

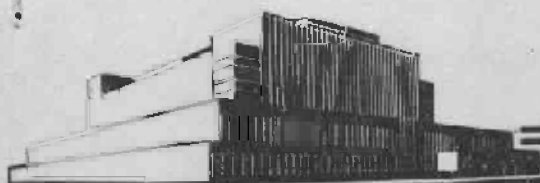
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HARDWOOD LOG GRADES FOR STANDARD LUMBER Proposals and Results

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October 1959

No. 1737



FOREST PRODUCTS LABORATORY
MADISON 5, WISCONSIN

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

In Cooperation with the University of Wisconsin

HARDWOOD LOG GRADES FOR STANDARD LUMBER

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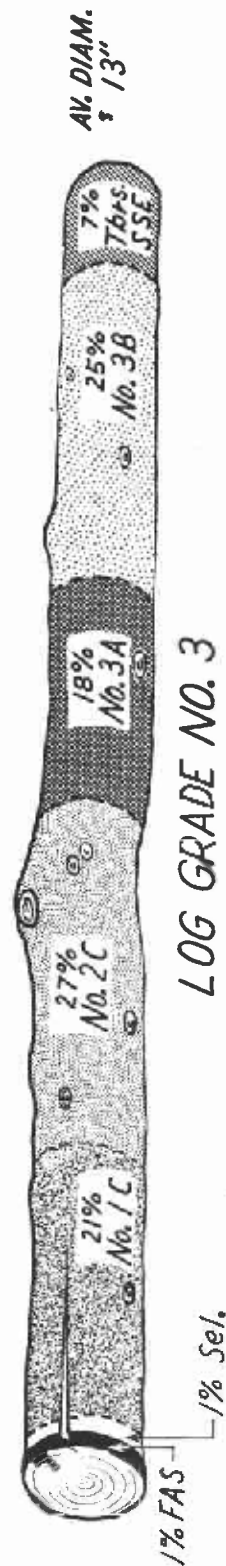
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LOG GRADE NO. 1



LOG GRADE NO. 2



LOG GRADE NO. 3

EXAMPLE OF RESULTS OBTAINED IN F.P.L. TESTS
ON RED OAK (LOWLAND) LOGS. (140,000 BD. FT.)

HARDWOOD LOG GRADES FOR STANDARD LUMBER

-- PROPOSED METHODS AND RESULTS --

(Results of Studies on Northern, Central, and Southern Hardwoods)

By¹

Forest Products Laboratory²
Forest Service,
U. S. Department of Agriculture

A system of grading hardwood logs for sawing into standard factory lumber has been developed by the Forest Products Laboratory through extensive work at sawmills in each of the important hardwood regions of the United States. This system is to meet a need, on the part of buyers and sellers of logs, timber appraisers, and those concerned in managing timber properties, for a method of determining the money values realizable when a given lot of logs is sawed into standard lumber. Visible surface characteristics of logs are correlated with the proportions of high, medium, and low-grade lumber that the logs will yield.

Heretofore in the appraisal of logs, quantity rather than quality has been the principal criterion of value, and the quality factor has been left largely to individual judgment with little definite means of measuring it in the log or standing tree. However, with a proper application of the proposed log grades the quality of lumber contained in a group of logs is fairly accurately predictable. By applying current lumber prices, the sales value of the lumber from logs is obtainable and with a proper adjustment for logging and milling costs a fair evaluation of the timber is provided for both the buyer and seller.

In brief, the use of log grades puts milling, logging, and the management of forest properties on a predictable dollars and cents basis and results in more profitable operation for all concerned.

¹The work covered by this report was done by A. C. Wollin and C. L. Vaughan under the direction of R. H. P. Miller and C. V. Sweet. Other members of the Forest Service including both Experiment Stations and administrative personnel have given valuable assistance. Report first issued March 1949.

²Maintained at Madison 5, Wisconsin, in cooperation with the University of Wisconsin.

Requirements for Satisfactory Log Grades

A fully satisfactory method of grading hardwood logs should meet the following requirements:

1. Separate from woods-run logs those that are best suited to sawing into standard factory lumber rather than into timbers, ties, or other products.
2. Segregate the logs into high, medium, and low-quality classes according to the lumber-grade yields and values that they will produce.
3. Provide a substantial differential in average lumber values among the grades, minimizing the overlapping of values of individual logs in different grades as when a log in a low grade cuts out better than a log of equal size in a higher grade.
4. Apply to small quantities of logs as well as to large quantities without relying too heavily on averages to balance misplacement of individual logs.
5. Make use of terms and methods sufficiently simple to be applicable in commercial transactions by men reasonably experienced in timber scaling, cruising, or green chain grading, and with the assistance of a farm forester or local lumberman to the occasional small buyer or seller of timber.

Such requirements serve as a good yardstick for evaluating the performance of the log grades here proposed.

Previous Log-grade Developments

Early efforts by industry and technical agencies to establish hardwood log grades fell short of desired results due to lack of necessary information, other than opinion and judgment, and to the principles embodied in the methods used. The earlier efforts made use of provisions limiting the size and frequency of defects, a method better suited for softwood log grading in which the end product is construction lumber. Among the first systems embodying the defect principle were those established in 1915 by the Southern Log Association of Memphis for grading southern hardwood logs. The Laboratory, cooperating with the Southern Forest Experiment Station, made use of similar principles in work on southern hardwoods in 1933^{and} incorporated them in a report "Lumber and Log Grades for Southern Hardwoods," by R. D. Carver and Raymond H. Miller.

A different approach, grading hardwood logs on the basis of clear areas between defects, the principle underlying the present hardwood lumber grades, was developed as a result of work by the Forest Products Laboratory on northern hardwoods. Making use of the principles growing out of the Laboratory's work on northern woods several other agencies have studied and made use of grading rules.

The results of the Laboratory's original work on northern hardwoods were given in a Forest Products Laboratory report issued in 1941 entitled "Grading Northern Hardwood Logs" by A. O. Benson and A. C. Wollin. Work on central hardwood species was covered in a Laboratory report in 1947 "Saw-log Grades for Hardwoods -- Central States Studies."

The results of the Laboratory's work on northern hardwoods have been incorporated in part in log grades adopted by the Northern Hemlock and Hardwood Manufacturers' Association under the title "Official Grading Rules for Northern Hardwood and Softwood Logs, Tie Cuts, Box Bolts, Shingle Bolts, Chemical Logs, Bolts, and Cordwood", revised 1947.

For use in survey work and appraisal of standing timber the results of the work on northern hardwoods have been made the basis of a set of rules issued in 1946 by the Southern Forest Experiment Station, New Orleans, La., entitled "Interim Sawlog Grades for Southern Hardwoods" by C. R. Lockard and R. D. Carpenter as representatives of a working committee of Forest Service personnel. These rules were formulated for use by the Forest Survey and in forest management work until more final grades could be developed incorporating the results of the Laboratory's detailed work on southern hardwoods. Rules similar to the Forest Products Laboratory rules for northern hardwoods were adopted in 1938 by the New England Timber Salvage Administration and in 1939 by the Otsego Forest Products Cooperative Association, Cooperstown, N. Y., for use in purchasing logs. Also making use of the earlier work on northern hardwoods, but modified by different provisions, the Department of Forestry, Purdue University, conducted tests and published a bulletin in 1946 entitled "Grade Yields and Overrun from Indiana Hardwood Sawlogs" by A. M. Herrick. Somewhat similar work has been done at Iowa State College by G. H. Hartman in cooperation with the Central States Forest Experiment Station, Columbus, Ohio. Although the results have not been published, other individuals and companies are known to have made use of log grades based on the principles developed as a result of the initial work on northern hardwoods.

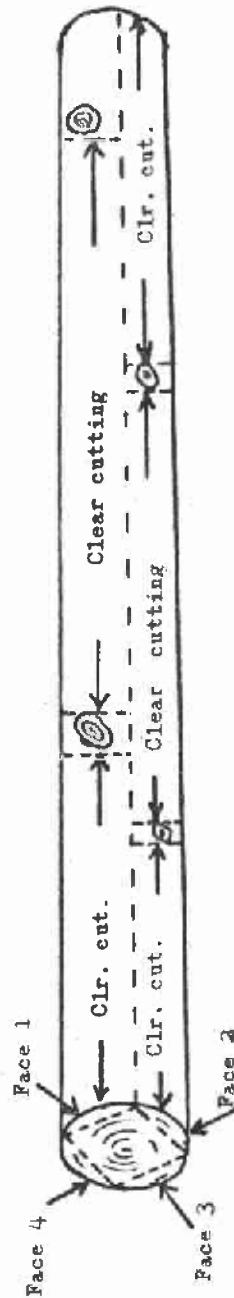
Log grades embodying substantially different principles are described in The Journal of Forestry (May 1948) "A Simple Method for Grading Hardwood Logs and Determining Log Values for New Hampshire" by O. P. Wallace. Likewise based on different principles of grading, the American Walnut Manufacturers' Association, Chicago, Ill., has issued "Rules for Grading American Walnut Logs", 1943.

Basic Principles

Since former attempts at grading hardwood logs, based on the size and frequency of defects, proved unsatisfactory, a different approach was sought. Rather than writing grading rules on the basis of judgment and then trying them out in practice, as had been the case previously, the Forest Products Laboratory conducted intensive mill studies to get basic relationships between surface characteristics of logs and the grades of lumber resulting from them without any preconceived ideas as to what the grade provisions should be. Logs of similar lumber-grade yields were carefully analyzed to determine what visible characteristics they had in common that could be used as grading factors. It was found that the principles used in grading hardwood lumber

HARDWOOD LOG GRADES FOR STANDARD LUMBER

Grade factors	Log Grade 1		Log Grade 2		Log Grade 3	
	Butts only	Butts and uppers	Butts and uppers	Butts and uppers	Butts and uppers	Butts and uppers
DIAMETER (minimum)	13"-15"	16"-19"; 20"+	11	8"+	8"+	8"+
LENGTH (minimum)	10'+	10'+	8'-11'; 12'+	8'+	8'+	8'+
CLEAR CUTTINGS (on the 3 best faces)						
Length (minimum)	7'	5' ; 3'	3'	2'	2'	2'
Number on face (maximum)	2	2	2 ; 3	Unlimited	Unlimited	Unlimited
Yield in face length (minimum)	5/6	5/6	4/6	3/6	3/6	3/6
SWEEP AND CROOK DEDUCTION (maximum)	15%	15%	30%	50%	50%	50%
CULL DEDUCTION, including sweep (maximum)	40%	40%	50%	50%	50%	50%
SOUND END DEFECTS, area (maximum)	--- See instructions ---					



Exceptions.—In ash and basswood 12" d.i.b. for grade 1 butts.

Grade 2 10" d.i.b. must be grade 1 surface quality.

Grade 2 11" d.i.b. limited to two cuttings.

Grade 2 8' and 9' lengths limited to 12" d.i.b.; 3/4 yield in not more than two 3' cuttings.

Sweep and crook allowance reduced 1/3 in logs with more than 1/4 diameter in sound end defects.

Sixty percent cull deduction permitted in grade 2 if otherwise of grade 1 quality.

Sixty percent cull deduction permitted in grade 3 if otherwise of grade 2 quality.

Forest Products Laboratory
Madison, Wisconsin
March 10, 1949

when applied to logs gave the closest correlation of any between log characteristics and lumber-grade yields.

On this basis the Laboratory has arrived at three log grades: Log Grade 1, Log Grade 2, and Log Grade 3. The specifications for these grades are correlated closely with the specifications for standard hardwood lumber grades. Since a board is graded on the basis of clear-faced or sound cuttings of a minimum size to comprise a certain fraction of the area of the board, a log is to be visualized as having four faces. Each face, graded as though it were a board except that rip cuttings and sound cuttings are not allowed, must furnish clear cuttings of a definite minimum size comprising a specified fraction of the area of the face. By so grading the logs it is found that the most accurate evaluation of each log can be obtained when the three best faces of the log are graded.

Other grading factors present in a log, which do not always show on the surface and limit cuttings, are the character of interior defects and the amount of cull. These factors are usually visible on the ends of a log thus allowing restrictions to be made; that is, with respect to maximum allowable cull (rot, shake, spider heart, etc.), also mineral stain, grub holes, worm holes, and bird pecks. Minimum diameter, minimum length, and maximum allowable sweep of logs are also provided for in the log grades.

Reasons for Specific Factors Used

The practice of grading logs has lagged behind that of most other commodities due to the variabilities in timber and to lack of a workable procedure. The grading system here developed appears to be good, however; it is not beyond improvement. It will require modification and improvement from time to time as it is put into practical use, just as has been the case with systems for grading lumber and other commodities.

It is realized that many questions will arise in the minds of readers actively interested in the grading of hardwood sawlogs as to just why and on what basis the detailed provisions were arrived at. It would be ideal if all such questions could be anticipated and answered here. Such procedure, of course, is impractical. It is believed, however, that the explanations given will help to clarify most of the questions that will arise and that the soundness of the analysis and of the log grades derived can be accepted in the same manner that lumber grading rules are accepted.

Three grades have been considered sufficient for commercial evaluation of logs. Analysis of field data has made it possible to establish basic specifications so that each log grade attracts to itself logs having similar lumber-grade yields and values and that each of the three log grades, high, medium, and low, has corresponding high, medium, and low average values.

Data from the first work on northern hardwoods were the basis for the original formulation of the grading principles. The original provisions have been modified and strengthened as a result of subsequent work in other hardwood regions. It is found after exhaustive trials of many combinations of

specifications that the one recommended here gives the best results that have been reached thus far. Each of the specific factors used helps to attain the goal of allocating each log to its proper grade. For example, detailed analysis has shown that for hardwood logs 15 inches and smaller butt logs yield considerably more high-grade lumber than do nonbutt logs of the same diameter. Consequently, the stipulation is made in Log Grade 1 that only butts are permitted in logs 13 to 15 inches in diameter.

Likewise the larger the log the more liberal allowance as to the size and number of cuttings can be made, provided the required yield in face length is obtained. For example, it is found that for logs 20 inches and larger the minimum length of cuttings for Log Grade 1 can be reduced to 3 feet as compared to 7 feet for butt logs 13 to 15 inches and still yield lumber of a quality that should be in Log Grade 1. The minimum length and yields in face length of cuttings have been made on a comparable basis with those in the lumber grading rules.

Limitations are placed on the amount of sweep and crook deductions, cull deductions, and sound end defects since excessive amounts definitely affect the value of a log. The particular limitation percentages chosen seem to serve the log grades to the best advantage.

In a like manner all the factors affecting the lumber grade yield of a log have been studied and evaluated, and their limitations established. Some of the limiting factors will seldom be encountered in grading logs, but an attempt has been made to foresee and provide for all visible factors that will affect the grade yield and thus the value of a log.

After various combinations were tried until the best was arrived at, check tests were made to compare the results with those obtained by the application of grading rules developed by others as referred to previously. It was found in these check tests that where much departure from the provisions of the present proposals was made the lumber-grade yields from the various log grades were substantially and seemingly unsatisfactorily altered, there being insufficient differentiation in the yield of No. 1C and Better lumber among the three log grades.

Results Obtained by Application of Proposed Log Grades

For nearly all species shown in table 1 the yield of No. 1 Common and Better lumber in Log Grade 1 varies from 65 to 80 percent; in Log Grade 2 from 40 to 64 percent; whereas in Log Grade 3 from only 13 to 36 percent. Thus there is good segregation according to average grade yields.³ On a comparative lumber value basis as seen for major species in table 1, Log Grade 2 is approximately 75 percent and Log Grade 3 50 percent that of Log Grade 1, and for the minor species 85 percent and 66 percent.

³The average grade yields are for the distribution of log diameters included in the mill tests, and will not apply to any given lot of logs without the adjustment described on page 7.

Table 1.--Yields and values of No. 1 Common and Better Lumber by Log Grades and Species

(For distribution of log diameters as tested)

Lumber	Percent of No. 1 Common and Better lumber ¹			Comparative value in percent of lumber with Log Grade 1 taken as 100 percent ²	
	Log grade: 1	Log grade: 2	Log grade: 3	Log grade 2	Log grade 3
<u>Primary Group³</u>					
Ash	80.1	57.4	29.7	77	54
Basswood	72.4	52.8	30.4	81	67
Birch, yellow	70.3	42.5	13.2	69	41
Gum, sap	71.6	49.4	23.9	78	58
Maple, hard	68.2	40.9	15.2	71	48
Oak, black	68.4	32.1	19.2	64	54
Oak, chestnut ⁴	65.0	41.5	36.5	70	60
Oak, red (lowland)	67.2	43.9	23.3	76	61
Oak, red (upland)	72.2	44.5	18.2	72	51
Oak, white (lowland)	68.5	42.4	18.4	73	56
Oak, white (upland)	72.1	42.7	15.4	67	46
Poplar, yellow	72.7	46.6	19.9	80	65
<u>Secondary Group³</u>					
Beech	67.3	46.8	18.7	83	63
Cottonwood	71.9	51.8	32.8	87	77
Elm, soft	66.7	44.9	20.3	81	66
Gum, black	76.4	60.1	31.9	84	63
Hickory	64.8	39.9	14.4	78	62
Maple, soft	72.7	63.6	25.2	89	64
Sycamore	67.4	49.7	30.6	84	66

¹These columns consist of the actual yield of FAS, Selects, and No. 1 Common.

²For explanation, see page 8.

³For explanation, see page 8.

⁴Combined grading WHND (worm holes no defect) and WHAD (worm holes a defect).

It should be clear that the relationship of values shown is that of the selling price of the lumber rather than the value of the logs before sawing. No. 3 Common lumber has a definite market value, and hence gives an appreciable lumber value for Log Grade 3 even though the lumber is produced with little or no margin over the cost of production.

The relative value of the logs of different grades has to be arrived at by taking conversion costs into account. Since costs are at least as high for low-grade logs as for high-grade leaving a much smaller margin for profit from low-grade logs, the relationship between log values of the three grades will be substantially different from that shown for the lumber values.

This segregation on the basis of the average yields and values shown in table 1 appears to be good from a practical standpoint. The segregation, however, is not perfect. The value of the lumber from individual logs varies from the average values for a given diameter but only by an amount that is reasonable to expect in the valuation of timber. The variation of individual logs from the average for a diameter class results in some overlapping between grades, but it is not so great that averages for a large number of logs have to be relied on for the differentials between grades. A certain percentage of low line logs in Log Grade 1, however, is found to be worth less per M than some of the best in Log Grade 2, and some of the poorest in Log Grade 2 are worth less than the best logs in Log Grade 3. Everyone familiar with timber knows that this can hardly be avoided.

