling is usually 7 to 10 cents per post.

Prices paid by fence companies are usually slightly higher than those paid by dealers -- about $\frac{1}{2}$ to 1 cent more in small posts and 5 cents more in large post sizes.

Prices paid by retailers are substantially more -- for a 7-foot post with a 4-inch top, retailers pay from 6 to 15 cents more than the dealer price.

Comparison of Costs and Prices

A comparison of costs and prices is extremely difficult to make because of the great variations in costs and prices.

A producer who produces a 7-foot post with a 4-inch top at an average cost of 21 cents and sells it to a dealer for a typical price of 21 cents receives no margin for profit and risk. He gets a return for his labor, but nothing more. If his production costs approach the minimum of 12 cents per post, his profit margin may become substantial. If his production costs scale upward to the top of the range (42 cents), he is obviously engaged in a highly unprofitable venture.

However, the producer's profit opportunities increase if he can obtain large post sizes and market them. His costs of production increase in logging larger posts, but dealer prices increase with sizes at a faster rate than costs of production.

Moreover, producers are not wholly dependent on sales to dealers and manufacturers. Some 55 percent of producers' post output is sold to dealers and 5 percent to manufacturers, but 36 percent goes directly to

retailers and 3 percent to consumers. Since the retailer price is substantially higher than the dealer price and the consumer price still higher, the larger the proportion of sales that can be funneled directly to retailers and consumers the larger the producer's profit margin.

The situation is similar for dealers. If a dealer sells to a fence manufacturer, his margin is very small, nonexistent, or even negative in small post sizes; in large post sizes, the margin may be 5 cents per post, but this is small compensation for the dealer's services. However, dealers funnel less than a fourth of their sales to manufacturers. Most of their sales are to retailers and to final consumers. Sales at these stages return more substantial profit margins. The same generalization can be made here as was made for producers -- the larger the proportion of sales that can be funneled directly to retailers and consumers, the larger the profit margin.

PINE POSTS AND POLES IN MISSOURI AND ILLINOIS

In many parts of the country, naturally durable species such as cedar and locust are not available in sufficient numbers to meet market demands for posts and poles. In these areas, less durable species to which a preservative treatment is applied become important. Such a situation exists in the Missouri and Illinois study areas where shortleaf pine (Pinus echinata Mill.) is the major post and pole species.

The pine post and pole industry is a relatively new industry to the Eastern Ozarks of Missouri; it began in 1950. Prior to 1950 posts and poles used in this area were imported from Arkansas, Texas and Louisiana.¹ In 1950 some 20,000 posts were produced in the Ozarks; by 1954 production had risen to 2,500,000 posts and 250,000 poles.

The establishment of two new wood preservation plants in Missouri in 1950 provided the market opportunity for expansion of production in pine posts and poles. The opportunities for this industry were described in a report by the Central States Forest Experiment Station and the Missouri State Division of Resources and Development.² A second report by the Missouri State Division of Resources and Development pointed out that some 5½ million posts could be harvested annually in thinning operations on the 3 million acres of pine in the Ozarks.³

Presently, pine posts and poles produced in Missouri are treated in Missouri, Tennessee, Illinois and other states. Missouri-produced posts are sold throughout the Midwest.

¹Quigley, Pine resources in Missouri, p. 17.

²Quigley and Clark, op. cit., pp. 1-9.

³Quigley, Pine resources in Missouri, p. 16.

Eighteen firms handline pine posts or pine poles were interviewed in the Illinois and Missouri study areas -- 15 in Missouri and 3 in Illinois. The three Illinois firms were treating plants. The Missouri sample consisted of 7 producers, 2 dealers, 3 producer-dealers and 3 treating plants.

Producers

The 10 producers¹ interviewed in the Missouri study areas produced 706,800 shortleaf pine posts and poles in 1959. Numbers of posts were not easily differentiated from numbers of poles since some producers are uncertain about the distinction in definition.

For purposes of this study, posts are distinguished from poles by length. Posts are 10 feet long or shorter. Poles are more than 10 feet long.

Of the 706,800 posts and poles handled by sampled producers in 1959, an estimated 678,300 pieces could be classed as posts and 28,500 as poles. Sampled production represents about 4 percent of the pine posts and 46 percent of the poles produced in Missouri in 1959.

Characteristics of Producers

Sampled Missouri producers had been harvesting pine posts and poles for an average of eight years in 1959. Two firms began operations in 1959. Unlike the Lake States cedar post industry, there does not seem to be a strong relationship between volumes handled and number of years in business.

¹Three producer-dealer firms were interviewed both as producers and as dealers.

Forty percent of the interviewed producers are part-time operators. These firms operate sawmills or engage in farming. Although timber producing is not a full-time occupation for these firms, it is a year-round activity.

The pine posts and poles industry is not a seasonal one. Pine can be harvested all year without substantial seasonal effects on production costs. However, producers do slow down their operations somewhat during the winter and summer months.

Producers vary a great deal in size of operations, ranging from a low of 1,500 posts and poles in 1959 to well over 400,000. The average output -- 70,000 pieces -- is strikingly greater than the 13,500 average for Lake States cedar producers. At least three factors contribute to the generally larger operations in Missouri: more extensive stands of the species used, year-round operations, and greater specialization on posts and poles production.

All of the producers sampled hire year-round employees. Small firms employ one or two workers, but the larger firms average 11 full-time workers. Seasonal workers are also employed by 30 percent of the firms on a piece basis, although the producers regard these workers as subcontractors rather than employees.

Financially, Missouri producers are more independent than cedar producers in the Lake States. None of those sampled in Missouri receive funds from their product buyers to facilitate logging or hauling operations.

Timber Handled

Producers sampled tend to be specialists in posts and poles (Table 13). In contrast to the roughly 678,000 posts and 28,500 poles they produced in 1959, they produced only 162 M bd. ft. of sawlogs and a negligible amount of mine timbers. It is also noteworthy that all the sawlogs and mine timbers harvested came from producers' own lands. Stumpage purchases were confined to pine post and pole timber.

Table 13. Timber handled by sampled Missouri producers, 1959.

Product	Unit of measure	Produced from	
		Purchased stumpage	Own land
Pine posts	Thous. pcs.	675.8	2.5
Pine poles	Thous. pcs.	27.7	.8
Sawlogs	Thous. bd. ft.		162.0
Mine timbers	Thous. pcs.		.5

Table 13 reflects the output of firms as producers only. Three of the 10 producers sampled also act as dealers who purchase the output of other producers. These cut wood purchases -- totaling some 242,000 posts -- are discussed in connection with the activities of intermediate market agents.

