
LUMBER AND TIMBER PRODUCTS

(581)

LUMBER AND TIMBER PRODUCTS.

By JASPER E. WHEELER, Expert Chief of Division.

The classification "lumber and timber products" embraces a wide variety of commodities, which may be divided roughly into two classes, namely, products of the ax and products of the saw. The former, the raw material for which is the standing tree, includes among its principal products saw logs; shingle, stave, and heading bolts; telegraph and telephone poles; fence posts; and railway ties. The second group, with the log or bolt as raw material, comprises lumber, shingles, cooperage materials, veneers, laths, etc., and, through additional processes when carried on in connection with the manufacture of these products, its scope is enlarged

to cover finished lumber, sash, doors, blinds, interior finish, etc.

Three separate operations, commonly designated logging, sawing, and planing or remanufacturing, are employed in the manufacture of these products. The three branches are largely interdependent, and taken as a whole constitute the lumber industry.

Table 1 is a comparative summary of the statistics of the lumber industry as returned at the censuses of 1850 to 1905, inclusive, with the percentages of increase for each census period.

TABLE 1.—LUMBER AND TIMBER PRODUCTS—COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1850 TO 1905.

	CENSUS.							PER CENT OF INCREASE.					
	1905	1900	1890	1880	1870	1860	1850	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments..	10,127	23,053	22,617	25,708	25,832	20,050	18,700	117.0	1.9	112.0	10.5	25.0	10.1
Capital.....	\$517,224,128	\$400,857,337	\$397,861,028	\$181,180,123	\$143,493,232	\$74,530,090	\$41,444,304	29.0	0.8	119.6	20.3	92.5	79.8
Salaried officials, clerks, etc., number.....	18,485	14,233	*20,375	(*)	(*)	(*)	(*)	20.8	130.1	.....	.....	.....	.....
Salaries.....	\$19,873,092	\$12,500,857	*\$11,203,757	(*)	(*)	(*)	(*)	59.0	11.0	.....	.....	.....	.....
Wage-earners, average number.....	404,020	413,335	311,004	147,050	140,007	75,862	55,810	12.1	32.5	110.8	11.4	97.7	35.9
Total wages.....	\$183,021,510	\$148,007,845	\$87,034,284	\$31,845,974	\$40,000,162	\$21,702,465	\$13,787,852	23.7	68.3	176.1	120.4	84.4	57.4
Men 10 years and over..	401,209	408,033	300,415	141,504	140,047	75,171	55,358	11.7	33.2	116.4	13.1	94.3	35.8
Wages.....	\$182,318,107	\$147,115,028	\$87,170,608	(*)	(*)	(*)	(*)	23.0	68.8	.....	.....	.....	.....
Women 10 years and over.....	911	1,728	2,281	425	682	601	452	147.3	124.2	436.7	137.7	11.3	52.0
Wages.....	\$230,095	\$31,298	\$363,390	(*)	(*)	(*)	(*)	128.5	18.8	.....	.....	.....	.....
Children under 10 years.	2,500	3,540	3,208	5,007	3,268	(*)	(*)	120.4	8.6	145.2	82.0	.....	.....
Wages.....	\$460,327	\$580,610	\$400,217	(*)	(*)	(*)	(*)	116.8	40.1	.....	.....	.....	.....
Miscellaneous expenses.....	\$82,880,280	\$40,295,488	\$23,844,037	(*)	(*)	(*)	(*)	100.3	60.0	.....	.....	.....	.....
Cost of materials used.....	\$183,780,210	\$242,035,237	\$242,502,290	\$140,155,385	\$103,343,430	\$44,581,753	\$28,328,792	124.3	0.1	66.0	41.4	131.8	57.4
Value of products.....	\$580,022,090	\$555,197,271	\$437,057,382	\$233,208,720	\$210,150,327	\$90,715,850	\$60,413,187	4.5	20.8	87.8	11.1	117.3	60.1

1 Decrease.
 2 Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
 3 Not reported separately.
 4 Not reported.
 5 Does not include the value of rough lumber remanufactured in planing mills connected with sawmills producing it.
 6 Includes wages and amount paid for contract work in dependent logging camps.

In comparing the figures of the censuses presented in Table 1 certain facts should be borne in mind. At the census of 1905 the canvass of establishments was confined to merchant mills and timber camps of similar magnitude, thus excluding the custom mills and petty establishments in all branches of the industry.

The figures for the census of 1900 have been revised, so as to eliminate, as far as practicable, the reports for such establishments as would not have come within the scope of the census of 1905. The figures

for these two censuses are therefore, with certain qualifications explained below, substantially comparable. No such revision of the figures of previous censuses has been attempted, however, and this fact should be considered when comparisons involving them are made.

The 19,127 establishments for 1905 include sawmills, whether operated separately or in conjunction with logging camps or planing mills, or both, and independent logging or timber camps. The same classes

of establishments were enumerated at the censuses of 1900 and 1890, but prior to the last-named census timber camps, or logging operations not conducted under a common ownership or management with milling plants, were not enumerated. Furthermore, veneer mills and establishments engaged in making split shingles, which have been classed as lumber and timber products since 1880, were classified separately at that and preceding censuses, and therefore have not been included in the statistics for those censuses.

Capital, at the census of 1905, embraces the total investment in sawmills, planing mills operated in connection with sawmills, and logging camps, whether conducted by milling establishments or operated independently, but does not include capital invested in timber lands and standing timber. The composition of this item for 1900 and 1890 has been made the same as that for 1905 by eliminating investments in timber lands and standing timber. Prior to the census of 1890 no separate inquiry as to investments in timber lands or standing timber was provided in the schedule, and it is probable that at the earlier censuses this item was included with other capital in the returns of some establishments and omitted from those of others. The amount of capital reported by lumbermen as invested in timber lands and standing timber at the census of 1905 is shown, by states and territories, in Table 1 of "Timber regions of the United States," page 64 in this report.

Under wage-earners, for 1905, are included all employees, other than salaried officials, clerks, etc., engaged in the three branches of the industry—logging plants, whether operated in connection with mill plants or independently; sawmills; and planing mills connected with sawmills. This item for 1905 includes the same classes of employees as in 1900, but the form of inquiry used in ascertaining the average number of wage-earners was slightly different. In 1900 wage-earners engaged in the transportation of logs to the mill were returned under a separate heading from other logging employees. In certain sections of the country this work is confined to a period of from five to seven months, and in many cases the same wage-earners are employed during the remainder of the year in felling, skidding, swamping, etc. It was found that duplications crept into the replies to the two inquiries relating to logging employees, resulting in a slightly inflated average number. There was no duplication of this character in the returns for 1905. Accompanying the inquiry relating to wage-earners in the schedule used at the later census was the printed instruction to include under the single heading "logging" all wage-earners engaged in logging operations—felling, skidding, transporting, driving, etc., from the stump to the mill. The schedule of the census of 1900, with respect to the inquiry concerning logging employees, was similar to that used in 1890, prior to which census the in-

quiry relating to wage-earners did not differentiate those engaged in logging from those employed in mills. Furthermore, the average number of wage-earners shown in Table 1 for 1890 does not include wage-earners engaged in logging operations conducted by milling establishments.

Miscellaneous expenses for 1905 include all miscellaneous expenses incurred in logging operations, in sawmills, and in planing mills connected with sawmills. The same factors composed this item in 1900, but in 1890 amounts paid for contract logging and for the keep of animals were included, along with all other expenses of logging operations conducted by milling establishments, in the cost of materials.

The cost of materials for 1905 includes the stumpage value of all timber cut during the year in logging camps and the cost of supplies consumed in these plants, but not the board of men and the keep of horses and cattle. This item also includes the cost of logs, bolts, rough lumber, and all other materials purchased and used in sawmills and planing mills operated in connection with sawmills, together with all sums paid for mill supplies, freight, fuel, and rent of power and heat. For 1900 this heading includes all the items included for 1905 and in addition the value of rough lumber manufactured in sawmills that was dressed or remanufactured in planing mills connected with them.

In 1900 rough lumber manufactured in sawmills and dressed or remanufactured in planing mills connected with them was treated as though purchased from outside sources, and its value was entered on the schedule, under "cost of planing mill materials," with rough lumber actually bought for use in these planing mills, the form of the inquiry not distinguishing the source of supply. In like manner the value of rough lumber, remanufactured in planing mills connected with sawmills producing it, entered twice into the total value of products of the industry, once as rough lumber, a sawmill product, and again in its finished condition as a planing mill product. In consequence of this repetition the totals for cost of materials and value of products were to that extent excessive. The schedule used at the census of 1890 was similar in this particular to that of 1900. The schedule used at the census of 1905, however, was so framed as to avoid these duplications and to show for each establishment the net cost of materials used and the true value of products as marketed.

At the census of 1905 the value of the rough lumber remanufactured in planing mills connected with sawmills producing it was \$120,242,249, and had the method been followed that was in use in 1900 and 1890, the total cost of materials would have been \$304,028,459, and the total value of products \$700,264,939, instead of \$183,786,210 and \$580,022,690, respectively, as shown in Table 1. It is probable that this duplication in 1900 and 1890 formed substantially

the same percentage of the totals into which it entered as would have been the case had it been similarly handled in 1905; therefore in making comparisons involving these totals some such degree of allowance should be made for its presence. In 1890 the cost of materials included, in addition to the factors composing this item for 1900 and 1905, all expenses incurred in the operation of dependent logging camps and the amount paid for contract logging.

The item of products for 1905 includes: (1) The value at the point where produced of all timber products, except that part of the output of logging plants operated by milling establishments which was used as material in the latter; (2) the value to the establishment of all sawmill products, except that part which was used as material in planing mills connected with the sawmills producing it; and (3) the value of all products of planing mills operated in connection with sawmills. This excludes the value of custom sawed lumber, but includes the amount received for sawing it.

An interesting phase of the figures shown in Table 1 is the relative unimportance to its growth and development of the number of establishments engaged in the lumber industry. While this number at the census of 1850 was 18,769 and at the census of 1905, 19,127, an increase of only 358, or 1.9 per cent, the capital invested in the industry during the same period rose from \$41,444,364 to \$517,224,128, an increase of \$475,779,764, or 1,148 per cent, and the value of products multiplied almost tenfold, from \$60,413,187 to \$580,022,690. This feature may appear more striking when presented in terms of the average value of products per establishment at the two censuses. In 1850 this was \$3,219; in 1905 it had grown to \$30,325; while a steadily expanding capacity in the average plant is shown at each intervening census. The bulky character of lumber products tends naturally to confine their market. That the number of establishments has fluctuated within comparatively narrow limits since 1850, while the volume of their product has increased enormously, is due in the main to a rapid and remarkable development of the transportation facilities of the country. Another factor that has aided in this concentration of the industry into larger establishments has been the improvement in sawmill machinery.

The number of persons employed reported at the census of 1905 was over seven times that in 1850, while the wages paid increased over twelvefold, which shows a substantial growth in the average annual earnings of employees.

In 1850 the total of salaries and wages and cost of materials constituted 69.7 per cent of the value of products, and at the census of 1905, 66.7 per cent. The ratio between the total of these items and the value of products at the two censuses has therefore not materially changed. In 1850, however, salaries and wages formed 22.8 per cent and the cost of materials 46.9 per

cent of the value of products, whereas in 1905 salaries and wages had increased to 35 per cent and materials declined to 31.7 per cent of the value of products. This actual reduction in the ratio of cost of materials to value of products, in spite of the large increase in the value of stumpage, shows clearly the great saving of material effected by the introduction of improved mill equipment.

As noted above, the operations of independent timber camps prior to the census of 1890 were not included as a part of the lumber industry of the country, so that the figures for the censuses from 1850 to 1880, inclusive, are not strictly comparable with those for the later censuses. In its scope the inquiry relating to the lumber industry in 1890 was identical with that for 1900 and 1905, and it is therefore practicable to make an accurate comparative analysis of the figures for these periods.

At the census of 1905 the total amount of capital invested in the industry was \$517,224,128; in 1900, \$400,857,337; and in 1890, \$397,861,928. There was an increase for 1905 of \$116,366,791, or 29 per cent, over 1900 and of \$119,362,200, or 30 per cent, over 1890. The total number of persons employed in all branches of the industry reported in 1905 was 4,462, or 1 per cent less than in 1900, but 90,772, or 27.3 per cent, greater than the number reported in 1890. As previously explained, however, the decrease in this item between 1900 and 1905 is apparent rather than real. The total amount paid in salaries and wages reported was an increase of \$42,385,909, or 26.4 per cent, over 1900 and \$103,756,570, or 104.7 per cent, over 1890. Miscellaneous expenses increased \$42,840,792, or 106.3 per cent, between 1900 and 1905 and \$59,291,643, or 248.7 per cent, between 1890 and 1905.

As previously explained, the cost of materials in 1890 contains, in addition to the factors composing this item for 1900 and 1905, all expenses incurred in dependent logging camps and the amount paid for contract logging. Moreover, for purposes of comparison, the value of rough lumber remanufactured in planing mills connected with sawmills producing it, and amounting for 1905 to \$120,242,249, should be added to the items of materials and products for that year given in Table 1. The cost of materials under this arrangement for 1905 was \$304,028,459; in 1900, \$242,685,257; and in 1890, \$242,562,296. The increase over 1900 was therefore \$61,343,202, or 25.3 per cent, and over 1890, \$61,466,163, or 25.3 per cent. The total value of products reported in 1905 was \$700,264,939; in 1900, \$555,197,271; and in 1890, \$437,957,382, showing an increase in 1905 over 1900 of \$145,067,668, or 26.1 per cent, and over 1890 of \$262,307,557, or 59.9 per cent.

While on the whole a steady growth is indicated at each of the censuses covered by Table 1, periods of unusual activity in the industry are shown in the

returns for 1870 and 1890. At the former census the increases over 1860 ranged from 25 per cent in the number of establishments to 131.8 per cent in the cost of materials used, with gains of 92.5 per cent, 84.4 per cent, and 117.3 per cent in capital, wages, and value of products, respectively. In 1890, while the number of establishments reporting was actually smaller than had been enumerated ten years before, having decreased from 25,708 to 22,617, a loss of 3,091, or 12 per cent, the amount of capital invested increased

\$216,675,806, or 119.6 per cent, and the value of products \$204,688,653, or 87.8 per cent; while the number of wage-earners, amount of wages, and cost of materials show, respectively, increases of 110.8 per cent, 176.1 per cent, and 66 per cent.

After a view of the industry in the country at large, as presented in Table 1, it is interesting to examine the statistics for the several states and territories, as shown in Table 2. This table covers the censuses of 1900 and 1905.

TABLE 2.—LUMBER AND TIMBER PRODUCTS—COMPARATIVE SUMMARY, BY STATES AND TERRITORIES: 1905 AND 1900.

STATE OR TERRITORY.	Census.	Number of establishments.	Capital.	WAGE-EARNERS AND WAGES.								Cost of materials used.	Value of products, including amount received for contract and custom work.
				Total.		Men 16 years and over.		Women 16 years and over.		Children under 16 years.			
				Average number.	Wages.	Average number.	Wages.	Average number.	Wages.	Average number.	Wages.		
United States..	1905	19,137	\$317,234,138	464,626	\$183,021,519	401,209	\$182,318,197	911	\$236,995	2,506	\$486,327	\$181,789,210	\$380,022,680
	1900	23,053	400,857,337	413,335	148,007,945	408,058	147,115,928	1,728	331,288	3,549	560,619	242,685,257	555,197,271
Alabama.....	1905	590	12,625,688	14,682	5,062,139	14,248	4,980,445	218	52,962	216	29,732	3,909,616	15,939,814
	1900	796	7,855,629	14,450	3,478,482	14,032	3,420,692	67	11,737	351	40,033	4,545,034	12,522,423
Alaska.....	1905	6	205,238	63	71,870	63	71,470			1	400	77,914	245,380
	1900	10	150,245	78	55,959	78	55,959					67,490	104,686
Arizona.....	1905	3	1,428,330	520	294,767	519	294,367			1	400	162,361	960,778
	1900	14	598,757	268	257,470	256	253,470			12	4,000	126,525	547,730
Arkansas.....	1905	852	27,034,651	22,298	9,561,843	22,063	9,513,737	5	1,420	230	40,686	6,829,651	28,065,171
	1900	915	15,047,973	23,990	7,136,277	23,728	7,080,518	9	1,485	253	44,274	9,811,143	24,357,593
California.....	1905	308	25,709,302	13,131	8,643,637	13,111	8,618,684	23	11,780	48	13,203	2,652,951	13,375,891
	1900	276	15,130,648	10,664	5,147,664	10,664	5,123,734	40	13,427	29	10,469	4,628,765	13,717,785
Colorado.....	1905	87	1,445,132	1,058	623,365	1,040	618,541	11	4,514	1	310	490,370	1,733,791
	1900	116	760,852	1,074	474,747	1,062	470,337	11	4,330	1	180	58,680	1,572,329
Connecticut.....	1905	114	829,567	1,069	493,031	1,069	493,031					490,862	1,562,234
	1900	139	791,037	1,202	450,955	1,202	450,955					553,490	1,745,881
Delaware.....	1905	75	242,175	322	102,410	322	102,410					143,979	430,443
	1900	67	343,832	587	134,481	552	129,713	23	3,113	12	1,055	189,581	459,441
Florida.....	1905	198	11,536,330	10,468	2,747,572	10,329	3,734,370	19	5,200	60	8,102	2,870,497	10,901,680
	1900	265	8,542,136	9,774	3,031,735	9,630	3,009,548	38	6,999	106	14,806	4,173,258	10,775,479
Georgia.....	1905	793	10,717,628	15,364	4,971,300	15,220	4,948,016			144	33,284	2,696,891	14,425,563
	1900	904	7,605,257	17,183	3,909,214	17,064	3,945,493	11	1,800	118	11,921	4,149,408	13,341,180
Idaho.....	1905	95	3,131,991	1,363	813,080	1,330	810,086	6	1,844	1	390	771,437	2,804,506
	1900	93	683,490	720	289,778	719	289,423	7	1,355			310,940	908,670
Illinois.....	1905	209	8,018,386	4,405	1,904,669	4,474	1,900,186	2	640	19	3,843	3,328,469	7,081,470
	1900	408	3,952,597	3,903	1,600,623	3,803	1,471,836	33	8,040	127	20,777	4,040,236	7,180,114
Indian Territory.....	1905	41	183,794	312	148,017	312	148,017					306,765	586,078
	1900	40	92,561	227	56,501	225	56,111	1	130	1	370	65,129	189,373
Indiana.....	1905	774	9,179,298	8,892	2,838,410	8,845	2,847,639	11	3,626	36	8,915	7,648,250	14,537,682
	1900	1,281	9,096,351	12,015	4,368,135	11,917	4,481,350	16	3,861	82	12,924	9,612,350	15,575,971
Iowa.....	1905	49	7,784,079	1,935	946,865	1,873	933,373	11	2,580	51	10,712	2,781,420	5,010,773
	1900	118	6,805,841	2,957	1,063,645	2,843	1,076,532	5	1,229	109	15,864	5,797,548	8,487,291
Kansas.....	1905	4	8,135	11	4,306	11	4,306					4,875	20,700
	1900	26	34,345	78	21,481	77	21,361					28,067	78,681
Kentucky.....	1905	854	11,799,697	9,718	3,810,917	9,622	3,793,579	7	1,440	89	15,890	5,354,554	14,339,000
	1900	901	7,246,823	9,671	3,061,483	9,509	3,025,623	4	867	158	24,964	6,045,337	13,336,335
Louisiana.....	1905	421	37,386,028	26,353	13,126,065	26,125	12,081,590	3	490	236	47,075	8,796,944	30,192,374
	1900	342	13,793,193	14,254	4,662,449	14,146	4,633,432	1	400	167	15,548	7,235,938	17,394,444
Maine.....	1905	752	15,083,365	13,628	5,429,796	11,989	5,421,595	37	6,154	12	2,040	7,084,131	17,987,683
	1900	647	12,732,673	9,671	3,439,597	9,613	3,420,894	54	11,674	4	949	6,394,268	13,281,361
Maryland.....	1905	203	1,735,837	1,979	860,132	1,940	856,171	7	1,000	29	3,961	1,043,346	3,730,339
	1900	246	1,669,808	2,634	653,545	2,355	633,589	143	13,778	103	6,178	902,777	2,495,189
Massachusetts.....	1905	296	3,283,773	1,942	961,368	1,927	957,736	11	3,023	4	615	2,425,441	4,903,714
	1900	366	4,470,008	3,548	1,502,524	3,494	1,497,618	50	14,046	4	890	2,637,634	6,277,231
Michigan.....	1905	766	38,507,307	27,460	13,057,977	27,322	13,011,743	73	15,895	136	30,339	14,182,066	49,599,335
	1900	1,343	43,618,572	33,614	16,076,499	33,103	15,957,928	251	54,288	260	54,303	22,386,664	53,915,647
Minnesota.....	1905	232	28,933,854	17,213	8,651,071	17,199	8,646,587	3	490	18	3,994	12,302,378	33,183,369
	1900	288	32,972,462	20,324	9,493,637	20,477	9,462,036	10	1,985	37	9,536	20,964,762	42,689,352
Mississippi.....	1905	618	23,439,235	21,233	8,780,338	21,037	8,735,977	47	11,691	154	32,487	5,932,300	24,035,329
	1900	570	10,117,421	14,830	4,289,682	14,736	4,257,632	10	2,450	64	3,600	5,062,514	15,236,763

LUMBER AND TIMBER PRODUCTS.