In table 2, 75 percent of the range of lumber value from individual logs of average diameters in the three log grades is shown for four important species. The value of No. 2 Common and Better lumber in logs of average diameters for the grade is used as the basis. As in table 1, the range in values is seen to be consistently segregated. The overlapping in values between the bottom of one grade and the top of the next lower grade is seen to be a relatively small percentage of the average value for the grade.

The breakdown of lumber yields and values by individual grades and log diameters for various species is shown in tables 3 to 47. From these detailed tables it may be seen that the distribution of lumber grades for any one log grade is fairly consistent among all diameters throughout the diameter range with an expectable gradual increase in the yield of higher grade lumber and in value as the log diameter increases.

It may be noted from the tables of grade yields of individual species that Log Grade 1 is characterized by a relatively high yield of FAS, Log Grade 2 by a good yield of No. 1C and Better, and Log Grade 3 by a predominance of No. 2C and No. 3C lumber.

In a special analysis of lowland red oak lumber it was found that of all the lumber tallied, 82 percent of the FAS came from logs of Log Grade 1 and 17 percent came from Log Grade 2. Similarly of the No. 1C and Better, 59 percent came from the Log Grade 1, 35 percent from Log Grade 2, and 6 percent from Log Grade 3.

Table 2.--Partial range in value of lumber per M by log grades
(in logs of three average¹ diameter classes per grade)

Lumber	: 75 percent of range in value of lumber : of No. 2 Common and Better		
	: Log grade 1	: Log grade 2	: Log grade 3
	: <u>Dollars</u>	: <u>Dollars</u>	: <u>Dollars</u>
Oak, red (lowland)	: 121 - 79	: 84 - 35	: 42 - 0
Oak, red (upland)	: 130 - 88	: 100 - 32	: 38 - 0
Gum, sap	: 109 - 78	: 86 - 47	: 52 - 0
Maple, hard	: 139 - 81	: 86 - 34	: 45 - 0

¹Average diameter for the log grade and species and diameter on each side of average.

The lumber grade yields and values as shown by log diameters in tables 3 to 47 enable the individual operator or forester to make adjustments according to the diameter of logs he gets and to changes in lumber prices. Some operators will be interested merely in the relative lumber values from the three log grades that can be approximated directly from the values given in the tables for the diameters corresponding to the average diameter of the operators' timber. Other operators will want to compute actual values for a given log grade or a run of logs and to make adjustments for lumber prices current at a given time and place. With the data given in the tables the individual can apply his own methods in computing the values in which he is interested. For example, the lumber value per M for a given lot of logs of a certain species, log grade, and range of diameters can be computed on the basis of the operator's own current lumber prices. First, new average values for each lumber grade can be figured by using the operator's prices and the thickness table by grades as shown for each species. These new average lumber-grade prices multiplied by the average lumber-grade yield of each log grade taken from the tables will give a new lumber value which can be referred to as B, in place of the values shown in the tables. The values in the tables can be referred to as A. If the operator knows his average log diameter, the value of that diameter multiplied by B/A will give a close estimate for a given species and log grade based on his own current prices and his own log sizes.

If the operator requires a more accurate average value, he can compute a corrected average value for each diameter by multiplying the value for each diameter as given in the proper table by B/A, designating this corrected diameter value as C. He can then compute the percentage distribution by diameters of the logs with which he is concerned and multiply his C value for each diameter class by its corresponding percentage distribution to obtain the average value per M for his lot of logs and his lumber prices.

Description of Methods of Field Study and Analysis

Approximately 11,000 logs as sawed at 28 sawmills in the northern, central, and southern hardwood regions are included in the studies covered by this report. Each log was diagrammed according to a system giving a record as closely comparable as possible to a close-up photograph of all sides and ends of the log. The diagram, plus a complete log description, was made on a special form before sawing the log. After sawing, a grade, thickness, and footage tally was made on the grading chain of what the log yielded in lumber. Thus, close correlation between log characteristics and lumber grade yields was obtained. A 5-percent deduction for shrinkage, but none for degrade, was made on all lumber tallies. The data on all log diagrams and mill tally sheets were computed and placed on punch cards for machine sorting and tabulating.

The log diagram, log description, and lumber tally for each log furnished an accurate means of showing the reasons for the lumber-grade yield from the particular log. The logs were first sorted into groups having similar grade yields, and then each of these groups was examined and whenever

a certain surface or end irregularity was the evident cause of low-grade yield it was noted. In this way each group of logs (with similar grade yields) was sorted into groups having similar external characteristics. Where surfaces and ends were free of irregularities, consideration was given diameters, lengths, and position of log (whether butt or other). Each type of surface and end irregularity, log diameter, length, and position was studied and its effect on the lumber-grade yields was determined. The effect of combinations of the foregoing log characteristics was also studied and evaluated.

Grade yields and varying thicknesses of lumber have been reduced to a common denominator basis by applying dollar values derived from published lumber prices as of June 1948. These values were then plotted and the value for each diameter shown in tables 3 to 47 was taken from the resulting curve. These adjusted values are the basis of the comparative values shown in table 1 with the average value of Log Grade 1 taken as 100.

Primary and secondary groupings of species are used in table 1 because some species carry a substantial differential in price between the upper and lower grades of lumber cut from them, and others a small differential. Such differences are due mainly to the number of uses for the species, particularly those for high value or finish purposes. This variation in comparative values of the two groups does not mean that the log grades are not so applicable to the secondary group as to the primary group. The grouping has been made merely to show the effectiveness of the log grades more advantageously.

The lumber-grade yields by thicknesses, shown in the lower half of tables 3 to 47, are the average for the particular species and log grade. They are presented for the purpose of conversion when prices other than those used in this report are to be applied.

Only those species furnishing sufficient data to be shown by log grades have been included in this report. It is felt that those species not included are of importance in local areas only and that species closely allied can be found in the report, thus furnishing suitable specifications and grade yields.

All oaks, except black and chestnut, have been classified as upland and lowland red and white oak due partly to the fact that, commercially, oak lumber is recognized as only red and white and partly to the uncertainty of identification (especially of the numerous oak species found in the South). All oaks found in the river bottoms and deltas of the South have been classified as lowland with the remainder classified as upland.

Table 3.--BASSWOOD -- Lumber grades and values by diameters

LOG GRADE No. 1

Lumber grade yields(actual)								
Log	Basis	FAS	Sel.	No.	No.	No.	Lumber	Overrun
d.i.b.	lumber			1C	2C	3C	value	net
	tally						per M	Scrib.
								Dec. C.
							(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent		
12	2,123	18.8	10.6	37.5	24.2	8.9	108.75	23.5
13	2,662	33.9	10.0	28.0	15.6	12.5	110.00	19.5
14	2,115	32.7	8.7	30.6	19.4	8.6	111.25	15.5
15	3,933	35.1	11.4	27.4	17.3	8.8	112.50	11.5
16	2,487	30.9	8.3	36.4	15.8	8.6	113.50	8.0
17	1,680	31.7	8.7	29.9	14.5	15.2	114.25	4.5
18	2,119	43.5	9.9	19.5	16.2	10.9	115.25	1.0
19	924	39.2	2.3	26.3	16.1	16.1	116.00	- 2.0
20	232	57.8	8.2	15.9	16.8	1.3	116.75	- 5.0
21	303	25.4	10.6	25.7	31.0	7.3	117.50	- 8.0
22	733	46.5	9.0	23.1	8.9	12.5	118.00	-11.0
23	265	44.5	1.5	40.8	6.4	6.8	118.50	-13.5
Average		33.9	9.3	29.2	17.2	10.4	112.71	+ 9.1

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
Thickness:			1C	2C	3C
Inches	Percent within grade				
4/4	59.0	47.8	64.0	62.1	59.6
5/4	21.4	16.6	17.3	17.8	7.8
6/4	.6	1.1	.5	-	.5
8/4	19.0	34.5	18.2	20.1	32.1
Total	100.0	100.0	100.0	100.0	100.0

Table 4.--BASSWOOD -- Lumber grades and values by diameters

LOG GRADE No. 2

Lumber grade yields (actual)								
Log	Basis						Lumber	Overrun
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	value	net
	tally			1C	2C	3C	per M	Scrib.
								Dec. C.
							(adjusted)	(adjusted)
<u>Inches</u>	<u>Bd.ft.</u>	<u>Per-</u>	<u>Per-</u>	<u>Per-</u>	<u>Per-</u>	<u>Per-</u>	<u>Dollars</u>	<u>Percent</u>
		<u>cent</u>	<u>cent</u>	<u>cent</u>	<u>cent</u>	<u>cent</u>		
10	2,189	8.1	6.3	32.2	32.2	21.2	89.00	31.5
11	5,873	7.9	4.7	40.0	34.0	13.4	90.00	24.5
12	4,799	9.5	5.6	37.0	31.2	16.7	91.00	17.5
13	4,299	11.5	5.6	32.1	32.6	18.2	92.00	12.0
14	3,581	13.1	6.5	36.9	28.6	14.9	92.75	6.5
15	2,219	17.0	3.5	38.6	31.7	9.2	93.50	2.0
16	977	11.7	5.1	36.3	25.6	21.3	93.75	- 1.5
17	504	4.4	3.0	55.5	30.0	7.1	94.00	- 3.5
Average		10.5	5.4	36.9	31.6	15.6	91.47	14.5

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
<u>Inches</u>	<u>Percent within grade</u>				
4/4	56.2	62.0	65.7	59.3	58.9
5/4	24.7	15.2	19.5	19.4	10.7
6/4	-	-	.5	.3	-
8/4	19.1	22.8	14.3	21.0	30.4
Total	100.0	100.0	100.0	100.0	100.0

Table 5.--BASSWOOD -- Lumber grades and values by diameters

LOG GRADE No. 3

Lumber grade yields (actual)								
Log	Basis						Lumber	Overrun
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	value	net
	tally			1C	2C	3C	per M	Scrib.
								Dec. C.
							(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent		
7	142	-	-	21.1	47.2	31.7	70.00	43.0
8	997	-	-	25.8	46.7	27.5	75.50	38.5
9	3,664	2.4	2.6	33.3	43.5	18.2	77.50	33.5
10	3,070	.6	3.5	25.2	50.4	20.3	76.25	28.0
11	886	.5	.5	22.3	46.8	29.9	73.25	22.5
12	556	.7	-	16.4	50.2	32.7	70.50	16.5
13	433	-	-	22.2	47.8	30.0	68.25	11.5
14	186	-	-	12.4	51.1	36.5	66.25	7.0
15	146	11.0	2.7	32.9	39.0	14.4	64.50	3.5
16	116	-	-	13.8	50.0	36.2	62.50	1.5
Average		1.3	2.1	27.0	46.9	22.7	75.15	27.7

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
Inches	Percent within grade				
4/4	78.5	68.1	73.7	66.2	62.1
5/4	21.5	10.5	21.1	23.3	12.1
6/4	-	-	1.0	-	.4
8/4	-	21.4	4.2	10.5	25.4
Total	100.0	100.0	100.0	100.0	100.0

Table 6.--YELLOW BIRCH -- Lumber grades and values by diameters

LOG GRADE No. 1

		Lumber grade yields (actual)								Lumber	Overrun
Log	Basis									value	net
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.	per M	Scrib.	
	tally			1C	2C	3A	3B	and		Dec. C.	
								SSE	(adjusted)	(adjusted)	
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent	cent	cent			
13	2,501	18.8	9.5	29.1	13.6	4.7	23.9	0.4	112.50	13.5	
14	2,571	28.4	4.3	30.7	15.0	3.4	18.2	-	117.75	9.5	
15	6,044	25.3	11.3	27.0	13.1	4.1	19.2	-	123.25	6.0	
16	6,475	27.7	6.9	30.6	12.7	4.9	15.9	1.3	128.50	3.5	
17	6,496	35.1	7.2	27.8	10.4	3.5	15.5	.5	133.75	1.0	
18	5,807	42.9	6.9	22.3	9.5	3.6	13.6	1.2	138.75	-1.0	
19	5,218	48.5	7.5	23.1	7.3	3.2	10.4	-	143.50	-3.0	
20	2,060	37.5	8.4	32.3	6.7	2.0	11.4	1.7	147.50	-5.0	
21	2,585	48.4	5.6	23.7	10.0	4.6	7.7	-	150.50	-7.0	
22	1,440	65.6	1.5	17.3	4.7	5.3	5.6	-	153.00	-9.0	
23	552	49.8	10.5	19.0	7.1	1.5	12.1	-	154.75	-11.0	
24	288	66.3	-	22.6	4.2	-	6.9	-	155.75	-13.0	
Average		36.3	7.5	26.5	10.6	3.8	14.7	.6	133.87	+ 1.0	

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No.	No.	No.	No.	Tbrs.
			1C	2C	3A	3B	and SSE
Inches	Percent within grade						
4/4	82.7	65.3	77.1	79.4	72.3	67.9	-
5/4	1.4	2.4	2.5	2.8	10.1	4.7	-
6/4	7.1	17.2	9.8	5.9	3.5	4.4	-
8/4	7.1	14.2	7.9	7.4	11.6	18.5	-
10/4	1.7	.9	2.7	4.5	2.5	3.2	-
12/4	-	-	-	-	-	1.3	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 7.--YELLOW BIRCH -- Lumber grades and values by diameters

LOG GRADE No. 2

Log d.i.b.	Basis lumber tally	Lumber grade yields (actual)							Lumber value per M	Overrun net Scrib. Dec. C.
		FAS	Sel.	No. 1C	No. 2C	No. 3A	No. 3B	Tbrs. and SSE		
Inches	Bd.ft.	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Dollars	Percent
10	1,964	3.8	2.6	25.6	21.2	9.9	36.9	-	77.25	28.0
11	4,959	4.6	6.3	26.1	18.3	7.2	37.5	-	81.00	20.5
12	6,989	8.7	5.9	25.1	18.5	7.7	34.1	-	84.75	15.0
13	4,900	5.8	3.3	29.0	21.2	5.8	33.6	1.3	88.50	10.5
14	5,731	7.6	5.8	33.0	20.5	5.0	27.0	1.1	92.00	7.0
15	4,416	8.4	4.7	26.0	24.7	7.8	28.4	-	95.50	3.5
16	2,596	11.8	4.0	28.7	22.5	7.9	25.1	-	99.25	.5
17	2,020	4.2	2.4	27.5	30.0	7.0	28.9	-	102.75	-1.5
18	2,470	10.0	5.3	34.1	19.2	5.3	26.1	-	106.00	-3.5
19	1,586	17.3	1.6	47.6	15.3	4.4	13.8	-	109.00	-5.5
20	412	2.2	4.1	42.2	27.0	11.4	13.1	-	112.00	-7.0
21	648	29.5	-	39.2	13.7	3.1	14.5	-	114.75	-9.0
22	345	22.0	7.5	33.1	17.4	-	20.0	-	117.00	-11.0
23	778	15.8	.8	42.7	23.4	1.8	15.5	-	119.25	-12.5
Average		8.3	4.6	29.6	20.8	6.6	29.8	.3	92.46	7.5

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No. 1C	No. 2C	No. 3A	No. 3B	Tbrs. and SSE
Inches	Percent within grade						
4/4	81.7	73.5	83.4	76.1	82.5	71.9	-
5/4	.3	1.7	2.0	3.6	3.3	4.0	-
6/4	10.7	16.7	6.9	6.8	3.7	4.3	-
8/4	5.6	5.5	4.8	5.3	8.4	12.4	-
10/4	1.7	2.6	1.4	3.9	2.1	4.9	-
12/4	-	-	1.5	4.3	-	2.5	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 8.--YELLOW BIRCH -- Lumber grades and values by diameters

LOG GRADE No. 3

Log	Basis	Lumber grade yields (actual)							Lumber	Overrun
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.	value	net
	tally			1C	2C	3A	3B	and	per M	Scrib.
								SSE	(adjusted)	Dec. C.
										(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent		
8	162	-	3.7	20.4	19.1	8.6	48.2	-	62.25	41.5
9	1,098	-	1.6	11.8	20.9	6.8	58.9	-	59.75	33.0
10	3,190	1.1	1.1	14.8	17.7	8.4	56.9	-	57.75	25.0
11	1,319	.8	-	7.7	20.7	5.8	65.0	-	56.00	17.0
12	1,207	-	-	8.1	20.1	7.0	64.8	-	54.50	10.0
13	683	-	.7	9.7	23.7	10.8	55.1	-	53.00	3.5
14	964	.7	.6	13.0	17.9	6.7	61.1	-	51.75	-3.0
15	832	1.4	.5	9.5	18.3	10.3	60.0	-	50.50	-8.5
16	680	1.9	2.3	12.4	22.2	4.9	56.3	-	49.50	-12.5
17	63	-	-	6.4	22.2	-	71.4	-	48.50	-16.5
18	122	-	-	6.5	-	3.3	90.2	-	47.50	-19.5
Average		.7	.9	11.6	19.3	7.6	59.9	-	55.23	9.9

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No. 1C	No. 2C	No. 3A	No. 3B	Tbrs. and SSE
Inches	Percent within grade						
4/4	100.0	91.1	89.1	81.2	93.8	84.8	-
5/4	-	8.9	5.3	6.0	3.8	3.6	-
6/4	-	-	1.7	4.2	2.4	2.2	-
8/4	-	-	2.5	4.6	-	3.2	-
10/4	-	-	1.4	.9	-	4.1	-
12/4	-	-	-	3.1	-	2.1	-
Total	100.0	100.0	100.0	100.0	100.0	100.0	-