Size of Wood Supply Area

Timbersheds of producers are quite small. Most producers report that they cut stumpage in just one county, usually the one in which they live. Generally, producers do not travel much more than 10 miles from their homes to cut stumpage. The largest producer reaches out the

longest distances for his wood supply; in 1959 his maximum radius of operations extended 50 miles.

Wood Procurement Methods and Policies

Producers usually initiate stumpage purchase contracts with landowners. A few producers report that landowners contact them and offer stumpage for sale, but this is the exception. Most Missouri producers operate within small areas and are familiar with the local timber stands. Producers report that they are "always looking" for prospective stumpage.

Stumpage contracts are negotiated with landowners a short time before the beginning of harvest operations -- ranging from a few days to one or two months. In most cases producers do not have sales contracts for their products at the time stumpage contracts are made. They rely on a "hope to sell," as one producer put it.

Producers make oral and written purchase contracts with private landowners about equally. The contracts are similar, except that oral contracts are used when it is expected that harvest operations will be completed within six months. Written contracts are used with longer-term purchases. On the average, producers made three stumpage purchase contracts with three different landowners in 1959.

Since Missouri post and pole producers generally do not cut other forest products, contracts usually specify pine (shortleaf) as the only species to be harvested. Generally, all merchantable stems are cut. Payment is usually made in advance of harvest operations in a lump sum.

Contracts with private landowners generally do not specify any conditions under which timber is to be harvested. Most producers feel that they cannot economically harvest pine stumpage for post and poles

unless all merchantable material is cut; they state that they would not accept any restrictions on cutting in their contracts.

Sales of Posts and Poles

Although pine posts and poles are produced on a year-round basis, there are pronounced seasonal variations in output. The peak of production and sales usually occurs in October and November. Low levels of production occur in July and August when the likelihood of insect damage is high, and in January and February, when weather conditions slow down logging operations.

All of the interviewed producers sold their posts and poles directly to treating plants in 1959, completely bypassing intermediate market agents. Most of the producers sell their product to just one treating plant; only one firm reported sales to as many as three buyers in 1959.

Posts and poles are usually sold as unpeeled products, although the 3 sampled producers who are also dealers commonly peel posts and poles before delivery to treating plants

Intermediate Market Agents

Five dealers in pine posts and poles were interviewed in the Missouri study area. Among them, they handled 371,000 posts and 20,900 poles in 1959 -- 2 percent and 34 percent respectively, of the state's output of these products.

Characteristics of Dealers

Dealer firms are generally young firms -- average age is 4 years. One of those sampled began business in 1959; the oldest firm had only 9 years of operation in 1959. As in the case of producers, the relationship between the number of years in business and the volume handled is weak.

Four of the five firms sampled are in the posts and poles business on a full-time basis. The fifth dealer, the largest of the five, is a store owner who deals in posts and poles as a sideline activity.

All the dealers purchase unpeeled wood and peel posts and poles before shipping them to treating plants. Usually the wood is peeled in the concentration yards maintained by the dealers, although one dealer uses a portable peeling machine at the sites of producer operations.

Dealers avoid long storage of posts and poles. They begin peeling operations immediately or shortly after wood is purchased, and the wood is shipped out within a few days to two weeks after peeling.

Timber Handled

Dealers tend to be specialists in posts and poles. They do not handle large volumes of other products, and they do not often engage in other businesses. However, they do not often confine their activities to one market role. Three of the five dealers sampled are also producers. In fact, the producer-dealers handled at least twice as many posts in 1959 as producers than they did as dealers.

Missouri dealers handle posts and poles on a year-round basis, but their business undergoes seasonal variations corresponding with producer operations. The lull periods usually occur in mid-winter and mid-summer; peak activity comes in the fall and spring.

Size of Wood Supply Area

Timbersheds of dealers are not much larger than those of producers -- the average radius of operations is 22 miles. At the minimum, one dealer reports obtaining his wood supply from producers within a 10-mile radius. The maximum distance, reported by the largest firm, is 40 miles.

Wood Procurement Methods and Policies

Only 2 of the 5 sampled dealers make prior agreements to buy posts and poles from producers (and one of them does not do so regularly). The other 3 firms do not make any prior contracts with suppliers. They purchase wood on a spot basis at their yards.

The firms reporting prior agreements with producers state they did not have to look for wood suppliers in 1959. Producers initiated the contracts. However, this may not be the typical pattern. In 1959 there was a "buyers market" for posts and poles.

When purchase contracts are made, they are usually negotiated only a few days before wood deliveries. Anything that will make a post or pole is accepted in unlimited numbers. Producers are paid by the piece on delivery, receiving different prices for various size classes of their product.

Four of the five dealers sampled report offering interest-free loans to producers in advance of wood deliveries, but the practice is not general. Only one firm offers loans as a regular practice.

Aids other than loans to producers are uncommon. One dealer reports that he supplies, on occasion, trucks, tractors and chain saws. However, there is a question as to whether this is a matter of supplying needed equipment to employees or offering aid to independent producers.

Sales of Posts and Poles

Sales by dealers are made year-round, but seasonal variations follow the pattern of purchases which, in turn, correspond with producer operations. Sales are at their peak in the fall and spring; the low periods occur in mid-winter and mid-summer.

All posts and poles are sold to treating plants as peeled wood. They are delivered to plants in Missouri, Illinois and Kentucky, but Illinois is the chief market. Shipping distance ranges from 50 to 250 miles and averages 175 miles.

Primary Manufacturers

Six wood preservation plants which treated pine posts and poles were sampled -- 3 in Missouri and 3 in Illinois. Much of the following analysis will apply to all 6 plants, but for the items discussed statistically, one Missouri plant (which obtained all of its wood supply in Arkansas) and one Illinois plant (which handled posts and poles as a minor item) will be eliminated.

Characteristics of Treating Plants

Three of the treating plants -- 2 in Illinois and 1 in Missouri -- are owned by corporations which operate plants throughout the United States. These firms are interested in wood preservation on a broad scale. They treat many kinds of forest products; posts and poles comprise only a portion of their business.

Each of the other 3 plants comprise a separate and independent business. These firms are more specialized. Two of them, both in Missouri, treat posts and poles only.

The sampled plants vary widely in size. The largest plant employs 90 full-time workers; the smallest 7 workers. Average employment for the 6 plants is 40 workers. Since operations are established on a year-round basis, the employment of seasonal labor is uncommon.

Timber Handled

The 2 treating plants in Missouri for which statistical data are summarized handle posts and poles only and obtain all of their wood supply within the state. In 1959 they treated 445,000 posts (about 95 percent pine) and 35,000 pine poles (Table 14). The 2 treating plants in Illinois for which statistical data are summarized handled a smaller volume of posts and poles in 1959, but their processing included a large volume of lumber, ties and piling.