587

TABLE 2.—LUMBER AND TIMBER PRODUCTS—COMPARATIVE SUMMARY, BY STATES AND TERRITORIES: 1905 AND 1900—Continued.

STATE OR TERRITORY.	Census.	Number of establishments.	Capital.	WAGE EARNERS AND WAGES.								Cost of materials used.	Value of products, including amount received for contract and custom work.
				Total.		Men 16 years and over.		Women 16 years and over.		Children under 16 years.			
				Average number.	Wages.	Average number.	Wages.	Average number.	Wages.	Average number.	Wages.		
Missouri.....	1905	374	\$8,021,437	9,091	\$3,637,402	8,866	\$3,592,104	60	\$15,391	165	\$29,907	\$2,650,497	\$10,903,783
	1900	647	7,801,738	8,542	2,818,640	8,387	2,791,344	51	8,010	104	19,286	4,806,187	10,540,690
Montana.....	1905	41	4,605,052	2,189	1,479,255	2,179	1,479,105	1	150	.....	.....	426,825	3,024,674
	1900	83	2,101,274	2,508	1,170,097	2,307	1,169,877	1	240	.....	.....	885,199	2,849,268
Nebraska.....	1905	4	25,314	11	5,381	11	5,381	.....	.....	.....	.....	5,369	10,624
	1900	11	21,100	40	13,161	39	13,036	.....	.....	.....	.....	13,150	37,390
New Hampshire.....	1905	398	6,079,442	4,594	2,017,131	4,570	2,011,281	23	5,610	1	240	2,817,671	7,519,431
	1900	397	7,129,509	7,502	2,652,094	7,422	2,635,318	69	15,881	11	1,495	3,422,470	9,023,574
New Jersey.....	1905	114	825,355	900	387,960	809	387,648	.....	.....	.....	.....	313,611	1,116,884
	1900	127	1,045,197	1,021	407,268	1,019	406,908	.....	.....	.....	.....	800,104	1,755,115
New Mexico.....	1905	23	1,886,257	1,134	535,983	1,117	533,540	.....	.....	.....	.....	254,277	1,315,364
	1900	27	178,690	608	182,222	607	182,147	1	75	.....	.....	120,284	402,005
New York.....	1905	820	12,599,870	8,186	3,649,389	8,161	3,643,230	20	5,350	5	809	5,309,763	13,310,413
	1900	1,134	13,413,300	10,405	3,801,310	10,308	3,784,034	76	12,925	21	4,360	9,358,099	15,131,386
North Carolina.....	1905	1,212	10,068,358	14,491	4,399,878	14,346	4,379,709	13	1,835	132	18,334	4,470,020	15,731,879
	1900	1,304	8,649,158	17,850	3,747,093	17,623	3,720,135	35	4,447	193	22,511	5,508,598	14,474,281
North Dakota ¹	1900	4	10,155	31	6,320	31	6,320	.....	.....	.....	.....	7,037	24,200
Ohio.....	1905	829	11,279,750	6,442	2,878,770	6,422	2,874,571	8	1,958	12	2,241	5,009,015	12,567,992
	1900	1,241	10,449,544	10,689	3,995,113	10,553	3,971,152	79	16,399	57	7,655	9,358,099	19,789,337
Oregon.....	1905	402	11,038,323	7,284	4,617,826	7,248	4,605,841	19	5,622	17	6,363	4,412,422	12,483,908
	1900	372	6,254,940	5,531	2,664,261	5,438	2,643,244	73	15,532	20	5,485	4,785,148	10,257,109
Pennsylvania.....	1905	1,212	22,677,322	16,674	7,959,875	16,518	7,917,726	67	20,740	89	21,409	10,005,505	31,642,399
	1900	1,672	28,456,098	22,671	9,147,924	22,509	9,120,598	62	7,723	120	19,690	14,177,091	36,931,998
Rhode Island.....	1905	22	159,141	198	95,763	198	95,763	.....	.....	.....	.....	100,177	401,170
	1900	23	147,280	205	68,697	204	68,579	.....	.....	.....	.....	69,111	222,083
South Carolina.....	1905	439	7,237,725	6,656	2,578,320	6,699	2,571,992	6	970	51	5,388	1,617,713	6,791,451
	1900	466	3,469,984	6,622	1,355,705	6,582	1,352,492	4	300	36	3,913	1,809,000	4,942,362
South Dakota.....	1905	18	163,902	164	97,690	164	97,690	.....	.....	.....	.....	38,687	275,190
	1900	29	198,370	356	163,431	356	163,431	.....	.....	.....	.....	105,025	445,891
Tennessee.....	1905	1,032	16,638,823	14,900	5,499,923	14,608	5,452,328	115	22,809	177	24,726	8,520,212	21,580,120
	1900	1,106	9,616,128	13,010	3,897,275	12,698	3,847,023	117	25,742	195	24,510	7,034,523	16,709,104
Texas.....	1905	289	18,426,242	13,332	5,879,744	13,269	5,873,733	3	432	30	5,579	3,642,484	16,278,240
	1900	474	11,900,657	11,724	4,487,005	11,683	4,479,486	3	296	38	7,233	7,467,225	10,652,966
Utah.....	1905	41	87,425	89	47,347	84	45,856	3	995	2	496	55,264	133,044
	1900	48	150,767	243	70,710	236	69,699	4	625	3	410	49,578	189,095
Vermont.....	1905	418	5,409,750	4,216	1,869,593	4,196	1,863,744	15	4,903	5	856	2,183,068	5,888,441
	1900	497	4,956,806	5,312	1,629,537	5,174	1,610,885	98	13,386	40	5,266	2,500,840	5,940,610
Virginia.....	1905	804	9,839,646	12,190	3,943,642	12,033	3,916,154	.....	.....	157	27,468	3,339,475	13,040,890
	1900	886	6,186,405	11,901	3,292,487	11,636	3,257,757	157	17,384	208	17,340	4,710,439	11,931,539
Washington.....	1905	1,064	40,953,816	28,023	18,613,318	27,965	18,592,808	41	15,298	17	5,214	10,325,954	40,672,612
	1900	778	19,045,843	19,856	10,733,959	19,757	10,708,935	59	16,412	43	11,909	13,043,512	30,289,280
West Virginia.....	1905	633	12,442,475	10,490	4,794,108	10,420	4,786,209	8	1,380	32	6,519	3,763,461	14,033,472
	1900	669	7,087,945	8,229	2,716,370	8,172	2,705,786	4	849	53	9,735	3,823,400	10,160,118
Wisconsin.....	1905	570	37,677,205	28,118	13,857,446	27,960	13,819,255	32	8,437	126	20,764	15,818,278	44,395,766
	1900	790	47,903,678	33,802	13,908,866	33,347	13,799,347	80	18,238	435	91,281	28,278,493	57,882,001
Wyoming.....	1905	28	312,396	297	145,313	296	145,103	1	210	.....	.....	40,420	420,438
	1900	31	486,106	685	298,997	685	298,997	.....	.....	.....	.....	204,624	729,524
All other states.....	² 1905	4	476,038	97	63,182	97	63,182	.....	.....	.....	.....	117,143	292,033
	² 1900	26	125,946	56	11,935	56	11,935	.....	.....	.....	.....	24,340	61,491

¹ None reported in 1905.
² Includes establishments distributed as follows: Nevada, 2; Oklahoma, 2.
³ Includes establishments distributed as follows: Nevada, 2; Oklahoma, 24.

The lumber industry is widely distributed, and is in this respect essentially different from others of similar magnitude and importance, such as the manufacture of textiles, slaughtering and meat packing, and iron and steel, which are more or less concentrated in certain sections or states. Lumber products were manufactured on a commercial scale in every state and territory in 1900, and in all but 1 (North Dakota) at the census

of 1905. At the later census the industry was an important one in 36 states, ranked first in 9 states and second in 12.

The brief period from 1900 to 1905 was one of marked changes in this industry. A general realignment of the states with respect to relative production occurred. Washington passed Michigan, Wisconsin, Minnesota, and Pennsylvania, the 4 leading states

in 1900, advancing from fifth to first place in the industry. Louisiana, which in 1900 was ninth in the United States, rose to first place in the southern group of states and to fourth in the country. Mississippi advanced from twelfth to eighth place; California, from fifteenth place to tenth; Alabama, from nineteenth to thirteenth; and Tennessee from tenth to ninth. Wisconsin, Michigan, and Minnesota, which occupied first, second, and third places, respectively, in 1900, contributing 27.8 per cent of the total product of the industry at that census, dropped to second, third, and fifth places, respectively; Pennsylvania, from fourth to sixth; Indiana, from seventh to sixteenth; and Ohio, from eighth to twenty-first. This remarkable shifting of the centers of activity between regions and from one state to another in the same section marks the rapid culmination of movements which were first clearly disclosed by the census of 1890.

Washington ranked first in the value of lumber products reported in 1905, closely followed by Wisconsin, and held first place with Louisiana second in point of actual increase in this item between the two censuses. Other states that made notable gains in the value of their output were Mississippi, Tennessee, West Virginia, Maine, California, Arkansas, Alabama, and Oregon, ranking in the order named. As pointed out in the discussion of Table 1, the value of the rough lumber remanufactured in planing mills connected with the sawmills producing it entered twice into the total value of the product of the industry in 1900, but only once for 1905. The extent of the inflation in the value of products due to this duplication in 1900 varied among the different states, and it is probable that conditions with respect to it had not materially changed at the census of 1905. Since the amount of the duplication can not be determined accurately for 1900, it may be offset, for purposes of comparison, by including it in the value of products for 1905. Table 3 has therefore been prepared, which shows by states and territories the value of products of the lumber industry for 1900 and 1905, with the value of the rough lumber remanufactured in planing mills connected with the sawmills producing it included for both censuses.

TABLE 3.—Value of lumber and timber products, including the duplication in the value of remanufactured rough lumber, by states and territories: 1905 and 1900.

STATE OR TERRITORY.	VALUE OF PRODUCTS.	
	1905	1900
United States.....	\$700,264,030	\$555,197,271
Alabama.....	20,157,462	12,522,423
Alaska.....	274,345	154,066
Arizona.....	1,109,127	547,790
Arkansas.....	35,151,489	24,357,503
California.....	21,038,564	13,717,785
Colorado.....	2,073,189	1,572,320
Connecticut.....	1,006,467	1,748,331
Delaware.....	463,058	459,441
Florida.....	12,889,585	10,775,479
Georgia.....	16,716,594	13,341,160
Idaho.....	3,810,657	908,670
Illinois.....	8,094,379	7,190,114
Indian Territory.....	595,017	139,373
Indiana.....	14,986,265	19,979,971

TABLE 3.—Value of lumber and timber products, including the duplication in the value of remanufactured rough lumber, by states and territories: 1905 and 1900—Continued.

STATE OR TERRITORY.	VALUE OF PRODUCTS.	
	1905	1900
Iowa.....	\$8,358,144	\$8,487,261
Kansas.....	20,700	79,581
Kentucky.....	15,073,587	13,338,533
Louisiana.....	49,201,068	17,294,444
Maine.....	19,068,525	13,281,561
Maryland.....	2,914,078	2,495,169
Massachusetts.....	6,380,203	6,277,729
Michigan.....	44,247,338	53,915,647
Minnesota.....	44,782,487	42,689,932
Mississippi.....	29,614,987	15,286,793
Missouri.....	12,556,688	10,540,590
Montana.....	4,209,713	2,846,288
Nebraska.....	19,624	37,390
New Hampshire.....	8,060,545	9,023,374
New Jersey.....	1,160,651	1,765,115
New Mexico.....	1,522,247	492,005
New York.....	14,930,115	15,131,385
North Carolina.....	18,619,377	14,474,281
North Dakota.....	(¹)	24,200
Ohio.....	13,151,961	19,780,337
Oregon.....	17,009,237	10,267,189
Pennsylvania.....	33,770,240	35,031,008
Rhode Island.....	401,170	222,083
South Carolina.....	8,442,704	4,942,362
South Dakota.....	297,100	445,861
Tennessee.....	22,680,790	16,706,104
Texas.....	26,272,373	16,052,666
Utah.....	137,734	189,005
Vermont.....	7,054,234	5,940,610
Virginia.....	14,586,799	11,631,539
Washington.....	61,162,834	30,286,280
West Virginia.....	15,908,796	10,199,113
Wisconsin.....	57,495,610	57,882,001
Wyoming.....	446,503	729,524
All other states ²	306,163	61,491

¹ None reported in 1905.

² Includes Nevada and Oklahoma.

With this adjustment, Louisiana shows an increase in value of products of \$31,906,624, or 184.5 per cent; Washington, of \$30,876,554, or 101.9 per cent; Mississippi, of \$14,328,224, or 93.7 per cent; Oregon, of \$6,752,068, or 65.8 per cent; Alabama, of \$7,635,039, or 61 per cent; California, of \$7,920,779, or 57.7 per cent; West Virginia, of \$5,718,648, or 56.1 per cent; Maine, of \$6,686,964, or 50.3 per cent; Arkansas, of \$10,793,986, or 44.3 per cent; and Tennessee, of \$5,977,686, or 35.8 per cent. There were 23 other states and territories which in 1905 showed increases in the value of their product over 1900, while 17 showed decreases. The largest decreases are shown for Ohio, \$6,628,376, or 33.5 per cent; Indiana, \$4,993,716, or 25 per cent; Michigan, \$9,668,309, or 17.9 per cent; and Pennsylvania, \$1,252,668, or 3.6 per cent; while Wisconsin shows a slight loss, \$386,385, or seven-tenths of 1 per cent.

Certain states which appear from Table 2 to have manufactured a lumber product of smaller value in 1905 than in 1900 in reality show an increase, as is indicated in Table 3, in which the values of products at the two censuses have been made exactly comparable. Thus Vermont shows an increase of \$2,013,624, or 33.9 per cent; Illinois, of \$904,265, or 12.6 per cent; Minnesota, of \$2,092,555, or 4.9 per cent; and Delaware, of \$4,217, or nine-tenths of 1 per cent.

In Table 4 are shown the investment in machinery, the value of products, the average number of wage-earners and the amount of wages paid per average establishment, for the United States and for the several states and territories, for 1900 and 1905.

TABLE 4.—Lumber and timber products—average per establishment of capital invested in machinery, value of products, number of wage-earners, and wages, by states and territories: 1905 and 1900.

STATE OR TERRITORY.	Census.	Investment in machinery.	Value of products.	Average number of wage-earners.	Wages.
United States.....	1905 1900	\$8,588 5,247	\$36,611 24,084	21 18	\$9,569 6,420
Alabama.....	1905 1900	10,625 5,114	34,165 15,732	25 18	8,580 4,370
Alaska.....	1905 1900	11,203 9,809	45,724 15,467	10 8	11,978 5,596
Arizona.....	1905 1900	60,127 18,716	221,825 30,128	104 20	78,953 18,391
Arkansas.....	1905 1900	11,400 6,468	41,258 26,620	26 20	11,223 7,799
California.....	1905 1900	30,802 27,027	70,255 49,702	43 39	28,064 18,651
Colorado.....	1905 1900	6,863 2,955	23,830 13,555	12 9	7,165 4,003
Connecticut.....	1905 1900	2,084 1,010	14,092 12,582	9 9	4,325 3,244
Delaware.....	1905 1900	1,712 1,766	6,182 0,857	4 9	1,365 2,007
Florida.....	1905 1900	27,110 9,694	65,090 29,522	53 27	18,027 8,306
Georgia.....	1905 1900	8,039 4,031	21,080 14,758	19 19	6,269 4,380
Idaho.....	1905 1900	11,341 2,876	40,112 9,771	14 8	8,559 3,116
Illinois.....	1905 1900	4,580 2,042	30,091 17,623	17 10	7,081 3,078
Indian Territory.....	1905 1900	2,245 1,453	14,527 4,734	8 6	3,610 1,413
Indiana.....	1905 1900	2,363 1,926	19,362 15,597	9 9	3,663 3,519
Iowa.....	1905 1900	15,864 5,775	170,574 71,926	39 25	10,324 9,298
Kansas.....	1905 1900	825 782	5,175 3,061	3 3	1,077 826
Kentucky.....	1905 1900	3,350 2,272	17,651 14,804	11 11	4,462 3,387
Louisiana.....	1905 1900	31,875 12,945	116,867 59,699	63 42	28,810 13,604
Maine.....	1905 1900	4,515 3,890	26,554 20,628	16 15	7,220 5,316
Maryland.....	1905 1900	3,576 2,777	14,355 10,143	10 11	4,237 2,657
Massachusetts.....	1905 1900	2,166 2,593	18,207 17,152	7 10	3,248 4,105
Michigan.....	1905 1900	10,561 7,065	57,764 40,146	36 20	17,047 11,971
Minnesota.....	1905 1900	21,216 20,537	201,723 148,229	78 71	38,969 32,604
Mississippi.....	1905 1900	16,252 7,521	47,921 26,819	34 26	14,208 7,542
Missouri.....	1905 1900	6,591 5,180	33,574 16,291	24 13	9,726 4,356
Montana.....	1905 1900	26,394 6,039	102,676 34,292	53 28	36,079 14,098
Nebraska.....	1905 1900	3,525 1,111	4,908 3,399	3 4	1,345 1,196
New Hampshire.....	1905 1900	4,581 5,122	20,882 22,729	12 19	5,226 6,682
New Jersey.....	1905 1900	2,321 2,358	10,181 13,820	8 8	3,403 3,207
New Mexico.....	1905 1900	31,072 2,231	66,185 14,889	49 23	23,304 6,749
New York.....	1905 1900	3,467 2,620	18,218 13,343	10 9	4,460 3,352
North Carolina.....	1905 1900	4,238 3,242	15,363 11,100	12 14	3,630 2,874

TABLE 4.—Lumber and timber products—average per establishment of capital invested in machinery, value of products, number of wage-earners, and wages, by states and territories: 1905 and 1900—Con.

STATE OR TERRITORY.	Census.	Investment in machinery.	Value of products.	Average number of wage-earners.	Wages.
North Dakota.....	1900	\$1,485	\$6,050	8	\$1,580
Ohio.....	1905 1900	2,473 2,100	15,865 15,030	8 9	3,473 3,219
Oregon.....	1905 1900	10,693 7,205	42,312 27,573	18 15	11,487 7,102
Pennsylvania.....	1905 1900	5,450 4,441	27,871 20,652	14 14	6,568 6,471
Rhode Island.....	1905 1900	1,871 1,026	18,235 9,650	9 9	4,353 2,987
South Carolina.....	1905 1900	7,801 3,045	10,232 10,006	22 14	5,873 2,911
South Dakota.....	1905 1900	4,154 3,023	16,511 15,375	9 12	5,394 5,636
Tennessee.....	1905 1900	3,615 2,478	21,983 15,108	14 12	5,329 3,524
Texas.....	1905 1900	24,405 9,285	87,867 33,867	45 25	10,665 9,466
Utah.....	1905 1900	1,156 2,088	3,359 3,894	2 5	1,155 1,473
Vermont.....	1905 1900	3,677 3,950	19,029 11,953	10 11	4,329 3,279
Virginia.....	1905 1900	5,515 2,760	18,143 13,128	15 13	4,905 3,716
Washington.....	1905 1900	16,987 9,837	60,919 38,928	28 20	18,539 13,797
West Virginia.....	1905 1900	6,384 4,604	25,132 16,733	17 14	7,574 4,400
Wisconsin.....	1905 1900	12,710 11,818	99,810 73,268	49 43	24,058 17,606
Wyoming.....	1905 1900	1,860 9,383	15,947 23,533	11 22	5,190 9,645
All other states ²	1905 1900	54,025 1,128	76,541 2,365	24 2	15,796 459

¹ None reported in 1905.

² Includes Nevada and Oklahoma.

As shown in the table, the amount of capital invested in machinery in the average plant in the United States increased between the two census periods from \$5,247 to \$8,588, a gain of \$3,341, or 63.7 per cent; while the average value of products increased \$12,527, or 52 per cent; the average number of wage-earners employed, 3, or 16.7 per cent; and the average amount of wages per establishment, \$3,149, or 49 per cent. A marked tendency is thus disclosed among merchant establishments to enlarge the capacity of their plants. The increases have not been uniform. The large increase in the amount of capital invested in machinery, accompanied by a relatively small gain in the average number of wage-earners, together with an increase in products exceeding that in wages, indicates that manual labor in the industry is being still further supplanted by mechanical devices.

At both censuses the highest average amount of capital invested in machinery and the largest average value of products per establishment were found as a rule in the new and active lumber regions. Notable among the states in which these conditions obtain are

Washington, Louisiana, Florida, Arkansas, Arizona, and Minnesota. These states show higher averages for the various items than the country as a whole.

The reverse conditions appear to prevail in the industry in the older lumber states and generally in sections where it is of only secondary importance, as is shown in the figures for New Hampshire, Connecticut, Delaware, North Carolina, South Carolina, and Georgia. While the maximum average annual earnings per employee generally appear in the states and regions where the industry is of later development and the plants are large, local influences to some extent affect this item. The average wages are higher in the Lake states than in the Northeastern and Southern states, but are exceeded in turn by those paid in the Pacific Coast states.