Table 9.--SAP GUM -- Lumber grades and values by diameters

LOG GRADE No. 1

Lumber grade yields (actual)									
Log	Basis							Lumber	Overrun
d.i.b.	lumber	FAS	Sel.	No.	No.	No.		value	net
	tally			1C	2C	3C		per M	Scrib.
									Dec. C.
								(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent			
13	4,589	21.5	9.7	32.5	26.1	10.2	91.25	26.0	
14	5,308	31.0	10.1	28.7	20.1	10.1	93.25	24.0	
15	7,412	26.3	9.4	29.7	25.6	9.0	94.75	22.0	
16	8,825	39.5	8.9	24.6	19.1	7.9	96.50	19.5	
17	6,027	36.8	7.2	28.8	20.0	7.2	97.75	17.5	
18	6,455	39.1	8.4	26.9	17.3	8.3	99.00	15.5	
19	4,757	41.5	7.8	22.9	18.0	9.8	99.75	14.0	
20	3,455	38.1	8.5	23.4	20.6	9.4	100.00	12.5	
21	2,040	40.0	7.2	33.1	13.2	6.5	100.00	11.5	
22	1,428	50.8	7.5	18.7	14.4	8.6	99.75	10.5	
23	1,394	34.9	4.2	39.5	14.9	6.5	99.50	9.5	
24	-	-	-	-	-	-	99.00	8.5	
25	330	23.4	7.6	52.1	3.0	13.9	98.50	8.0	
26	781	49.0	1.6	29.7	6.8	12.9	98.00	7.5	
27	530	39.4	5.3	37.2	13.4	4.7	97.50	7.0	
28	-	-	-	-	-	-	97.00	6.5	
29	588	64.6	1.4	14.0	3.2	16.8	96.50	6.0	
Average		35.6	8.3	27.7	19.6	8.8	96.95	17.8	

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
Inches	Percent within grade				
5/8	0.2	0.9	1.6	0.5	0.4
4/4	44.2	40.8	55.4	55.8	38.8
5/4	54.9	57.7	39.5	31.9	10.8
8/4	.3	.6	1.2	11.3	50.0
10/4	.4	-	2.3	.5	-
Total	100.0	100.0	100.0	100.0	100.0

Table 10.--SAP GUM -- Lumber grades and values by diameters

LOG GRADE No. 2

Lumber grade yields (actual)								
Log	Basis						Lumber	Overrun
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	value	net
	tally			1C	2C	3C	per M	Scrib.
								Dec. C.
							(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent		
10	1,218	1.6	7.6	28.3	41.6	20.9	64.75	40.0
11	4,706	4.3	6.3	24.3	40.0	25.1	67.50	34.0
12	9,594	7.4	7.3	27.9	38.4	19.0	70.25	29.0
13	9,528	10.4	6.1	29.0	35.5	19.0	72.75	24.5
14	10,710	9.5	6.5	32.1	32.9	19.0	75.25	20.5
15	8,639	10.4	5.5	36.7	31.0	16.4	77.50	17.0
16	7,947	9.9	3.7	38.0	34.6	13.8	79.75	13.5
17	5,453	14.0	4.6	40.7	31.6	9.1	81.75	10.5
18	2,956	16.0	3.1	41.0	28.5	11.4	83.50	8.0
19	1,849	23.4	10.4	32.2	23.2	10.8	84.50	6.0
20	1,086	13.6	2.9	28.4	25.6	29.5	85.50	4.0
21	744	5.1	-	63.2	17.2	14.5	85.75	2.5
22	-	-	-	-	-	-	86.00	1.0
23	646	23.2	4.9	39.2	26.8	5.9	86.00	.0
24	-	-	-	-	-	-	86.00	- 1.0
25	211	13.3	-	39.3	33.2	14.2	85.75	- 1.5
26	399	28.3	-	40.1	17.3	14.3	85.50	- 2.5
27	-	-	-	-	-	-	85.00	- 3.0
28	355	23.1	1.4	45.9	17.8	11.8	84.50	- 3.5
Average		10.4	5.6	33.4	33.6	17.0	75.75	18.7

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
Inches	Percent within grade				
5/8	0.8	0.8	2.3	0.9	0.6
4/4	62.3	46.1	62.0	61.8	37.7
5/4	34.0	49.0	31.8	26.5	11.2
6/4	.4	-	-	.1	.3
8/4	1.7	4.1	2.9	10.4	50.2
10/4	.8	-	1.0	.3	-
Total	100.0	100.0	100.0	100.0	100.0

Table 11.--SAP GUM -- Lumber grades and values by diameters

LOG GRADE No. 3

Lumber grade yields (actual)								
							Lumber	Overrun
							value	net
							per M	Scrib.
								Dec. C.
							(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent		
8	100	-	-	23.0	55.0	22.0	48.00	47.0
9	1,895	1.3	3.8	10.2	42.0	42.7	49.75	42.5
10	3,388	1.0	1.5	12.7	50.0	34.8	51.50	38.0
11	2,888	-	.7	11.5	48.9	38.9	53.00	34.0
12	3,627	1.0	1.3	19.6	46.7	31.4	54.50	30.0
13	3,458	1.6	1.6	19.1	51.0	26.7	56.00	26.0
14	2,831	.4	1.7	22.1	47.5	28.3	57.50	22.0
15	2,599	2.7	1.4	21.9	52.6	21.4	69.00	18.0
16	2,649	4.4	2.1	32.9	43.5	17.1	60.50	14.5
17	1,009	.9	1.0	40.9	42.3	14.9	61.50	11.0
18	1,589	2.8	2.5	25.0	43.7	26.0	62.50	8.0
19	652	-	-	38.8	39.0	22.2	63.50	5.0
20	184	-	-	25.0	72.8	2.2	64.00	2.5
21	208	7.2	-	39.9	32.7	20.2	64.75	.0
Average			1.6	20.7	47.5	28.6	56.02	24.4

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
Inches	Percent within grade				
5/8	0.9	1.8	4.9	1.9	2.0
4/4	52.5	49.2	66.3	64.9	47.1
5/4	46.6	44.6	27.7	22.2	8.9
6/4	-	-	-	.3	.9
8/4	-	4.4	1.1	10.7	41.1
Total	100.0	100.0	100.0	100.0	100.0

Table 12.--HARD MAPLE -- Lumber grades and values by diameters

LOG GRADE No. 1

Log	Basis	Lumber grade yields (actual)								Lumber	Overrun
d.i.b.	tally	FAS	Sel.	No.	No.	No.	No.	Tbbs.		value	net
				1C	2C	3A	3B	and		per M	Scrib.
								SSE	(adjusted)	(adjusted)	Dec. C.
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent	cent	cent			
13	1,778	12.2	15.7	32.2	11.4	6.7	21.8	-	106.00	16.5	
14	2,235	25.9	15.1	22.6	14.4	5.8	14.8	1.4	109.25	9.5	
15	5,344	22.5	11.5	30.4	12.6	6.3	16.7	-	112.50	4.0	
16	3,812	19.3	11.8	34.2	12.1	4.9	16.8	.9	115.50	0	
17	3,848	22.1	14.4	34.5	10.9	2.6	13.9	1.6	118.75	- 2.5	
18	3,143	28.8	13.6	27.6	12.3	3.4	12.4	1.9	121.75	- 5.0	
19	2,336	27.4	11.0	31.7	15.3	3.4	11.2	-	124.25	- 6.5	
20	2,529	34.0	13.8	29.4	9.7	2.8	7.0	3.3	126.50	- 8.0	
21	1,276	38.4	9.6	23.8	13.6	5.3	9.3	-	128.50	- 9.0	
22	253	36.0	23.3	28.5	6.3	-	5.9	-	130.25	-10.0	
23	700	23.1	7.6	40.3	14.1	4.0	10.9	-	131.50	-10.5	
Average		24.7	12.9	30.6	12.3	4.5	14.0	1.0	117.87	- 1.0	

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbbs.
thickness			1C	2C	3A	3B	and
							SSE
Inches	Percent within grade						
4/4	45.0	36.9	66.3	72.3	64.8	72.2	-
5/4	.7	.5	1.0	1.2	-	1.4	-
6/4	11.0	8.7	3.7	1.9	1.1	1.4	-
8/4	36.1	44.2	25.9	23.0	34.1	18.7	-
9/4	2.3	4.5	1.2	1.0	-	.4	-
12/4	4.9	5.2	1.9	.6	-	5.9	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13.--HARD MAPLE -- Lumber grades and values by diameters

LOG GRADE No. 2

Log : Basis :		Lumber grade yields (actual)							Lumber	Overrun
d.i.b.:	lumber	FAS :	Sel.:	No. :	No. :	No. :	No. :	Tbhrs.:	value	net
:	tally :	:	:	1C :	2C :	3A :	3B :	and :	per M :	Scrib.
:	:	:	:	:	:	:	:	SSE :	(adjusted):	(adjusted)
Inches:	Bd.ft.	Per-:	Per-:	Per-:	Per-:	Per-:	Per-:	Per-:	Dollars	Percent
:	:	cent:	cent:	cent:	cent:	cent:	cent:	cent:	:	:
10 :	977 :	3.5:	5.2:	28.2:	16.9:	11.5:	27.7:	7.0 :	70.50 :	26.0
11 :	5,294 :	2.4:	6.6:	25.2:	16.3:	6.9:	38.7:	3.9 :	73.50 :	19.5
12 :	10,297 :	4.5:	5.1:	28.3:	19.4:	8.2:	31.0:	3.5 :	76.50 :	13.5
13 :	8,162 :	3.4:	5.5:	26.3:	22.3:	9.2:	31.8:	1.5 :	79.50 :	8.0
14 :	7,343 :	4.4:	4.9:	32.5:	22.8:	7.6:	27.1:	.7 :	83.00 :	4.0
15 :	6,379 :	5.8:	4.6:	29.9:	24.7:	8.2:	25.5:	1.3 :	86.50 :	1.0
16 :	4,039 :	6.3:	6.5:	32.2:	25.6:	8.2:	20.4:	.8 :	89.50 :	-1.0
17 :	3,637 :	8.0:	8.2:	32.4:	19.9:	9.7:	21.8:	- :	92.75 :	-3.0
18 :	1,964 :	9.3:	8.2:	27.8:	24.2:	8.9:	21.6:	- :	95.75 :	-4.0
19 :	1,212 :	14.2:	4.0:	40.3:	22.4:	5.1:	11.4:	2.6 :	98.50 :	-5.0
20 :	1,017 :	9.8:	8.7:	26.3:	18.2:	7.0:	23.8:	6.2 :	101.50 :	-5.5
21 :	636 :	27.2:	5.6:	43.9:	16.2:	5.5:	1.6:	- :	104.00 :	-6.0
22 :	481 :	21.4:	17.3:	21.6:	19.3:	6.9:	13.5:	- :	106.50 :	-6.5
Average	:	5.6:	5.9:	29.4:	21.3:	8.2:	27.6:	2.0 :	83.19 :	+5.8

Distribution by thicknesses of above yields

Lumber	FAS :	Sel.:	No. :	No. :	No. :	No. :	Tbhrs.
thickness:	:	:	1C :	2C :	3A :	3B :	and
:	:	:	:	:	:	:	SSE
Inches	:	Percent within grade					
4/4	:	58.0:	48.1:	71.7:	67.4:	68.9:	59.6: -
5/4	:	1.1:	3.5:	1.7:	1.9:	1.6:	1.0: -
6/4	:	12.2:	9.2:	6.8:	4.1:	3.2:	1.6: -
8/4	:	24.2:	39.2:	19.2:	26.3:	25.7:	23.8: -
9/4	:	.7:	- :	.1:	.3:	.6:	2.5: -
12/4	:	3.8:	- :	.5:	- :	- :	11.5:100.0
Total	:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:

Table 14.--HARD MAPLE -- Lumber grades and values by diameters

LOG GRADE No. 3

		Lumber grade yields (actual)							Lumber	Overrun
Log	Basis								value	net
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.	per M	Scrib.
	tally			1C	2C	3A	3B	and		Dec. C.
								SSE	(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent		
8	170	-	2.3	11.8	10.6	29.4	45.9	-	53.50	40.0
9	1,581	0.3	1.0	16.5	19.4	10.7	52.1	-	54.25	33.5
10	3,200	.2	.8	18.3	22.9	11.2	46.6	-	54.75	26.5
11	2,380	-	1.2	8.4	19.9	12.8	57.7	-	55.25	20.0
12	1,381	-	-	10.3	22.2	15.1	49.7	2.7	55.75	13.5
13	2,402	.5	1.1	12.8	26.7	14.0	44.9	-	56.50	7.0
14	2,268	.8	-	11.3	27.9	13.4	46.6	-	57.50	1.5
15	850	.5	1.7	12.5	22.6	11.2	51.5	-	59.00	-4.0
16	627	1.8	-	19.3	36.8	12.6	29.5	-	60.75	-9.0
17	628	1.4	4.0	14.2	26.1	11.5	24.8	18.0	62.50	-13.0
18	365	-	3.8	26.6	24.7	10.7	34.2	-	64.50	-16.5
19	168	-	-	13.7	23.8	15.5	47.0	-	66.50	-19.0
Average		.4	1.0	13.8	23.9	12.7	47.3	.9	56.55	+11.0

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.
thickness:			1C	2C	3A	3B	and
							SSE
Inches	Percent within grade						
4/4	80.0	47.7	81.4	75.6	65.9	54.7	-
5/4	-	-	.8	.9	1.0	1.2	-
6/4	-	12.9	4.3	7.1	4.0	2.8	-
8/4	20.0	39.4	13.5	16.4	29.1	24.4	-
9/4	-	-	-	-	-	1.8	-
12/4	-	-	-	-	-	15.1	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 15.--BLACK OAK -- Lumber grades and values by diameters

LOG GRADE No. 1

		Lumber grade yields (actual)							Lumber	Overrun
Log	Basis								value	net
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	No.	Tbhrs.	per M	Scrib.
tally				1C	2C	3A	3B	and		Dec. C
								SSE	(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent		
13	1,472	25.6	10.1	25.3	15.9	8.2	12.5	2.4	99.50	20.0
14	2,125	24.2	9.6	28.0	14.9	6.1	17.2	-	102.00	17.0
15	4,363	19.5	9.5	26.8	15.2	7.0	22.0	-	104.75	14.0
16	4,285	23.4	10.4	27.1	15.2	6.8	17.1	-	107.25	11.5
17	4,809	23.0	11.5	27.4	15.1	5.3	17.0	.7	110.00	9.0
18	3,214	22.9	7.5	31.4	14.5	6.1	13.4	4.2	112.50	7.0
19	4,618	30.9	10.4	27.8	10.6	3.1	11.0	6.2	115.00	5.0
20	4,254	30.3	6.2	38.6	9.2	5.0	10.7	-	117.50	3.0
21	2,370	38.8	6.5	32.0	10.1	3.9	8.7	-	119.75	1.0
22	1,999	37.9	5.5	42.4	4.1	1.1	9.0	-	122.00	-.5
23	746	29.1	7.7	37.5	10.2	3.2	12.3	-	124.00	-2.0
24	564	20.7	5.7	59.0	5.5	2.0	7.1	-	126.00	-3.5
25	524	77.7	-	13.4	3.6	-	5.3	-	127.75	-5.0
26	1,238	57.1	11.4	26.7	.7	2.2	1.9	-	129.25	-6.5
27	1,073	53.2	10.2	21.6	4.8	2.5	7.7	-	130.75	-8.0
Average		29.2	8.9	30.3	11.8	4.9	13.6	1.3	113.09	+6.5

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbhrs.
thickness:			1C	2C	3A	3B	and
							SSE
Inches:	Percent within grade						
5/8	0.3	0.2	0.8	-	-	-	-
4/4	21.4	35.3	44.0	59.1	57.1	41.9	-
5/4	6.1	7.3	6.0	3.8	.4	.3	-
6/4	54.5	39.6	41.7	24.8	12.2	5.2	-
8/4	8.1	6.9	5.3	11.4	30.3	52.6	-
10/4	6.2	9.3	1.1	.9	-	-	-
12/4	3.4	1.4	1.1	-	-	-	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 16.--BLACK OAK -- Lumber grades and values by diameters

LOG GRADE No. 2

Log	Basis	Lumber grade yields (actual)							Lumber value per M	Overrun net Scrib. Dec. C
		FAS	Sel.	No.	No.	No.	No.	Tbhrs. and SSE		
d.i.b.	tally			1C	2C	3A	3B		(adjusted)	(adjusted)
Inches	Bd.ft.	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Dollars	Percent
10	53	-	-	18.9	43.4	-	37.7	-	62.75	37.0
11	1,037	3.5	7.5	16.4	23.2	11.6	37.8	-	64.50	30.0
12	2,499	4.3	2.3	19.2	23.3	9.6	41.3	-	66.25	24.0
13	1,847	3.4	2.2	22.6	20.5	12.2	39.1	-	68.00	19.5
14	3,926	3.9	2.8	23.0	18.0	8.2	44.1	-	69.75	15.5
15	4,160	2.8	2.4	21.9	24.2	8.1	40.6	-	71.50	12.0
16	4,183	2.3	4.1	22.7	17.8	8.3	44.8	-	73.25	8.5
17	3,906	4.5	2.0	26.9	21.0	6.5	37.5	1.6	74.75	5.0
18	2,238	5.2	7.3	36.6	17.4	10.1	23.4	-	76.25	2.5
19	2,302	7.4	3.4	33.4	17.9	8.7	26.5	2.7	77.75	- .5
20	1,165	13.8	1.4	23.1	22.7	9.7	29.3	-	79.25	-3.0
21	500	-	1.8	28.0	28.2	13.4	28.6	-	80.50	-5.5
Average		4.3	3.3	24.8	20.5	8.8	37.9	.4	72.31	+10.0

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No.	No.	No.	No.	Tbhrs. and SSE
			1C	2C	3A	3B	
Inches	Percent within grade						
5/8	-	1.2	1.1	0.3	-	0.1	-
4/4	39.3	48.7	53.1	54.0	58.0	29.7	-
5/4	6.6	6.4	6.7	1.9	1.3	-	-
6/4	54.1	30.5	33.4	29.2	7.3	8.6	-
8/4	-	6.9	4.4	13.6	33.4	61.6	-
10/4	-	-	1.3	-	-	-	-
12/4	-	6.3	-	1.0	-	-	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 17.--BLACK OAK -- Lumber grades and values by diameters

LOG GRADE No. 3

Log d.i.b.	Basis lumber tally	Lumber grade yields (actual)							Lumber value per M	Overrun net Scrib. Dec. C
		FAS	Sel.	No. 1C	No. 2C	No. 3A	No. 3B	Tbrs. and SSE	(adjusted)	(adjusted)
Inches	Bd.ft.	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Dollars	Percent
8	148	-	-	-	13.5	5.4	81.1	-	45.25	52.0
9	263	-	-	8.7	16.7	10.7	63.9	-	48.00	39.0
10	510	-	-	13.3	19.2	15.5	52.0	-	50.75	30.5
11	324	-	2.2	7.7	15.7	10.2	64.2	-	53.50	23.5
12	788	0.7	.8	14.5	23.5	10.8	49.7	-	56.00	18.5
13	814	-	1.1	11.7	24.5	13.9	48.8	-	58.75	13.5
14	1,071	1.0	-	22.4	23.6	13.0	40.0	-	61.25	9.0
15	990	.6	-	11.6	25.4	10.5	51.9	-	63.75	5.5
16	684	3.8	1.3	25.3	28.4	14.8	26.4	-	66.00	2.0
17	-	-	-	-	-	-	-	-	68.50	-2.0
18	353	-	13.0	37.1	27.2	4.0	5.7	13.0	70.50	-5.0
19	165	-	-	6.0	18.2	9.1	66.7	-	72.50	-8.0
20	688	4.4	1.6	21.5	21.4	13.1	32.8	5.2	74.50	-11.0
Average		1.1	1.3	16.8	23.1	11.9	44.6	1.2	61.13	+9.3