Table 14. Timber handled by sampled treating plants in Missouri and Illinois, 1959.

Product	Unit of measure	Missouri	Illinois
Pine posts	Thous. pcs.	420	370
Pine poles	Thous. pcs.	35	9
Oak posts	Thous. pcs.	25	
Oak piling	Thous. lin. ft.		197
Cross ties	Thous. pcs.		307
Switch ties	Thous. bd. ft.		684
Lumber	Thous. bd. ft.		3,896

Posts and poles are purchased by the Missouri firms as unpeeled wood; peeling is done after delivery to the plants. The Illinois plants, like most treating plants, purchase all of their wood peeled. .

The Missouri firms obtained 19 percent of their posts and poles in 1959 as purchased stumpage. Logging and hauling were done as part of the treating plant operations. However, 81 percent of the post and pole supply was purchased directly from producers.

The Illinois plants also obtain most of their posts and poles from producers -- 85 percent in 1959. They have their own logging operations and, in fact, obtain posts and poles from their own lands. However, in 1959, they logged with their own employees only 7 percent of their post and pole supply; 8 percent of the supply came from dealers.

Some seasonality in wood purchases is evident among sampled firms, not because of any deliberate policies, but because of the seasonal variations in producer and dealer operations. Because of the diversity of supply sources and suppliers, the seasonal patterns in wood purchases vary among treating plants. No dominant pattern emerges except that the summer months are usually a low period in wood deliveries.

Size of Wood Supply Area

The timbersheds of 2 of the 3 plants sampled in Missouri are highly local. These firms reach out for their wood supply a maximum distance of about 50 miles.

The third Missouri firm purchases almost all of its wood within the state of Arkansas. Posts, poles and other forest products are shipped in by rail from a minimum of 150 miles to a maximum of 550 miles.

Timbersheds of plants sampled in Illinois are much larger. Each of the 3 plants draws its wood supply from a number of states -- the average is 5. The longer hauls probably apply to timber products other than posts and poles, but data obtained do not indicate to what extent the timbersheds for posts and poles are more restricted than those of more valuable timber products. However, all 3 plants obtain only a small portion of their post and pole supply from within Illinois.

Wood Procurement Methods and Policies

None of the cut wood purchased by the sampled Missouri and Illinois treating plants in 1959 was obtained under formal contract or agreement with producers or dealers.

The Illinois plants report that they rely on oral contracts, usually negotiated from 2 weeks to one month before expected delivery dates. Missouri firms, in contrast, report that they made no purchase contracts in advance of delivery in 1959. All of the posts and poles purchased by them were bought when delivered.

Oral contracts used by Illinois treating plants usually specify the species to be delivered, the quantity, quality, time period of delivery, and the method and time of payment.

Only pine is accepted for posts and poles. Delivery dates are not rigidly enforced unless contracts are negotiated to fill advance orders held by the treating plants. Suppliers are paid by the piece and receive different prices for different size classes of material.

Two treating plants sampled in Missouri purchase stumpage for pine posts and poles. The Illinois firms purchase stumpage but not for post and pole material.

Both of the Missouri treating plants purchased stumpage exclusively from private landowners in 1959. Written contracts are standard and are very similar to the contracts used by Missouri producers. Briefly, all merchantable pine is harvested and payment is made as a lump sum in advance of harvest operations. Restrictions on cutting operations are not included in any of the contracts.

All of the sampled treating plants report that wood suppliers are offered interest-free loans in advance of the time of payment specified in contracts. These loans are not offered as a general practice. They are made available to preferred suppliers and only if the need appears to be urgent.

Sales of Posts and Poles

The two reporting firms in Missouri sold their posts and poles in 1959 to retailers and individual consumers (Table 15). Only a small volume went to wholesalers and none was sold to industrial users. Reported customers included 85 retailers, some 300 individual consumers, and 15 wholesalers.

Table 15. Sales of treated pine posts and poles by sampled treating plants in Missouri and Illinois to different kinds of buyers, 1959.

Type of buyer	Missouri	Illinois
	(percent of volume)	
Wholesaler	5	49
Retailer	57	17
Industrial ^a		34
Other ^b	38	
Total	100	100

^aIncludes railroads and public utilities.

^bIncludes farmers and other individual consumers.

The two reporting treating plants in Illinois have a different kind of market. Their output, which includes posts and poles among a variety of products, is sold mainly to wholesalers and industrial users. Only 17 percent of their posts and poles was sold to retailers in 1959; none of the output went to individual consumers. Reported customers include 60 wholesalers and 40 industrial users.

Sales areas are fairly extensive. One Illinois firm reported its sales are largely confined to the state of Illinois, but all other reporting firms state their sales areas extend outward 300 to 500 miles.

Landownership Sources of Wood

Farmers, who own approximately 37 percent of the commercial forest land within the Missouri study area, are an important source of pine stumpage to post and pole producers (Table 16). Missouri and Illinois firms also obtain large numbers of posts and poles from their own lands or other privately owned lands.

Although 26 percent of the commercial forest land in the Missouri study area is publicly owned, only 13 percent of the posts and poles handled by sampled Missouri and Illinois firms in 1959 came from this landownership source.

Costs in Production and Marketing

Various estimates of costs and prices in pine post and pole production and marketing were obtained. These are summarized in this section, but they do not lend themselves to the type of price-cost comparison that was made for the cedar post and pole industry.

Table 16. Landownership sources of Missouri pine posts and poles handled by sampled Missouri and Illinois firms, 1959.

Landownership	Commercial forest land ownership ^a (percent of area)	Post and pole production (percent of volume)
Farmer	37	42
Own land)	37	26
Other private)		19
National forest	22	11
State forest	4	2
Total	100	100

^aSource: Smith, Richard C. Forestry in the economy of the Missouri-Eastern Ozarks, University of Missouri Business and Economic Review, 1:6, November-December, 1960.

Costs of Production

Producers who also act as dealers (producer-dealers) supplied the most useful data for estimating the costs of producing pine posts and poles. As producers, they hire piece workers to perform harvest operations. The prices paid to piece workers may be regarded as the costs of logging and hauling operations. As dealers, producer-dealers purchase posts and poles from independent producers at prices set to cover estimated logging and hauling costs plus stumpage costs and the profit margin necessary to stimulate production.

In actual practice, Missouri producer-dealers follow a formula to determine the relationship between the price paid to piece workers (estimated cost of logging and hauling) and the price paid to independent

producers (which includes, additionally, stumpage cost and profit margin). The formula states that logging and hauling cost is 70 percent of the price paid to producers.