ELEMENTS OF THE LUMBER INDUSTRY.

In the preceding tables statistics have been given for the lumber industry as a whole, comprehending the successive stages of the conversion of standing timber into finished products. In Table 5 the principal statistics for the industry at the census of 1905 are shown for each of its three divisions—logging camps, sawmills, and planing mills. To the figures for planing mills connected with sawmills have been added the statistics for those owned or managed independently. In this connection it should be noted that the figures for independent planing mills have not been included with those shown in the preceding tables.

TABLE 5.—Lumber and timber products—summary, by branches: 1905.

	Total.	Logging or timber camps.	Sawmills.	Planing mills.
Number of establishments.....	40,257	12,494	18,277	9,486
Capital.....	\$694,309,862	\$90,454,494	\$381,621,184	\$222,294,184
Wage-earners, average number.....	502,300	146,596	223,674	132,030
Total wages.....	\$233,735,128	\$66,989,795	\$100,310,891	\$66,434,440
Cost of materials used.....	\$617,554,310	\$80,412,828	\$263,865,101	\$273,276,381
Value of products.....	\$1,132,305,992	\$236,131,048	\$491,524,662	\$404,650,282

Each branch of the industry is, in Tables 5 to 22, inclusive, treated as a distinct industry. In the value

of the products of logging camps is included the value of all saw logs and bolts turned out by dependent logging camps and used as material in the milling establishments connected with them; and in the products of sawmills is included the value of all rough lumber dressed or remanufactured in planing mills connected with the sawmills producing it. Likewise under the cost of materials in sawmills is included the value, delivered at the mill, of all saw logs and bolts used that were supplied to milling establishments by the logging camps operated by them, and similarly under cost of materials in planing mills is included the value of all rough lumber used that was manufactured in sawmills with which they were connected.

Thirteen per cent of the aggregate capital of the lumber industry was invested in logging camps; 55 per cent in sawmills, and 32 per cent in planing mills. Of the wages, 28.7 per cent was expended in logging operations, 42.9 per cent in sawmills, and 28.4 per cent in planing mills. Of the aggregate value of products, 20.9 per cent was contributed by logging camps, 43.4 per cent by sawmills, and 35.7 per cent by planing mills.

The average logging plant in the country reported capital to the amount of \$7,240, paid out \$5,362 in wages, and turned out a product valued at \$18,900. The average sawmill reported capital of \$20,880, wages to the amount of \$5,488, and products to the value of \$26,893. For planing mills the average capital was \$23,434; the average wages, \$7,003; and the average value of products, \$42,658.

LOGGING.

The raw material of the logging industry is standing timber, and its leading product is saw logs. Among the other principal products are shingle, stave, and heading bolts; cooperage and excelsior stock; fence posts; hop and hoop poles; handle stock; tan bark; piles; paving stock; railway ties; rived, or split, shingles; masts and spars; ship knees; telegraph and telephone poles; wheel stock; and charcoal.

In Table 6 are presented, by states and territories, statistics of the logging industry as reported at the census of 1905.

TABLE 6.—LOGGING OR TIMBER CAMPS—

STATE OR TERRITORY.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS AND WAGES.	
			Number.	Salaries.	Average number.	Wages.
1 United States.....	12,494	\$90,454,494	3,953	\$3,673,355	140,596	\$66,089,795
2 Alabama.....	518	3,151,639	137	123,160	5,220	1,786,113
3 Arizona.....	5	200,072	7	6,800	198	144,893
4 Arkansas.....	463	5,021,334	218	182,654	6,749	2,959,418
5 California.....	288	4,976,748	177	218,160	6,416	4,301,177
6 Colorado.....	72	235,915	18	14,755	284	185,285
7 Connecticut.....	89	127,850	8	7,500	635	285,813
8 Delaware.....	62	42,000	.....	.....	125	35,645
9 Florida.....	153	2,754,274	113	105,841	3,531	1,214,709
10 Georgia.....	756	3,238,059	121	94,015	6,254	2,034,381
11 Idaho.....	32	188,848	22	21,930	292	165,452
12 Illinois.....	152	523,478	25	19,271	936	435,926
13 Indian Territory.....	9	14,910	1	1,000	98	56,505
14 Indiana.....	190	299,755	19	18,598	734	317,380
15 Iowa.....	24	537,050	8	2,000	88	30,755
16 Kentucky.....	516	2,047,409	98	89,280	3,933	1,674,809
17 Louisiana.....	340	7,301,346	356	375,924	8,498	3,060,588
18 Maine.....	411	1,076,050	207	95,139	4,890	2,121,392
19 Maryland.....	99	338,434	6	5,480	835	421,726
20 Massachusetts.....	162	185,510	7	2,240	583	260,523
21 Michigan.....	458	6,202,748	112	124,567	10,472	4,839,872
22 Minnesota.....	126	4,804,540	274	252,084	7,487	3,435,809
23 Mississippi.....	527	5,066,550	242	232,422	8,185	3,401,697
24 Missouri.....	229	1,318,244	110	92,778	2,631	1,107,799
25 Montana.....	29	529,088	45	44,583	1,004	605,093
26 New Hampshire.....	224	993,593	41	30,100	2,122	908,743
27 New Jersey.....	82	80,835	1	500	384	162,920
28 New Mexico.....	21	369,270	15	16,625	400	219,053
29 New York.....	440	1,030,500	58	45,831	3,170	1,337,240
30 North Carolina.....	915	2,067,259	123	93,538	4,670	1,492,464
31 Ohio.....	361	1,253,704	39	34,883	1,272	563,319
32 Oregon.....	300	1,083,442	60	55,600	2,350	1,562,775
33 Pennsylvania.....	982	4,561,319	129	118,006	7,353	3,453,019
34 Rhode Island.....	19	20,050	.....	.....	109	51,284
35 South Carolina.....	333	1,191,450	78	56,557	3,044	1,093,582
36 South Dakota.....	18	40,638	2	1,300	88	52,916
37 Tennessee.....	577	2,417,822	78	75,002	4,486	1,829,275
38 Texas.....	267	3,565,990	172	187,750	4,234	1,921,234
39 Utah.....	14	7,915	.....	.....	20	9,638
40 Vermont.....	271	638,125	18	16,825	1,205	521,228
41 Virginia.....	654	1,601,095	93	72,910	4,743	1,489,659
42 Washington.....	571	8,971,176	250	321,211	10,220	7,065,437
43 West Virginia.....	423	2,978,228	102	123,834	4,852	2,253,092
44 Wisconsin.....	284	3,887,204	278	250,133	10,588	5,112,810
45 Wyoming.....	22	218,340	23	26,700	242	113,892
46 All other states and territories ¹	6	195,700	2	3,200	50	34,597

¹ Includes establishments distributed as follows: Alaska, 1; Nebraska, 2; Nevada, 2; Oklahoma, 1.

LUMBER AND TIMBER PRODUCTS.

SUMMARY, BY STATES AND TERRITORIES: 1905.

MISCELLANEOUS EXPENSES.			MATERIALS USED.					PRODUCTS.			
Total.	Keep of animals.	Contract work.	Total cost.	Log stumpage.		Other stumpage (cost).	Supplies (cost).	Total value.	Saw logs.		Other products (value).
				M feet B. M.	Cost.				M feet B. M.	Value.	
\$40,910,885	\$12,212,947	\$34,706,938	\$80,412,828	27,940,097	\$72,347,227	\$3,502,710	\$4,502,801	\$236,131,048	27,080,798	\$210,074,480	\$26,050,502
1,074,827	804,051	810,777	1,937,301	1,106,302	1,718,900	38,295	180,100	6,626,077	1,106,278	6,341,430	284,047
82,156	21,139	61,017	137,544	50,957	120,134	7,508	9,902	445,672	50,957	409,730	35,942
2,784,388	638,182	2,146,206	3,002,045	1,480,729	2,001,303	96,883	244,759	10,715,287	1,494,571	9,733,318	981,969
1,057,140	323,815	733,325	1,877,015	1,008,550	1,523,339	96,462	257,214	8,944,190	1,096,950	7,947,204	996,980
145,567	83,704	61,803	163,602	90,713	137,909	2,860	12,773	599,051	96,713	587,326	11,725
154,428	44,240	110,182	301,812	57,509	230,178	148,534	4,100	1,007,464	57,634	537,065	470,809
44,845	14,615	30,230	92,415	25,581	85,512	5,628	1,275	195,606	173,931	173,931	21,075
801,876	304,791	527,085	1,408,125	674,264	1,230,710	28,875	208,540	4,416,561	678,396	4,245,256	171,305
1,396,483	1,060,070	330,413	2,255,054	1,145,344	1,622,305	163,070	170,519	6,937,000	1,142,812	5,915,589	1,021,411
873,722	21,940	351,782	104,123	90,755	126,193	30,250	7,680	870,272	92,205	681,926	188,340
107,005	34,871	102,104	336,342	90,625	283,196	48,243	4,903	1,280,879	99,599	858,151	422,728
51,023	2,823	48,200	30,170	2,790	8,193	21,005	907	166,438	3,046	35,533	132,905
304,344	59,355	244,989	1,067,230	137,451	1,061,813	35,292	10,155	2,085,002	133,482	1,934,949	150,053
407,681	22,615	455,006	87,244	445,906	87,244	1,503	7,060	1,232,382	87,242	1,215,716	16,906
1,080,801	213,370	867,521	1,502,200	355,305	1,326,968	108,093	67,189	5,288,616	353,630	3,683,373	1,004,743
3,081,111	687,350	2,393,761	5,276,056	2,088,971	4,727,272	110,493	438,321	15,245,375	2,094,250	14,060,970	1,184,405
1,587,541	332,530	1,255,011	2,425,643	921,943	2,300,862	74,255	50,536	6,442,547	621,040	6,060,323	442,224
104,880	53,401	111,479	405,245	101,612	423,593	34,417	7,235	1,268,707	101,692	1,090,781	172,016
109,080	72,671	127,009	476,915	163,928	433,628	37,738	5,549	1,138,030	104,035	930,154	207,876
2,725,543	773,778	1,951,765	6,467,277	1,488,061	5,636,684	524,113	300,480	17,034,456	1,404,390	13,713,934	3,320,522
4,100,200	478,908	3,720,211	6,862,475	1,892,600	6,478,318	183,015	201,142	16,962,014	1,305,759	15,002,194	1,860,820
1,080,813	864,207	1,122,606	3,331,534	1,402,789	2,983,786	97,008	250,740	10,859,950	1,402,831	9,583,831	1,266,128
1,307,830	344,843	962,987	940,473	538,110	767,939	77,159	95,875	4,138,659	536,036	3,757,559	381,097
274,973	76,003	198,970	328,174	218,094	289,122	12,340	20,712	1,563,280	218,581	1,350,820	143,400
985,244	180,021	805,223	1,731,729	359,971	1,541,372	102,928	27,420	3,850,604	305,190	3,210,122	640,572
80,528	33,478	56,050	200,731	33,570	170,423	28,643	1,005	555,215	33,610	308,982	156,233
88,102	20,057	58,445	199,900	76,044	172,108	2,297	25,435	623,410	76,944	613,599	14,817
822,110	266,713	555,406	1,884,639	304,355	1,792,247	71,007	21,385	4,800,059	308,541	4,456,672	430,487
1,090,987	484,735	1,212,252	2,120,705	1,056,777	2,027,335	8,455	84,075	6,370,505	1,000,040	6,253,706	122,739
720,055	130,206	589,849	1,821,380	200,522	1,704,545	41,867	14,968	3,778,304	203,330	3,620,396	157,908
411,254	131,500	279,754	702,594	658,857	620,802	10,773	62,019	3,800,344	658,867	3,099,327	167,617
4,363,322	490,000	3,866,422	7,266,612	1,544,519	6,735,841	620,028	120,743	10,570,404	1,544,972	13,063,242	2,853,252
72,006	12,046	59,360	95,230	12,848	52,000	42,020	250	202,224	12,848	88,159	174,005
381,695	297,407	84,288	852,954	409,831	777,340	13,159	62,449	2,763,746	472,055	2,647,012	106,734
62,128	21,818	30,310	31,636	13,686	27,011	3,435	1,190	105,648	13,686	111,858	53,790
1,412,020	201,137	1,121,480	2,145,078	510,980	1,780,730	329,723	35,525	6,550,240	511,891	4,726,120	1,830,129
1,614,734	525,263	1,089,471	2,590,669	1,260,419	2,241,919	127,303	230,387	7,588,051	1,262,805	6,490,054	1,097,997
2,630	2,530	100	4,040	2,914	3,770	-----	270	19,570	2,914	19,570	-----
478,801	168,469	310,332	813,027	201,750	793,347	4,785	14,895	2,073,585	209,908	2,008,888	64,697
925,885	439,956	485,929	1,036,517	840,774	1,810,158	50,801	75,588	5,309,965	841,279	5,024,250	285,709
2,387,013	341,188	2,046,425	4,103,675	3,127,720	3,333,627	17,973	752,075	18,405,800	3,127,689	18,004,611	401,249
1,080,554	297,802	1,382,752	2,488,402	732,515	2,289,175	67,791	131,496	8,456,210	734,624	7,245,887	810,323
2,351,273	580,675	1,761,598	7,814,076	1,796,555	7,445,044	116,469	252,553	18,641,150	1,802,809	17,757,259	888,891
100,254	3,988	96,206	31,337	5,990	6,840	22,809	1,988	344,603	5,990	35,940	308,723
10,059	4,530	5,529	29,298	13,039	19,623	2,705	6,910	92,025	13,039	73,303	18,722

The figures shown in Table 6 are for both dependent logging camps—those operated by milling establishments—and those conducted independently. As previously noted, the canvass at the census of 1905 was confined to merchant mills and to logging operations or timber camps of corresponding magnitude. Thus numerous small operators—farmers, as a rule—engaged in getting out, during a few months of the year, such products as railway ties, telegraph and telephone poles, and fence posts, were not included. The scope of the census was still further restricted by excluding establishments engaged solely or chiefly in cutting cord wood.

Under "capital" are included all items of investment in both plant and live capital in the entire logging industry, with the exception of investments in timber lands and standing timber (see Table 1, page 64). Important among the items under this heading aside from live capital, are logging railways and equipment, stationary and traction engines, pull boats, wire cables, and other equipment used in steam logging; flumes; animals, wagons, and carts; and axes, saws, chains, booms, etc. Under "wage-earners" are included all employees of the logging industry other than salaried officials, clerks, etc., and under "wages" is given the total compensation paid such employees during the census year. Where either board or quarters, or both, are furnished as part pay, their value to the wage-earner is included under wages.

Under "materials" are shown the cost on the stump of all timber cut in logging camps and the cost of supplies consumed in these camps during the year, exclusive of those for board of men and for keep of horses and cattle. The heading "log stumpage" covers the quantity in thousand feet, board measure, and the value in the tree of all timber cut for use as material in sawmills, and under "other stumpage" is given the value of all other stumpage, from which such products as telegraph and telephone poles, fence posts, hewed railway ties, etc., were manufactured. The showing of products is similar to that of materials, the quantity and value of saw logs being presented separately and the combined value of all other timber products given in one item.

Of the 12,494 logging camps in operation during the census year, 11,644, or 93.2 per cent, were conducted by milling establishments; and 850, or 6.8 per cent, were operated independently. The dependent logging camps reported \$70,686,873, or 78 per cent, of the total amount of capital invested in the industry; employed 117,280, or 80 per cent, of the wage-earners; paid out \$52,041,305, or 78 per cent, of the wages; and of the total cost of materials and the value of products they contributed \$72,372,388 and \$201,970,272, or 90 per cent and 86 per cent, respectively.

While it thus appears that the bulk of the logging industry is carried on in conjunction with sawmills—that is, in dependent camps—the independent logging camps on an average are much the larger. The distri-

bution of the latter follows closely the centers of heaviest lumber production. They are most numerous in Washington, where 195, or 22.9 per cent of the total number, were in 1905 reported in operation. These 195 establishments reported capital to the amount of \$6,429,480, or 32.5 per cent of the total invested in independent logging camps in the country, and turned out a product valued at \$9,793,155, or 28.7 per cent of the total for plants of this character. Other states in which logging was conducted as a distinct industry and on a large scale were the following: Minnesota, where there were 32 establishments in operation during the census year, with capital of \$2,489,270 and products valued at \$4,406,695; Michigan, with 73 establishments, \$1,808,750 of capital, and products valued at \$2,147,361; Tennessee, with 23 establishments, \$1,549,961 of capital, and products valued at \$1,847,527; Kentucky, where there were 29 establishments, with capital of \$1,085,765, and products valued at \$1,572,030; Louisiana, with 34 establishments, \$664,525 of capital, and value of products of \$1,573,254; and Oregon, where there were 54 establishments reporting capital to the amount of \$707,631 and products valued at \$1,179,608.

The average logging camp in the country at the census of 1905, as indicated in Table 6, reported capital to the amount of \$7,240; employed 12 wage-earners; paid out \$5,362 in wages, including board and quarters when furnished as part pay; expended \$6,436 for standing timber and supplies; and turned out products valued at \$18,900, which comprised 2,240 thousand feet, board measure, of saw logs, with a value of \$16,814, and other timber products, to the value of \$2,086. Taking the value of products as a measure of its magnitude, the average logging camp in the United States was exceeded by that of Arizona, with an average value of \$89,134; Arkansas, with \$23,143; California, with \$31,056; Florida, with \$28,866; Idaho, with \$27,196; Iowa, with \$51,349; Louisiana, with \$44,839; Michigan, with \$37,193; Minnesota, where the average was far in excess of that of the country, amounting to \$134,619; Mississippi, with \$20,590; Montana, with \$51,837; New Mexico, with \$29,924; Texas, with \$28,420; Washington, with \$32,234; West Virginia, with \$19,045; and Wisconsin, with \$65,638. In the remaining states, which in the main are of secondary importance in the lumber industry, logging operations were conducted on a smaller scale. In certain of these, however, notably Maine, Tennessee, Kentucky, and Pennsylvania, the aggregate of such operations was large, but much of it, owing to the varied character of the timber handled and other local conditions, was distributed among numerous small plants.

The rank of the leading states in the manufacture of timber products with respect to number of establishments, capital, average number of wage-earners, wages, and value of products at the censuses of 1900 and 1905 is presented in Table 7.

TABLE 7.—LOGGING OR TIMBER CAMPS—RANK OF LEADING STATES IN VALUE OF PRODUCTS, QUANTITY OF SAW LOGS, CAPITAL, NUMBER OF ESTABLISHMENTS, NUMBER OF WAGE-EARNERS, AND WAGES: 1905 AND 1900.

STATE.	VALUE OF PRODUCTS.		SAW LOGS (M FEET B. M.).		CAPITAL.		NUMBER OF ESTABLISHMENTS.		WAGE-EARNERS AND WAGES.			
	1905	1900	1905	1900	1905	1900	1905	1900	Average number.		Wages.	
									1905	1900	1905	1900
Wisconsin.....	1	2	3	1	9	1	20	16	1	2	2	4
Washington.....	2	5	1	3	1	6	6	12	3	4	1	2
Michigan.....	3	1	6	2	3	2	11	6	2	1	3	1
Minnesota.....	4	3	8	4	7	3	29	28	6	3	8	3
Pennsylvania.....	5	4	4	5	8	4	1	1	7	5	7	5
Louisiana.....	6	8	2	8	2	11	16	23	4	11	5	10
Mississippi.....	7	13	7	11	4	10	7	15	5	9	6	9
Arkansas.....	8	6	5	6	5	8	10	4	8	6	9	7
California.....	9	10	12	12	6	5	19	27	9	10	4	6
West Virginia.....	10	20	15	17	13	18	13	18	13	15	10	17
Texas.....	11	14	9	10	10	7	22	17	17	14	13	8
Georgia.....	12	9	10	7	11	15	3	3	10	7	12	11
Alabama.....	13	10	11	13	12	13	8	8	11	12	15	18
Tennessee.....	14	23	20	23	15	25	5	8	16	24	14	25
Maine.....	15	22	18	24	18	17	14	21	12	21	11	23
North Carolina.....	16	16	13	0	10	14	2	2	15	8	10	12
Virginia.....	17	7	14	14	21	20	4	7	14	13	18	13
Kentucky.....	18	24	24	25	17	21	0	13	19	25	16	24
New York.....	19	12	22	18	19	9	12	10	21	17	20	14
Florida.....	20	18	16	15	14	12	27	25	20	18	21	20
Missouri.....	21	21	19	20	22	19	23	14	22	19	22	19
New Hampshire.....	22	17	23	16	25	16	24	24	24	10	24	15
Oregon.....	23	25	17	10	20	24	18	22	23	20	17	21
Ohio.....	24	11	25	22	23	22	15	5	25	23	20	22
South Carolina.....	25	27	21	26	24	27	17	19	18	22	23	26
Indiana.....	26	15	28	21	32	28	25	11	30	20	30	16
Vermont.....	27	30	27	28	26	20	21	20	20	27	27	28

Table 7 clearly indicates wide differences in size, as measured by value of products, of the average logging camp in the various states and regions at both censuses. The average camp was largest in Minnesota and, among the other leading lumber states, was large also in Wisconsin, Washington, California, Louisiana, and Texas, and relatively small in Pennsylvania, North Carolina, Virginia, and Georgia. It is noteworthy that in general those states and regions which were most active in lumber production ranked highest both in aggregate value of logging products and in average capacity of camp.