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No. 1C	No. 2C	No. 3A	No. 3B	Tbrs. and SSE
Inches	Percent within grade						
5/8	-	-	-	-	-	-	-
4/4	45.6	22.7	60.0	70.1	56.1	35.0	-
5/4	21.5	12.5	8.9	3.6	1.0	-	-
6/4	-	20.5	20.5	14.6	15.6	4.7	-
8/4	-	17.0	8.5	8.8	27.3	60.3	-
10/4	-	27.3	2.1	-	-	-	-
12/4	32.9	-	-	2.9	-	-	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 18.--CHESTNUT OAK* -- Lumber grades and values by diameters

LOG GRADE No. 1

Log	Basis	Lumber grade yields (actual)								Lumber value per M	Overrun net
		FAS	Sel.	No.	No.	SW	No.	No.	Tbrs.		
d.i.b.	lumber	:	:	1C	2C	:	3A	3B	and	:	Scrib.
	tally	:	:	:	:	:	:	:	SSE	:(adjusted)	:(adjusted)
Inches	Bd.ft.	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Dollars	Percent
13	366	23.2	21.0	22.9	11.5	3.0	3.6	8.5	6.3	106.75	16.5
14	95	-	-	58.9	41.1	-	-	-	-	108.00	13.5
15	232	6.5	7.7	19.0	40.5	-	26.3	-	-	109.25	11.5
16	236	15.7	8.0	31.3	13.6	5.5	3.4	22.5	-	110.50	10.0
17	344	12.8	13.9	32.6	-	11.9	3.2	-	25.6	111.50	8.5
18	129	-	24.8	31.0	11.6	24.8	7.8	-	-	112.50	7.0
19	354	25.2	7.6	12.4	28.5	6.8	14.7	4.8	-	113.50	6.0
20	726	14.5	8.1	40.6	7.0	13.9	8.6	7.3	-	114.50	5.0
21	359	12.5	8.1	4.8	13.4	20.3	7.5	-	33.4	115.50	4.0
22	505	10.3	1.6	54.0	13.1	9.1	3.4	8.5	-	116.25	3.0
23	-	-	-	-	-	-	-	-	-	116.75	2.5
24	417	47.7	16.8	15.3	8.2	6.2	3.4	2.4	-	117.25	2.0
Average		17.8	10.3	29.3	13.9	9.8	7.3	5.5	6.1	113.36	6.8

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No.	No.	SW	No.	No.	Tbrs.
	:	:	1C	2C	:	3A	3B	and
	:	:	:	:	:	:	:	SSE
Inches	Percent within grade							
4/4	75.7	79.1	67.9	84.7	84.2	100.0	63.3	-
5/4	9.5	-	5.6	-	-	-	-	-
8/4	14.8	7.8	16.2	15.3	10.4	-	25.6	-
12/4	-	13.1	10.3	-	5.4	-	11.1	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Lumber graded (WHAD) wormholes a defect.

Table 19.--CHESTNUT OAK* -- Lumber grades and values by diameters

LOG GRADE No. 2

Log	Basis	Lumber grade yields (actual)								Lumber value per M (adjusted)	Overrun net Scrib. Dec. C. (adjusted)
		FAS	Sel.	No. 1C	No. 2C	SW	No. 3A	No. 3B	Tbbs. and SSE		
d.i.b.	tally										
Inches	Bd.ft.	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Per-cent	Dollars	Percent
10	311	-	1.0	31.2	40.2	5.8	17.3	4.5	-	64.00	36.0
11	810	-	-	15.3	23.4	6.9	15.6	14.7	24.1	65.50	28.5
12	692	1.4	1.9	27.8	20.1	19.9	10.0	18.9	-	67.25	23.5
13	655	3.8	1.5	12.1	13.7	13.6	26.0	29.3	-	68.75	19.5
14	1049	1.0	-	9.3	17.8	13.3	22.5	25.2	10.9	70.25	16.0
15	937	1.7	2.3	10.8	21.0	21.2	11.1	27.9	4.0	71.50	13.5
16	712	2.8	.9	24.3	18.5	28.1	8.0	17.4	-	73.00	11.0
17	277	-	-	5.4	12.6	22.4	34.3	25.3	-	74.25	9.0
18	866	3.7	1.6	27.5	21.2	13.4	11.9	20.7	-	75.50	7.0
19	903	5.2	2.7	31.0	18.0	13.7	13.2	16.2	-	76.50	5.5
20	689	-	-	8.6	24.4	41.2	6.4	19.4	-	77.50	4.0
21	846	2.1	1.8	19.4	11.0	32.8	3.7	29.2	-	78.25	2.5
22	-	-	-	-	-	-	-	-	-	79.00	1.0
23	307	12.4	15.0	30.3	5.9	9.4	2.9	7.5	16.6	79.50	-.5
24	1234	-	-	16.0	10.9	33.3	7.4	9.5	22.9	79.75	-1.5
Average		2.1	1.5	18.6	18.0	20.8	12.7	19.7	6.6	73.57	10.6

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No. 1C	No. 2C	SW	No. 3A	No. 3B	Tbbs. and SSE
Inches	Percent within grade							
4/4	66.7	56.2	80.1	79.1	74.1	74.8	60.3	-
5/4	5.1	-	1.3	-	-	.9	-	-
8/4	28.2	13.7	8.9	12.1	15.3	18.2	31.3	-
12/4	-	30.1	9.7	8.8	10.6	6.1	8.4	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Lumber graded (WHAD) wormholes a defect.

Table 20.--CHESTNUT OAK* -- Lumber grades and values by diameters

LOG GRADE No. 3

Log		Lumber grade yields (actual)								Lumber	Overrun
d.i.b.	Basis									value	net
	lumber	FAS:	Sel.:	No.:	No.:	SW	No.:	No.:	Tbbs.:	per M	Scrib.
	tally			1C	2C		3A	3B	and		Dec. C.
									SSE	(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent	cent		
8	164	-	-	2.4	9.2	7.9	14.0	66.5	-	53.00	41.5
9	594	-	-	10.1	17.2	4.7	17.0	32.5	18.5	55.75	37.0
10	636	-	-	1.1	15.9	10.8	22.5	34.1	15.6	57.25	33.0
11	887	-	0.7	6.7	11.5	27.5	16.1	27.5	10.0	58.75	29.0
12	666	-	.8	7.8	12.3	35.4	6.8	24.0	12.9	59.50	25.0
13	962	-	-	2.6	9.0	28.0	24.8	19.7	15.9	60.00	21.0
14	957	1.1	3.8	7.7	10.8	34.7	16.0	23.2	2.7	60.25	17.5
15	648	-	-	4.2	3.8	52.5	15.1	15.0	9.4	60.25	14.0
16	617	-	-	9.1	13.8	33.7	16.7	20.7	6.0	60.50	10.5
17	413	-	-	6.8	19.4	41.4	21.3	11.1	-	60.50	7.0
18	990	-	-	5.4	7.7	38.1	13.3	23.4	12.1	60.25	4.0
19	403	-	-	2.5	-	46.1	15.4	36.0	-	60.25	1.0
20	990	-	-	3.7	18.3	24.3	29.0	24.7	-	60.00	-1.0
21	358	-	-	5.9	13.4	53.1	12.8	14.8	-	59.75	-3.0
22	425	-	-	7.1	1.4	16.9	10.1	-	64.5	59.50	-4.5
23	901	-	-	2.8	3.9	49.2	15.1	18.4	10.6	59.00	-5.5
24	506	-	-	3.9	7.9	42.5	11.9	22.7	11.1	58.75	-5.5
Average		.1	.4	5.3	10.5	32.7	17.1	23.0	10.9	59.37	10.7

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	SW	No.	No.	Tbbs.
thickness:			1C	2C		3A	3B	and
								SSE
Inches	Percent within grade							
4/4	-	38.3	92.5	87.8	86.6	88.0	61.0	-
5/4	100.0	25.5	-	-	.4	-	.3	-
8/4	-	36.2	7.5	12.2	11.0	9.9	35.1	1.4
12/4	-	-	-	-	2.0	2.1	3.6	98.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Lumber graded (WHAD) wormholes a defect.

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Table 21.--CHESTNUT OAK -- Lumber grades for sound
wormy and better when graded WHND

LOG GRADE No. 1

Lumber grade yields (actual)										Lumber
Log										value
d.i.b.	FAS	FAS	Sel.	Sel.	No.	No.	1C	No.	SW	per M ¹
		WHND		WHND	1C	WHND	2C			(adjusted)
Inches	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars
	cent	cent	cent	cent	cent	cent	cent	cent	cent	
13	23.2	-	21.0	-	22.9	1.6	11.5	1.4		108.00
14	-	-	-	-	58.9	-	41.1	-		111.00
15	6.5	-	7.7	-	19.0	-	40.5	-		113.00
16	15.7	-	8.0	-	31.3	5.5	13.6	-		114.50
17	12.8	11.9	13.9	-	32.6	-	-	-		115.50
18	-	-	24.8	-	31.0	24.8	11.6	-		116.50
19	25.2	3.1	7.6	-	12.4	3.7	28.5	-		117.25
20	14.5	3.4	8.1	-	40.6	9.7	7.0	8		117.75
21	12.5	-	8.1	-	4.8	1.7	13.4	18.6		118.25
22	10.3	5.1	1.6	-	54.0	4.0	13.1	-		118.50
23	-	-	-	-	-	-	-	-		118.75
24	47.7	-	16.8	-	15.3	6.2	8.2	-		119.00
Av.	17.8	2.7	10.3	-	29.3	4.9	13.9	2.2		116.03

Distribution by thicknesses of above yields

Lumber	FAS	FAS	Sel.	Sel.	No.	No.	1C	No.	SW
thickness:		WHND		WHND	1C	WHND	2C		
Inches	Percent within grade								
4/4	75.7	68.0	79.1	-	67.9	100.0	84.7	68.0	
5/4	9.5	-	-	-	5.6	-	-	-	
8/4	14.8	12.6	7.8	-	16.2	-	15.3	32.0	
12/4	-	19.4	13.1	-	10.3	-	-	-	
Total	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	

¹Includes No. 3A, No. 3B timbers and sound square edged lumber values. All data not shown is the same as in tables 18, 19, and 20.

Table 22.--CHESTNUT OAK -- Lumber grades for sound
wormy and better when graded WHND

LOG GRADE No. 2

Lumber grade yields (actual)										Lumber
Log	FAS	FAS	Sel.	Sel.	No.	No.	1C	No.	SW	value
d.i.b.	WHND	WHND	WHND	WHND	1C	WHND	2C			per M ¹
										(adjusted)
Inches	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars
	cent	cent	cent	cent	cent	cent	cent	cent	cent	
10	-	-	1.0	-	31.2	2.6	40.2	3.2		63.75
11	-	-	-	-	15.3	1.5	23.4	5.4		66.75
12	1.4	7.2	1.9	-	27.8	12.7	20.1	-		69.75
13	3.8	-	1.5	0.9	12.1	7.3	13.7	5.4		72.50
14	1.0	1.4	-	.5	9.3	11.4	17.8	-		75.25
15	1.7	6.2	2.3	1.3	10.8	7.4	21.0	6.3		78.00
16	2.8	18.7	.9	1.0	24.3	8.4	18.5	-		80.50
17	-	-	-	2.5	5.4	19.9	12.6	-		83.00
18	3.7	5.3	1.6	2.6	27.5	5.5	21.2	-		85.25
19	5.2	2.3	2.7	-	31.0	11.4	18.0	-		87.50
20	-	25.7	-	3.3	8.6	12.2	24.4	-		89.50
21	2.1	17.8	1.8	1.8	19.4	12.4	11.0	.8		91.25
22	-	-	-	-	-	-	-	-		92.50
23	12.4	4.7	15.0	-	30.3	4.7	5.9	-		93.50
24	-	15.1	-	1.0	16.0	16.2	10.9	1.0		94.00
Av.	2.1	8.3	1.5	1.0	18.6	10.0	18.0	1.5		81.35

Distribution by thicknesses of above yields

Lumber	FAS	FAS	Sel.	Sel.	No.	No.	1C	No.	SW
thickness:	WHND	WHND	WHND	WHND	1C	WHND	2C		
Inches	Percent within grade								
4/4	66.7	62.7	56.2	86.2	80.1	81.9	79.1	76.3	
5/4	5.1	-	-	-	1.3	-	-	-	
8/4	28.2	18.5	13.7	13.8	8.9	15.1	12.1	-	
12/4	-	18.8	30.1	-	9.7	3.0	8.8	23.7	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

¹Includes No. 3A, No. 3B timbers and sound square edged lumber values. All data not shown is the same as in tables 18, 19, and 20.

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Table 23.--CHESTNUT OAK -- Lumber grades for sound
wormy and better when graded WHND

LOG GRADE No. 3

Lumber grade yields (actual)										Lumber
Log	FAS	FAS	Sel.	Sel.	No.	No.	1C	No.	SW	value
d.i.b.		WHND		WHND	1C	WHND	2C			per M ¹
										(adjusted)
Inches	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars
	cent	cent	cent	cent	cent	cent	cent	cent	cent	
8	-	-	-	-	2.4	7.9	9.2	-	-	55.50
9	-	-	-	-	0.8	10.1	3.9	17.2	-	58.00
10	-	-	-	-	1.9	1.1	7.9	15.9	1.0	60.25
11	-	3.3	0.7	1.6	6.7	22.4	11.5	.2	.2	62.50
12	-	2.2	.8	.6	7.8	26.9	12.3	5.7	5.7	65.00
13	-	6.8	-	.7	2.6	20.2	9.0	.3	.3	67.00
14	1.1	11.7	3.8	1.3	7.7	18.5	10.8	3.2	3.2	69.00
15	-	20.4	-	-	4.2	31.3	3.8	.8	.8	71.00
16	-	-	-	-	9.1	30.6	13.8	3.1	3.1	72.50
17	-	19.1	-	-	6.8	22.3	19.4	-	-	74.00
18	-	13.9	-	2.1	5.4	22.1	7.7	-	-	75.00
19	-	7.0	-	-	2.5	37.2	-	1.9	1.9	75.50
20	-	6.7	-	-	3.7	17.6	18.3	-	-	75.50
21	-	31.8	-	3.1	5.9	18.2	13.4	-	-	75.00
22	-	2.4	-	-	7.1	14.5	1.4	-	-	74.00
23	-	4.9	-	.7	2.8	31.7	3.9	11.9	11.9	72.75
24	-	2.8	-	-	3.9	39.7	7.9	-	-	71.50
Av.	.1	7.6	.4	.8	5.3	22.3	10.5	2.0	2.0	69.50

Distribution by thicknesses of above yields

Lumber	FAS	FAS	Sel.	Sel.	No.	No.	1C	No.	SW
thickness:		WHND		WHND	1C	WHND	2C		
Inches	Percent within grade								
4/4	-	78.5	38.3	100.0	92.5	89.2	87.8	83.6	
5/4	100.0	-	25.5	-	-	.4	-	-	
8/4	-	16.8	36.2	-	7.5	9.0	12.2	16.4	
12/4	-	4.7	-	-	-	1.4	-	-	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

¹Includes No. 3A, 3B, timbers and sound square edged lumber values. All data not shown is the same as in tables 18, 19, and 20.