Logging and hauling cost combined and stumpage cost and profit margin combined are contrasted by post and pole sizes in Table 17. The

Table 17. Estimated costs of production by Missouri producer-dealers, by pine post and pole size, 1959.

Size of posts and poles	Logging and hauling costs ^a	Stumpage cost and profit margin	Price paid to independent producers ^b
(cents per piece)			
4" x 7'	3 - 8	10 - 17	13 - 25
6" x 7'	4 - 8	14 - 35	18 - 43
5" x 8'	5 - 10	15 - 33	20 - 43
6" x 8'	10 - 20	25 - 52	35 - 72
7" x 8'	14 - 25	30 - 67	44 - 92
4" x 10'	6 - 15	14 - 33	21 - 48
6" x 10'	12 - 33	30 - 55	42 - 88
6" x 12'	12 - 55	40 - 79	52 - 134
6" x 14'	16 - 65	50 - 95	66 - 180
6" x 16'	28 - 50	65 - 95	93 - 145
6" x 18'	37 - 75	85 - 125	122 - 200
6" x 20'	52 - 80	115 - 175	167 - 255

^aPrice paid to piece workers

^bDetermined by formula on assumption that logging and hauling cost should comprise 70 percent of price paid to producer.

costs go up by piece sizes, as would be expected; for any given size, there is considerable variation in costs depending on the operation; and

in general, harvesting costs are two to three times larger than the allowance for stumpage and profit margin. However, from the data at hand there is no way of separating stumpage cost from profit margin to determine the adequacy of the profit margins available.

Costs of Dealer Services

Data available do not permit determination of dealer margins for dealer services alone. Prices paid by dealers can be subtracted from prices paid by treating plants, but the difference includes not only the dealer's margin but also the cost of peeling (which is usually done by dealers) and the cost of shipping peeled wood from the dealer's yard to the treating plant.

Table 18 shows the margins calculated by subtracting reported dealer prices from reported treating plant prices. The figures are of interest in that they indicate the increase in margins with post and pole sizes and the general relationships between the composite margin for wood assembly, peeling and transportation and treating plant prices. Unfortunately there is no way to isolate the dealer's profit margin from the margin shown.

Value Added by Treating Pine Posts

Only two treating plants reported prices received for treated pine posts. Presumably, their prices are in line with prices received by other firms, but this is a matter of supposition. As for prices paid for untreated posts, the reporting firms are at the bottom of the price range shown previously in Table 18.

Table 18. Estimated costs of dealer services as indicated by margins between delivered pine post and pole prices at treating plants and at dealer yards, 1959.

Size of post and pole	Prices paid by treating plants ^a	Prices paid by dealers	Dealers' margins ^b
(cents per piece)			
4" x 7'	18 - 33	13 - 25	5 - 19
6" x 7'	30 - 60	18 - 42	19 - 35
5" x 8'	28 - 50	20 - 43	10 - 29
6" x 8'	45 - 90	35 - 72	10 - 65
7" x 8'	60 - 90	44 - 92	35 - 45
4" x 10'	50 - 60	21 - 48	25 - 30
6" x 10'	85 - 100	42 - 88	33 - 47
6" x 12'	105 - 115	52 - 134	55 - 62
6" x 14'	135 - 155	66 - 160	60 - 70
6" x 16'	155 - 190	93 - 145	45 - 95
6" x 18'	210 - 230	122 - 200	90 - 105
6" x 20'	290 - 310	167 - 255	130 - 175

^aTreating plant prices are highly variable, depending on the cost of transportation. Dealers receive lower prices for wood shipped short distances to plants than for wood shipped longer distances.

^bMargins shown are those experienced by reporting dealers. They are quite different from the values that would be indicated if either minimum (or maximum) prices paid by dealers were subtracted from minimum (or maximum) prices paid by treating plants.

At least for the reporting firms, the value added by processing is large (Table 19). Stating this fact somewhat differently, the cost of delivered, untreated posts represents only a small portion (from 15 to 22 percent) of the sale value of treated posts.

Table 19. Reported value added to pine posts by wood preserving treatment, 1959.

Size of post	Price paid for untreated post	Price received for treated post	Value added by processing
(cents per piece)			
3" x 7'	14	65	51
4" x 7'	24	106	82
5" x 7'	35	197	162
5" x 8'	28	137	109
6" x 8'	45	302	257
7" x 8'	60	393	333

OHIO FENCE AND HIGHWAY POSTS

Locust fence posts and oak or pine highway posts are handled by producers, dealers, and treating plants sampled in the Ohio study area. The marketing of these products is described in this section.

Black locust (Robinia pseudoacacia L.) is a naturally durable species. It is used for fence posts without a preservative treatment. Highway post species in Ohio, mainly oak and some pine, generally receive preservative treatment before they are sold to final consumers.

Despite the differences in treatment and final use, Ohio locust posts and oak or pine highway posts can be discussed together. Many of the marketing characteristics involved -- landownership sources, timber-sheds, wood procurement methods, etc. -- are similar for the two industries.

The interviewed sample on which this section is based includes 11 producers, 6 intermediate market agents, and 5 treating plants.

Producers

Eleven producers were interviewed in the Ohio study area -- 3 producers of locust fence posts and 8 producers of highway posts. These producers handled a total of 5,950 highway posts and 4,530 locust fence posts in 1959.

Characteristics of Producers

None of the interviewed producers rely mainly upon the production of posts for their livelihood. All engage in other businesses or occupations from which most of their income is obtained. All but one of the sampled producers operate sawmills on a year-round or part-time basis.

Not only are post producers unspecialized as producers, but most of those sampled produce larger volumes of other timber products than of posts.

Most sampled producers have been in the business for a number of years. The average producer has been harvesting posts for 9 years. As in the cedar-post industry, there seems to be a definite relationship between the number of years a firm has been harvesting timber and volume produced.

Posts are generally produced on a year-round basis. Firms that handle large numbers of posts, however, concentrate on production during the first four months of the year. Highway posts are sold to treating plants which, in turn, sell directly or indirectly to highway departments and road contractors. Treating plants prefer to have most of their posts treated before the month of April when highway departments and contractors begin using posts.

Locust fence posts are used mainly by farmers repairing or building fences during the early spring months before the farming season begins. Producers try to market them during the peak demand months of March, April and May. Production is therefore higher during the first four months of the year than at other times.

Since the 3 locust post producers sampled produced about 4,500 posts in 1959, and the 8 highway post producers, 6,000 posts, none of them could be termed large post producers. However, they do vary markedly in size of operations. Two highway post producers accounted for 84 percent of the output of 8 sampled producers in 1959; 1 locust post producer accounted for 75 percent of the output of 3 sampled producers.

Post producers are highly localized in their operations. Their average radius of operations in 1959 was only 13 miles.