The table brings out the fact that growth in the industry since 1900 has been most rapid in the southwestern and certain of the Pacific Coast states, while a substantial and, with respect to most of the items, uniform decline characterizes the showing of the Lake states as a group. That logging is relatively declining in the Central states is indicated clearly. Ohio, which stood fifth in number of establishments and eleventh in value of products in 1900, dropped at the census of 1905 to fifteenth in number of establishments and twenty-fourth in value of products, while Indiana receded from eleventh place to twenty-fifth in number of establishments and from fifteenth to twenty-sixth in value of products. This marked falling off in the logging industry in the Central states is due of course to the practical exhaustion of merchantable timber in continuous bodies. The present supply, which consists in the main of scattered remnants, can be converted into lumber more economically by the use

of portable mills, which means the practical elimination of logging as an important factor in the manufacturing process. Moreover, much of the material which supplies the still comparatively important sawmill and planing mill industries of these states comes from the forests of Kentucky, West Virginia, and other neighboring states.

Pennsylvania shows little change in its relative standing in the industry. That in value of timber products it has dropped from fourth to fifth place, while in quantity it has advanced from fifth to fourth, indicates that the better grades of timber in the state are being exhausted and lower grades cut in increasing quantity.

While exceptional activity in nearly all the Southern states west of Georgia is indicated, that state, with Florida, North Carolina, and Virginia, loses rank under most of the headings, while South Carolina on the whole shows a normal gain. Tennessee and Kentucky have made substantial advances. Among the Eastern states, New York and New Hampshire have declined in rank, while Maine shows a fair gain.

Of the several items covered by the table, perhaps the quantity of saw logs produced by the various states affords the most accurate measure of the magnitude of their logging operations. The rules followed in scaling saw logs do not differ materially throughout the country, while the value of a given quantity of saw logs in one state or section may differ quite widely from the value of a like quantity in another state or section. The relative rank of many

states in capital, wage-earners, and wages is also appreciably affected by local conditions and the methods of logging employed. Furthermore, saw logs constituted in 1905, in point of value, nearly nine-tenths of the total logging product. Among the states showing the most rapid growth in the industry since 1900, as gauged by the quantity of saw logs produced, are Louisiana, which advanced from eighth to second place; Mississippi, from eleventh to seventh; Alabama, from thirteenth to eleventh; Texas, from tenth to ninth; and Washington, from third rank to first. The decline of the industry in the Lake states is shown clearly by the marked shrinkage in the volume of logging camp products. Wisconsin, which in 1900 ranked first in the quantity of sawmill material produced, stood third in 1905; while Michigan and Minnesota, which ranked second and fourth in 1900, dropped to sixth and eighth places, respectively, at the census of 1905.

Changes in the rank of certain states under "capital" are significant. Most pronounced gains were made by Washington, Louisiana, and Mississippi, which advanced from sixth place to first, from eleventh to second, and from tenth to fourth, respectively; while relatively heavy losses in rank are recorded for Wisconsin, Michigan, Minnesota, New Hampshire, and New York. Wisconsin dropped from first place to ninth, Michigan from second to third, Minnesota from third to seventh, New Hampshire from sixteenth to twenty-fifth, and New York from ninth to nineteenth.

In the first group of states the lumber industry is growing rapidly in all branches, which involves, of course, additional investment in logging equipment. This equipment being new, the amount of capital reported as invested in it was little, if any, short of its actual cost. In the second group, conditions in the industry are in many respects reversed, so that the amount of new capital being put into logging plants is relatively small. As the time approaches when much of the old logging equipment will have a value little above that of junk, the tendency is to report as the amount of capital invested in the plant its present market value, which in many instances is far below the original cost. Furthermore, the problem of economic mill management, the reduction to the minimum of the cost of lumber manufacture from the delivery of the logs in the pond to the loading of the finished product

on the car, has for many years received exhaustive study, and has been solved to such a degree that in a modern plant the mill expense involved in producing a given quantity of lumber is a known and practically a constant quantity. Increase in the outlay for stumpage is steady and certain, though this item can not exceed the difference between the market value of lumber and its cost of manufacture. The cost of logging is the variable item. The available supply of merchantable timber in the country is fast passing into the hands of the lumber manufacturers. With holdings which insure a supply of material for a mill for many years, perhaps indefinitely, if scientific and conservative methods of lumbering are employed, and with the amount of profit from the enterprise hinging largely upon the economy practiced in logging operations, that branch of the industry now receives far more thought than formerly. Labor saving mechanical devices are at many points supplanting primitive implements and methods, so that the equipment of a modern logging plant is characterized by a degree of permanency that was wholly lacking when stumpage values were low and the supply of timber seemed practically unlimited. As a result of these changed conditions, it is natural that those states in which the logging industry is rapidly growing should show a greater proportionate increase in capital than in products, number of establishments, wage-earners, and wages.

Among the states not included in Table 7 whose scope is limited to those which led in 1905 in the production of timber products, as determined by the aggregate value of their output, are some in which the industry is growing with great rapidity, and in which logging operations, as disclosed by the census of 1905, are being conducted on a large scale, the average output of their camps being far in excess of that of the country.

Prominent among the latter class are Idaho, where the average logging camp in 1905, as measured by the quantity of saw logs and value of all products, was nearly four times as large as that of 1900, and Arizona and New Mexico, where it more than doubled in size between the two censuses.

In Table 8 are shown the average values per thousand feet, board measure, of log stumpage and saw logs of all species, by states and territories, at the censuses of 1900 and 1905.

TABLE 8.—Logging or timber camps—stumpage and log value, by states and territories: 1905 and 1900.

STATE OR TERRITORY.	LOG STUMPAGE (VALUE PER M FEET B. M.).		SAW LOGS (VALUE PER M FEET B. M.).	
	1905	1900	1905	1900
United States.....	\$2.59	\$2.18	\$7.51	\$6.28
Alabama.....	1.55	1.20	5.73	4.30
Alaska.....	0.50	0.97	3.55	5.08
Arizona.....	2.36	1.03	8.04	7.50
Arkansas.....	1.70	1.09	6.51	4.74
California.....	1.30	1.10	7.24	4.63
Colorado.....	1.43	1.12	6.07	4.99
Connecticut.....	4.15	2.00	9.32	7.88
Delaware.....	3.34	3.53	6.80	5.55
Florida.....	1.83	1.22	6.26	6.23
Georgia.....	1.68	1.01	5.18	4.41
Idaho.....	1.39	1.09	7.40	3.95
Illinois.....	2.84	2.64	8.62	8.36
Indian Territory.....	2.93	1.21	11.01	4.61
Indiana.....	7.05	5.39	14.50	9.39
Iowa.....	5.11	4.05	13.93	12.16
Kansas.....	(¹)	2.17	5.41	7.84
Kentucky.....	3.73	2.67	10.42	6.86
Louisiana.....	2.26	1.22	6.71	5.59
Maine.....	3.70	2.52	9.66	8.15
Maryland.....	4.17	2.92	10.79	6.75
Massachusetts.....	4.19	2.64	8.94	9.49
Michigan.....	3.79	3.06	9.18	7.00
Minnesota.....	4.65	3.40	10.81	8.09
Mississippi.....	2.00	1.30	6.42	4.60
Missouri.....	1.43	1.89	7.01	6.01
Montana.....	1.33	1.18	6.22	4.11
Nebraska.....	3.00	2.29	7.12	5.60
Nevada.....	1.40	1.04	5.71	4.02
New Hampshire.....	4.28	2.68	8.79	6.96
New Jersey.....	5.34	3.03	11.87	7.56
New Mexico.....	2.24	1.14	7.97	4.82
New York.....	4.54	3.12	11.32	7.75
North Carolina.....	1.92	1.34	5.90	4.45
North Dakota.....	(¹)	1.00	(¹)	5.00
Ohio.....	6.77	4.92	13.75	9.47
Oklahoma.....	(¹)	2.54	² 45.57	5.82
Oregon.....	0.96	0.66	5.61	4.46
Pennsylvania.....	4.36	2.94	8.84	6.71
Rhode Island.....	4.12	3.02	6.86	7.15
South Carolina.....	1.65	1.23	5.91	4.16
South Dakota.....	1.97	1.80	8.17	5.25
Tennessee.....	3.48	2.18	9.23	6.50
Texas.....	1.78	1.17	5.14	4.47
Utah.....	1.29	1.32	6.72	5.31
Vermont.....	3.63	2.09	10.00	5.80
Virginia.....	2.15	1.70	5.97	8.35
Washington.....	1.07	0.80	5.76	5.14
West Virginia.....	3.13	2.30	9.86	6.59
Wisconsin.....	4.14	3.51	9.85	7.20
Wyoming.....	1.50	1.27	6.00	5.09

¹ None reported.² Black walnut.

The increase in the value of log stumpage was general and in certain states large. The fact that the rise in stumpage values was confined to no particular section or group of states and extended to all species of merchantable timber is significant. It is due not so much to a present shortage in the supply of lumber material in the country as a whole as to the fact that the available supply of log stumpage is rapidly being bought up and withdrawn from the market. This movement is prompted largely by the belief that the time is fast approaching when the available supply will prove inadequate to the demand. The average for the United States increased from \$2.18 per thousand feet, board measure, in 1900 to \$2.59 in 1905, a rise of 41 cents, or 18.8 per cent. This advance in the cost of stumpage added \$11,472,115 to the total cost of sawmill material, and increased the value of lumber proportionately.

The showing for certain states is noteworthy. In Maine, New Hampshire, and New York the advance

in the price of standing timber has been at a rate well above that for the country. In Maine spruce was the leading species of lumber manufactured during the year covered by the census of 1905, constituting 52 per cent of the total cut; while in New Hampshire and New York it formed 22.3 and 27.1 per cent, respectively. The further demand for this species of timber as a raw material in the wood pulp industry is heavy and increasing in these states. They contributed 63.2 per cent of the total quantity of domestic spruce manufactured into wood pulp in 1900 and 69.7 per cent at the census of 1905. The inroad being made by the lumber and pulp industries into the remaining supply is consequently rapid. This condition, together with the fact that much of the stand has been concentrated into extensive holdings by the pulp manufacturers, largely explains the substantial rise in the cost of lumber stumpage.

In the Lake states the advances have not been uniform, and the explanation lies mainly in the fact that white pine, the species of highest stumpage value, was cut to a far less extent in certain of these states than formerly. In Michigan the average value for all species rose during the five years from \$3.06 to \$3.79 per thousand feet, an increase of 73 cents; in Wisconsin, from \$3.51 to \$4.14, an advance of 63 cents; in Minnesota, from \$3.40 to \$4.65, a rise of \$1.25. In Michigan and Wisconsin the cut is running more and more to hemlock and the hard woods, species of lower stumpage value, while in Minnesota white pine is still the principal species manufactured into lumber, constituting 98 per cent of the total cut of the state at the census of 1905.

Among the Central states the appreciation in certain instances is noteworthy. In Illinois, Indiana, and Ohio, where very little merchantable timber remains, the rise in stumpage values is due directly to the growing scarcity of sawmill material for immediate use. In Kentucky and Tennessee, however, where the supply is still relatively large, the sharp advances are due in large part to extensive buying for future use.

In the southern yellow pine region the advance in stumpage values has been most marked in those states which have been most active in lumber manufacture and in which stands the bulk of the supply of yellow pine stumpage. In Louisiana the advance during the five years was from \$1.22 to \$2.26 per thousand feet, an increase of \$1.04, or 85.2 per cent; in Mississippi, from \$1.30 to \$2, a rise of 70 cents, or 53.8 per cent; in Texas, from \$1.17 to \$1.78, an increase of 61 cents, or 52.1 per cent. The increase in Texas practically measures the advance in the cost of yellow pine stumpage, since this species constituted 98.3 per cent of its total lumber cut in the year covered by the report. In Louisiana 78.5 per cent and in Mississippi 78.6 per cent of the total cut was yellow pine.

On the Pacific slope is still to be found the cheapest high grade stumpage in the country, though the values in this region show substantial increases over 1900.

The difference between the cost of stumpage and the value of the saw log product consists of two elements, namely, the cost of logging operations and profit. The average cost of log stumpage for the United States in 1905 was 41 cents per thousand feet more than in 1900, while the average value of saw logs in 1905 exceeded that of 1900 by \$1.23 per thousand feet. The logical inference from this showing is that either the cost of logging operations has increased since 1900 or that the margin of profit was wider in 1905. There was probably an increase in both. As a rule that timber is first utilized for saw logs which is most accessible and can be taken from the stump and delivered to the mill with least expense. As a result of this practice, the average distance from the stump to the mill is constantly increasing, and this, together with the fact that the supply of stumpage in the country is becoming more scattered, tends to multiply the operations involved in logging and to increase the total cost. The showing is also affected to some extent by the steady rise in wages. It is not improbable, therefore, that there has been a slight increase in the cost of logging operations between the two censuses despite the fact that improved logging equipment was more extensively used than formerly. Furthermore, in 1905 the statistics relating to the logging branch of the lumber industry were secured in greater detail and are therefore more complete than was the case in 1900, and it is not improbable that certain items of expense were included at the latter census which were not covered at the former.

In Table 9 are presented the average stumpage values per thousand feet of the principal species of timber cut into saw logs, as reported at the censuses of 1900 and 1905.

TABLE 9.—Logging or timber camps—stumpage, average value per thousand feet of the principal species of timber, for the United States; 1905 and 1900.

SPECIES.	AVERAGE VALUE PER M FEET B. M.	
	1905	1900
All species.....	\$2.59	\$2.18
Yellow pine.....	1.03	1.12
White pine.....	4.02	3.06
Douglas fir.....	1.05	0.77
Hemlock.....	3.51	2.56
Oak.....	3.83	3.18
Spruce.....	3.70	2.20
Cypress.....	3.42	1.58
Redwood.....	1.55	1.06
Cedar.....	1.49	1.32
Gum.....	1.67	1.68
Poplar.....	3.89	2.81
Maple.....	3.82	2.06
Cottonwood.....	2.61	1.45
Elm.....	5.58	3.30
Chestnut.....	3.39	2.71
Basewood.....	3.89	1.50
Ash.....	3.95	3.03

Yellow pine, which was the species most extensively used as lumber material at both censuses, showed a substantial rise in stumpage value, the increase for the census period being 56 cents per thousand feet, or exactly 50 per cent. As reported in 1905 this species was converted into lumber in merchantable quantities in 25 states and territories, and as to quantity was the leading species used in 22. Under the name "yellow pine" are comprised all such species as the long-leaf, short-leaf, loblolly, and Cuban pines of the Southern states and the yellow pines of the West. The range in stumpage value among the different states was wide at both censuses. In 1905 it was lowest in Oregon, where the average was 87 cents per thousand feet, and highest in New Mexico, where it was \$2.51. The most marked increases from 1900 to 1905 in the stumpage value of yellow pine were shown in Arizona, where the advance was from \$1.03 to \$2.36; New Mexico, from \$1.16 to \$2.51; Louisiana, from \$1.01 to \$1.86; Arkansas, from 86 cents to \$1.49; Washington, from 85 cents to \$1.39; and Texas, from \$1.12 to \$1.78.

The increase in stumpage value of white pine, which includes Norway pine, was for the country 96 cents per thousand feet, or 26.2 per cent. The advance was greatest in Maine, where the stumpage value of this species increased from \$2.51 per thousand feet in 1900 to \$4.42 for 1905. New York, where the stumpage value of white pine was the highest in the country in 1900, namely, \$4.33, reported an average for 1905 of \$4.73. In Michigan, where white pine is rapidly disappearing as a lumber timber, the increase was from \$3.82 per thousand feet in 1900 to \$5.28 for 1905, the highest stumpage value shown by any of the states for this species at the latter census. In Minnesota and Wisconsin, the leading producers of white pine lumber at both censuses, the advances in stumpage values were from \$3.61 and \$3.85 in 1900 to \$4.67 and \$4.79, respectively, at the census of 1905.

Douglas fir was in 1905, as in 1900, the principal species converted into lumber in the states of Washington and Oregon. In Washington, where it was cut in greatest quantity, the stumpage value increased from 80 cents in 1900 to \$1.07 at the census of 1905. In Oregon the advance was from 59 cents to 93 cents.

The increase in value of hemlock stumpage was for the United States 95 cents per thousand feet, or 37.1 per cent. The growing scarcity of white pine and spruce created a demand for hemlock, which resulted in a substantially larger quantity of this species being cut in 1905 than in 1900 and accounts in part for the sharp advance in the value of hemlock stumpage. In Pennsylvania, where this species constituted 67.1 per cent of the total cut of lumber reported in 1905, its stumpage value rose from \$2.75 to \$4.36 per thousand feet between the two censuses. In Michigan it contributed 39.1 per cent of the total cut reported in 1905, and its stumpage value advanced from \$2.25 to \$3.02. In Wisconsin 26.4 per cent of the total cut reported in

1905 was from hemlock stumpage, which increased in value during the five years from \$2.16 to \$2.95 per thousand feet. In Maine hemlock stumpage advanced from \$2.52 in 1900 to \$3.13 at the census of 1905; in New Hampshire, from \$3.19 to \$4.15; in New York, from \$2.98 to \$4.79; and in Vermont, from \$2.01 to \$3.44.

The rise in the value of oak stumpage in the country was 65 cents per thousand feet, about the same percentage of increase as that shown in the average of all species. The stumpage value of oak varied greatly among the different states in 1905, being lowest in Missouri, where the average was \$1.88, and highest in Indiana, where it was \$7.94 per thousand feet. In certain states the advance over 1900 was notably large. In Michigan it rose from \$3.58 to \$7.12; in Ohio, from \$4.70 to \$6.40; and in Indiana, from \$5.38 to \$7.94 per thousand feet.

The per cent of increase in the value of spruce stumpage was far above that in the average value of all species, the net advance being \$1.44 per thousand feet, or 63.7 per cent. In Maine the rise was from \$2.70 in 1900 to \$3.63 in 1905; in New Hampshire, from \$2.71 to \$4.50; in New York, from \$2.81 to \$4.62; in Vermont, from \$2.04 to \$4.04. Western spruce is still cheap, the increases

over 1900 being immaterial except in Oregon, where it rose from 67 cents to \$1.43. In California the stumpage value of this species was \$1.28, and in Washington 94 cents per thousand feet, in 1905.

The advance in the stumpage value of cypress between the two censuses was remarkable, the increase per thousand feet being \$1.84, or 116.5 per cent. The range in stumpage value of this species in 1905 was from \$1.53 per thousand feet in North Carolina to \$5.06 in Georgia. The states showing the largest increases are Florida, where it rose from \$1.55 in 1900 to \$3.29 in 1905, and Louisiana, where the advance was from \$1.51 to \$3.76.

A substantial increase was made in the stumpage value of redwood, found only in California, the advance per thousand feet being 49 cents, or 46.2 per cent.

The remaining species, chiefly hard woods, were in the main cut in relatively small quantities, and, with the exceptions of cottonwood, basswood, maple, and elm, the advances in stumpage values have not been large.

In Table 10 are presented the quantity and value of the leading products of the logging industry as returned at the censuses of 1900 and 1905.

TABLE 10.—LOGGING OR TIMBER CAMPS—QUANTITY AND VALUE OF PRINCIPAL PRODUCTS: 1905 AND 1900.

CENSUS.	SAW LOGS.		RAILWAY TIES.		TELEGRAPH AND TELEPHONE POLES.		FENCE POSTS.		HEMLOCK BARK.		OAK BARK.		CHARCOAL.	
	M feet B. M.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Cords.	Value.	Cords.	Value.	Bushels.	Value.
1905.....	27,980,768	\$210,074,486	36,445,308	\$12,413,793	2,080,482	\$2,383,275	17,483,268	\$1,253,107	361,661	\$2,347,463	60,873	\$470,722	1,587,443	\$112,401
1900.....	25,279,702	158,880,352	22,524,640	6,277,439	936,713	1,392,284	8,625,292	508,520	471,802	1,940,057	39,044	224,912	6,523,364	441,322

An upward movement in the value of forest products is clearly indicated by the showing. Saw logs, the principal product of the industry, increased between the two censuses in quantity 2,701,066 thousand feet, board measure, or 10.7 per cent, and in value \$51,194,134, or 32.2 per cent. The increase in the average value per thousand feet of saw logs of all species was from \$6.28 in 1900 to \$7.51 in 1905.

In the number of railway ties reported the increase was 13,920,668, or 61.8 per cent, and in value it was \$6,136,354, or 97.8 per cent. The figures relate only to hewn ties. The average value of a tie rose from 28 cents in 1900 to 34 cents as reported in 1905. The data are of interest chiefly because they disclose the rapid increase in the value of this important article of railway construction and maintenance. The number of railway ties shown in the table is less for both censuses than the total production of the country at the two periods. A large percentage of this product is gotten out by small operators, chiefly farmers, who engage in this work during certain seasons of the year only and sell directly to the railroad companies. As previously explained, petty operations of this character were not regarded as falling within the scope of the canvass at

the census of 1905, which was restricted to merchant sawmills and to timber camps of similar magnitude. Furthermore, an important and increasing percentage of the total production of railway ties in the country was sawed and reported by the mills in thousand feet, board measure, under the general heading of rough lumber.