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Table 24.--RED OAK LOWLAND -- Lumber grades and values by diameters

LOG GRADE No. 1

Log d.i.b.	Basis lumber tally	Lumber grade yields (actual)							Lumber value per M (adjusted)	Overrun net Scrib. Dec. C (adjusted)
		FAS	Sel.	No. 1C	No. 2C	No. 3A	No. 3B	Tbrs. and SSE		
Inches	Bd.ft.	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Dollars	Percent
13	1,740	15.0	7.4	31.9	21.3	7.8	11.8	4.8	94.50	23.0
14	3,368	25.7	9.4	27.4	16.1	7.7	7.0	6.7	96.00	20.5
15	4,855	24.1	11.2	29.1	13.6	6.2	6.9	8.9	97.75	18.0
16	9,439	18.9	9.9	31.1	15.2	9.9	9.3	5.7	99.50	16.0
17	7,462	29.4	7.5	28.2	14.9	7.9	4.6	7.5	101.00	14.0
18	6,932	25.1	9.7	32.1	12.3	4.2	5.2	11.4	102.75	12.0
19	6,272	30.7	6.5	34.4	13.1	6.8	4.3	4.2	104.25	10.0
20	6,336	33.8	8.5	26.5	10.7	5.8	8.4	6.3	105.75	8.0
21	4,755	40.1	7.9	26.9	7.4	2.3	4.9	10.5	107.25	6.0
22	4,397	28.9	6.4	34.8	11.1	4.9	10.2	3.7	108.75	4.5
23	4,594	30.9	9.1	32.6	9.3	4.2	9.1	4.8	110.00	3.0
24	1,577	25.7	8.6	41.3	6.8	3.3	3.1	11.2	111.25	1.5
25	1,521	33.2	4.1	36.8	16.3	4.9	1.9	2.8	112.25	.0
26	234	10.2	-	42.7	30.8	4.3	12.0	-	113.00	-1.5
27	974	34.1	16.2	24.0	6.8	4.4	3.8	10.7	113.75	-2.5
Average		27.8	8.6	30.8	12.8	6.2	6.8	7.0	103.41	10.6

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No. 1C	No. 2C	No. 3A	No. 3B	Tbrs. and SSE
Inches	Percent within grade						
4/4	49.4	65.5	81.9	94.6	93.6	74.7	-
8/4	50.1	34.5	18.0	5.4	6.4	25.3	23.8
12/4	.5	-	.1	-	-	-	76.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 25.--RED OAK LOWLAND -- Lumber grades and values by diameters

LOG GRADE No. 2

Log	Basis	Lumber grade yields (actual)								Lumber	Overrun
d.i.b.	lumber									value	net
	tally	FAS	Sel.	No.	No.	No.	No.	Tbrs.		per M	Scrib.
				1C	2C	3A	3B	and			Dec. C
								SSE	(adjusted)	(adjusted)	
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent	cent	cent			
10	127	-	7.9	33.1	15.7	27.6	15.7	-	70.25	30.5	
11	2,624	6.2	4.5	27.8	23.4	12.4	14.8	10.9	71.75	26.0	
12	4,912	5.3	3.7	30.2	22.2	12.9	18.1	7.6	73.25	22.0	
13	7,025	5.0	4.2	26.8	24.3	14.8	17.2	7.7	74.50	18.5	
14	6,536	6.9	5.0	27.8	23.3	15.2	18.2	3.6	76.00	15.5	
15	9,687	4.8	4.0	29.4	23.3	15.0	14.9	8.6	77.50	13.0	
16	6,533	4.7	5.5	39.3	20.4	10.4	11.4	8.3	79.00	10.5	
17	5,808	8.0	5.7	33.2	17.7	9.9	17.8	7.7	80.25	8.0	
18	5,830	8.0	3.8	40.9	16.5	9.0	12.3	9.5	81.50	6.5	
19	4,457	10.1	4.8	34.6	22.6	13.0	12.1	2.8	82.75	4.5	
20	1,098	12.2	2.7	27.8	19.0	14.0	21.0	3.3	84.00	2.5	
21	1,120	3.8	8.2	35.1	20.0	17.0	8.8	7.1	85.00	1.0	
22	793	8.4	4.7	36.2	19.5	14.8	7.6	8.8	86.25	-1.0	
23	267	3.4	4.1	38.6	30.0	4.1	4.1	15.7	87.00	-2.5	
24	1,970	8.9	3.2	50.2	16.1	8.4	6.2	7.0	88.00	-4.0	
Average		6.5	4.6	32.8	21.3	12.7	14.8	7.3	78.46	11.6	

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.
thickness:			1C	2C	3A	3B	and
							SSE
Inches	Percent within grade						
4/4	70.5	67.2	91.2	96.2	93.7	71.4	-
8/4	29.5	32.8	8.8	3.8	6.3	27.9	39.1
12/4	-	-	-	-	-	.7	60.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 26.--RED OAK LOWLAND -- Lumber grades and values by diameters

LOG GRADE No. 3

Log	Basis	Lumber grade yields (actual)								Lumber	Overrun
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.		value	net
	tally			1C	2C	3A	3B	and		per M	Scrib.
								SSE	(adjusted)	(adjusted)	Dec. C
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent	cent	cent			
8	274	-	-	19.7	8.4	11.7	36.9	23.3	53.75	33.5	
9	491	1.6	1.6	14.1	20.4	8.3	32.0	22.0	55.25	29.0	
10	1,171	1.2	1.2	21.4	20.7	16.0	25.9	13.6	56.75	24.5	
11	1,054	-	1.6	11.0	30.8	25.6	28.1	2.9	58.00	20.5	
12	1,344	-	.4	19.2	31.8	19.4	20.5	8.7	59.50	17.0	
13	2,574	1.0	.6	12.1	21.4	22.9	33.0	9.0	61.00	14.0	
14	2,647	1.1	.7	12.8	24.9	21.5	32.7	6.3	62.25	11.0	
15	1,644	.4	.7	24.7	30.3	19.2	19.4	5.3	63.50	8.0	
16	885	-	-	26.9	22.6	20.1	27.8	2.6	64.75	5.5	
17	1,914	.8	2.9	32.4	31.7	9.9	16.7	5.6	66.00	3.0	
18	1,172	3.0	5.0	22.2	21.8	19.3	23.0	5.7	66.75	.5	
19	530	-	.8	46.0	22.1	12.8	18.3	-	67.75	-2.0	
20	1,457	.8	.7	27.2	30.9	17.4	23.0	-	68.50	-4.0	
21	207	-	-	34.3	26.6	21.2	17.9	-	69.00	-6.0	
22	571	-	-	34.0	41.9	15.9	8.2	-	69.50	-8.0	
Average		.8	1.2	21.3	26.5	18.5	25.2	6.5	62.67	8.9	

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.
thickness:			1C	2C	3A	3B	and
							SSE
Inches	Percent within grade						
4/4	81.5	76.8	95.3	97.0	96.5	76.7	-
8/4	18.5	23.2	4.7	3.0	3.5	23.3	58.2
9/4	-	-	-	-	-	-	1.5
12/4	-	-	-	-	-	-	40.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 27.--RED OAK UPLAND -- Lumber grades and values by diameters

LOG GRADE No. 1

Log d.i.b.	Basis lumber tally	Lumber grade yields (actual)							Lumber value per M (adjusted)	Overrun net Scrib. Dec. C (adjusted)
		FAS	Sel.	No. 1C	No. 2C	No. 3A	No. 3B	Tbrs. and SSE		
Inches	Bd.ft.	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Dollars	Percent
13	2,819	18.9	12.8	26.5	13.6	9.0	17.7	1.5	106.25	26.5
14	1,632	33.4	13.7	22.8	11.7	8.2	10.2	-	108.25	21.5
15	4,294	28.0	14.1	25.9	9.3	6.8	13.4	2.5	110.25	18.0
16	4,603	34.6	12.6	26.8	11.1	6.6	6.5	1.8	112.25	14.5
17	4,887	32.8	11.8	24.8	12.2	6.5	11.2	.7	113.75	12.0
18	4,320	32.2	9.3	29.8	11.3	4.3	10.8	2.3	115.25	9.5
19	5,589	31.8	6.7	34.0	9.8	4.3	10.3	3.1	116.75	7.5
20	4,906	38.1	9.6	25.5	10.9	3.4	11.5	1.0	118.25	5.5
21	4,687	38.3	6.6	28.2	9.9	3.1	12.1	1.8	119.50	3.5
22	5,037	36.3	6.3	28.0	11.8	4.8	12.1	.7	120.75	2.0
23	3,765	42.8	5.6	27.5	10.6	4.2	8.5	.8	122.00	.5
24	4,463	37.2	4.9	31.7	12.6	3.6	10.0	-	123.25	-.5
25	1,574	29.7	4.7	39.2	13.5	4.1	8.8	-	124.25	-1.5
26	3,358	42.7	4.8	36.9	6.2	.7	8.7	-	125.25	-2.5
27	615	57.4	11.0	5.4	2.8	6.3	17.1	-	126.00	-3.5
28	244	30.3	3.7	29.1	5.7	4.1	27.1	-	126.50	-4.5
29	706	42.8	-	48.7	7.5	-	1.0	-	126.75	-5.5
30	1,472	29.1	4.6	33.6	15.8	6.6	10.3	-	127.00	-6.5
Average		34.7	8.5	29.0	10.9	4.8	10.9	1.2	117.56	+6.7

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No. 1C	No. 2C	No. 3A	No. 3B	Tbrs. and SSE

Inches	Percent within grade						
5/8	0.6	0.8	1.1	0.8	0.3	0.1	-
4/4	27.2	37.9	49.1	60.1	62.9	46.3	-
5/4	16.0	12.8	7.5	3.8	.9	.1	-
6/4	40.8	33.3	33.9	20.4	7.4	4.9	-
8/4	7.4	6.8	7.2	13.6	23.6	45.6	5.4
10/4	2.8	.9	.6	.6	-	1.2	-
12/4	5.2	7.5	.6	.7	4.9	1.8	94.6

Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 28.--RED OAK UPLAND -- Lumber grades and values by diameters

LOG GRADE No. 2

Log	Basis	Lumber grade yields (actual)							Lumber	Overrun
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	No.	Tbbs.	value	net
	tally			1C	2C	3A	3B	and	per M	Scrib.
								SSE	(adjusted)	Dec. C.
										(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent		
10	838	8.3	15.4	28.7	16.5	9.1	19.1	2.9	74.00	34.5
11	3,102	3.1	4.1	29.1	24.7	14.4	22.1	2.5	76.50	26.0
12	4,775	3.9	6.1	28.9	19.2	13.2	23.5	5.2	78.75	20.5
13	3,729	5.4	4.0	27.1	21.3	11.8	30.4	-	80.50	16.5
14	4,998	6.9	5.0	35.4	23.7	9.6	16.3	3.1	82.25	14.0
15	6,109	3.9	5.7	32.7	21.6	7.8	27.2	1.1	83.75	12.0
16	4,874	6.6	3.0	28.6	21.7	9.7	29.1	1.3	85.00	10.5
17	5,330	9.6	5.2	30.5	12.8	8.1	30.0	3.8	86.25	9.0
18	4,142	11.1	1.8	33.8	21.3	6.0	24.2	1.8	87.50	8.0
19	4,102	12.8	4.1	39.1	16.5	6.7	20.8	-	88.50	7.5
20	2,293	7.8	3.6	33.3	21.4	6.4	20.2	7.3	89.50	7.0
21	1,449	21.1	4.7	27.1	9.9	4.1	33.1	-	90.50	6.5
22	1,658	15.2	.7	36.8	18.5	3.4	25.4	-	91.75	6.5
23	1,279	7.3	.7	28.6	22.7	6.2	34.5	-	92.75	6.0
24	1,092	10.5	5.9	54.2	13.1	-	13.4	2.9	93.75	6.0
Average		7.9	4.4	32.2	19.7	8.7	24.9	2.2	84.49	12.3

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbbs.
thickness			1C	2C	3A	3B	and
							SSE
Inches	Percent within grade						
5/8	0.8	0.3	1.1	1.2	0.2	0.2	-
4/4	40.7	45.8	57.5	62.9	65.6	34.8	-
5/4	15.3	7.7	5.3	2.2	1.1	.3	-
6/4	29.6	24.3	25.0	16.6	4.3	3.8	-
8/4	10.2	14.2	8.8	16.0	26.4	59.3	-
10/4	.8	2.2	.7	1.0	1.5	.7	-
12/4	2.6	5.5	1.6	.1	.9	.9	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 29.--RED OAK UPLAND -- Lumber grades and values by diameters

LOG GRADE NO. 3

		Lumber grade yields (actual)							Lumber	Overrun
Log	Basis	FAS	Sel.	No.	No.	No.	No.	Tbrs.	value	net
d.i.b.	lumber			1C	2C	3A	3B	and	per M	Scrib.
	tally							SSE	(adjusted)	Dec. C.
										(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent:	cent:	cent:	cent:	cent:	cent:	cent:		
8	435	1.9:	1.6:	11.7:	23.0:	7.8:	38.4:	15.6:	55.00	43.0
9	925	.5:	.9:	18.3:	26.4:	14.2:	35.4:	4.3:	55.50	34.0
10	1,878	.2:	1.8:	18.5:	23.9:	14.9:	40.7:	-	56.00	27.5
11	432	-	-	11.3:	19.0:	15.5:	54.2:	-	56.50	23.0
12	1,344	-	.5:	15.8:	23.2:	17.3:	43.2:	-	57.25	19.5
13	1,501	-	.6:	8.7:	25.9:	15.1:	46.9:	2.8:	57.75	16.5
14	1,763	.6:	-	11.4:	22.1:	14.8:	51.1:	-	58.50	14.0
15	1,526	.3:	-	9.6:	18.6:	9.4:	56.0:	6.1:	59.25	12.0
16	1,887	-	-	13.8:	20.8:	11.6:	50.2:	3.6:	60.00	10.0
17	1,068	2.5:	2.4:	21.3:	26.1:	8.9:	27.5:	11.3:	60.75	8.0
18	1,126	4.6:	-	15.9:	19.0:	16.3:	44.2:	-	61.75	6.5
19	1,379	.6:	-	25.5:	26.2:	5.8:	41.9:	-	62.75	5.0
20	565	-	-	1.9:	19.3:	3.0:	75.8:	-	63.75	4.0
21	1,542	-	1.0:	20.2:	34.7:	10.4:	33.7:	-	65.00	2.5
22	297	-	-	7.7:	18.9:	15.8:	57.6:	-	66.25	1.5
23	530	-	-	50.6:	25.3:	13.2:	10.9:	-	67.75	.5
24	272	-	-	26.1:	30.9:	12.5:	30.5:	-	69.50	-.5
25	263	10.3:	-	51.7:	20.1:	-	17.9:	-	72.25	-1.5
Average		.8:	.6:	16.8:	23.8:	12.2:	43.5:	2.3:	60.20	+12.5

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.
thickness:			1C	2C	3A	3B	and
							SSE
Inches	Percent within grade						
5/8	-	-	0.3:	0.6:	-	-	-
4/4	56.8:	64.8:	65.3:	60.9:	61.2:	41.0:	-
5/4	13.7:	10.5:	2.8:	2.9:	1.1:	-	-
6/4	11.0:	-	17.8:	15.2:	5.2:	2.2:	-
8/4	18.5:	24.7:	13.1:	19.8:	32.5:	55.8:	-
10/4	-	-	-	.6:	-	.6:	-
12/4	-	-	.7:	-	-	.4:	100.0
Total	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0

Table 30.--WHITE OAK LOWLAND -- Lumber grades and values by diameters

LOG GRADE No. 1

		Lumber grade yields (actual)								Lumber	Overrun
Log	Basis									value	net
d.i.b.	lumber	FAS	Sel.	No.	No.	SW	No.	No.	Tbrs.	per M	Scrib.
	tally			1C	2C		3A	3B	and		Dec. C.
									SSE	(adjusted)	(adjusted)
Inches	Bd. ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent	cent		
13	1,378	7.0	7.1	32.7	19.5	0.7	13.5	11.8	7.7	93.25	27.0
14	1,457	15.6	7.9	31.2	20.4	-	7.6	13.1	4.2	97.50	22.5
15	2,666	24.5	9.0	28.5	19.7	.7	9.8	6.1	1.7	101.75	18.0
16	3,795	20.7	7.5	29.6	14.9	1.3	9.2	11.1	5.7	105.50	15.0
17	5,088	26.6	8.8	29.2	13.5	1.7	7.7	7.5	5.0	109.75	12.0
18	4,881	27.7	7.5	32.7	15.6	.5	7.1	5.6	3.3	113.25	10.0
19	3,167	24.7	7.3	35.3	13.1	1.6	4.8	2.9	10.3	117.00	8.5
20	3,610	29.8	4.0	40.1	10.4	-	3.2	8.7	3.8	121.25	6.5
21	3,247	28.0	6.3	37.6	13.7	-	4.3	8.0	2.1	124.75	5.5
22	2,093	28.7	3.0	39.1	12.4	2.3	2.7	2.9	8.9	128.50	4.5
23	1,561	44.6	3.9	36.7	9.2	-	3.4	2.2	-	131.75	3.5
24	1,523	39.7	8.3	38.8	4.8	-	2.8	2.8	2.8	135.00	2.5
25	745	29.4	4.3	54.1	4.2	-	.9	3.3	3.8	137.75	1.5
26	695	52.1	5.5	23.7	11.5	-	-	7.2	-	140.00	1.0
27	453	36.9	2.0	37.3	15.9	-	-	7.9	-	142.00	.5
28	996	58.7	8.0	11.5	9.9	-	.7	11.2	-	143.75	.0
29	477	76.3	3.4	10.7	3.1	-	1.5	-	5.0	145.00	- .5
Average		28.6	6.8	33.1	13.5	.8	5.9	6.9	4.4	116.92	+ 9.4

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	SW	No.	No.	Tbrs.
thickness:			1C	2C		3A	3B	and
								SSE
Inches	Percent within grade							
4/4	69.0	74.6	89.6	91.7	100.0	92.9	62.8	-
5/4	.1	.9	2.0	2.3	-	1.6	.7	-
6/4	-	-	.2	.3	-	-	-	-
8/4	3.6	2.2	1.3	3.3	-	5.5	32.6	35.3
10/4	26.3	21.1	6.3	2.4	-	-	3.9	-
12/4	1.0	1.2	.6	-	-	-	-	64.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 31.--WHITE OAK LOWLAND -- Lumber grades and values by diameters

LOG GRADE No. 2

Log d.i.b.	Basis lumber tally	Lumber grade yields (actual)								Lumber value per M	Overrun net Scrib. Dec. C. (adjusted)
		FAS	Sel.	No.	No.	SW	No.	No.	Tbbs.		
				1C	2C		3A	3B	and		
									SSE	(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent	cent		
10	267	2.6	3.8	20.6	29.6	-	20.2	10.5	12.7	69.00	39.5
11	2,135	.9	2.8	18.8	28.1	1.8	19.9	22.1	5.6	71.50	35.0
12	4,285	4.3	3.8	24.9	26.6	3.2	13.1	15.9	8.2	74.25	30.5
13	5,464	3.1	1.2	26.1	29.7	.9	15.2	10.9	12.9	76.75	26.5
14	6,254	5.3	3.0	29.5	27.2	1.2	11.8	13.6	8.4	79.50	22.5
15	8,619	4.5	3.3	29.9	23.4	2.7	13.2	12.5	10.5	82.25	19.0
16	6,258	4.8	3.1	36.4	26.6	1.2	9.0	7.7	11.2	84.75	16.0
17	6,795	6.4	3.4	31.3	25.1	1.9	10.6	10.9	10.4	87.25	13.5
18	6,429	6.8	3.7	40.6	18.3	2.9	6.2	8.2	13.3	89.75	11.0
19	3,621	12.2	6.4	35.3	19.8	1.2	9.0	12.2	3.9	92.00	9.0
20	1,830	11.8	3.8	43.5	19.4	-	3.3	10.3	7.9	94.00	7.0
21	2,113	12.5	1.7	45.6	20.3	1.2	4.8	8.0	5.9	96.00	5.0
22	2,322	10.1	3.4	37.5	19.4	5.5	10.4	10.1	3.6	97.75	3.5
23	-	-	-	-	-	-	-	-	-	99.50	2.0
24	1,313	21.0	3.4	41.8	15.6	1.9	2.3	1.9	12.1	100.75	.5
25	389	17.7	-	20.6	28.0	8.8	5.1	2.3	17.5	102.00	- 1.0
26	623	7.2	3.0	46.9	29.7	4.0	2.1	7.1	-	102.75	- 2.0
Average		6.5	3.3	32.7	24.1	2.0	10.6	11.2	9.6	84.89	+16.3