Timber Handled

Producers sampled usually handle a variety of timber products. They concentrate their production efforts on sawlogs, veneer logs, and other products and produce posts as a sideline activity (Table 20). In contrast to the roughly 10,000 posts they produced in 1959, they produced 650,000 board feet of sawlogs, 102,000 board feet of veneer logs, and 100 cords of pulpwood. The emphasis on sawlogs is easily understood since all but one of the sampled producers are also sawmill operators.

Table 20. Timber handled by sampled Ohio producers, 1959.

Product	Unit of measure	Volume
Locust posts	Thous. pcs.	4.3
Highway posts	Thous. pcs.	6.0
Oak piling	Thous. lin. ft.	1.3
Stave bolts	Thous. bolt ft.	6.3
Veneer logs	Thous. bd. ft.	101.7
Pulpwood	Cords	100.0
Sawlogs	Thous. bd. ft.	650.0

Locust posts are produced in the round or, when diameters of bolts are large, as longitudinally split pieces. Intended almost exclusively for use in fences, their length is usually limited to 8 feet or less. Only 3 percent of the posts produced in 1959 exceeded 8 feet in length (designated as end posts in contrast to the shorter line posts).

Highway posts are not often sold in the round. Producers who are also sawmill operators square the posts in their sawmills before selling

them to treating plants. Of the 6,000 highway posts harvested by sampled producers in 1959, more than 90 percent were sold as sawed posts.

The producer-dealer, important in the Lake States cedar industry and the Missouri-Illinois pine post industry, apparently is a lesser market functionary in the Ohio post industry. Only one of the 11 sampled producers operated also as a dealer.

Wood Procurement Methods and Policies

Ohio post producers usually purchase stumpage from private landowners from one to three months in advance of logging operations. The purchase is usually for all the merchantable timber in a forested tract. Since post material is only a sideline interest contracts do not apply specifically to post products.

Producers usually initiate the contracts. Since their timberlands are small, producers know their supply areas fairly well. When a producer locates a tract of land which he feels can be logged profitably, he contacts the landowner and offers a contract.

Both oral and written contracts are used. Six of the sampled producers used written contracts exclusively in 1959, 3 used oral contracts only, and 2 used both oral and written contracts.

In general, contracts specify the species to be cut, the time or period of harvesting, and the method and time of payment. Limitations on logging are not included and, in fact, all producers sampled state they would not be willing to accept any limitations on their logging operations.

Both the method of payment and the species to be cut are variable. Some firms purchase timber by the tract, paying the landowner a lump sum

in advance of harvest operations. In this case, there are not likely to be any species limitations in the contract. Other producers offer landowners a sharing arrangement in which the landowner receives a stated percentage of the gross sales value of the products harvested. Under the latter type of arrangement, the producer is likely to limit the species included in the purchase contract.

Subcontracting of logging and hauling operations is not a common practice among Ohio producers. Logging and hauling are usually performed by the producer or his employees.

Sales of Posts

Posts are sold by producers throughout the year, but seasonal variations follow the seasonal pattern of production. Producers try to market locust posts during the farmers' peak demand months of March, April, and May. Similarly, sales of highway posts to treating plants are concentrated in the same period to precede the heavy demand season for posts by highway departments and road contractors.

Sampled producers of locust fence posts sold nearly all their posts directly to farmers in 1959, but a small volume went to truckers who act as intermediate market agents. Sampled producers of highway posts sold all their posts directly to treating plants, completely bypassing the intermediate market agents.

Intermediate Market Agents

Six intermediate market agents were interviewed in the Ohio study area. Five of the firms are dealers in locust fence posts, and these are the firms discussed in this section. The sixth firm, dealing in highway posts, has been eliminated since its marketing operations are different.

It may not be representative of highway post dealers and there is the risk that discussion of its operations might disclose the identity of the firm.

Characteristics of Locust Dealers

As is the case with locust post producers, none of the interviewed dealers operate their post businesses on a full-time basis. Three of the dealers operate sawmills; two are farm-supply store operators. In all cases, the selling of locust posts provides dealers with only a small portion of their total income. Posts are handled as a sideline.

Three firms have been handling posts for less than 5 years; the other two have been in business nearly 20 years. There does not seem to be any relationship between number of years in business and the volume of posts handled.

Timber Handled

Sampled dealers purchased a total of 12,400 locust posts from producers in 1959. Nearly two-thirds of the posts were line posts 8 feet or less in length.

Since the sampled dealers are sawmill or store operators, all have a place of business at which post purchases can be accumulated. Inventories are accumulated during the late winter months and reach their peak around April when the heavy sales season becomes active.

Wood Procurement Methods and Policies

Most posts handled by sampled Ohio post dealers are purchased on a spot basis. Dealers usually do not find it necessary to contact producers to obtain the posts they handle.

Dealers operating sawmills purchase posts from producers who deliver sawlogs to their mills. These producers know that posts will be accepted, especially in early spring; they deliver posts without prior agreement with dealers. Similarly, dealers who operate stores are well known to producers as post buyers.

Some 95 percent of the posts purchased in 1959 by sampled dealers was purchased at dealers' yards. Only 5 percent was purchased roadside.

Sales of Locust Fence Posts

Dealers sell to two different types of buyers -- farmers and truckers. Farmers, who took about a fourth of the dealers' sales in 1959, use the posts directly for the construction and repair of fences.

Truckers, designated as "roving post buyers," are a special class of intermediate market agent. They purchase posts from producers as well as dealers in the producing areas and transport them to other areas where the posts can be marketed directly to consumers or to retailers. Truckers are the important customers to dealers; they took three-fourths of the sampled dealers' sales in 1959.

Primary Manufacturers

Four treating plants were sampled in Ohio. These are all specialized plants, confining their treating operations to one product -- highway posts. In 1959, the sampled plants treated 118,000 highway posts. Some 25 percent of the posts treated were sawed posts purchased from sawmill operators. All other posts treated were round posts bought from producers.

Operations depend on post purchases from numerous small producers. The average number of suppliers is 35, and their deliveries average fewer than 1,000 posts per producer.

Timbersheds are variable in size but tend to be small. One treating plant reaches out only 25 miles for its wood supply; other plants reach longer distances up to a maximum of 100 miles. The longer distances apply to sawed posts which have higher unit value than round posts and can absorb higher transportation costs.

Characteristics of Treating Plants

The sampled firms in Ohio, which confine their treating operations to highway posts only, are all part-time businesses. All of the owners have some other principal business or occupation -- in three cases, the principal business is unconnected with timber products; the fourth firm operates a sawmill. In each case, the treating of highway posts is a sideline activity.