The increase in the number of telegraph and telephone poles over 1900 was 1,143,769, or 122.1 per cent, while the increase in value was \$990,991, or 71.2 per cent. The average value per unit of this product decreased between the two censuses from \$1.49 in 1900 to \$1.15 at the census of 1905. This was doubtless due to the fact that for telephone lines in the smaller towns and villages and between such points a much larger proportion of the total production of telegraph and telephone poles than formerly is required, the poles used in such systems being on the average much smaller and consequently of lower value than those required for telegraph lines and for telephone systems in large cities.

The same explanation should be made with reference to the quantities of telegraph and telephone poles, and of fence posts, hemlock and oak bark, and charcoal

reported at the two censuses as was made in connection with the quantities of railway ties reported. The quantities are all more or less short of the country's total production of these products, and the statistics relating to them are valuable chiefly in showing the increase in prices between the two censuses. The advance in fence posts was from \$6.94 per hundred in 1900 to \$7.17 in 1905. Hemlock bark increased between the two censuses from \$4.11 per cord to \$5.99, while oak bark advanced from \$5.76 in 1900 to \$6.74 in 1905. Charcoal increased from \$6.77 per hundred bushels in 1900 to \$7.08 in 1905.

In addition to the products shown in Table 10 there were reported by the logging camps of the country at the census of 1905 numerous other forest products, including basket stock, cooperage stock, excelsior stock, wheel stock, handle stock, piles, masts and spars,

ship knees, etc., to the value of \$7,075,741. The value of the corresponding group of products at the census of 1900 was \$4,126,704, or an increase of 71.5 per cent.

SAWMILLS.

Logs and bolts, products of the logging industry, constitute the raw material of the sawmill industry and rough lumber is its leading product. The term "rough lumber" comprises all sawed products reported in thousand feet, board measure, such as planks, boards, scantlings, furniture stock, carriage and wagon stock, agricultural implement stock, bobbin and spool stock, and dimension stock. Among the other principal products of the industry are shingles; cooperage materials; veneers, cut, sawed, and sliced; and laths. In Table 11 are presented, by states and territories, the statistics of the sawmill industry.

TABLE 11.—SAWMILLS—SUMMARY, BY STATES AND TERRITORIES: 1905.

STATE OR TERRITORY.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	Value of products.
			Number.	Salaries.	Average number.	Wages.			
United States	18,277	\$381,621,184	14,532	\$16,199,737	223,074	\$100,310,801	\$35,966,395	\$263,865,101	\$401,524,662
Alabama	572	7,737,847	514	502,853	8,028	2,779,908	914,093	6,875,778	14,408,796
Alaska	6	183,504	4	8,000	55	65,800	8,573	80,074	230,141
Arizona	5	908,023	17	45,540	206	229,580	384,021	384,021	870,241
Arkansas	837	19,409,773	975	1,007,211	13,190	5,599,108	2,256,387	11,402,621	23,728,565
California	289	18,092,805	433	584,660	3,990	3,844,960	1,500,189	7,721,222	15,337,850
Colorado	86	1,008,718	47	37,965	688	380,032	130,270	803,794	1,569,495
Connecticut	101	674,462	20	10,878	417	190,121	81,642	508,461	997,880
Delaware	74	152,644	1	4,8	167	50,432	32,326	189,628	339,255
Florida	176	7,918,804	435	490,683	6,262	2,300,403	740,998	4,804,270	10,320,754
Georgia	695	6,019,874	482	432,800	3,273	2,608,255	693,121	5,732,774	12,762,709
Idaho	91	2,197,863	67	85,506	825	408,570	310,150	1,144,605	2,047,827
Illinois	295	4,742,611	184	187,995	3,009	1,241,411	446,711	2,928,339	5,381,506
Indian Territory	39	164,010	8	4,840	211	90,272	33,379	238,013	440,312
Indiana	772	8,471,051	424	389,106	5,970	2,459,382	666,998	7,987,774	13,987,856
Iowa	49	6,000,259	97	130,838	1,196	693,024	310,018	3,078,361	5,080,614
Kansas	4	8,135			11	4,303	1,966	4,875	20,700
Kentucky	825	9,102,558	419	400,032	5,420	2,002,839	716,781	6,574,309	11,566,532
Louisiana	387	20,013,520	1,374	1,716,055	14,292	6,531,412	3,320,131	14,159,049	31,052,072
Maine	716	11,782,709	293	274,103	6,539	3,026,588	950,645	9,794,750	15,320,310
Maryland	203	1,132,892	33	37,912	1,039	398,324	86,274	1,513,342	2,341,242
Massachusetts	284	2,782,849	35	67,133	1,215	618,493	259,852	2,710,277	4,342,382
Michigan	693	30,583,370	939	1,020,978	15,972	7,720,305	2,832,420	10,431,328	34,446,919
Minnesota	190	22,399,739	500	696,147	7,215	3,899,435	2,134,250	16,751,232	25,848,232
Mississippi	609	16,150,521	854	953,194	11,446	4,639,796	1,667,850	10,314,182	21,797,928
Missouri	363	6,100,983	337	358,067	5,919	2,317,073	699,469	4,519,950	9,889,516
Montana	38	3,482,605	89	143,044	971	722,006	230,042	1,241,381	2,441,693
Nebraska	4	10,414	1	978	8	3,881	1,720	7,469	19,624
New Hampshire	379	4,793,118	41	44,560	2,205	1,028,263	289,641	4,164,438	6,221,511
New Jersey	111	707,787	7	3,748	499	217,689	45,542	508,659	910,902
New Mexico	23	1,430,711	61	76,194	666	289,072	133,031	561,700	1,237,847
New York	813	9,356,300	232	252,760	4,421	2,030,841	632,578	6,826,118	11,314,124
North Carolina	1,190	6,567,383	439	404,476	3,342	2,540,254	682,755	7,106,620	13,857,302
Ohio	821	9,481,895	381	314,806	4,859	2,175,925	883,718	6,972,214	11,423,391
Oregon	348	7,808,342	275	344,585	3,073	2,460,228	798,040	5,482,840	9,576,041
Pennsylvania	1,185	10,924,781	403	466,188	8,721	4,216,814	1,386,407	17,002,306	27,288,287
Rhode Island	20	136,091	1	1,200	89	44,479	11,085	125,110	224,805
South Carolina	432	5,374,491	223	224,607	4,951	1,364,806	409,701	2,936,989	6,200,919
South Dakota	18	117,066	6	4,900	68	39,874	6,613	111,373	191,047
Tennessee	1,009	13,130,047	533	525,955	9,643	3,399,335	1,053,093	9,599,053	17,925,004
Texas	294	12,281,915	764	868,830	6,491	2,824,410	847,098	6,960,691	13,651,334
Utah	41	74,219	6	1,470	68	37,003	5,079	67,454	130,279
Vermont	417	3,543,108	61	47,099	2,328	995,773	204,130	2,870,177	4,947,439
Virginia	789	7,194,499	282	272,866	6,544	2,155,940	5,227,275	5,227,275	11,127,430
Washington	899	27,605,600	917	1,109,551	15,615	10,105,935	3,051,691	18,823,453	37,055,604
West Virginia	620	8,784,358	315	338,346	5,295	2,398,473	811,658	7,265,276	13,423,578
Wisconsin	549	30,607,609	930	1,128,882	14,088	7,020,690	2,773,872	21,108,648	37,872,672
Wyoming	24	78,369	1	1,200	50	28,716	50,804	24,763	110,734
All other states ¹	3	289,038	6	10,380	61	31,045	10,342	150,860	202,441

¹ Includes establishments distributed as follows: Nevada, 2; Oklahoma, 1.

The data covered by the table relate exclusively to the sawmill branch of the lumber industry. In establishments in which logging operations, planing, or both, were carried on jointly with sawmills the figures have been segregated so as to show the capital invested, persons employed, wages, miscellaneous expenses, cost of materials, and value of products for the sawmill branch alone. The number of establishments, 18,277, comprises, therefore, only such plants as reported some or all the products of the sawmill industry.

The item of capital covers: (1) Investments in land for the plant site; (2) buildings of all kinds used exclusively by sawmill establishments in producing the products reported, including dry kilns, office buildings, and in certain instances dwellings occupied by officers and other employees; (3) all machinery used in the manufacturing process from the taking of the logs from the pond or yard to the delivery of the sawed products in the market; and (4) live capital, which includes, in addition to bills receivable, unsettled ledger accounts, cash on hand, and other sundries, the stock of sawmill material delivered at the mills and the unsold sawed products in mills, dry kilns, and yards.

Salaries and wages include the value to salaried officials and wage-earners of board and quarters when furnished as part compensation by milling establishments. The cost of materials includes the cost delivered at the mill of all logs or bolts owned and used during the census year, together with amounts paid for mill supplies, saws, files, fuel, and all other materials. Under "products" are included the value of all merchant sawed products, together with the amount received for contract or custom sawing, but not the value of contract or custom sawed lumber.

In the sawmill industry the average plant in the United States at the census of 1905 reported capital to the amount of \$20,880, employed 12 wage-earners, paid out \$5,488 in wages, expended for materials \$14,437, and turned out a product valued at \$26,893. The average plant is therefore substantially larger than in 1900, when the amount of capital averaged \$16,339; the number of wage-earners employed, 11; the amount of wages paid, \$4,120; the cost of materials, \$9,633; and the value of products, \$18,768. At both censuses the average mill plant in several of the states and territories, as gauged by the value of products, was far above that of the whole country. In Arizona at the census of 1905 the average value of products per establishment was \$174,048; in Iowa, \$103,686; in Minnesota, \$136,043; in Wisconsin, \$68,985; in Washington, \$45,802; in Montana, \$64,255; in Louisiana, \$80,238; in Florida, \$58,641; and in California, \$53,072.

22917—MFG 1905—PT 3—08—40

In the sawmill industry, as in logging, wages as a rule were higher in the relatively newer lumber regions, where the industry is conducted on a larger scale and along the most modern lines. The highest wages were paid in the mills in the Pacific Coast states, and the lowest in the older lumber sections of the Southern and the Northeastern states.

The substantial increase in average wages in the sawmill industry for the United States as a whole at the census of 1905 over the rate for 1900 is noteworthy. The drift of the industry has been westward, and in general from states and regions of relatively low wages to those of higher. A far larger proportion of the total lumber product at the census of 1905 was cut west of the Mississippi river than was the case in 1900. The mills in this region employed 34.8 per cent of the total number of wage-earners engaged in the industry at the census of 1905 and paid 40.5 per cent of the wages, as compared with 27.7 per cent of the wage-earners and 30.5 per cent of the wages at the census of 1900. The number of wage-earners employed in Washington was 60.8 per cent greater in 1905 than in 1900, and the increase for the 3 Pacific Coast states was more than 50 per cent. The average wages throughout the country at the census of 1905 was therefore more largely influenced by the wages paid in states and sections where higher rates of pay obtained at both censuses than was the case in 1900. Hence the increase in individual states between the two censuses was not so marked as the increase in the average for the country as a whole would indicate.

Table 12 shows, for 1900 and 1905, the rank of the principal lumber states in value of products, amount of capital invested, number of establishments, average number of wage-earners, and total wages paid.

In the value of sawmill products, as in that of logging products, Wisconsin stood first at the census of 1905, although Washington surpassed it in the showing of the combined industry. This is due to the fact that a larger percentage of the logging product in Washington was turned out by independent camps.

The most conspicuous gains in the value of sawmill products between the two censuses were made by Washington, which advanced from sixth place to second, while Louisiana rose from eleventh to fourth; Mississippi, from tenth to eighth; California, from twenty-second to tenth; and Alabama from fifteenth to twelfth. Michigan, which was nineteenth in 1900, dropped to third place at the census of 1905. Pennsylvania, from third to fifth; Minnesota, from fourth to sixth; Indiana, from fifth to thirteenth; and Ohio, from eighth to nineteenth.

TABLE 12.—SAWMILLS—RANK OF LEADING LUMBER STATES IN VALUE OF PRODUCTS, CAPITAL, NUMBER OF ESTABLISHMENTS, NUMBER OF WAGE-EARNERS, AND WAGES: 1905 AND 1900.

STATE.	VALUE OF PRODUCTS.		CAPITAL.		NUMBER OF ESTABLISHMENTS.		WAGE-EARNERS AND WAGES.			
							Average number.		Wages.	
	1905	1900	1905	1900	1905	1900	1905	1900	1905	1900
Wisconsin.....	1	2	1	1	17	14	4	2	3	2
Washington.....	2	6	3	5	8	22	2	7	1	3
Michigan.....	3	1	2	2	13	7	1	1	2	1
Louisiana.....	4	11	4	8	20	25	3	13	4	10
Pennsylvania.....	5	3	8	4	2	1	8	4	7	4
Minnesota.....	6	4	5	3	29	26	12	10	8	5
Arkansas.....	7	7	6	7	4	12	5	3	5	6
Mississippi.....	8	10	9	15	15	18	6	11	6	12
Tennessee.....	9	9	10	11	3	6	7	5	10	8
California.....	10	22	7	13	25	30	17	23	9	16
Maine.....	11	10	12	9	11	16	14	17	11	11
Alabama.....	12	18	20	20	16	13	11	12	13	19
Indiana.....	13	5	17	14	10	3	18	8	17	7
North Carolina.....	14	13	24	16	1	4	9	6	15	17
Texas.....	15	17	11	12	24	21	15	18	12	13
West Virginia.....	16	20	10	22	14	15	21	22	18	23
Georgia.....	17	15	22	24	12	10	10	9	14	18
Kentucky.....	18	12	15	10	5	9	20	15	24	14
Ohio.....	19	8	13	10	6	2	23	14	21	9
New York.....	20	14	14	6	7	5	24	20	23	15
Virginia.....	21	10	21	23	9	8	13	16	22	20
Florida.....	22	23	18	18	30	27	16	19	20	21
Missouri.....	23	21	25	17	22	11	19	21	19	22
Oregon.....	24	24	19	20	23	29	25	28	16	24
New Hampshire.....	25	25	27	21	21	22	28	25	27	25
South Carolina.....	26	29	26	30	18	19	22	24	25	29
Illinois.....	27	26	28	26	27	17	26	27	26	26
Iowa.....	28	27	23	25	36	31	30	31	31	30

The large increases in the value of output have been made by those states situated in regions where the lumber industry is of later development, while the principal losses in rank occurred in the Central states, where the supply of merchantable timber has been practically exhausted, the industry being supported at present to a considerable extent by material imported from other states, and in the Lake region, where the shrinkage in lumber production is due also to the rapid depletion of the forests.

The changes in rank under the heading of "capital" have not been so marked in the sawmill industry as was the case in logging, and the reasons therefor are indicated in the discussion of Table 7. The rapid growth of the industry in certain states is brought out clearly by the substantial increase in the number of wage-earners employed and in total wages paid.

Washington, which stood seventh in 1900 in the number of wage-earners, advanced to second place at the census of 1905; Louisiana rose from thirteenth to third; Mississippi, from eleventh to sixth; and California, from twenty-third to seventeenth. In amount of wages paid Washington advanced from third place to first; Louisiana, from tenth place to fourth; Mississippi, from twelfth place to sixth; and California, from sixteenth place to ninth.

Since rough lumber constitutes the bulk of the production of the sawmill industry, the quantity of this product affords perhaps the most accurate measure of the magnitude of the individual plants. In Table 13 the lumber mills reporting at the censuses of 1900 and 1905 are classified according to the quantity of lumber cut, by states and territories.

LUMBER AND TIMBER PRODUCTS.

TABLE 13.—SAWMILLS, CLASSIFIED ACCORDING TO NUMBER OF THOUSAND FEET, BOARD MEASURE, OF ROUGH LUMBER SAWED: 1905 AND 1900.

STATE OR TERRITORY.	Census.	Total.	NUMBER OF MILLS SAWING—						STATE OR TERRITORY.	Census.	Total.	NUMBER OF MILLS SAWING—					
			50 M to 500 M feet.	500 M to 1,000 M feet.	1,000 M to 5,000 M feet.	5,000 M to 10,000 M feet.	10,000 M to 50,000 M feet.	50,000 M feet and over.				50 M to 500 M feet.	500 M to 1,000 M feet.	1,000 M to 5,000 M feet.	5,000 M to 10,000 M feet.	10,000 M to 50,000 M feet.	50,000 M feet and over.
United States.	1905 1900	16,446 10,976	7,575 8,677	3,390 5,179	4,026 4,827	600 607	730 655	47 31	Missouri.....	1905 1900	317 584	144 340	67 115	81 110	16 8	8 10	1 1
Alabama.....	1905 1900	548 738	180 311	137 203	162 175	27 27	30 22		Montana.....	1905 1900	36 69	7 8	7 15	13 30	3 11	5 5	1
Alaska.....	1905 1900	6 8	..... 1	2 5	4 2	.....	.....	.....	Nebraska.....	1905 1900	4 11	2 9	2 2	.....	.....	.....	.....
Arizona.....	1905 1900	5 13	3 11	.....	.....	.....	2 1	.....	Nevada.....	1905 1900	2 1	1 1	.....	.....	.....	1	.....
Arkansas.....	1905 1900	745 704	287 202	152 199	228 294	41 35	36 33	1 1	New Hampshire.....	1905 1900	360 373	123 123	72 110	153 126	10 8	2 6	.....
California.....	1905 1900	245 222	68 68	44 46	80 62	20 21	32 25	1	New Jersey.....	1905 1900	109 107	84 62	18 30	6 14	1 1	.....	.....
Colorado.....	1905 1900	86 111	36 29	19 34	27 30	2 9	2	.....	New Mexico.....	1905 1900	23 26	11 8	3 4	6 14	.....	3	.....
Connecticut.....	1905 1900	99 127	47 64	24 27	28 34	.....	.....	.....	New York.....	1905 1900	771 1,042	527 645	128 248	92 126	12 13	12 10	.....
Delaware.....	1905 1900	72 67	40 41	22 18	4 8	.....	.....	.....	North Carolina.....	1905 1900	1,157 1,219	535 639	267 283	271 258	33 32	21 7	.....
Florida.....	1905 1900	162 305	25 92	23 71	65 80	30 30	18 23	1	North Dakota ¹	1900	4	2	1	1	.....	.....	.....
Georgia.....	1905 1900	646 821	247 260	140 240	203 202	28 30	28 23	.....	Ohio.....	1905 1900	736 1,100	401 525	164 302	75 203	4 6	2 3	.....
Idaho.....	1905 1900	86 87	10 46	20 16	35 25	8	4	.....	Oklahoma.....	1905 1900	1 25	..... 25	.....	1	.....	.....	.....
Illinois.....	1905 1900	239 372	161 248	41 79	32 39	1 1	4 4	.....	Oregon.....	1905 1900	324 287	115 101	78 77	61 78	17 13	20 17	3 1
Indian Territory.....	1905 1900	38 37	17 28	10 5	11 4	.....	.....	.....	Pennsylvania.....	1905 1900	1,039 1,501	660 715	199 382	160 313	31 40	37 49	3 2
Indiana.....	1905 1900	718 1,150	414 590	146 291	147 259	5 12	4 7	.....	Rhode Island.....	1905 1900	19 23	10 13	2 2	7 8	.....	.....	.....
Iowa.....	1905 1900	40 110	31 66	4 22	2 10	1 1	11 10	.....	South Carolina.....	1905 1900	368 407	163 169	97 104	117 121	13 11	7 2	1
Kansas.....	1905 1900	4 25	3 22	..... 2	1 1	.....	.....	.....	South Dakota.....	1905 1900	18 29	11 14	2 6	5 8	.....	.....	.....
Kentucky.....	1905 1900	745 774	435 383	163 192	131 176	13 17	3 6	.....	Tennessee.....	1905 1900	864 939	491 478	183 244	167 189	14 10	9 9	.....
Louisiana.....	1905 1900	304 292	56 55	41 67	132 102	44 31	89 37	2	Texas.....	1905 1900	277 392	32 110	66 103	117 121	26 20	32 38	4
Maine.....	1905 1900	561 522	307 267	115 121	125 92	26 26	18 16	.....	Utah.....	1905 1900	41 46	33 41	7 4	1 1	.....	.....	.....
Maryland.....	1905 1900	195 224	108 105	53 75	28 40	2 4	4	.....	Vermont.....	1905 1900	410 472	195 230	111 123	100 117	2 2	2	.....
Massachusetts.....	1905 1900	270 331	135 125	60 105	81 99	1 1	2 1	.....	Virginia.....	1905 1900	728 823	300 331	191 263	214 211	8 10	14 8	1
Michigan.....	1905 1900	557 1,028	269 337	84 259	157 301	51 53	56 75	.....	Washington.....	1905 1900	447 317	88 85	75 46	158 122	56 29	65 31	5 4
Minnesota.....	1905 1900	180 244	87 80	25 55	20 42	4 6	32 47	12 14	West Virginia.....	1905 1900	545 568	271 224	97 182	140 143	26 7	11 12	.....
Mississippi.....	1905 1900	574 519	174 171	107 141	213 157	36 25	41 25	3	Wisconsin.....	1905 1900	593 686	162 159	63 189	126 190	48 44	66 93	8 2
									Wyoming.....	1905 1900	24 25	18 19	6 4	..... 1	..... 1	.....	.....

¹ No mills reported in 1905.