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	No.	No.	SW	No.	No.	Tbbs.
			1C	2C		3A	3B	and
								SSE
Inches	Percent within grade							
4/4	90.6	90.3	93.6	86.0	84.1	86.2	59.2	-
5/4	1.9	.5	3.5	8.5	7.8	8.4	5.0	-
6/4	-	-	-	-	-	-	-	-
8/4	.7	2.8	.6	3.3	-	5.4	34.1	19.6
10/4	6.8	6.4	2.3	.7	2.3	-	-	.4
12/4	-	-	-	1.5	5.8	-	1.7	80.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 32.--WHITE OAK LOWLAND -- Lumber grades and values by diameters

LOG GRADE No. 3

		Lumber grade yields (actual)								Lumber	Overrun
Log	Basis	FAS	Sel.	No.	No.	SW	No.	No.	Tbrs.	value	net
d.i.b.	lumber			1C	2C		3A	3B	and	per M	Scrib.
	tally										Dec. C.
									SSE	(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent	cent		
8	50	-	8.0	20.0	-	-	52.0	20.0	-	60.00	44.5
9	413	-	2.9	13.3	21.3	-	33.2	19.6	9.7	60.50	41.0
10	1,556	0.5	-	17.7	33.3	1.5	14.6	25.6	6.8	61.25	37.0
11	1,311	.6	.3	17.3	24.0	3.1	13.7	31.3	9.7	61.75	33.5
12	1,236	-	1.2	14.7	27.6	5.7	13.4	18.5	18.9	62.50	29.5
13	2,916	.5	.3	13.7	30.3	.3	17.4	24.0	13.5	63.00	26.0
14	1,921	-	.8	6.8	39.4	5.0	11.1	18.1	18.8	63.75	22.5
15	2,475	-	-	20.6	23.8	3.3	14.7	20.6	17.0	64.50	19.0
16	2,962	1.7	1.7	20.4	30.7	6.7	14.2	9.0	15.6	65.25	16.0
17	2,237	.4	.8	14.7	28.3	2.6	9.7	14.0	29.5	66.00	13.0
18	2,194	.5	2.8	24.2	32.8	4.2	11.3	13.9	10.3	66.75	10.0
19	1,288	-	-	15.3	40.4	8.4	8.6	7.8	19.5	67.75	7.0
20	1,046	-	-	17.2	31.0	15.7	10.1	7.1	18.9	68.75	4.5
21	876	-	1.0	25.1	27.1	1.1	13.6	28.9	3.2	69.50	2.5
22	945	-	1.6	16.4	46.3	-	7.8	7.1	20.8	70.75	.0
23	341	-	-	17.6	37.5	5.6	14.1	8.5	16.7	72.00	- 2.0
Average		.4	.9	17.1	31.2	4.1	13.3	17.2	15.8	65.12	+17.6

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	SW	No.	No.	Tbrs.
thickness:			1C	2C		3A	3B	and
								SSE
Inches	Percent within grade							
4/4	100.0	92.0	95.8	89.0	91.8	90.7	76.7	-
5/4	-	8.0	3.2	7.4	8.2	6.2	2.9	-
8/4	-	-	-	1.0	-	-	20.4	15.6
10/4	-	-	1.0	.7	-	3.1	-	-
12/4	-	-	-	1.9	-	-	-	84.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 33.--WHITE OAK UPLAND -- Lumber grades and values by diameters

LOG GRADE No. 1

Log	Basis	Lumber grade yields (actual)								Lumber value per M	Overrun net Scrib. Dec. C.
		FAS	Sel.	No.	No.	SW	No.	No.	Tbrs.		
d.i.b.	tally			1C	2C		3A	3B	and		
									SSE	(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent	cent		
13	808	15.4	16.2	23.9	13.1	-	5.7	25.7	-	112.50	17.5
14	518	18.9	4.3	28.8	19.1	-	10.8	18.1	-	115.75	16.0
15	764	28.5	14.9	17.8	13.5	1.2	5.6	18.5	-	119.00	14.5
16	1,893	33.0	10.3	28.3	11.1	.3	5.5	10.5	1.0	122.25	12.5
17	857	30.9	9.9	34.7	5.5	-	4.4	14.6	-	125.25	11.0
18	688	39.2	3.5	18.6	13.4	-	10.6	14.7	-	128.25	9.5
19	225	13.3	-	36.0	22.2	-	-	28.5	-	131.00	8.0
20	1,910	26.8	6.5	34.0	8.3	3.9	7.3	11.3	1.9	133.75	7.0
21	3,409	43.2	8.6	25.6	9.8	.6	4.3	7.9	-	136.25	6.0
22	2,150	36.4	10.4	29.6	7.0	1.6	3.1	10.2	1.7	138.75	4.5
23	1,900	58.8	6.4	16.4	5.3	1.0	5.7	6.4	-	140.75	3.0
24	928	40.5	6.0	30.2	8.9	-	5.4	4.4	4.6	142.75	2.0
25	1,753	49.0	5.4	19.6	10.9	-	5.2	9.9	-	144.00	1.0
Average		37.9	8.3	25.9	9.7	.9	5.4	11.1	.8	132.94	7.0

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	SW	No.	No.	Tbrs.
thickness:			1C	2C		3A	3B	and
								SSE
Inches	Percent within grade							
4/4	45.1	39.1	50.6	59.8	51.6	60.4	45.1	-
5/4	6.0	6.7	13.0	4.0	-	1.1	-	-
6/4	32.8	37.1	27.3	20.9	11.8	14.7	5.0	-
8/4	2.1	6.1	2.9	11.4	36.6	23.8	49.4	-
10/4	8.4	2.4	.7	-	-	-	.5	14.1
12/4	5.6	8.6	5.5	3.9	-	-	-	85.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 34.--WHITE OAK UPLAND -- Lumber grades and values by diameters

LOG GRADE No. 2

		Lumber grade yields (actual)								Lumber	Overrun
Log	Basis									value	net
d.i.b.	lumber	FAS:	Sel.:	No.:	No.:	SW	No.:	No.:	Tbrs.:	per M	Scrib.
	tally	:	:	1C	2C	:	3A	3B	and	:	Dec. C.
		:	:	:	:	:	:	:	SSE	:(adjusted)	:(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent	cent		
10	361	3.0	2.2	26.9	16.1	-	12.5	24.9	14.4	69.75	31.0
11	1,783	2.3	4.2	21.4	21.1	2.3	11.8	31.7	5.2	73.00	26.5
12	3,118	5.5	5.0	22.9	16.4	3.9	12.3	30.7	3.3	76.25	23.0
13	2,470	3.4	2.6	26.1	21.7	1.3	10.7	26.2	8.0	79.50	19.5
14	2,802	4.2	5.5	26.4	16.7	2.8	11.4	29.0	4.0	82.75	16.5
15	3,540	4.4	3.5	31.8	23.6	2.9	7.0	22.8	4.0	86.00	14.0
16	2,302	2.4	2.7	30.8	23.3	.6	6.4	30.3	3.5	89.25	11.5
17	3,544	6.7	4.2	40.9	19.6	.2	7.7	15.6	5.1	92.25	9.0
18	3,266	7.1	5.2	33.5	17.3	3.1	11.0	20.4	2.4	95.25	6.5
19	3,088	5.5	3.0	42.1	27.0	.3	8.8	10.5	2.8	98.00	4.5
20	1,448	11.7	5.7	35.8	25.8	.6	9.7	7.4	3.3	101.00	2.5
21	710	23.8	2.7	30.4	20.1	-	6.2	10.0	6.8	103.50	.5
22	1,010	13.9	3.7	41.1	6.2	7.6	5.3	18.8	3.4	106.00	- 1.0
23	714	5.6	1.5	48.3	24.7	-	7.6	12.3	*	108.25	- 3.0
24	601	16.0	4.2	47.7	15.3	-	7.2	9.6	*	110.25	* 5.0
Average		6.1	4.0	32.6	20.4	1.9	9.3	21.6	4.1	89.21	10.9

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	SW	No.	No.	Tbrs.
thickness:	:	:	1C	2C	:	3A	3B	and
	:	:	:	:	:	:	:	SSE
Inches	Percent within grade							
4/4	46.7	54.4	57.9	64.6	69.4	60.7	44.2	-
5/4	.7	1.0	1.6	.7	3.3	.9	.1	-
6/4	46.7	33.6	34.7	20.4	14.4	6.6	4.8	-
8/4	3.9	5.0	4.1	8.3	8.5	27.7	49.6	5.3
10/4	-	-	1.0	4.2	-	2.0	-	12.1
12/4	2.0	6.0	.7	1.8	4.4	2.1	1.3	82.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 35.--WHITE OAK UPLAND -- Lumber grades and values by diameters

LOG GRADE No. 3

		Lumber grade yields (actual)								Lumber	Overrun
Log	Basis									value	net
d.i.b.	lumber	FAS:	Sel.:	No.:	No.:	SW	No.:	No.:	Tbrs.:	per M	Scrib.
	tally	:	:	1C	2C	:	3A	3B	and	:	Dec. C.
		:	:	:	:	:	:	:	SSE	:(adjusted)	:(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent:	cent:	cent:	cent:	cent:	cent:	cent:	cent:		
8	264	-	-	1.1:	6.1:	1.1:	5.3:	50.0:	36.4	47.00	47.0
9	759	0.5:	-	7.3:	17.3:	2.5:	15.9:	52.3:	4.2	49.50	35.0
10	1,328	-	-	7.1:	12.7:	6.0:	9.9:	37.9:	26.4	52.25	28.0
11	1,093	-	0.4:	10.5:	18.5:	3.3:	10.1:	47.7:	9.5	54.75	22.5
12	1,514	1.3:	-	7.7:	23.8:	1.8:	9.5:	45.3:	10.6	57.50	18.5
13	1,091	-	-	9.3:	21.4:	7.2:	6.7:	48.7:	6.7	60.00	15.5
14	816	1.6:	1.7:	15.4:	21.7:	4.2:	9.1:	46.3:	-	62.50	13.0
15	1,407	1.6:	-	13.9:	26.9:	4.3:	13.0:	38.7:	1.6	65.00	11.0
16	1,413	-	.7:	18.0:	27.8:	5.6:	15.3:	24.1:	8.5	67.50	9.0
17	441	3.4:	2.3:	27.0:	32.4:	-	11.6:	23.3:	-	69.75	7.0
18	1,487	3.5:	3.5:	22.7:	25.1:	-	20.5:	24.7:	-	72.00	5.5
19	523	-	-	26.4:	37.8:	-	11.5:	24.3:	-	74.25	4.0
Average		1.0:	.8:	13.6:	22.9:	3.4:	12.2:	38.2:	7.9	61.51	15.4

Distribution by thicknesses of above yields

Lumber	FAS	Sel.:	No.	No.	SW	No.	No.	Tbrs.
thickness:	:	:	1C	2C	:	3A	3B	and
:	:	:	:	:	:	:	:	SSE
Inches	:	Percent within grade						
4/4	:	85.6:	63.7:	75.0:	66.8:	92.3:	64.6:	45.4: -
5/4	:	-	-	1.0:	.3:	-	.7:	.4: -
6/4	:	14.4:	36.3:	22.7:	22.0:	-	5.5:	4.1: -
8/4	:	-	-	1.3:	6.9:	7.7:	16.9:	47.2: 2.4
10/4	:	-	-	-	.5:	-	-	.6: 4.0
12/4	:	-	-	-	3.5:	-	12.3:	2.3: 93.6
Total	:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0

Table 36.--YELLOW POPLAR -- Lumber grades and values by diameters

LOG GRADE No.1

		Lumber grade yields (actual)								Lumber	Overrun
Log	Basis									value	net
d.1.b.	lumber	FAS	Sel.	Saps	No.	No.	No.	No.		per M	Scrib.
	tally				1C	2A	2B	3C			Dec. C.
										(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent	cent	cent			
13	859	-	2.5	8.0	41.4	18.6	17.0	12.5	99.50		19.0
14	1,013	4.1	1.1	25.1	42.5	14.2	6.2	6.8	102.50		16.5
15	1,521	4.8	2.8	18.3	45.6	21.3	2.8	4.4	105.25		14.0
16	938	9.1	2.5	24.2	31.4	22.3	7.1	3.4	107.75		12.5
17	1,648	11.4	4.6	11.6	42.7	15.3	10.0	4.4	110.00		11.0
18	707	1.4	2.1	28.7	50.2	12.6	.9	4.1	112.00		10.0
19	1,280	8.2	6.1	22.4	46.8	11.3	2.2	3.0	113.25		9.0
20	189	15.9	11.1	43.9	22.2	6.9	-	-	114.00		8.0
21	263	-	-	-	38.4	15.2	46.4	-	114.50		7.5
22	922	8.6	-	3.3	63.8	12.4	8.6	3.3	115.00		7.0
23	902	23.9	2.6	1.8	50.0	7.8	1.2	12.7	115.25		6.5
24	280	-	-	22.1	69.7	8.2	-	-	115.50		6.0
Average		7.9	2.9	16.2	45.7	15.0	6.9	5.4	109.16		11.3

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	Saps	No.	No.	No.	No.
thickness:				1C	2A	2B	3C
Inches	Percent within grade						
3/4	8.0	8.1	2.6	2.2	3.7	2.2	2.3
4/4	38.9	58.6	52.5	52.3	67.9	68.2	70.4
5/4	26.1	7.4	1.6	12.5	3.9	4.9	5.0
6/4	20.6	5.2	18.3	9.3	2.0	2.8	7.5
8/4	6.4	20.7	25.0	23.7	22.5	21.9	14.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 37.--YELLOW POPLAR -- Lumber grades and values by diameters

LOG GRADE No. 2

Log		Lumber grade yields (actual)								Lumber	Overrun
Basis										value	net
d.i.b.	lumber	FAS	Sel.	Saps	No.	No.	No.	No.		per M	Scrib.
	tally				1C	2A	2B	3C			Dec. C.
										(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent	cent	cent			
10	1,090	0.9	1.6	4.9	41.8	25.6	15.6	9.6	78.50		34.5
11	3,096	.8	.2	2.6	33.8	27.1	18.8	16.7	80.50		29.5
12	3,225	-	.2	7.7	34.9	27.8	19.9	9.5	82.50		25.5
13	2,339	1.3	1.8	5.2	33.5	29.9	17.6	10.7	84.50		22.5
14	2,260	.3	1.0	3.9	39.1	30.9	8.3	16.5	86.50		19.5
15	1,656	-	-	2.7	39.9	18.2	25.3	13.9	88.25		16.5
16	1,232	-	.6	.5	40.7	34.6	14.0	9.6	90.00		14.0
17	61	-	-	19.7	52.4	27.9	-	-	91.75		11.5
18	942	-	-	-	30.7	37.6	12.3	19.4	93.50		9.5
19	655	1.5	-	6.9	60.8	16.2	8.7	5.9	95.00		7.5
20	526	-	-	.7	46.8	42.4	2.5	7.6	96.25		5.5
21	1,295	8.3	1.3	3.7	48.3	17.9	16.8	3.7	97.50		3.5
22	1,052	1.8	-	1.8	49.1	22.0	13.6	11.7	98.50		2.0
23	-	-	-	-	-	-	-	-	99.00		.5
24	1,391	9.6	-	-	64.2	19.2	1.8	5.2	99.25		-1.0
Average		1.7	.6	3.7	40.6	26.7	15.1	11.6	87.77		17.1

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	Saps	No.	No.	No.	No.
thickness:				1C	2A	2B	3C
Inches	Percent within grade						
3/4	-	-	5.1	1.8	1.2	3.1	2.9
4/4	29.9	59.5	73.7	57.7	70.4	73.2	77.7
5/4	70.1	14.0	2.4	26.7	5.7	3.3	1.8
6/4	-	-	5.9	5.5	1.7	1.0	1.0
8/4	-	26.5	12.9	8.3	21.0	19.4	16.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 38.--YELLOW POPLAR -- Lumber grades and values by diameters

LOG GRADE No. 3

		Lumber grade yields (actual)								Lumber	Overrun
Log	Basis									value	net
d.1.b.	lumber	FAS	Sel.	Saps	No.	No.	No.	No.	per M	Scrib.	
	tally				1C	2A	2B	3C		Dec. C.	
									(adjusted)	(adjusted)	
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent	cent	cent			
8	488	-	-	1.0	9.0	31.8	42.6	15.6	62.50	42.5	
9	1,248	-	-	-	8.1	24.8	36.7	30.4	64.75	35.5	
10	1,492	-	-	-	17.9	27.5	29.4	25.2	67.00	30.0	
11	1,005	-	-	1.5	14.5	31.0	25.2	27.8	69.25	25.5	
12	516	-	-	-	26.7	29.7	26.0	17.6	71.50	22.0	
13	719	-	-	-	18.5	29.6	21.4	30.5	73.50	19.0	
14	201	-	-	-	4.5	17.4	32.8	45.3	75.50	16.0	
15	391	-	-	-	23.8	40.9	13.3	22.0	77.50	13.0	
16	677	-	-	3.1	32.8	32.2	15.1	16.8	79.25	10.0	
17	-	-	-	-	-	-	-	-	81.00	7.5	
18	210	-	-	-	59.1	29.0	-	11.9	82.50	5.0	
19	622	5.1	1.0	-	24.6	41.2	17.2	10.9	83.75	3.0	
Average		.4	.1	.5	18.9	30.2	26.1	23.8	71.18	22.6	

Distribution by thicknesses of above yields

Lumber thickness	FAS	Sel.	Saps	No. 1C	No. 2A	No. 2B	No. 3C
	:	:	:	:	:	:	:
Inches	Percent within grade						
3/4	-	-	-	2.5	1.1	1.0	0.5
4/4	-	-	100.0	72.2	70.5	73.2	74.1
5/4	100.0	100.0	-	9.3	3.2	3.4	.6
6/4	-	-	-	1.0	.8	-	-
8/4	-	-	-	15.0	24.4	22.4	24.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 39.--BEECH -- Lumber grades and values by diameters