The sampled plants are relatively new; average age is 6 years. The oldest firm, which is also the largest, had been treating highway posts for 10 years in 1959. The youngest firm, which is also the smallest, began its operations in 1958.

Seasonal Nature of Operations

The needs of highway post buyers are quite seasonal. Posts are usually purchased from treating plants and set during the warmer part of the year -- mainly from April to September.

Sampled treating plants gear their operations to meet this seasonal demand for their product. Inventories of untreated posts are accumulated by treating plants until they reach a peak in March and April. In the

latter months treating plants begin concentrating upon production, and inventories of untreated posts begin to decline.

Wood Procurement Methods and Policies

Ohio treating plants sampled report that they do not often negotiate for highway posts in advance of delivery. Their timber requirements in terms of species, size, and quality are known locally, as are their prices. Producers simply bring in their loads of posts and are paid upon delivery.

Loans, or other aids, are generally not offered to suppliers. In unusual cases, such as a shortage of post supply, suppliers may be encouraged to produce posts with small loans.

Sales of Treated Highway Posts

None of the highway posts sold by interviewed manufacturers were purchased as raw wood to fill advance orders. These firms generally sell what they have on hand.

Sales are made to three main types of buyers -- brokers, public highway departments, and road contractors. Usually, the treating plants sell to a number of buyers, but only one type of buyer. In 1959, 30 percent of the treated posts sold went directly to highway departments, and 12 percent to contractors. More than half the sales were made through brokers.

The sampled firms selling to highway departments bid on contracts let by these public agencies. The time interval for meeting the terms of the contract varies. In the case of sales to highway contractors and brokers, orders are usually filled within a two-week period.

Landownership Sources of Wood

Posts handled by sampled firms in Ohio are produced mainly from farm woodlands (Table 21). More than 90 percent of the highway posts produced in 1959 and 70 percent of the locust posts whose origin could be traced came from farm properties. Public forests are a negligible factor in the post business.

Table 21. Landownership sources of locust fence posts and highway posts handled by sampled Ohio firms, 1959.

<u>Landownership</u>	<u>Highway posts</u>	<u>Locust fence posts</u>
	(percent of volume)	
Own land		1
Farmer	93	52
Other private	7	20
State forest	a	
Unknown		27
Total	100	100

^aNegligible

The output of posts is not closely tied to the landownership pattern. Farmers own 56 percent of the forest land in Ohio; other private owners, 40 percent; and public agencies, 4 percent.¹ It is obvious that farm holdings yield proportionately far more posts than their area would suggest. Conversely, other private forest lands and public forests yield fewer posts than would be expected from the proportionate area in these classes of ownership.

¹Hutchinson, Ohio's wood-using industries, p. 32.

Costs and Prices

All sampled producers of locust posts sold their posts in 1959 directly to farmers and truckers. The prices they received were substantially higher than if their sales had been made to dealers.

Prices received averaged 55 to 60 cents per line post. End posts -- longer than 8 feet -- were sold on the basis of 30 to 40 cents per inch of top diameter. These prices are substantially higher than the costs of production which are estimated by producers to be about 35 cents per line post. One-third of the estimated costs applies to stumpage, the other two-thirds to logging and hauling.

Based on reported data, margins for profit and risk all but disappear when producers sell to dealers. Dealers pay from 30 to 40 cents for delivered line posts. This is virtually the same as the average production cost of 35 cents estimated by producers.

Since virtually the same costs of production apply to dealers as to producers and both dealers and producers sell at the same prices to farmers and truckers, the dealer's margin for profit and risk is about the same as it is for the producer who bypasses dealers in making his sales.

Costs and prices cannot be compared for highway post production in the same way as for locust post production. Highway posts are usually a sideline in the production of sawlogs and veneer logs. Producers estimate their costs per thousand board feet for their major products, but they do not have a clear idea of how much of their costs of operation apply to the posts they produce.

Presumably, since posts are sold to treating plants, producers find that their costs of operation are covered by the prices paid for

delivered posts and that there is some margin to apply to profit and risk. However, from the data at hand, there is no way to calculate whether and to what extent there is a margin between delivered price and costs of production.

Costs of untreated highway posts to treating plants and prices received from the sale of treated posts are compared in Table 22. Again, there is no indication of the adequacy of the margins, but the presumption is that treating plants generally cover their costs of production and gain some return for profit and risk. It is noteworthy that margins are from 2 to 3-1/2 times greater than the costs of untreated posts in the case of round posts, but margins are whittled down when sawed posts are handled.

Table 22. Costs and prices of pine and oak highway posts handled by sampled Ohio treating plants, 1959.

Size class of posts	Cost of untreated posts to treating plants	Selling price of treated posts	Margin
(dollars per post)			
Sawed posts: ^a			
4" x 6" x 6'	1.00	2.30	1.30
6" x 6" x 6'	1.30	2.50	1.20
8" x 6" x 6'	1.40	2.50	1.10
Round posts: ^b			
7" - 9" x 6'	.55	2.25	1.70
6" - 8" x 6½'	.50	2.00	1.75
7" - 9" x 9'	.90	2.75	1.85

^aMostly oak.

^bOak and pine.

PILING

The total regional sample of firms handling piling is small. Only 13 firms were included. By state, 6 firms were interviewed in Ohio, 2 in Illinois, 2 in Minnesota and one each in Missouri, Wisconsin and Michigan.

The sample consists of 10 producers and 3 wood preservation plants. Intermediate market agents are not common in the piling industry and none were sampled. Producers and wood preservation plants generally handle piling only to fill special orders by highway departments and building or road contractors.

The relatively small sample size and accidents of sampling within the regional study areas suggest that data supplied by sampled firms may not represent an accurate picture of the movement of piling from stump to consumer. This section will, therefore, be limited to a brief, general description of the production and marketing of piling within the North Central region.

Producers

Ten producers of piling were sampled in the region. Six producers were interviewed in Ohio, and one each in Illinois, Michigan, Minnesota and Wisconsin.

Several species of piling were produced by sampled firms. Oak was produced in Ohio, Illinois, and Michigan; pine in Minnesota; and elm and ash in Wisconsin.

In terms of volumes handled, sampled Ohio producers harvested some 28 percent of the piling produced within their state in 1959. The producer interviewed in Illinois handled about 25 percent of the total Illinois output. Sampled firms in Michigan, Wisconsin, and Minnesota

accounted for less than 10 percent of the total piling production within their respective states.

Generally, the production of piling is a part-time business; it provides sampled producers with only a small portion of their gross revenues. With the exception of the Illinois producer (who specializes in the production of piling), interviewed producers are mainly concerned with the production of sawlogs, veneer logs, pulpwood, stavebolts, posts or poles. All of the sampled Ohio firms operate sawmills in addition to producing piling and other raw timber products.