The table shows the distribution among the various states of the lumber producing mills, classified according to the quantity of lumber cut, and indicates the location of the centers of heaviest production. Mills engaged exclusively in sawing shingles, cooperage materials, etc., are not included. That the capacity of the average lumber mill plant was substantially larger as reported in 1905 than in 1900 is clearly evident. The number of mills the annual cut of which was 50,000,000 feet or over increased between the two censuses from 31 to 47, or 51.6 per cent; the number cutting from 10,000,000 to 50,000,000 feet increased from 655 to 739, or 12.8 per cent; and the number of mills the cut of which during the census year was from 5,000,000 to 10,000,000 feet increased from 607 to 660, or 8.7 per cent. The proportion of mills cutting 1,000,000 feet or more increased from 30.6 per cent of all mills in 1900 to 33.3 per cent in 1905.

The product of rough lumber cut by the mills of the

several groups may be roughly approximated by multiplying the mean cut of each group by the number of mills it contains. Carrying out this process, it appears that the mills of the first group, which cut 5.1 per cent of the total at the census of 1900, cut 4.4 per cent at the census of 1905, while the mills of the second group cut 8.3 and 5.4 per cent; those of the third group, 30.8 and 25.5 per cent; those of the fourth group, 9.7 and 10.5 per cent; those of the fifth group, 41.8 and 46.8 per cent; and those of the sixth group, 4.3 and 7.4 per cent, respectively. The mills of the fifth and sixth groups combined, which constituted only 3.4 per cent of all mills in 1900 and 4.8 per cent in 1905, cut 46.5 per cent and 54.2 per cent, respectively, of the total rough lumber product at the two censuses.

In Table 14 are presented the quantity and value of the principal sawed products, together with the percentage which the value of each is of the value of all sawmill products, for 1900 and 1905.

TABLE 14.—SAWMILLS—QUANTITY AND VALUE OF PRINCIPAL PRODUCTS, WITH PER CENT THAT THE VALUE OF EACH IS OF THE TOTAL VALUE OF PRODUCTS: 1905 AND 1900.

	1905			1900		
	Quantity.	Value.		Quantity.	Value.	
		Amount.	Per cent of total.		Amount.	Per cent of total.
Rough lumber, M feet B. M.	34,135,139	\$435,708,084	85.0	33,404,850	\$372,909,923	89.5
Shingles, M.	14,647,477	24,000,010	4.7	11,947,020	18,549,873	4.2
Cooperage materials:						
Hoops, M.	540,879	3,159,073	0.6	440,859	2,686,555	0.6
Staves, M.	2,404,689	19,082,041	3.7	1,658,375	13,609,233	3.1
Headings, M sets.	126,354	7,430,259	1.5	111,180	4,338,881	1.0
Laths, M.	2,047,847	5,435,908	1.1	2,501,314	4,647,591	1.1

The proportions in which the several items entered into the total value of sawmill products were substantially the same at the two censuses. The general upward tendency in values was pronounced. Rough lumber increased 670,289 thousand feet, or 2 per cent, in quantity and \$62,798,161, or 16.8 per cent, in value between the two censuses. Shingles increased 2,599,857 thousand in quantity, or 21.8 per cent, and \$5,459,737 in value, or 29.4 per cent. In quantity hoops increased 106,020 thousand, or 24 per cent, and in value \$493,418, or 18.5 per cent. Staves increased

in quantity 806,314 thousand, or 48.6 per cent, and in value \$5,413,408, or 39.6 per cent. The increase in the quantity of headings was slight, being only 14,174 thousand sets, or 12.7 per cent, while in value the increase was \$3,097,378, or 71.4 per cent. Laths increased in quantity 146,533 thousand, or 5.9 per cent, and in value \$788,377, or 17 per cent.

In Table 15 are presented, by species, and states and territories, the quantity and value of rough lumber reported at the census of 1905. Custom or contract sawed lumber is included.

MANUFACTURES.

TABLE 15.—SAWMILLS—ROUGH LUMBER PRODUCTION,

STATE OR TERRITORY.	AGGREGATE.		ROUGH LUMBER.							
			Conifers.							
			Total.		Yellow pine.		White pine.		Hemlock.	
	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.
1 United States.....	34,135,130	\$435,708,084	27,353,312	\$319,835,740	12,812,307	\$129,306,749	5,332,704	\$79,594,717	3,268,787	\$38,938,154
2 Alabama.....	1,243,988	13,563,815	1,137,706	11,744,484	1,110,118	11,320,909				
3 Alaska.....	7,974	232,064	7,974	232,064						
4 Arizona.....	55,601	814,184	55,601	814,184	55,401	810,184				
5 Arkansas.....	1,680,536	18,816,594	1,120,423	10,676,379	1,056,163	9,723,380				
6 California.....	1,077,499	14,068,745	1,077,341	14,040,330	388,623	4,953,292			0	180
7 Colorado.....	141,014	1,489,267	135,314	1,405,147	104,318	1,059,280				
8 Connecticut.....	69,376	1,055,010	17,296	226,569			13,603	177,148	3,633	49,421
9 Delaware.....	30,416	331,441	25,152	232,988	25,027	230,675				
10 Florida.....	812,693	9,569,621	811,892	9,544,255	745,641	8,133,102				
11 Georgia.....	1,135,010	11,912,300	1,101,773	11,433,356	1,063,602	10,613,950			425	7,750
12 Idaho.....	211,447	2,053,725	211,447	2,053,725	131,127	1,280,709		13,155	119,706	
13 Illinois.....	211,545	3,607,643	69,945	1,048,334			59,248	980,350		
14 Indian Territory.....	30,980	400,922	10,995	118,794	10,995	118,794				
15 Indiana.....	593,853	12,053,000	3,120	68,130			2,730	60,000	240	4,320
16 Iowa.....	281,521	4,835,869	270,740	4,666,077			209,340	4,045,077	1,400	21,000
17 Kansas.....	2,120	30,615								
18 Kentucky.....	586,371	9,880,233	44,520	465,045	31,507	312,620	500	5,000	9,988	111,891
19 Louisiana.....	2,459,327	28,477,915	2,302,182	26,354,234	1,929,949	19,332,652				
20 Maine.....	863,869	12,331,401	833,153	11,770,739			245,309	3,538,120	97,612	1,138,010
21 Maryland.....	106,499	2,154,723	105,283	1,194,414	67,700	706,432	1,022	14,310	30,278	393,057
22 Massachusetts.....	202,407	4,820,094	215,315	2,962,547			154,749	1,870,158	18,900	250,957
23 Michigan.....	2,006,670	27,870,710	1,332,505	18,002,959			522,839	8,870,229	785,603	8,810,020
24 Minnesota.....	1,942,248	28,407,620	1,013,569	28,015,482			1,902,532	27,802,440		
25 Mississippi.....	1,727,391	20,526,754	1,414,092	15,493,013	1,358,015	14,540,997				
26 Missouri.....	553,940	6,797,244	234,218	2,312,692	215,318	2,058,073				
27 Montana.....	236,430	2,510,278	236,430	2,510,278	138,476	1,473,423				
28 Nebraska.....	1,802	25,721	100	1,700	100	1,700				
29 New Hampshire.....	491,591	6,415,340	453,977	5,881,481			307,331	3,810,483	36,074	422,855
30 New Jersey.....	44,658	788,074	20,647	280,401	11,381	141,780			785	10,161
31 New Mexico.....	81,113	1,080,569	81,113	1,080,569	62,236	805,430				
32 New York.....	581,976	11,884,266	437,855	7,148,201	15	300	80,947	1,520,095	175,506	2,450,378
33 North Carolina.....	1,318,411	13,100,800	1,095,389	10,644,185	1,068,742	10,336,649			8,758	83,294
34 Ohio.....	420,965	9,030,265	4,806	83,167			4,121	71,617	685	11,550
35 Oregon.....	987,107	9,080,350	982,802	9,014,533	135,807	1,376,519			10,275	81,507
36 Pennsylvania.....	1,738,972	24,574,607	1,302,048	17,172,324	4,571	68,619	123,720	2,244,050	1,169,712	14,756,750
37 Rhode Island.....	15,398	228,816	11,545	163,552			11,095	157,502	450	6,050
38 South Carolina.....	609,769	6,120,477	580,594	5,706,075	540,200	5,205,160			8	86
39 South Dakota.....	13,705	139,731	13,705	139,731	13,705	139,731				
40 Tennessee.....	775,885	13,010,549	109,004	1,270,870	86,074	964,432	5,734	61,890	12,324	146,040
41 Texas.....	1,400,473	13,330,680	1,383,275	12,900,723	1,383,030	12,995,475				
42 Utah.....	12,630	138,064	12,630	138,064	10,740	116,809				
43 Vermont.....	337,238	4,805,390	263,336	3,648,798			13,808	194,508	42,574	533,684
44 Virginia.....	949,797	10,149,168	773,170	7,619,813	793,870	7,508,432		66,050	233	3,147
45 Washington.....	2,485,023	24,065,206	2,485,028	23,995,006	232,534	2,223,221	4,000	61,250	11,960	114,766
46 West Virginia.....	855,889	13,226,516	290,510	3,748,120	33,995	451,454	9,130	159,716	161,660	1,862,992
47 Wisconsin.....	2,023,157	36,008,518	2,285,658	30,872,281			1,579,200	23,035,986	602,655	7,067,388
48 Wyoming.....	7,990	110,280	7,990	110,280	6,270	88,110				
49 All other states and territories ¹	13,939	245,566	11,289	140,316	11,289	140,316				

¹ Includes Nevada and Oklahoma.

TABLE 15.—SAWMILLS—ROUGH LUMBER PRODUCTION,

STATE OR TERRITORY.		ROUGH LUMBER—continued.													
		Hard woods.													
		Total.		Ash.		Birch.		Chestnut.		Cottonwood.		Elm.		Gum.	
M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.
1	United States.....	6,781,827	\$115,872,338	169,178	\$3,174,801	224,000	\$3,450,501	243,537	\$3,356,054	321,574	\$4,797,779	258,330	\$3,732,609	523,090	\$5,603,555
2	Alabama.....	106,282	1,819,331	2,641	61,310			400	4,800	300	6,000			13,078	161,268
3	Alaska.....														
4	Arizona.....														
5	Arkansas.....	560,113	8,140,215	14,586	273,263					106,481	1,557,186	15,876	134,782	136,326	1,340,625
6	California.....	158	28,415												
7	Colorado.....	6,600	84,120							4,900	58,020				
8	Connecticut.....	52,080	828,441	202	5,504	708	11,801	26,661	381,650						
9	Delaware.....	5,264	98,453											250	4,845
10	Florida.....	831	16,305	167	2,925									352	6,040
11	Georgia.....	34,137	470,444	426	9,100			1,150	11,850			35	315	425	3,572
12	Idaho.....														
13	Illinois.....	151,600	2,550,309	800	16,240	1,313	26,803			27,369	543,542	8,778	125,177	24,152	299,046
14	Indian Territory.....	19,985	282,128	475	9,650					7,180	102,285			615	6,470
15	Indiana.....	560,733	11,985,776	25,006	547,836	70	750	100	1,200	365	7,300	40,503	606,146	22,102	293,856
16	Iowa.....	10,781	169,792	115	2,300					1,713	27,863	2,516	36,768		
17	Kansas.....	2,120	30,615							550	6,030	745	9,580		
18	Kentucky.....	541,851	9,421,188	4,246	76,265	2	33	7,110	61,678	25	450	3,460	38,028	30,001	329,355
19	Louisiana.....	97,145	1,623,681	2,087	52,810					56,711	849,286			15,778	161,371
20	Maine.....	30,702	554,662	105	1,568	18,342	347,626								
21	Maryland.....	61,186	960,369	1	25	1,000	13,936	11,004	140,029					1,503	17,849
22	Massachusetts.....	47,152	1,857,547	2,281	38,230	1,963	26,463	13,693	203,763						
23	Michigan.....	674,165	9,867,711	34,925	651,503	68,727	904,154			530	7,060	78,255	1,082,083		
24	Minnesota.....	28,679	392,438	228	3,779	1,122	18,200			125	1,575	2,662	32,511		
25	Mississippi.....	313,329	5,033,741	15,499	270,539					66,874	976,265	1,030	13,343	63,107	663,388
26	Missouri.....	310,722	4,484,552	5,356	127,726					22,430	284,173	9,345	125,360	135,496	1,505,008
27	Montana.....														
28	Nebraska.....	1,762	24,021							1,762	24,021				
29	Nevada.....	37,614	533,865	796	15,990	5,522	74,800	4,055	58,138						
30	New Hampshire.....	23,411	501,613	3	54			8,079	130,543					75	1,560
31	New Jersey.....											50	1,400		
32	New Mexico.....														
33	New York.....	144,121	4,236,065	2,796	63,026	21,077	372,070	7,337	133,673			4,011	72,853		
34	North Carolina.....	223,022	2,465,615	3,833	49,321	60	935	14,950	151,477					6,944	68,469
35	Ohio.....	416,069	8,953,098	13,082	279,908	309	5,418	6,447	124,552	146	2,220	27,080	446,223	353	5,722
36	Oregon.....	4,305	71,817	1,840	30,027					200	1,400				
37	Pennsylvania.....	436,924	7,402,283	2,448	66,682	14,131	270,025	61,167	847,806			5,764	113,743		
38	Rhode Island.....	3,853	65,264												
39	South Carolina.....	26,265	419,892	4,213	71,027			1,713	20,594	4,000	66,216			3,300	31,017
40	South Dakota.....							422	7,562						
41	Tennessee.....	666,881	11,733,073	8,950	205,776			25,816	366,482	15,173	241,913	3,043	41,257	61,003	717,216
42	Texas.....	23,198	339,963	2,826	44,837					3,990	52,600			2,512	25,120
43	Utah.....														
44	Vermont.....	73,902	1,156,698	3,471	61,360	23,482	341,550	570	9,260			1,442	15,918		
45	Virginia.....	176,627	2,629,345	201	5,398			6,063	90,258					4,381	45,873
46	Washington.....	600	10,200	150	3,000										
47	West Virginia.....	556,379	9,478,399	2,729	53,732	783	10,320	46,200	508,640			255	3,650	527	5,044
48	Wisconsin.....	337,499	5,136,237	10,915	168,500	64,441	904,615					52,805	773,472		
49	Wyoming.....														
50	All other states and territories. ¹	1,750	96,250												

¹Includes Nevada and Oklahoma.

LUMBER AND TIMBER PRODUCTS.

BY SPECIES, AND BY STATES AND TERRITORIES: 1905—Continued.

ROUGH LUMBER—continued.															
Hard woods—Continued.															
Hickory.		Basswood.		Oak.		Poplar.		Walnut.		Maple.		Sycamore.		All other hard woods.	
M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.	M feet, B. M.	Value.
100,824	\$2,557,001	228,011	\$1,815,885	2,902,855	\$50,832,303	853,554	\$10,205,312	31,455	\$1,435,500	587,558	\$8,780,727	18,002	\$236,850	312,020	\$7,763,780
2,790	65,200	8	81	50,588	880,740	35,206	027,686	6	240			575	6,000		
15,358	410,506			203,040	4,314,402	5,341	04,281	66	2,700	408	7,430	2,012	24,700	10	250
				61	5,510									04	22,875
408	12,503	35	420	22,703	308,750	1,700	25,500	285	8,200	203	2,004			555	5,010
				4,974	02,808	40	800								
745	15,930			18,485	230,130	12,771	206,341							100	2,200
0,588	143,648	820	10,475	01,258	012,832	3,118	60,990	3,321	242,367	2,508	32,490	1,605	22,678	0,871	113,006
1,712	33,430			0,157	115,593			168	4,200			100	1,845	518	8,605
20,443	699,001	5,335	174,501	203,821	0,981,348	31,367	701,220	3,350	330,078	30,448	544,810	8,320	118,804	58,885	000,830
		245	4,158	5,803	02,383			80	2,870	223	3,050	20	400		
10,043	304,154	4,904	65,911	575	0,705			50	1,500		200		2,000		
1,120	10,028			205,770	4,845,036	153,057	2,750,042	5,004	107,477	2,529	20,175	680	7,515	18,778	624,208
				16,016	267,845	1,024	12,441							3,500	260,000
				7,170	127,254	085	14,300			2,508	30,615			402	8,202
58	1,570	3,000	56,000	40,540	660,450	1,029	16,746	32	1,584	3,010	43,120				
140	3,325	110	1,210	0,545	170,378	35	475	145	2,350	4,126	58,858			15,254	1,355,820
		60,605	1,047,880	32,191	025,709	300	3,300	240	14,800	333,715	4,827,806	50	1,060	04,401	738,116
		8,302	100,954	14,850	167,580	2,135	25,523			169	2,217				
				138,896	2,585,417	20,638	370,100			150	1,500	106	2,800	1,686	30,026
5,254	101,463	150	2,150	120,013	2,012,107	1,974	42,051	3,328	158,400	1,802	24,136	1,757	22,505	1,973	23,215
0,138	157,721														
		337	0,255	13,085	204,535	340	5,100			5,700	74,702			7,149	94,285
2,099	68,700	10	100	12,034	282,031	195	4,490			216	4,775			50	1,000
570	20,035	0,249	164,277	20,751	443,531	2,715	85,240	2,010	80,700	37,000	040,066			34,433	2,153,688
110	2,093	3,699	37,402	121,554	1,351,005	70,563	702,337	22	640	60	711			1,225	10,475
10,402	220,902	7,152	130,208	253,638	5,645,771	48,020	1,225,301	5,354	272,795	17,652	275,099	1,277	18,708	25,175	391,121
				705	15,065					1,500	10,325				
1,806	47,305	3,132	64,007	232,718	4,057,493	7,050	123,539			57,834	1,057,016	70	1,310	50,814	743,307
				2,140	38,070										
106	3,088	8	154	12,200	172,420	3,950	62,215							100	4,000
4,952	108,813	3,401	50,911	318,729	5,591,502	220,949	4,342,012	880	31,357	801	0,477	572	7,235	1,613	10,722
50	700			13,740	214,956			30	1,000					50	700
		4,165	68,183	3,471	57,405	547	8,752			28,030	483,599			7,824	110,475
110	2,250	2,005	41,514	118,079	1,549,495	44,715	780,487	77	2,702	16	188			230	2,200
										160	3,000			300	4,500
735	10,090	4,877	88,215	304,104	4,756,444	183,432	3,705,247	128	4,027	0,482	87,757			0,127	80,215
		105,222	1,695,793	60,102	1,008,304			15	272	42,276	409,252			1,573	20,020
								1,750	96,250						

Rough lumber.—The discrepancy between the quantity of saw logs produced by logging camps, namely, 27,980,768 thousand feet, board measure, as shown in Table 6, and the rough lumber product of sawmills, namely, 34,135,139 thousand feet, board measure, as given in Table 15, is accounted for as follows:

(1) The rough lumber product includes lumber sawed for customers. The timber from which the latter was manufactured was, as a rule, cut in small quantities by its owners, and the logging operations incident to its handling were seldom of sufficient magnitude to come within the scope of the census of 1905. Likewise, the logs put in by small contractors and those cut for sale by farmers were not in every instance covered by a schedule.

(2) The difference between the scaling of the logs in camp and their yield in lumber, the extent of which varies among the different species of timber and in the different sections of the country; on the whole, however, it is well understood that the actual cut at the mills exceeds the scale of the logs in the woods.

Table 16 shows, for 1900 and 1905, the quantity of the chief species of lumber sawed, with the proportion which the quantity of each formed of the total.

TABLE 16.—Sawed lumber—chief species, by quantity, with proportion of the total quantity sawed: 1905 and 1900.

SPECIES.	QUANTITY (M FEET B. M.).		PER CENT OF TOTAL.	
	1905	1900	1905	1900
Aggregate.....	34,135,139	33,404,850	100.0	100.0
Conifers.....	27,353,312	25,450,702	80.1	76.1
Yellow pine.....	12,812,307	10,231,140	37.5	30.6
White pine ¹	5,332,704	7,005,639	15.6	22.7
Hemlock.....	3,268,787	3,285,045	9.6	9.8
Douglas fir.....	2,028,409	1,725,968	5.9	5.2
Spruce.....	1,303,886	1,402,333	3.8	4.2
All other conifers.....	1,707,219	1,192,577	5.0	3.6
Hard woods.....	6,781,827	8,014,148	19.9	23.9
Oak.....	2,902,855	3,848,363	8.5	11.5
Poplar.....	853,554	1,042,380	2.5	3.1
All other hard woods.....	3,025,418	3,123,405	8.9	9.3

¹ Includes Norway pine.

From Table 16 it will be seen that yellow pine, the timber cut in largest quantity as reported at both censuses, shows a substantial increase; while white pine,

which was second in importance, shows a large decrease. The cut of hemlock at the two censuses was practically the same. A large increase is shown in the quantity of Douglas fir, which is accounted for by the fact that it forms the bulk of the cut in Washington and Oregon, new and active states in the lumber industry. Aside from spruce, the cut of the other conifers was relatively small at both censuses, and the increases and decreases were unimportant except in the case of cypress, which increased from 492,761 to 749,592 thousand feet, or 52.1 per cent. Among the hard woods, oak was the principal species at both censuses, and poplar was next in importance. Decreases are shown in the quantity of these two species, the decrease for oak being marked. Among the remaining hard woods, manufactured in smaller quantities than oak and poplar at both censuses, maple, ash, cottonwood, elm, basswood, black walnut, and sycamore decreased, while birch, chestnut, hickory, and gum increased. The increase in gum was notably large, from 268,251 thousand feet to 523,990, or 95.3 per cent.