LOG GRADE No. 1

Log		Lumber grade yields (actual)								Lumber	Overrun
Basis		FAS	Sel.	No.	No.	No.	No.	Tbrs.		value	net
d.i.b.	lumber			1C	2C	3A	3B	and		per M	Scrib.
	tally										Dec. C.
								SSE	(adjusted)	(adjusted)	
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent	cent	cent			
13	890	8.6	12.4	35.1	13.4	8.3	19.4	2.8	88.25		10.5
14	473	33.4	6.5	31.9	12.5	8.9	6.8	-	88.75		8.0
15	908	16.9	11.0	44.7	7.1	3.6	16.7	-	89.25		6.0
16	2,244	24.8	8.9	33.0	13.7	4.2	15.4	-	90.00		4.0
17	1,524	8.9	2.3	46.1	18.6	7.1	13.6	3.4	90.50		2.5
18	2,052	28.0	5.3	34.2	10.6	9.4	11.5	1.0	91.00		1.0
19	2,546	26.3	3.7	35.2	15.1	4.3	15.4	-	91.25		.5
20	3,244	26.2	5.8	37.1	12.7	4.4	10.8	3.0	91.75		-.5
21	3,266	31.4	6.2	33.5	9.3	2.7	13.8	3.1	92.00		-1.0
22	1,506	28.2	2.5	38.2	14.8	6.4	9.9	-	92.50		-2.0
23	1,811	24.2	1.3	40.2	11.4	3.7	13.0	6.2	92.75		-2.5
24	660	25.0	1.7	36.0	12.9	7.3	15.6	1.5	93.00		-3.0
25	-	-	-	-	-	-	-	-	93.25		-3.5
26	301	32.6	7.3	55.5	2.3	-	2.3	-	93.50		-4.0
Average		24.9	5.4	37.0	12.5	5.1	13.2	1.9	91.32		+ .9

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.
thickness:			1C	2C	3A	3B	and
							SSE
Inches	Percent within grade						
4/4	41.8	29.6	50.7	42.0	27.1	41.9	-
5/4	20.9	25.8	21.4	23.8	9.5	5.9	-
6/4	17.5	31.9	12.7	8.1	8.3	2.1	-
8/4	19.8	12.7	14.9	26.1	55.1	50.1	96.4
12/4	-	-	-	-	-	-	3.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 40.--BEECH -- Lumber grades and values by diameters

LOG GRADE No. 2

Log	Basis	Lumber grade yields (actual)							Lumber	Overrun
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.	value	net
	tally			1C	2C	3A	3B	and	per M	Scrib.
								SSE	(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent	cent	cent		
10	116	6.9	-	34.5	23.3	11.2	24.1	-	65.25	28.0
11	1,051	2.8	6.5	23.1	19.2	9.4	39.0	-	67.00	20.0
12	3,332	2.2	3.4	27.4	18.4	10.1	29.7	8.8	68.75	14.5
13	4,143	4.9	4.6	26.5	21.9	6.9	22.8	12.4	70.50	10.5
14	6,454	5.6	5.4	30.0	21.4	8.0	20.0	9.6	72.25	8.0
15	5,896	7.6	5.2	30.4	20.9	7.7	17.4	10.8	73.75	5.5
16	5,178	7.1	4.0	35.7	21.5	5.8	19.3	6.6	75.50	3.0
17	5,954	9.9	3.5	38.3	18.8	4.7	17.6	7.2	77.00	1.0
18	3,941	8.9	4.2	32.3	21.4	7.7	17.9	7.6	78.50	.0
19	4,904	11.4	3.9	42.4	18.7	4.7	14.5	4.4	79.75	-1.0
20	1,730	10.2	3.2	38.8	23.8	4.9	14.2	4.9	80.75	-2.0
21	2,229	9.3	4.2	39.9	15.6	11.1	18.0	1.9	81.50	-2.5
22	1,802	4.6	5.5	50.0	21.6	2.8	11.8	3.7	82.25	-3.5
23	-	-	-	-	-	-	-	-	82.75	-4.0
24	764	5.6	3.7	51.0	18.8	11.7	9.2	-	83.00	-4.5
25	1,353	8.0	1.4	56.5	17.6	1.8	14.7	-	83.25	-5.0
Average		7.5	4.2	35.1	20.2	6.8	19.0	7.2	75.66	+3.7

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.
thickness:			1C	2C	3A	3B	and
							SSE
Inches	Percent within grade						
4/4	53.7	32.1	49.0	43.5	41.8	51.4	-
5/4	8.7	4.7	13.9	13.5	5.4	3.3	-
6/4	32.3	51.3	29.0	26.9	21.9	10.4	-
8/4	5.3	11.9	8.1	16.1	30.9	34.9	2.3
12/4	-	-	-	-	-	-	97.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 41.--BEECH -- Lumber grades and values by diameters

LOG GRADE No. 3

		Lumber grade yields (actual)								Lumber	Overrun
Log	Basis	FAS	Sel.	No.	No.	No.	No.	Tbrs.		value	net
d.i.b.	lumber			1C	2C	3A	3B	and		per M	Scrib.
	tally							SSE	(adjusted)	(adjusted)	Dec. C.
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent	cent	cent			
8	100	-	-	10.0	4.0	6.0	80.0	-	48.50	35.0	
9	460	-	-	12.0	17.6	11.9	58.5	-	50.75	27.0	
10	1,311	-	0.5	11.4	22.6	8.7	45.2	11.6	52.75	20.5	
11	1,291	-	1.2	10.8	24.3	12.5	36.5	14.7	54.50	15.5	
12	1,900	-	.4	14.2	23.7	12.6	35.9	13.2	56.00	11.0	
13	1,993	0.5	1.0	13.6	26.4	17.1	24.2	17.2	57.25	7.0	
14	1,812	1.1	2.0	9.4	26.8	11.6	27.9	21.2	58.25	3.5	
15	1,511	1.1	.3	18.3	33.4	10.5	25.1	11.3	59.00	.5	
16	1,181	-	-	21.9	23.0	7.8	36.5	10.8	60.00	-2.5	
17	358	-	-	31.9	39.1	18.4	10.6	-	60.75	-5.0	
18	488	-	2.0	23.6	31.4	13.1	21.1	8.8	61.25	-7.5	
19	871	-	-	18.1	31.6	10.0	35.4	4.9	62.00	-10.0	
20	460	-	-	24.6	35.2	13.9	26.3	-	62.50	-12.0	
21	344	3.5	-	45.9	22.1	7.6	20.9	-	63.00	-14.5	
22	482	6.4	-	56.6	21.4	2.5	8.3	4.8	63.50	-16.5	
Average		.6	.7	17.4	26.4	11.6	31.4	11.9	57.67	+ 3.8	

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.	No.	Tbrs.
thickness:			1C	2C	3A	3B	and
							SSE
Inches	Percent within grade						
4/4	39.3	19.8	49.7	45.3	42.9	64.3	-
5/4	14.6	-	5.2	5.4	3.4	.8	-
6/4	46.1	69.3	41.2	44.0	45.5	20.9	-
8/4	-	10.9	3.9	5.3	8.2	14.0	-
12/4	-	-	-	-	-	-	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 42.--COTTONWOOD -- Lumber grades and values by diameters

LOG GRADE No. 1

Log d.i.b.	Basis lumber tally	Lumber grade yields (actual)						Lumber value per M :(adjusted)	Overrun net Scrib. Dec. C. :(adjusted)
		FAS	Sel.	No. 1C	No. 2C	No. 3C			
Inches	Bd.ft.	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent		Dollars	Percent
13	890	11.9	5.5	36.0	44.3	2.3		75.00	27.5
14	1,430	21.3	10.0	32.2	29.5	7.0		77.50	24.0
15	3,288	22.7	7.5	32.3	32.9	4.6		79.50	21.0
16	3,965	26.0	4.4	33.3	31.3	5.0		81.75	18.0
17	3,797	29.0	9.5	30.6	25.3	5.6		83.50	16.0
18	2,600	37.9	8.2	29.7	19.8	4.4		85.00	14.0
19	2,614	36.1	6.5	29.3	21.3	6.8		86.50	12.5
20	2,856	44.7	4.9	27.1	21.7	1.6		87.75	11.0
21	1,326	39.5	1.5	25.6	24.6	8.8		88.50	10.0
22	1,758	59.6	6.6	19.1	12.6	2.1		89.00	9.0
23	785	55.0	6.8	26.2	12.0	-		89.25	8.5
24	1,460	38.5	3.7	39.2	17.3	1.3		89.25	7.5
25	1,676	44.3	7.9	30.9	11.5	5.4		89.00	7.0
26	483	21.3	1.4	62.8	9.9	4.6		88.50	6.5
27	1,395	38.2	3.4	37.6	18.3	2.5		88.00	6.0
Average		34.4	6.4	31.1	23.7	4.4		84.64	13.7

Distribution by thicknesses of above yields

Lumber thickness:	FAS	Sel.	No. 1C	No. 2C	No. 3C
Inches	Percent within grade				
4/4	95.2	87.1	95.5	81.7	80.8
6/4	4.6	12.9	4.3	2.6	5.2
7/4	-	-	.2	15.1	6.0
8/4	.2	-	-	.6	8.0
Total	100.0	100.0	100.0	100.0	100.0

Table 43.--COTTONWOOD -- Lumber grades and values by diameters

LOG GRADE No. 2

		Lumber grade yields (actual)							
Log	Basis						Lumber	Overrun	
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	value	net	
	tally			1C	2C	3C	per M	Scrib.	
								Dec. C.	
							(adjusted)	(adjusted)	
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent			
10	69	-	-	76.8	23.2	-	63.75	40.0	
11	1,373	1.5	3.0	33.9	47.6	14.0	66.00	34.5	
12	4,542	2.9	2.7	36.7	47.3	10.4	68.25	29.5	
13	6,319	3.5	2.6	40.0	46.9	7.0	70.50	24.5	
14	6,235	7.0	5.0	39.0	39.6	9.4	72.50	20.5	
15	4,366	9.5	5.2	37.7	39.3	8.3	74.25	16.5	
16	5,331	6.2	4.4	41.9	42.9	4.6	76.00	13.5	
17	2,997	6.7	2.9	46.5	35.5	8.4	77.50	11.0	
18	2,731	15.7	4.1	42.4	31.2	6.6	79.00	9.0	
19	1,709	28.8	4.4	32.0	26.7	8.1	80.25	7.5	
20	593	19.2	1.9	48.9	25.3	4.7	81.25	6.0	
21	182	10.3	5.0	53.9	30.8	-	81.75	5.0	
22	814	23.3	4.4	43.6	21.9	6.8	82.00	4.0	
Average		8.0	3.9	39.9	40.3	7.9	73.53	18.0	

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
<u>Inches</u>	<u>Percent within grade</u>				
4/4	74.3	67.6	79.6	77.8	69.5
6/4	25.7	32.4	20.3	13.5	20.1
7/4	-	-	.1	8.5	6.9
8/4	-	-	-	.2	3.5
Total	100.0	100.0	100.0	100.0	100.0

Table 44.--COTTONWOOD -- Lumber grades and values by diameters

LOG GRADE No. 3

Lumber grade yields (actual)									
Log	Basis	FAS	Sel.	No.	No.	No.	Lumber	Overrun	
d.i.b.	lumber			1C	2C	3C	value	net	
	tally						per M	Scrib.	
							(adjusted)	Dec. C	
								(adjusted)	
Inches	Bd. ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent	
		cent	cent	cent	cent	cent			
8	-	-	-	-	-	-	55.50	43.5	
9	207	-	-	19.3	42.5	38.2	57.25	38.5	
10	798	-	-	28.5	61.3	10.2	59.50	34.0	
11	384	-	1.8	13.3	70.6	14.3	61.00	29.5	
12	439	-	-	26.4	59.9	13.7	62.75	25.5	
13	763	-	.7	20.3	74.3	4.7	64.25	20.0	
14	1,115	2.6	2.5	34.3	58.4	2.2	66.00	18.5	
15	470	3.6	-	27.2	55.1	14.1	67.50	15.5	
16	132	-	-	21.2	78.8	-	69.00	13.5	
17	-	-	-	-	-	-	70.50	11.5	
18	533	1.9	1.3	44.5	50.8	1.5	71.75	9.5	
19	-	-	-	-	-	-	73.00	8.0	
20	128	8.6	6.3	35.9	49.2	-	74.00	6.5	
21	-	-	-	-	-	-	75.00	5.5	
22	-	-	-	-	-	-	75.75	4.0	
23	303	-	-	63.7	32.0	4.3	76.25	3.0	
Average		1.3	1.0	30.5	59.2	8.0	65.53	20.0	

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
Inches	Percent within grade				
4/4	59.7	87.3	94.7	83.2	75.6
6/4	40.3	12.7	5.3	9.7	13.0
7/4	-	-	-	6.6	6.9
8/4	-	-	-	.5	4.5
Total	100.0	100.0	100.0	100.0	100.0

Table 45.--EIM -- Lumber grades and values by diameters

LOG GRADE No. 1

Lumber grade yields (actual)								
Log	Basis						Lumber	Overrun
d.i.b.	lumber	FAS	Sel.	No.	No.	No.	value	net
	tally			1C	2C	3C	per M	Scrib.
							(adjusted)	Dec. C.
								(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent		
13	2,208	12.0	6.6	36.7	24.6	20.1	72.00	20.0
14	3,629	28.5	11.0	29.2	13.0	18.3	73.25	16.5
15	4,877	25.6	10.2	27.7	15.8	20.7	74.50	13.5
16	5,978	21.5	11.0	28.9	17.8	20.8	75.50	11.0
17	6,619	30.4	10.2	26.8	15.2	17.4	76.75	9.0
18	5,475	31.6	8.8	24.5	14.0	21.1	77.75	7.0
19	4,988	30.0	5.3	30.4	14.9	19.4	78.75	5.5
20	4,582	25.8	12.8	29.2	16.6	15.6	79.75	4.0
21	3,055	34.2	6.5	28.0	19.6	11.7	80.75	2.5
22	4,530	34.9	6.5	26.7	16.5	15.4	81.75	1.0
23	1,464	49.7	5.1	22.4	6.7	16.1	82.50	.0
24	729	25.9	14.1	35.0	11.7	13.3	83.25	- 1.0
25	2,793	29.0	12.8	25.4	16.2	16.6	84.00	- 2.0
26	330	50.0	11.5	17.9	15.5	5.1	84.50	- 3.0
27	1,675	49.0	8.9	24.9	8.8	8.4	85.25	- 4.0
28	450	36.7	-	39.1	12.2	12.0	86.00	- 5.0
Average		29.5	9.2	28.0	15.7	17.6	78.20	+ 6.6

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
Inches	Percent within grade				
2/4	1.2	-	1.0	0.3	0.1
4/4	47.3	42.6	65.1	75.4	81.7
5/4	2.0	2.3	1.9	.9	.6
6/4	5.6	1.5	5.0	3.7	2.8
8/4	3.0	2.8	4.9	6.4	10.5
10/4	29.8	34.9	16.0	11.7	3.7
12/4	11.1	15.9	6.1	1.6	.6
Total	100.0	100.0	100.0	100.0	100.0

Table 46.--EIM -- Lumber grades and values by diameters

LOG GRADE No. 2

Lumber grade yields (actual)								
Log	Basis	FAS	Sel.	No.	No.	No.	Lumber	Overrun
d.i.b.	lumber			1C	2C	3C	value	net
	tally						per M	Scrib.
							(adjusted)	Dec. C.
								(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent		
10	1,169	3.2	1.8	23.8	31.3	39.9	53.50	28.0
11	3,591	4.2	3.8	28.1	28.2	35.7	56.25	24.0
12	4,703	8.0	3.5	29.4	26.3	32.8	58.75	20.5
13	5,523	6.6	4.2	34.9	26.1	28.2	61.00	17.5
14	6,393	3.8	5.2	32.3	30.2	28.5	63.25	14.5
15	3,809	7.3	4.7	31.2	31.2	25.6	65.00	11.5
16	3,153	5.8	7.6	33.8	30.8	22.0	66.50	9.0
17	3,489	10.8	3.4	33.7	29.2	22.9	67.50	6.0
18	2,449	13.2	9.0	41.2	21.1	15.5	68.25	3.5
19	989	9.6	2.6	52.6	19.1	16.1	69.00	1.0
20	905	13.1	4.5	39.8	25.5	17.1	69.25	- 1.5
21	528	3.2	-	40.7	25.8	30.3	69.50	- 4.0
22	299	10.7	17.4	30.1	23.1	12.7	69.75	- 6.5
23	517	10.8	-	25.5	30.8	32.9	70.00	- 8.5
Average		7.1	4.7	33.1	27.9	27.2	63.01	12.5

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
Inches	Percent within grade				
2/4	0.5	0.1	1.3	0.1	0.2
4/4	61.4	46.0	76.1	75.7	65.0
5/4	6.9	14.0	6.3	7.2	1.6
6/4	8.2	4.0	2.3	1.4	1.9
8/4	6.2	10.7	7.5	13.6	27.5
10/4	1.0	6.7	.5	.5	1.2
12/4	15.8	18.5	6.0	1.5	2.6
Total	100.0	100.0	100.0	100.0	100.0

Table 47.--ELM -- Lumber grades and values by diameters

LOG GRADE No. 3

		Lumber grade yields (actual)						
Log	Basis	FAS	Sel.	No.	No.	No.	Lumber	Overrun
d.i.b.	lumber						value	net
	tally			1C	2C	3C	per M	Scrib.
								Dec. C.
							(adjusted)	(adjusted)
Inches	Bd.ft.	Per-	Per-	Per-	Per-	Per-	Dollars	Percent
		cent	cent	cent	cent	cent		
8	146	-	-	7.5	27.4	65.1	42.75	28.0
9	1,008	-	.5	13.6	25.4	60.5	46.00	25.0
10	2,019	1.8	1.1	16.8	34.2	46.1	48.50	22.5
11	465	-	-	4.1	50.7	45.2	50.50	20.0
12	819	1.7	2.1	21.5	42.8	31.9	52.25	17.5
13	762	2.6	-	15.8	40.8	40.8	53.75	15.0
14	270	-	-	27.8	48.9	23.3	54.50	13.0
15	606	-	6.5	15.0	40.9	37.6	55.50	10.5
16	819	12.2	.5	22.2	40.1	25.0	56.25	8.5
17	544	-	-	15.8	51.3	32.9	56.75	6.5
18	274	5.1	-	15.7	45.6	33.6	57.25	4.5
19	390	-	-	23.8	38.2	38.0	57.50	2.5
Average		2.3	1.1	16.9	38.7	41.0	51.88	15.7

Distribution by thicknesses of above yields

Lumber	FAS	Sel.	No.	No.	No.
thickness:			1C	2C	3C
Inches	Percent within grade				
2/4	-	-	0.8	1.0	-
4/4	49.2	27.9	76.6	73.6	61.8
5/4	11.3	24.4	15.7	11.3	2.3
6/4	5.4	-	.5	-	.8
8/4	-	11.6	6.4	9.8	31.4
10/4	-	-	-	-	.8
12/4	34.1	36.1	-	4.3	2.9
Total	100.0	100.0	100.0	100.0	100.0

Table 48.--ASH, BLACK GUM, HICKORY, SOFT MAPLE, AND SYCAMORE --
Lumber grades and values by log grades

Log grade	Basis lumber tally	Lumber grade yields (actual)						Lumber value per M (adjusted)	Overrun net Scrib. Dec. C. (adjusted)
		FAS	Sel.	No. 1C	No. 2C	No. 3C			
	Bd. ft.	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Dollars	Percent	
ASH									
1	7,499	45.5	10.4	24.2	11.1	8.8	124.72	10.1	
2	12,918	15.6	8.7	33.1	24.8	17.8	95.90	13.9	
3	3,662	3.0	1.9	24.8	40.8	29.5	67.47	22.0	
BLACK GUM									
1	15,386	44.7	7.5	24.2	14.6	9.0	90.96	8.8	
2	9,867	16.5	5.7	37.9	26.8	13.1	76.17	16.0	
3	1,309	1.5	2.4	28.0	39.3	28.8	57.13	37.9	
HICKORY									
1	13,264	25.2	3.1	36.5	20.6	14.6	76.82	12.7	
2	13,322	5.6	1.5	32.8	39.0	21.1	60.08	19.7	
3	4,765	.7	.3	13.4	49.8	35.8	47.82	28.8	
SOFT MAPLE									
1	3,108	30.6	6.6	35.5	20.8	6.5	103.16	8.8	
2	3,150	15.3	4.7	43.6	19.2	17.2	91.46	20.1	
3	1,079	3.2	1.4	20.6	52.5	22.3	65.96	24.5	
SYCAMORE									
1	7,398	34.2	6.7	26.5	12.8	19.8	86.94	15.3	
2	7,260	7.6	4.1	38.0	24.3	26.0	72.98	17.0	
3	1,147	-	.5	30.1	27.2	42.2	57.64	18.2	

How to Apply the Log Grades

The grading of logs is not so difficult as may first appear. However, it does require close scrutiny to make sure that the hidden defects are not overlooked. With some experience the grade of the log can be determined in most cases while examining the log in the process of scaling. Even in the logs where the grade is not immediately apparent it is seldom necessary to lay out the actual cuttings. Usually measurements to see whether the cuttings conform to the minimum size will be enough to determine the grade.