Most of the sampled firms do not purchase stumpage specifically for piling. Usually, trees suitable for piling material are harvested from stumpage that producers have purchased in connection with other timber-production activities. Firms sampled in Ohio purchase stumpage (mainly for products other than piling) for \$8 to \$15 per thousand board feet. Only the firm sampled in Illinois purchases stumpage solely for the production of piling; landowners are paid from 4 to 10 cents per linear foot.

Logging costs for Ohio firms which buy mixed stumpage (including piling as well as other products) are estimated to range from \$15 to \$30 per thousand board feet. The Illinois firm estimates logging costs at 11 cents per linear foot.

Since piling is generally not harvested by sampled producers until they have obtained an order for this product, considerable seasonal variation in production occurs.

The Michigan producer and a few producers sampled in Ohio sell their product to road contractors or other buyers using untreated piling.

Most of the firms sampled in Ohio as well as those in Minnesota, Wisconsin, and Illinois, sell directly to wood preservation plants or to buyers who subsequently subcontract the treating of this product.

Producers who produce piling only occasionally do not have the necessary equipment to transport long piles. These producers either sell at roadside or subcontract hauling operations.

Primary Manufacturers

Three wood preservation plants which handle piling were sampled; one each in the states of Missouri, Illinois, and Minnesota. The treating plant in Missouri is located outside of the study area; all of this firm's wood supply is obtained from Arkansas. The Illinois treating plant is one of the largest producers of pressure-treated piling in Illinois. This firm processed close to 250,000 linear feet of oak piling in 1959. Orders received by this firm for specific sizes of piling are usually filled within two weeks. Since the plant does not maintain a large inventory of treated or untreated piling, wood suppliers are contacted immediately after orders are received. Due to the short notice given suppliers, oral contracts are standard.

Piling is a minor product to the firm operating within the Minnesota study area. The pine piling pressure-treated by this firm in 1959 represents an insignificant volume of wood as compared with the volume of posts, poles and lumber that were processed. Unlike the Illinois plant, this firm attempts to anticipate market needs. It treats piling before orders are received and maintains a small inventory of preserved piling in its yard. Producers deliver untreated piling to the firm's yard during the winter months under an oral or written contract.

SUMMARY AND CONCLUSIONS

This study of the marketing of posts, poles and piling in the North Central region is based largely on a field survey conducted during the year 1960 in parts of nine states -- Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Ohio and Wisconsin. Standardized interview schedules were used at each market stage considered in the study -- producer, intermediate market agent, and primary manufacturer. Interest was focused on data for the year 1959.

Posts, poles and piling are a minor product in the perspective of total timber output in the region. They comprise about five percent of the volume of all timber products, but they have relatively much more importance in localized forest areas and timber types. Post production in the region, totaling 38.5 million pieces in 1958, far outstrips pole production (294,000 pieces) and piling production (25,000 pieces).

Data collected, due to the variable importance of posts, poles and piling production and the accidents of area sampling within states, do not permit a thorough regionwide analysis. Cedar posts and poles in the Lake States are treated as one industry group. Pine posts and poles in Missouri and Illinois are treated as a second industry group. A third group includes fence posts and oak or pine highway posts in Ohio. Piling can be discussed only generally for the region as a whole.

Cedar Posts and Poles in the Lake States

The cedar post and pole industry, as it presently functions in the Lake States, is highly competitive. Large numbers of producers, most of them unspecialized; the mixing of marketing roles; the lack of preservative treatment; and the wide variations in channeling wood from producer

to final consumer combine to deny strong market control to any group involved in marketing cedar.

Producers sampled sell largely to dealers (59 percent of 1959 output) and to retailers (34 percent). Sampled dealers, in turn, sold 42 percent of their output to secondary intermediate agents (wholesalers), 32 percent to retailers and 22 percent to various manufacturers, mainly fence companies, in 1959.

Cedar producers are a heterogeneous group. Some are part-time cedar producers; still others, full-time cedar producers. Larger firms are often full-time cedar producers, although some of them are also pulpwood producers. Logging, which tends to be seasonal, discourages full-time operations.

Producers are usually active in seeking out landowners and initiating contracts for stumpage. Small producers commonly buy stumpage immediately before logging begins, while larger producers may buy stumpage a year or more in advance of logging; but regardless of size, nearly all producers buy stumpage before obtaining contracts for the sale of products.

Few producers buy stumpage under oral contracts. The emphasis is on written contracts which specify species, sizes and quality of timber to be cut, prices, and time and method of payment. Logging is concentrated in the winter. Cut posts are sold mainly in the winter and early spring.

Dealer operations are usually, but not always, larger than producer operations. However, regardless of size, full-time cedar dealers are few. The seasonal nature of the industry leads many dealers to handle other products, particularly pulpwood, and to engage in producing activities as well as intermediate marketing.

Post dealers usually prefer casual, oral contracts with producers. Some, in fact, make no agreements of any kind prior to delivery. However, they indicate they will accept any quantity delivered since deliveries do not often reach the volume that can be sold. Producers are usually paid on delivery, by the piece, with prices graduated by post and pole sizes. Dealers anxious to increase the volume of their purchases often pay producers in advance of deliveries. Such advances may be limited in amount, but are always interest-free.

Wood preservation plants are not important to the marketing of Lake States cedar; a negligible proportion of total cedar production receives preservative treatment. However, rustic cedar fence companies, which are considered a special case of primary manufacturing, are an important market for Michigan producers and dealers.

Fence companies are full-time operators but purchase most of their raw material during the winter and early spring when producers are active. Loose oral agreements, initiated by suppliers, are common. Generally, unlimited amounts of cedar are accepted. The distinction between producer and dealer is unimportant to fence companies since there is no price recognition of dealer services. Suppliers generally receive the same prices for equal sizes and quantities of wood.

Fence companies in Michigan serve a number of markets. One firm, the largest of the three sampled, sells all of its output to wholesalers who place orders with the company well in advance of delivery -- wholesalers in 28 states are served by this company. Another company serves retailers in 10 states, while the smallest of the firms confines its sales to the Detroit area.

The market outlets available to an individual producer strongly affect his opportunities for profitable operations. In general, producers selling to dealers or primary manufacturers cover their labor and other costs of operation, but get little return for profit and risk. However, if sales can be made to retailers, higher prices are received; if sales are made to final consumers, prices received are still higher.

Despite the obvious fact that the larger the proportion of sales that can be funneled directly to retailers and consumers, the larger the producer's profit margin, producers cannot always bypass dealers or fence companies. The producer is usually a small operator with limited knowledge of markets. He can sell to a local dealer or a known fence company and resolve all his problems in finding market outlets. By selling to the local dealer or fence company, he gains several other market advantages: he obtains an outlet for picket-size materials as well as conventional posts and poles, an assured market, and payment on delivery or even in advance of delivery.