The increase in the average value of all lumber was from \$11.14 per thousand feet in 1900 to \$12.76 at the census of 1905, or 14.5 per cent. The advance extended to all species of both conifers and hard woods, and in the case of several of them was large. Among the conifers yellow pine advanced from \$8.59 per thousand feet to \$10.10; white pine, from \$12.72 to \$14.92; hemlock, from \$9.97 to \$11.91; Douglas fir, from \$8.67 to \$9.51; spruce, from \$11.29 to \$14.03; and cypress, from \$13.34 to \$17.50.

The hard woods show without exception material advances in value, the increase in the average for the group being from \$13.84 per thousand feet to \$17.09. Oak increased from \$14.02 per thousand feet to \$17.51; poplar, from \$14.22 to \$18.99; maple, from \$11.83 to \$14.94; cottonwood, from \$10.35 to \$14.92; elm, from \$11.57 to \$14.45; and gum, from \$9.75 to \$10.87.

Shingles.—The sawmill product next in importance to rough lumber, as shown in Table 14, was shingles. In Table 17 are shown, by states and territories, the quantity and value of shingles produced at the census of 1905. Custom or contract sawed shingles are included.

LUMBER AND TIMBER PRODUCTS.

611

TABLE 17.—SAWMILLS—PRODUCTION OF SHINGLES, BY SPECIES, AND BY STATES AND TERRITORIES: 1905.

STATE OR TERRITORY.	TOTAL.		CEDAR.		CYPRESS.		YELLOW PINE.		REDWOOD.		WHITE PINE.		ALL OTHER.	
	Number of thousands.	Value.	Number of thousands.	Value.	Number of thousands.	Value.	Number of thousands.	Value.	Number of thousands.	Value.	Number of thousands.	Value.	Number of thousands.	Value.
United States..	14,547,477	\$24,000,010	10,428,725	\$16,288,222	1,494,038	\$3,359,020	704,382	\$1,420,832	727,076	\$851,026	711,078	\$1,231,572	421,578	\$857,738
Alabama.....	112,093	207,101			38,114	79,088	73,970	127,413						
Alaska.....	928	6,477	426	1,477									500	5,000
Arkansas.....	269,706	547,301			257,016	519,881	11,700	27,420						
California.....	737,589	874,285			3,183	5,731	4,915	12,048	727,076	851,626			2,415	4,880
Colorado.....	950	2,875					950	2,875						
Connecticut.....	6,225	17,843	1,750	0,000							754	2,150	3,721	9,693
Delaware.....	350	2,200			350	2,200								
Florida.....	188,652	451,884			152,624	380,752	36,028	62,132						
Georgia.....	304,378	672,572			13,663	37,252	350,590	636,063					125	317
Idaho.....	41,072	99,044	41,272	64,304			700	1,650						
Illinois.....	12,408	28,303			1,375	3,188					10,788	24,655	245	550
Indian Territory.....	300	750					300	750						
Indiana.....	3,900	8,175									50	150	3,910	8,025
Iowa.....	35,404	98,347									35,404	68,347		
Kentucky.....	43,775	88,655			11,000	24,250	10,280	19,545					22,495	44,800
Louisiana.....	801,806	1,033,958			770,816	1,568,075	31,050	65,883						
Maine.....	482,414	983,775	400,618	847,125							21,916	42,000	50,880	93,741
Maryland.....	6,677	29,701			1,275	8,025	1,557	7,780					3,845	13,950
Massachusetts.....	10,086	29,635	1,870	5,417							6,020	15,037	2,187	6,181
Michigan.....	1,347,163	2,490,100	1,200,049	2,200,509							95,057	202,472	45,157	87,065
Minnesota.....	318,783	477,251	85,162	69,314							283,021	407,937		
Mississippi.....	50,654	112,301			20,983	50,171	29,671	62,130						
Missouri.....	74,036	162,728			65,615	137,366					6,571	12,287	1,850	3,075
Montana.....	4,580	7,827	4,080	6,827			500	1,000						
New Hampshire.....	17,327	37,833	902	2,720							4,103	9,514	12,202	25,599
New Jersey.....	31,411	145,037	30,377	140,997			999	4,400					35	180
New Mexico.....	950	1,900					950	1,900						
New York.....	55,581	129,361	11,780	31,836							13,271	31,107	30,530	63,419
North Carolina.....	192,239	595,834	12,005	59,873	101,905	353,422	77,481	153,136					848	2,403
Ohio.....	3,820	11,340	2,000	7,000							1,000	2,000	820	2,840
Oregon.....	117,511	174,883	99,233	145,991			1,810	4,080					10,468	24,812
Pennsylvania.....	115,211	280,794									8,459	24,530	100,752	255,264
Rhode Island.....	620	1,838	475	1,463							125	315	20	60
South Carolina.....	81,108	204,616	1,200	4,800	28,930	101,434	50,598	97,761					380	621
South Dakota.....	200	610					200	610						
Tennessee.....	35,121	61,415	687	3,135	250	687	13,850	24,725					20,334	32,868
Texas.....	75,926	133,428			17,640	40,099	58,286	87,329						
Utah.....	550	1,180					550	1,180						
Vermont.....	10,415	34,977	3,580	8,595							2,650	5,262	10,185	21,120
Virginia.....	30,388	137,572	17,000	130,000	8,399	32,399	2,540	9,825			75	188	2,305	9,160
Washington.....	8,357,457	12,203,631	8,330,407	12,176,376			490	1,255					17,500	26,000
West Virginia.....	24,630	62,060	50	200			3,764	7,216					13,720	29,427
Wisconsin.....	474,928	812,511	200,667	371,114							7,096	25,823	61,443	84,538
Wyoming.....	1,071	3,240					485	1,650					586	1,590

Conifers supplied the bulk of the timber used as shingle material, and of these the various cedar species furnished by far the larger part at both censuses. At the census of 1900 cedar shingles formed 53.1 per cent of the total output, while at the census of 1905 they constituted 71.7 per cent. Cypress was the species next in importance to cedar at the census of 1905, the production of cypress shingles showing an increase over 1900 of 247,422 thousand, or 19.8 per cent. White pine shingles decreased 1,107,248 thousand, or 60.9 per cent. The cut of redwood shingles increased 97,821 thousand, or 15.5 per cent. The production of hemlock shingles decreased 147,547 thousand, or 40.2 per cent; of spruce shingles, 127,477 thousand, or 61.4 per cent; and of Douglas fir shingles, 191,559 thousand, or 84.8 per cent. Of the remaining species, chiefly hard woods, the production decreased 252,702 thousand, or 22.9 per cent.

The average value per thousand of all shingles advanced from \$1.55 in 1900 to \$1.65 for 1905, an increase of 10 cents, or 6.5 per cent. The increases for the principal species between the two censuses were as follows: Cedar, from \$1.49 to \$1.56; cypress, from \$1.83 to

\$2.25; redwood, from \$1.05 to \$1.17; yellow pine, from \$1.60 to \$1.86; white pine, from \$1.58 to \$1.73; hemlock, from \$1.98 to \$2.04; and spruce, from \$1.80 to \$2.02.

Among the states, Washington was preeminent in the manufacture of shingles at the census of 1905. Although constituting a part of the sawed product of nearly all the states, shingles were produced in many of them chiefly as a by-product of lumber, slabs being utilized as material. In Washington, however, the production of shingles is an important industry in itself, the number of plants engaged exclusively in the manufacture of this product forming a considerable percentage of the total number of sawmills in the state.

The growth of the shingle industry in Washington has been rapid, having developed to large proportions since 1890. At that census the production in the state constituted only 5.9 per cent of the total output in the United States, while ten years later it had increased to 36.3 per cent, and at the census of 1905 reached the enormous proportion of 57.4 per cent of the total production for the United States.

Cooperage materials.—The production of cooperage materials is an important industry in certain states whose timber is especially adapted to the purpose. In

Table 18 are shown the kind, quantity, and value of cooperage materials manufactured in the principal states engaged in their production at the census of 1905.

TABLE 18.—SAWMILLS—PRODUCTION OF COOPERAGE MATERIALS: 1905.

STATE.	STAVES.		HEADINGS.		HOOPS.	
	Number of thousands.	Value.	Number of sets.	Value.	Number of thousands.	Value.
United States.....	2,404,689	\$10,082,041	125,353,528	\$7,430,250	546,879	\$3,150,078
Arkansas.....	257,730	2,772,064	10,928,506	1,100,701	22,876	161,676
Indiana.....	158,620	1,707,110	5,581,957	207,707	52,004	364,215
Kentucky.....	101,367	1,440,873	5,365,020	242,600	22,626	126,104
Michigan.....	279,138	1,745,786	20,760,572	850,280	148,720	1,023,451
Missouri.....	107,271	1,362,111	15,120,307	969,742	38,907	227,357
Ohio.....	248,370	1,058,508	4,077,888	174,364	204,822	837,005
Pennsylvania.....	256,759	1,354,000	9,275,464	475,026	1,625	12,375
Tennessee.....	219,466	2,786,108	5,510,317	783,084	23,079	167,822
All other states.....	746,032	5,254,401	48,721,317	2,436,797	32,220	249,878

While all the hard wood states were heavy producers of staves, headings, and hoops at the census of 1905, Arkansas led in the value of these products and Tennessee was second. The bulk of the high grade or tight cooperage material manufactured in the United States was produced in Kentucky, Tennessee, and Arkansas, and was made chiefly from the excellent white oak timber which is found in these states. The average value of staves, the principal item of cooperage materials, was—for Kentucky, \$14.21 per thousand; for Tennessee, \$12.69; and for Arkansas, \$10.76; while the average for the United States was only \$7.74. The large production of relatively low value reported for Michigan was due mainly to the heavy salt production in that state, for which only an inferior grade of staves is required.

Veneers.—Of the remaining products of which logs or bolts are the materials, the most important is veneers. The manufacture of this product is fast becoming an important branch of the lumber industry. Unfortunately it is not practicable to present the statistics of the veneer industry in its entirety, for the reason that much of the output was manufactured in establishments which consumed it as material in the manufacture of furniture, musical instruments, sewing machine cases, office fixtures, baskets, packing boxes, crates, etc. The proportion of the total which was manufactured and consumed in establishments of this character, though doubtless large, can not be satisfactorily estimated from the data available. The magnitude of the production reported at the census

of 1905 and the rapid development of this branch of the lumber industry during the last few years make it desirable, however, that the statistics be presented, even though they are incomplete, as a basis for future comparisons.

The production at the census of 1905, or that portion of it which reached the market as veneers, amounted to 998,538 thousand square feet, valued at \$6,095,207. One hundred and forty-nine establishments in 26 states contributed to this total. Forty-two of these were engaged exclusively and 46 chiefly or largely in the manufacture.

In Table 19 are shown the statistics of these 88 establishments. In order that the figures might relate exclusively to the manufacture of veneers, it was necessary to make an estimated apportionment of the capital, employees, salaries and wages, cost of materials, miscellaneous expenses, and power of the 46 establishments which did not manufacture veneers exclusively and to eliminate the data pertaining to their other products. In making these segregations the ratios obtaining between the several items on the schedules of the 42 plants whose entire product consisted of veneers were used as a guide, so that the statistics are believed to represent the conditions in the industry with substantial exactness.

In the remaining 61 establishments veneers were a minor product, the bulk of the output of these plants consisting of rough and dressed lumber, shingles, staves, headings, etc.

LUMBER AND TIMBER PRODUCTS.

613

TABLE 19.—SAWMILLS—PRODUCTION OF VENEERS, BY STATES: 1905.

(Includes the returns of 42 establishments manufacturing veneers exclusively, and the veneer output of 46 others, with estimates of the capital, employees, salaries and wages, materials, and miscellaneous expenses involved in its production.)

STATE.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	PRODUCTS.		Power (number horse-power).
			Number.	Salaries.	Average number.	Wages.			Quantity (M square feet).	Value.	
Total.....	88	\$4,730,422	175	\$193,356	3,091	\$1,226,363	\$366,642	\$2,240,640	713,403	\$4,880,205	9,471
Illinois.....	5	880,210	21	26,320	415	159,635	65,950	272,000	26,749	577,450	1,037
Indiana.....	17	746,449	20	40,474	473	211,958	87,436	458,256	89,143	1,000,661	1,664
Maine.....	4	118,854	4	4,420	91	37,340	5,320	39,624	28,868	110,156	163
Michigan.....	8	771,332	26	18,804	420	181,972	53,338	329,870	141,235	701,008	1,872
Mississippi.....	4	100,700	3	3,000	113	41,182	10,650	23,350	11,625	98,000	195
Missouri.....	4	250,000	12	12,600	170	71,900	21,600	108,000	26,749	288,108	540
New York.....	9	326,880	8	7,560	128	64,600	27,280	313,885	66,035	458,820	733
North Carolina.....	7	197,204	16	12,440	242	54,347	21,332	92,451	17,900	197,680	502
Ohio.....	5	182,500	10	14,150	60	25,000	19,232	82,250	11,401	179,016	285
Wisconsin.....	9	621,204	23	24,060	505	222,150	21,001	205,684	91,362	607,635	950
Other states ¹	16	631,999	23	29,528	475	156,675	32,473	317,071	141,628	661,161	1,535

¹ Includes establishments distributed as follows: Arkansas, 2; Georgia, 2; Kentucky, 1; Maryland, 1; Massachusetts, 2; Pennsylvania, 1; Tennessee, 2; Vermont, 2; Virginia, 2; West Virginia, 1.

As indicated in Table 19, the industry is confined in the main to the states lying within or near the hard wood belt. This results from the fact that the materials used were almost entirely the hard woods, the entire production involving the use of more than twenty species of these woods, though only fourteen contributed to the total shown in Table 19.

In Table 20 is shown the production of these establishments according to the species of wood used as material.

TABLE 20.—Sawmills—quantity and value of veneers, by species: 1905.

SPECIES.	Quantity (M square feet).	Value.
Total.....	713,403	\$4,880,205
Oak.....	158,747	1,456,427
Maple.....	136,379	653,395
Gum.....	115,124	522,632
Mahogany.....	45,413	390,511
Poplar.....	52,525	308,230
Walnut.....	27,000	397,000
Basswood.....	42,493	329,800
Birch.....	57,372	198,178
Elm.....	34,041	143,996
All other ¹	44,369	381,226

¹ Includes cottonwood, pine, rosewood, red cedar, and cherry.

Veneers were formerly manufactured from the cabinet woods exclusively, and their use was confined to the covering of inferior woods. While this class still forms an important part of the total product of the industry, a large and rapidly increasing proportion is utilized as material in the manufacture of built-up lumber, packing boxes, crates, baskets, etc., many of the less valuable hard woods and a few of the conifers being used for these purposes.

Oak and maple were the woods most extensively used in the production designed for use in the manufacture of furniture and interior finish. Of the total

quantity of oak veneers, Indiana contributed 31.4 per cent; Michigan, 26.5 per cent; Wisconsin, 12.8 per cent; and Tennessee, 6.9 per cent; while of maple, Michigan contributed 55.2 per cent; New York, 21 per cent; and Wisconsin, 8.1 per cent. Walnut veneers were reported from Illinois and Indiana only, these states furnishing 59.3 per cent and 40.7 per cent, respectively, of the total production. Rosewood and mahogany veneers were manufactured from imported logs, and of the total output New York contributed 71.6 per cent and Massachusetts 12.9 per cent. In the production from gum Illinois was first, with 48.6 per cent of the total, followed by Arkansas and North Carolina, with 29.2 per cent and 5.2 per cent, respectively. North Carolina furnished 22.6 per cent of the poplar veneers reported; Indiana, 17.1 per cent; and West Virginia, 15.2 per cent. Nearly all of the production from basswood and birch was reported from Wisconsin and Maine, these states contributing, respectively, 48.7 per cent and 30.3 per cent of basswood and 68.6 per cent and 27.9 per cent, respectively, of birch. Of the veneers manufactured from elm, 58.8 per cent was reported from Michigan, 17 per cent from Pennsylvania, and 16.9 per cent from Illinois. The entire production from cottonwood, pine, red cedar, and cherry was reported from Missouri, Georgia, Massachusetts, and Illinois, respectively.

PLANING MILLS.

In the planing mill industry rough lumber forms the principal material, with hardware, glass, glue, etc., as other materials; while chief among its products are finished lumber, such as ceiling, flooring, etc., and sash, doors, blinds, and interior finish.

In Table 21 are presented the statistics of planing mills, by states and territories, at the census of 1905.

MANUFACTURES.

TABLE 21.—PLANING MILLS—SUMMARY, BY STATES AND TERRITORIES: 1905.

STATE OR TERRITORY.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	Value of products.
			Number.	Salaries.	Average number.	Wages.			
United States.....	0,486	\$222,204,184	9,745	\$0,900,230	132,030	\$66,434,440	\$13,654,313	\$273,270,381	\$404,650,282
Alabama.....	254	3,052,834	113	112,380	2,540	889,327	98,195	5,635,401	7,050,545
Alaska.....	3	14,434	.....	.....	3	3,520	.....	29,265	35,204
Arizona.....	0	209,169	2	3,300	48	38,135	2,002	107,788	270,283
Arkansas.....	200	5,061,983	153	157,902	3,804	1,670,867	172,744	9,883,343	13,811,942
California.....	363	11,064,260	431	500,207	5,628	4,074,380	561,523	11,018,054	18,878,481
Colorado.....	44	564,809	25	28,520	436	309,445	21,115	645,835	1,168,256
Connecticut.....	63	2,480,714	140	130,116	958	592,540	185,146	1,951,278	3,108,074
Delaware.....	28	253,039	9	3,415	210	68,178	8,082	225,917	30,118
District of Columbia.....	6	273,100	18	17,390	271	158,008	19,063	144,300	392,132
Florida.....	118	2,008,477	84	90,520	1,400	583,000	105,001	3,052,741	3,655,049
Georgia.....	240	4,045,551	351	349,040	4,437	1,404,598	330,825	5,810,138	9,305,185
Idaho.....	68	1,120,724	9	12,830	332	211,910	48,860	1,175,400	1,798,498
Illinois.....	299	11,753,030	761	850,379	7,544	4,196,950	1,000,964	12,249,029	20,569,358
Indian Territory.....	12	120,196	8	8,902	64	47,484	10,144	144,514	242,096
Indiana.....	291	4,663,744	301	292,088	2,516	1,244,397	334,886	4,264,354	6,888,293
Iowa.....	93	6,120,955	270	305,625	3,233	1,593,302	468,712	6,352,248	8,931,073
Kansas.....	31	914,367	57	65,487	682	294,445	93,451	868,714	1,508,378
Kentucky.....	180	3,834,844	194	187,475	2,107	808,233	245,040	3,512,780	5,025,942
Louisiana.....	208	6,019,163	120	135,300	4,864	2,244,103	150,510	15,641,408	18,074,263
Maine.....	353	3,327,850	104	77,909	1,549	740,579	234,804	3,318,311	5,042,140
Maryland.....	112	2,597,000	176	144,297	1,505	622,300	214,020	2,401,828	3,817,933
Massachusetts.....	275	5,012,459	309	298,292	3,124	1,047,905	444,407	4,821,160	8,460,136
Michigan.....	380	10,491,826	470	475,408	6,241	2,850,770	682,724	13,468,249	19,292,894
Minnesota.....	192	7,050,814	237	260,281	5,360	2,828,658	423,143	16,797,132	21,497,480
Mississippi.....	188	3,001,770	120	114,128	2,800	1,110,561	131,954	6,901,206	8,614,868
Missouri.....	142	4,970,851	280	309,970	2,912	1,612,898	325,250	4,468,538	7,370,238
Montana.....	27	833,461	11	10,500	243	184,592	13,628	1,227,882	1,618,979
Nebraska.....	23	353,215	32	35,662	345	228,853	25,226	258,283	625,352
Nevada.....	3	190,090	7	9,740	55	41,432	10,344	139,050	225,000
New Hampshire.....	137	1,257,774	42	37,187	048	440,128	65,508	1,487,242	2,278,795
New Jersey.....	129	4,766,179	242	265,101	2,288	1,308,763	280,067	3,726,655	6,211,827
New Mexico.....	13	144,880	2	525	98	50,144	3,101	285,162	380,083
New York.....	874	32,300,900	1,342	1,527,634	15,045	8,333,055	2,812,400	24,581,605	43,502,688
North Carolina.....	370	3,174,422	163	116,001	3,622	1,099,477	130,076	5,259,073	7,914,068
Ohio.....	558	12,410,096	666	655,413	6,116	3,310,892	806,131	12,031,444	19,120,971
Oklahoma.....	9	211,949	14	15,920	85	50,522	26,038	92,004	190,566
Oregon.....	271	3,293,820	85	112,000	2,088	1,355,277	109,311	5,059,798	8,601,546
Pennsylvania.....	757	20,757,401	919	837,276	9,650	5,214,735	1,021,301	14,679,450	24,834,094
Rhode Island.....	19	569,158	37	30,847	301	187,880	62,118	527,531	916,738
South Carolina.....	161	1,618,970	91	66,130	1,735	502,253	61,367	2,628,482	3,577,905
South Dakota ¹	16	148,631	9	7,363	77	48,028	9,960	124,829	234,034
Tennessee.....	215	4,237,009	178	173,591	2,634	1,049,840	143,720	4,848,521	7,299,451
Texas.....	246	4,450,723	89	101,723	3,659	1,087,915	127,018	11,421,905	13,661,919
Utah.....	19	163,057	15	13,990	64	58,331	9,067	88,213	207,576
Vermont.....	316	3,324,245	69	73,245	1,772	722,278	150,934	4,565,545	6,005,157
Virginia.....	185	3,731,364	188	156,101	2,020	1,081,310	208,611	4,638,424	7,204,486
Washington.....	432	7,999,385	221	260,158	4,146	2,555,656	315,766	14,888,504	19,292,886
West Virginia.....	180	2,851,378	126	108,939	1,421	713,998	125,536	3,658,019	5,092,151
Wisconsin.....	353	11,958,884	443	431,614	8,169	3,945,015	691,188	21,133,343	28,389,692
Wyoming.....	14	48,387	.....	.....	13	8,310	1,686	43,658	65,921

¹ Includes 2 establishments in North Dakota.