Faces

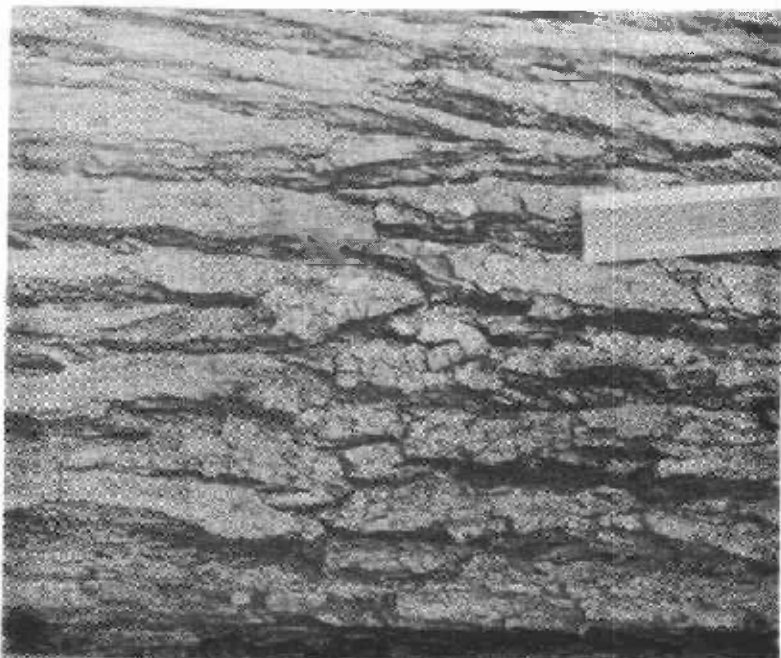
After taking into account the size and soundness of the log, the first step in grading is to visually square the log full length into four faces so oriented to give the largest possible number of good faces. The influence of a given defect should be confined to one grading face wherever possible instead of permitting it to extend over two faces unnecessarily.

Clear Cuttings

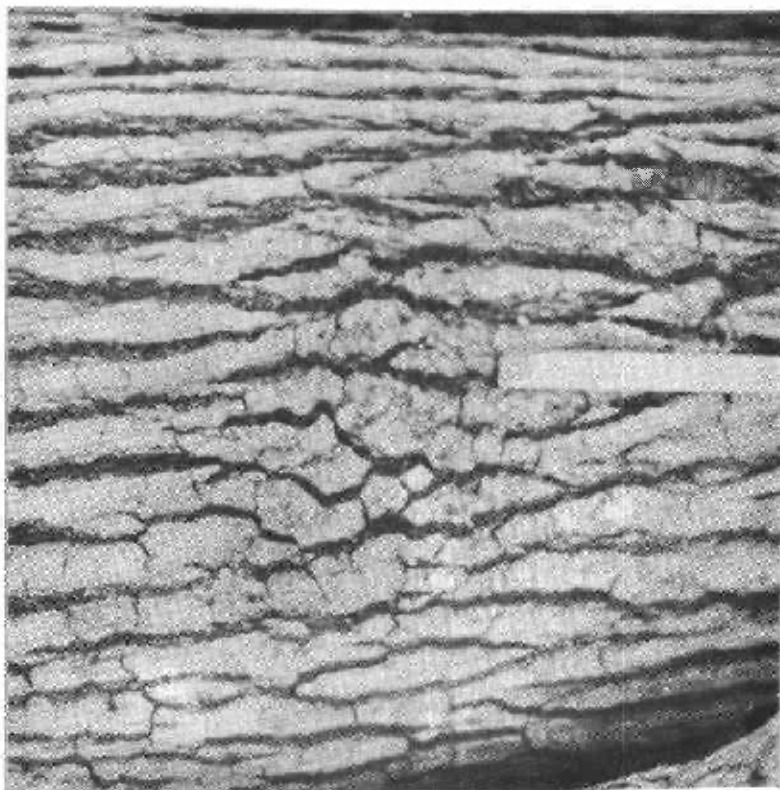
The next step is to establish the grade of the best three faces on the basis of the clear cutting requirements. Only when two of these faces grade higher than the third is it necessary to examine the fourth face in order to be sure that the best faces have been selected. The grade of the log is that of the lowest of the faces chosen as the three grading faces.

The portions of the length of the face that lie between defects or between the ends of the logs and defects and extending over the full width of the face are taken as the clear cuttings.

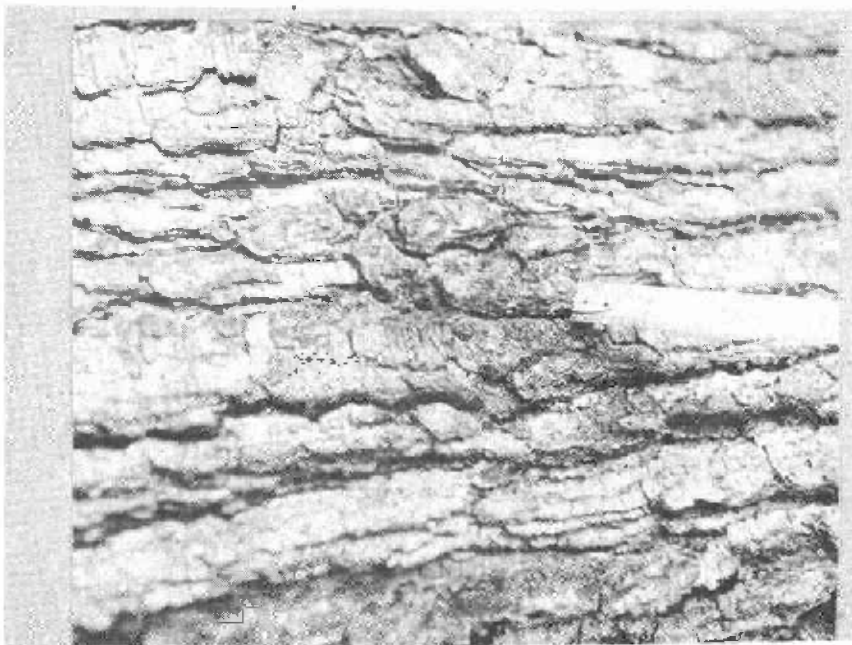
Knots, bark-covered defects such as bumps, overgrown knots, grub holes, etc., either projecting or recessed, are excluded from clear cuttings. However, any feature, such as shallow fire and other scars, seams, and frost cracks whose maximum depth extends one-fifth or less the diameter of the log at that point, is not considered a defect.



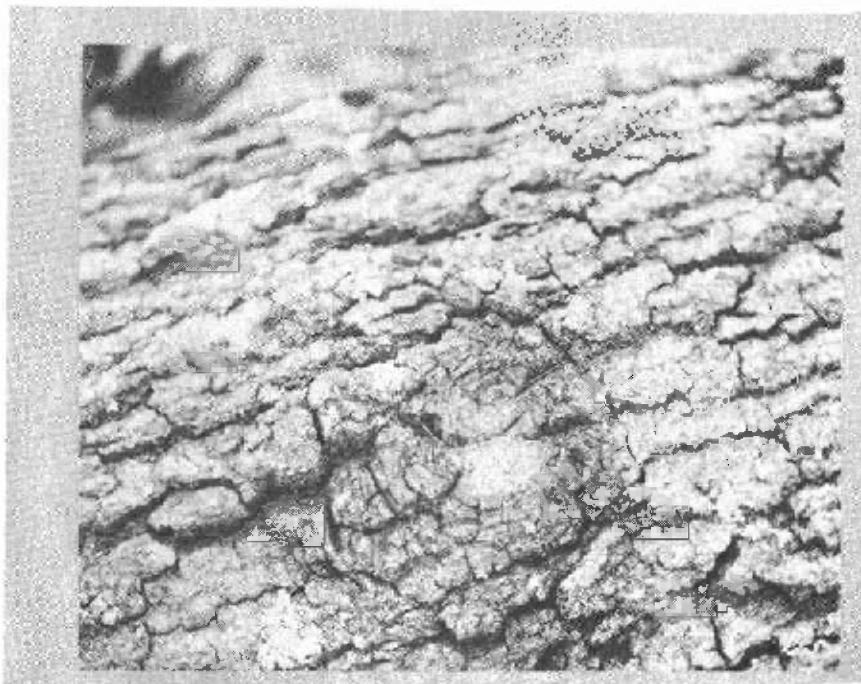
Slight bark distortion, consisting of a simple horizontal break across the normal bark pattern -- not a defect.



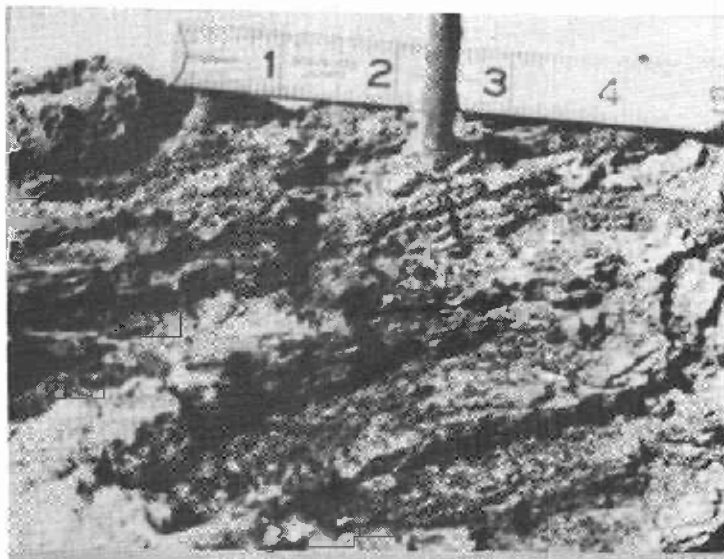
Medium bark distortion consisting of compound breaks across and along the normal bark pattern -- a defect in all diameter logs.



Small bark distortion, consisting of a localized break in the normal bark pattern but not clearly an overgrown knot -- not a defect in 15-inch and larger logs.



Bark distortion that clearly is an overgrown knot -- a defect in all diameter logs.



Adventitious twig growth $\frac{3}{8}$ " or less in diameter is a defect in logs under 14" d.i.b. On logs 14" and larger, only every other one is considered a defect.

In the nondense hardwood species it is not considered a defect in grade 3 logs.



Grub holes or other insect holes open or overgrown are considered defects on all logs under 16" d.i.b. In larger logs when the occurrence of the holes is frequent, some of them can be included on each face in the clear cuttings as follows:

16"	to 19"	d.i.b.	every 6th hole
20"	to 23"	d.i.b.	every 5th hole
24"	to 27"	d.i.b.	every 4th hole
28"+		d.i.b.	every 3rd hole

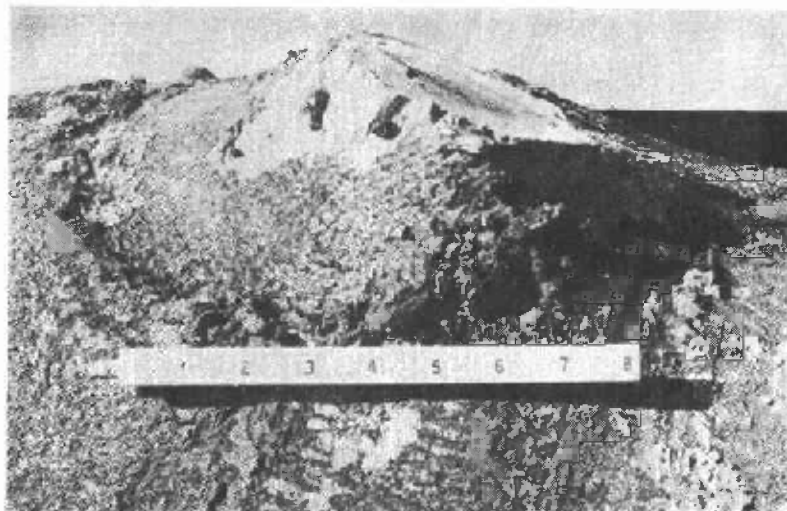


A bump is taken as any bark-covered protuberance with gradual to abrupt sloping sides, the cause of which is not clearly evident.

Bumps are not considered defects in logs:
 under 14" d.i.b. when the length of the bump is 16
 or more times its height,
 nor in 14" logs and over d.i.b. when the length of
 the bump is 12 or more times its height.

Measurement of clear cuttings may extend into both ends
 of bumps by:

1/4 when length is 6 or more times the height,
 1/8 when length is 3, but less than 6, times the height.



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For measurement of clear cuttings adjacent large,
 coarse, elevated defects, the size of which is
 taken flush with the bark surface:

2" to 4" defects: measure cuttings to 1/2"
 above flush bark surfaces,
 5" to 7" defects: measure cuttings to 1"
 above flush bark surfaces,
 8"+ defects: measure cuttings to 1-1/2" above
 flush bark surfaces.

Sound end defects, such as medium to heavy mineral stain in hard maple and yellow-poplar and slight dote in yellow birch on the small end of the log, shall not exceed one-half the log diameter for Grade 1 logs and for Grade 2 logs under 16", and not exceed three-fifths the log diameter on Grade 2 logs 16" and larger. Excess will lower the log one grade. When the defect is not concentrated in one spot, its extent is taken as the sum of the individual occurrences.

Slight stain is not a defect.

Unsound end defect, such as decay and heavy shake, outside the heart zone (taken as one-fifth of the diameter from the pith), when extending more than one-half the distance between the heart zone and the bark, prevents taking clear cuttings on the face surface overlying it. When it extends less than the full log length, cuttings can be taken over a third of its estimated length from the end tapering out.

End defects, such as bird peck, worm holes, spot wormhole stain, mineral spots or streaks, and such unsound defects as grub holes and bark pockets are considered when outside the heart zone, the heart zone being taken as extending one-fifth the diameter of the log from the pith. When these defects affect one-half the radial distance between the heart zone and the bark under three faces of the log at one end, or two faces at both ends, a log of Grade 1 or 2 shall be dropped one grade. When there is less than 3 inches either between the heart zone and the defect, or between defects, the portion will be included with the defect.

For seams, frost cracks, and fire or other scars whose depth exceed one-fifth the diameter but not extending the full length of the log, clear cuttings can be taken over one-third of its length from the end tapering out.

Bird pecks are considered defects in cuttings of Grade 1 and Grade 2 logs when the area contains more than four bird pecks per square foot. However, when the depth of the bird peck on the end of the log is less than one-tenth of the log diameter it is not considered a defect.

Sweep, Crook, and Cull Deductions

Logs that involve deductions in scale in excess of percentages allowed for each grade are dropped one grade. All deductions that are made by enclosing the defect in a rectangle are computed according to the National Forest Scaling Handbook (1940) by multiplying width, height, and length of defect together and dividing by 15. The maximum percentage deduction for this type of cull as provided for in log grade specifications will apply to Scribner Decimal C, Doyle, or International rules. However, the percentage deduction arrived at when Doyle or International scale is used in grading should be multiplied by the following factors to give the approximate percentage deduction for grading:

International Rule

	<u>Factor</u>
Logs 8" to 14"	1.2
Logs 15" to 19"	1.1
Logs 20" to 36"	1.05
Logs 37" and up	None

Doyle Rule

	<u>Factor</u>
Logs 8" to 11"	0.6
Logs 12" to 13"	.8
Logs 14" to 20"	.9
Logs 21" to 31"	None
Logs 32" to 40"	1.1

For sweep the rule-of-thumb given in the Handbook is replaced by the provision that the percentage deduction is taken as the maximum sweep minus 2, divided by log diameter.

Measurement of Log Diameter and Length

Average diameter inside the bark on the small end of log is used in scaling and grading. The length for figuring the necessary clear cuttings is dropped to the full foot, but the cuttings are allowed to include the overlength.

Yield of Clear Cuttings

Required yields are given in fractions for simplicity of application: For a five-sixths yield, use 10 times the nominal length of log in feet as equal to the required total clear length in inches, namely, $10 \times 12 = 120$ or 10 feet; for four-sixths yield take $8 \times$ length; for three-sixths yield take $6 \times$ length.

Note: A pocket edition of pages 9 to 15 of this report has been issued as Forest Products Laboratory Report DL737-A, "Hardwood Log Grades and How to Apply Them."