Dealers do not usually realize a substantial profit from sales to manufacturers or other intermediate agents. As is the case with producers, profits are increased by sales made closer to the consumer stage. But again, as in the case of producers, dealers cannot always sell directly to the most profitable outlets. In many cases, their knowledge of market outlets is limited. Moreover, like producers, they are concerned with other market advantages provided by some of the lower-price outlets: an assured market, an outlet for picket-size material, and payment on delivery or in advance of delivery.

Pine Posts and Poles in Missouri and Illinois

Pine is the major post and pole species handled in the Missouri and Illinois study areas. Production is centered in Missouri, but the wood preservation plants to which the wood moves are located in other states as well as Missouri. Illinois plants receive much of the Missouri posts and poles output, but they draw most of their wood supply from other states. All pine posts and poles are treated at wood preservation plants.

As in the cedar industry, both full-time and part-time producers are active. In Missouri, however, producers tend to specialize in the production of posts and poles. Also, producers are usually year-round operators rather than seasonal workers; many act as dealers. The average output of sampled producers -- 70,000 pieces -- is strikingly greater than the 13,500 average for Lake States cedar producers.

Producers seek out and contract for stumpage supplies, generally before they arrange for the sale of their products. Both oral and written contracts are used. Oral contracts are usually used when it is expected that harvest operations will not be completed within six months. Written contracts are used with longer-term purchases.

Sampled producers felt that they cannot economically harvest pine stumpage for posts and poles unless all merchantable timber is harvested; limitations on logging are not accepted in contracts. All of the posts and poles handled by sampled producers were sold directly to wood preservation plants in 1959 -- intermediate agents were bypassed.

Dealers also tend to be specialists in posts and poles and operate on a year-round basis. They do not handle much volume in other products and, unlike producers, do not often confine their activities to one market

role; many dealers also act as producers. In fact, dealers often handle more posts as producers than as dealers.

Most dealers do not make agreements with producers prior to delivery; those who do prefer a loose, oral contract. When purchase contracts are made, they are initiated by producers and are made only a few days before delivery. These purchase agreements state that anything that will make a post will be accepted in unlimited numbers and that payments will be made upon delivery. In some cases, advance payments are made to producers, but this is not a regular practice.

Wood preservation plants treating pine posts and poles generally operate on a year-round basis. These plants usually treat many kinds of timber products, but two plants sampled in Missouri specialize in posts and poles.

Plants specializing in the production of posts and poles do not make agreements with producers prior to delivery. Other treating plants usually use an oral contract with suppliers. These purchase agreements are usually negotiated from two weeks to one month before expected delivery dates. Contracts specify pine, the quantity and quality to be delivered, the time period of delivery and the method and time of payment. Suppliers are paid by the piece, and price recognition is not given for dealer services.

The limited price information obtained from sampled firms indicates that about 80 percent of the sales value of treated posts or poles represents the value added by preservative treatment. Stated differently, the cost of peeled posts delivered to treating plants represents only 20 percent of the sales value of treated posts. One treating plant, for example, buys a 4-inch, 7-foot post for \$0.24 and sells it after treating for \$1.06.

Since all posts and poles are sold to treating plants, either directly by producers or through intermediate market agents, the treating plants are a strong force in setting market prices for posts and poles. Data obtained from sampled firms indicates that these prices are adequate to cover the costs of production and the costs of dealer services, but the adequacy of margins for risk and profit is not clear. Further research is needed to analyze cost-price relationships.

The fact that dealers do not receive price recognition for their services indicates their weakness in competition with the larger producers who sell directly to wood preservation plants. However, dealers perform a needed service for small local producers by concentrating round posts and poles, peeling the bark, and locating treating plant outlets.

Ohio Fence and Highway Posts

Locust fence posts, a durable product, do not receive preservation treatment, but highway posts, mainly oak and some pine, pass through treating plants before reaching consumers.

Sampled producers of locust posts sold nearly all their posts directly to farmers in 1959, but a small volume went to truckers who act as intermediate market agents. Sampled producers of highway posts sold all their posts to treating plants, completely bypassing the intermediate market agents. In general, intermediate market agents handling posts have a less significant role in Ohio than in the Lake States cedar and Missouri-Illinois pine industries.

Ohio producers handle posts on a year-round basis as a sideline activity. Most of them are primarily sawmillers. Not only are post producers unspecialized as producers, but most of those sampled produce

larger volumes of other timber products than of locust or highway posts. Firms producing locust fence posts handled an average of only 1,500 posts annually; highway post producers average less than 800 posts.

Stumpage purchase contracts used by Ohio producers are similar to those used by Missouri producers. Contracts may be oral or written. In either case, they include provisions for the harvesting of all merchantable timber. Logging restrictions are not included, and payment is usually made in advance as a lump sum. In Ohio, however, post production is only a sideline activity and stumpage is not purchased specifically for post material.

Dealers in locust fence posts are part-time but year-round operators. Many operate sawmills or stores; posts are handled only as a sideline. Sampled dealers handled an average of less than 2,500 posts in 1959. Posts are usually purchased on a spot basis delivered to dealers' yards.

Farmers and truckers generally pay from 55 to 60 cents per line post. These prices are substantially higher than the costs of production which are estimated to be about 35 cents per post. Dealers pay from 30 to 40 cents for delivered posts.

Since dealers and producers sell at the same price to farmers and truckers, the dealers' margin for profit and risk is about the same as it is for the producer who bypasses dealers in making his sales. As in the pine and cedar post industries, services performed by dealers are more important to producers than to consumers.

Sampled wood preservation plants operate on a part-time basis. These plants confine their treating operations to oak or pine highway posts.

Preservation plants do not often negotiate for highway posts in advance of delivery. Their timber requirements in terms of species, size, and quality are known locally, as are their prices. Producers simply bring in their loads of posts and are paid upon delivery. In unusual cases, however, suppliers may be encouraged to produce posts with small advance payments.

Presumably, since highway posts are sold to treating plants, producers find that their costs of operation are covered by the prices for delivered posts and that there is some margin to apply to profit and risk. However, from the data at hand, there is no way to calculate whether and to what extent there is a margin between delivered price and costs of production.

Piling

Piling is a relatively minor product in the North Central region; piling imported from other areas provides users with the bulk of their requirements. Local production becomes important only when demand for piling is higher than normal.

The marketing chain for piling produced within the region is relatively short. Intermediate market agents are uncommon in this industry and sampled producers and wood preservation plants generally handle piling only to fill special orders.

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