The statistics shown in Table 21 are for both planing mills operated in connection with sawmills and independent planing mills. The location of the former generally is, like that of sawmills, remote from populous centers, and their product consists chiefly of finished lumber; while the latter is essentially an urban industry, and the character of its product is more varied. Of the total number of establishments, 5,009, or 52.8 per cent, were of the independent type. These mills reported capital to the amount of \$177,145,734, or 79.7 per cent, of the total amount invested in the industry; employed 97,674, or 74 per cent, of the number of wage-earners; paid out \$50,713,607, or 76.3 per cent, of the wages; used \$143,137,662 worth, or 52.4 per cent, of the materials; and turned out a product valued at \$247,441,956, which was 61.1 per cent of the total for the industry.

In number of establishments, cost of materials, and value of products the industry appears to be about evenly divided between the two classes of mills; while by far the larger part of the totals of capital, average number of wage-earners, and wages paid were contributed by the independent mills. This lack of uniformity in the statistics of the two branches of the industry accords with the dissimilarity in the character of their product and the conditions surrounding its manufacture. Aside from the item of machinery, the amount of capital invested in dependent mills is relatively small, while for independent mills, located as they are in towns and cities, the initial cost of the plant site, buildings, and dry kilns is much greater. The product of dependent planing mills consists mainly of dressed lumber, in the production of which manual labor is a relatively small factor, being confined for the

most part to tending the machines, supplying them with materials, and removing the product; whereas in the case of independent mills, the product of which is characterized by greater diversity, a much smaller proportion of the operations can be performed by machinery and the factor of manual labor is accordingly increased.

The average planing mill in the United States at the census of 1905 was substantially larger than in 1900. It reported capital of \$23,434, employed 14 wage-earners, paid out \$7,003 in wages, expended for materials \$28,808, and turned out a product valued at \$42,658; while at the former census the averages

were—for capital, \$14,763; number of wage-earners, 10; amount of wages paid, \$4,497; cost of materials, \$17,839; and value of products, \$27,047. This increase in the capacity of the average plant in the industry was brought about mainly by the increase in the products of the average dependent planing mill—from \$17,940 in 1900 to \$35,115 at the census of 1905—with corresponding increases in the amount of capital invested, average number of wage-earners employed, wages paid, and cost of materials used.

In Table 22 is shown the rank of the principal states in the production of planing mill products at the censuses of 1900 and 1905.

TABLE 22.—PLANING MILLS—RANK OF LEADING STATES IN VALUE OF PRODUCTS, CAPITAL, NUMBER OF ESTABLISHMENTS, NUMBER OF WAGE-EARNERS, AND WAGES: 1905 AND 1900.

STATE.	VALUE OF PRODUCTS.		CAPITAL.		NUMBER OF ESTABLISHMENTS.		WAGE-EARNERS.			
							Average number.		Wages.	
	1905	1900	1905	1900	1905	1900	1905	1900	1905	1900
New York.....	1	1	1	1	1	1	1	1	1	1
Wisconsin.....	2	2	4	4	8	7	3	2	5	3
Pennsylvania.....	3	3	2	2	2	2	2	3	2	2
Minnesota.....	4	5	9	13	21	24	8	7	8	7
Illinois.....	5	7	5	6	11	12	4	5	3	4
Washington.....	6	14	8	19	4	19	11	21	9	16
Michigan.....	7	4	7	3	5	4	5	4	7	5
Ohio.....	8	6	3	5	3	3	6	6	6	6
Louisiana.....	9	16	11	22	19	30	9	14	10	17
California.....	10	9	6	7	7	13	7	11	4	8
Arkansas.....	11	10	13	15	20	21	12	26	13	13
Texas.....	12	12	18	25	17	15	13	16	12	15
Georgia.....	13	17	15	17	16	18	10	10	16	18
Iowa.....	14	8	10	9	32	32	15	8	15	10
Mississippi.....	15	21	27	28	22	25	19	17	20	22
Oregon.....	16	26	24	20	14	20	25	31	17	28
Massachusetts.....	17	11	12	8	13	10	16	13	11	9
North Carolina.....	18	18	25	21	6	5	14	9	21	19
Missouri.....	19	15	14	12	27	27	18	12	14	11
Tennessee.....	20	20	19	18	18	11	20	19	23	20
Virginia.....	21	22	21	20	23	16	17	18	22	21
Alabama.....	22	20	26	32	15	14	21	23	24	30
Indiana.....	23	13	17	11	12	6	22	15	10	14
New Jersey.....	24	10	16	10	29	28	23	20	18	12
Vermont.....	25	23	23	16	10	8	26	24	27	27
Kentucky.....	26	25	20	23	24	22	24	22	25	23
West Virginia.....	27	30	28	30	24	23	31	32	28	33
Maine.....	28	27	22	24	8	9	28	27	26	25

At both censuses New York was first under all the headings of inquiry. The value of its output was at the later census 53.2 per cent greater than that of the state next in rank, and it constituted nearly 11 per cent of the total planing mill product of the United States. The high rank of New York in the planing mill industry is due almost entirely to the magnitude of the operations of its independent planing mills, the value of product of which formed nearly one-sixth of the total for the United States for this class of planing mills and 93.7 per cent for all planing mill products manufactured in the state. Wisconsin, Pennsylvania, and Minnesota show relatively little change in rank. The low rank of Minnesota in number of establishments, compared with its rank in respect to the other items, indicates that the average mill in this state is exceptionally large. In fact the value of product per aver-

age establishment in Minnesota was far above that of any other state and nearly three times the average for the United States. The position of Illinois is noteworthy. Its prominence in the planing mill industry is far above its rank in the lumber industry as a whole, and, as in the case of New York, this is due to the large volume of its independent planing mill operations. While Washington advanced markedly in the planing mill industry, its relatively low rank, as compared with its standing in the lumber industry as a whole, is due to the fact that its planing mill product was confined largely to the output of its dependent mills, which contributed 73.2 per cent of the total for that state. The prominence of Ohio and Massachusetts, like that of New York and Illinois, was due chiefly to the large production of their independent mills.

HISTORICAL AND DESCRIPTIVE.¹

The exploitation of the country's forest resources was one of the earliest occupations to engage the attention of the colonists. In fact, it may be said that the first settler in the New World was also the first American lumberman. The ax preceded the plow. With it the pioneer fashioned the first rough lumber for his cabin and barn and fenced the clearing in which to plant his crops. In the manufacture of these first lumber products the ax was at times supplemented by saws operated by handpower, and as the pioneers increased in number to the point of forming a settlement a division in the process of lumber making occurred. The sawmill appeared and the logging and sawing branches of the lumber industry were differentiated. Authorities differ as to the date and location of the first sawmill in the territory now comprised within the limits of the United States. Some fix it in the extreme southwestern portion of Maine in the year 1623,² while others hold that during this same year wind-driven sawmills were operated by the Dutch at New Amsterdam, and that even prior to this date sawmills were built at Fort George on the Hudson river. However this may be, the permanent establishment of the industry in New England preceded that in New York.

The typical sawmill of colonial times was small, its motive power was water, and like the gristmill, in conjunction with which it was often operated, it was generally to be found in early settlements. It was usually a custom mill, the log owner paying toll to the miller for the sawing and commonly using his lumber product as a medium of exchange between himself and the storekeeper. The equipment of the sawmills of this period ranged in cost from \$60 to \$500, and the product, because of its unwieldy character and the limited transportation facilities, seldom found a market beyond the immediate neighborhood of its manufacture. As the population increased and spread into new territory,

¹ Among others the following authorities were consulted in the preparation of this chapter: Engineering, Vol. VII; "One Hundred Years of American Commerce," by Chauncey M. Depew; "History of the Lumber Industry of America," by J. E. Defebaugh; "A History of the Lumber Industry in the State of New York," by William F. Fox; "North American Sylva," by F. A. Michaux, Vols. I, II, and III; World's Work, Vol. VII; Outlook, Vol. LXXVI; Century, Vol. LXVI; Cosmopolitan, Vol. XXXVII; and International Encyclopedia, Vols. XI and XV.

² J. E. Defebaugh, "History of the Lumber Industry of America."

the number of sawmills multiplied, since the lack of adequate means of transportation necessitated the location of a sawmill in practically every community.

The manufacture of lumber on this small scale was characteristic of the industry until near the middle of the nineteenth century. The census of 1840 disclosed 31,650 sawmills in operation in the United States, with an average product of only \$409. With the advent of the railroad era, however, the merchant sawmill, which, rafting its product to nearby markets or to the mouths of rivers for export, had already begun to work a change in the industry, became a transforming factor of increasing importance. Furthermore, as the supply of timber was cut away from the streams, steam as a motive power began to supplant water, and this, together with the introduction of improved equipment, rendered the industry practically independent of place or season. These changing conditions tended naturally toward a concentration into larger plants, where economies in the manufacturing process could be applied. At the census of 1850, while the product of the industry had more than quadrupled in value, only 18,769 sawmills were enumerated. The average product per establishment had thus increased during the decade from \$409 to \$3,219, or almost sevenfold. Since 1850 the lumber industry has continued to grow away from the custom basis on which it had its inception. At the census of 1900 the mills of this type contributed only 2 per cent of the total lumber production of the United States.

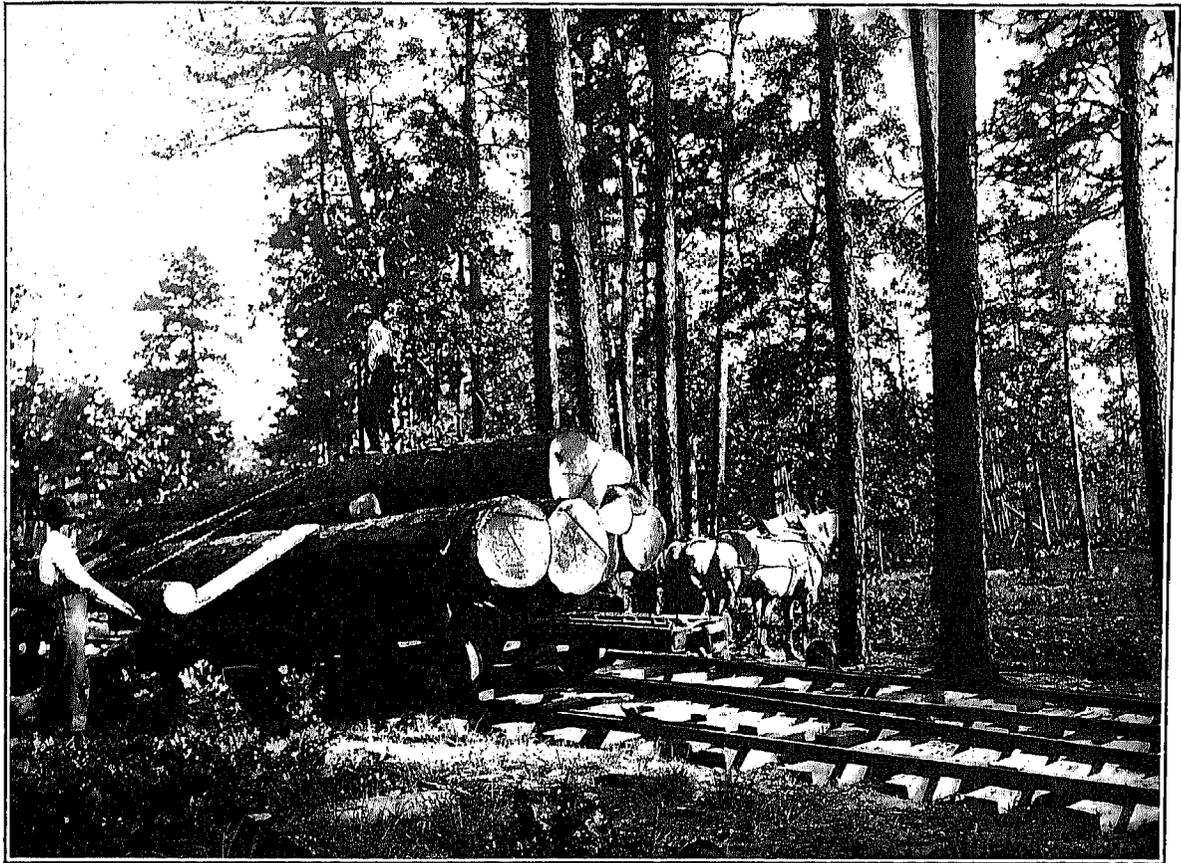
The successive stages in the growth of the lumber industry since it reached a plane of commercial importance roughly accord geographically and chronologically with the expansion and westward trend of the general development of the country. Periods of regional rise and decline in lumber manufacture during the past fifty-five years are traced in their general outlines in Table 23. The four principal lumber regions, having an aggregate output in 1905 of more than four-fifths of the entire product, are covered in the showing. The total product of the industry in the United States is given for each census from 1850 to 1905, inclusive, and the product in each of the four regions and in each state and territory is shown for the same periods.



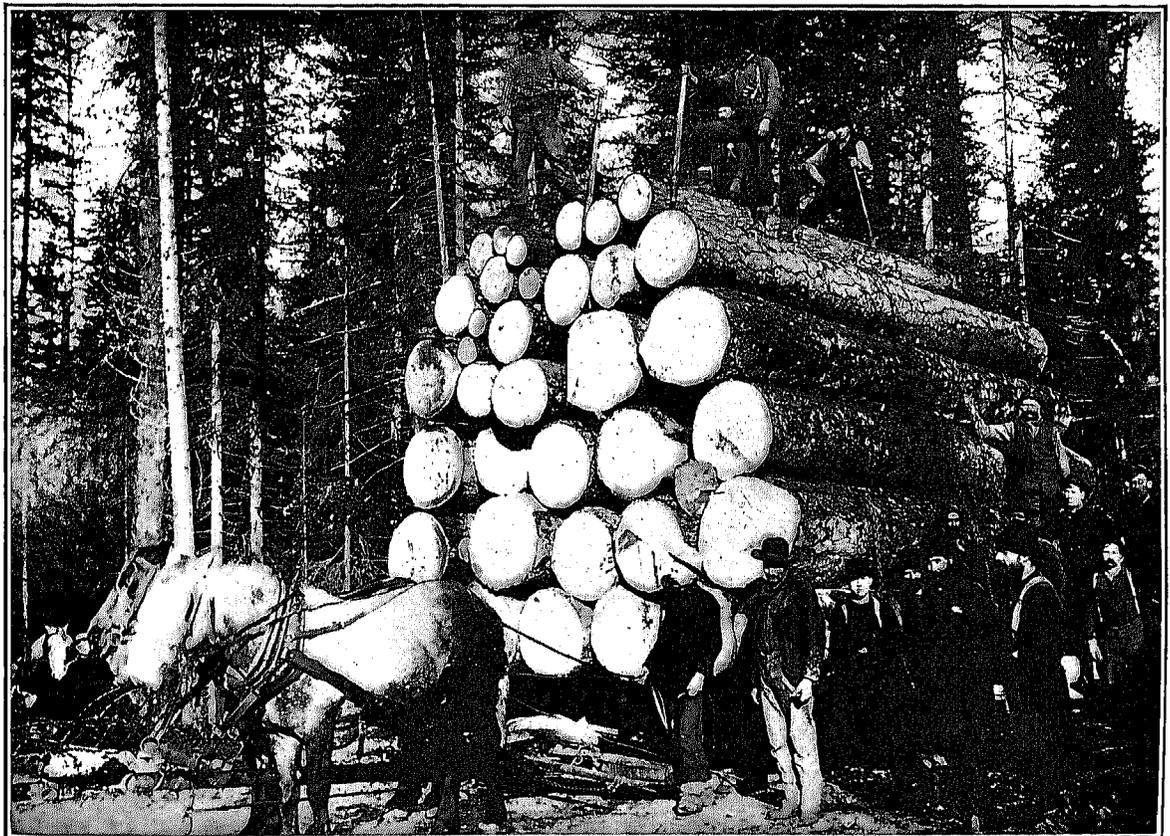
LONG LEAF YELLOW PINE, HORNBECK, LOUISIANA.



SILVER FIR AND SUGAR PINE, SEQUOIA NATIONAL PARK, CALIFORNIA.



LOADING LONG LEAF PINE, PICKERING, LOUISIANA.



LOGGING SCENE IN FLATHEAD COUNTY, MONT., WESTERN YELLOW PINE.

LUMBER AND TIMBER PRODUCTS.

TABLE 23.—VALUE OF LUMBER PRODUCTS, BY STATES AND TERRITORIES, AND BY GEOGRAPHIC GROUPS: 1850 TO 1905.

	1905	1900	1890	1880	1870	1860	1850
United States.....	\$580,022,690	\$555,107,271	\$437,057,382	\$233,268,729	\$210,150,327	\$90,715,856	\$60,413,187
Northeastern group.....	84,712,823	88,872,287	70,158,889	58,324,883	77,880,748	35,800,708	33,345,485
Maine.....	17,037,683	13,281,561	11,840,654	7,033,868	11,305,747	7,167,762	6,800,295
New Hampshire.....	7,510,431	9,023,574	5,641,445	3,842,012	4,286,142	1,293,706	1,111,854
Vermont.....	5,888,441	5,940,610	6,958,674	3,258,816	3,525,122	928,541	620,015
Massachusetts.....	4,003,714	6,277,720	5,211,607	3,120,184	3,556,870	2,353,153	1,665,575
Rhode Island.....	401,170	222,083	264,625	240,570	257,258	76,114	245,566
Connecticut.....	1,562,254	1,748,881	1,353,544	1,076,455	1,541,038	589,456	545,569
New York.....	13,310,413	15,181,385	17,160,547	14,356,910	21,238,228	10,597,595	13,126,750
Pennsylvania.....	31,642,390	35,031,908	29,087,970	22,457,859	28,638,685	10,994,060	7,850,937
New Jersey.....	1,116,884	1,755,115	1,225,760	1,627,640	2,745,317	1,623,160	1,123,052
Delaware.....	430,443	459,441	405,057	411,060	405,041	276,101	276,863
Lake group.....	118,148,410	154,487,580	169,163,545	77,768,313	51,370,277	13,177,437	3,772,082
Michigan.....	40,569,335	53,915,647	83,121,969	52,440,928	31,046,306	7,303,404	2,404,320
Wisconsin.....	44,335,766	57,882,001	60,966,444	17,052,347	15,130,719	4,616,430	1,240,953
Minnesota.....	33,183,809	42,689,932	25,075,132	7,366,038	4,200,162	1,257,603	57,800
Southern group.....	183,162,380	143,174,089	68,245,808	29,689,305	21,126,070	17,232,458	9,235,605
Maryland.....	2,750,330	2,495,169	1,600,472	1,813,332	1,501,471	609,044	535,168
Virginia.....	13,040,860	11,631,539	5,630,600	3,434,163	2,111,055	2,213,962	1,059,672
North Carolina.....	15,731,379	14,474,281	5,898,742	2,672,796	2,000,243	1,176,013	1,383,310
South Carolina.....	6,791,451	4,942,362	2,146,750	2,031,507	1,197,005	1,125,640	1,125,280
Georgia.....	14,435,563	13,341,160	6,545,195	4,875,310	4,044,375	2,420,196	937,416
Florida.....	10,901,650	10,775,479	5,514,879	3,060,291	2,235,780	1,476,645	391,034
Alabama.....	15,939,814	12,522,423	8,597,971	2,640,634	1,359,083	1,375,628	1,103,481
Mississippi.....	24,035,539	16,286,763	5,770,387	1,020,335	2,160,667	1,832,227	915,997
Louisiana.....	35,192,374	17,294,444	5,745,194	1,764,640	1,212,037	1,575,995	1,145,377
Arkansas.....	28,065,171	24,357,593	8,943,052	1,793,848	1,344,403	1,158,902	122,918
Texas.....	16,278,240	16,062,966	11,942,566	3,673,449	1,900,861	1,754,208	466,012
Pacific group.....	80,332,311	54,261,234	32,775,713	8,194,155	7,548,860	5,887,799	2,314,985
California.....	18,275,801	13,717,785	8,794,655	4,428,950	5,227,064	4,003,431	959,485
Oregon.....	12,483,008	10,257,169	6,530,757	2,040,463	1,014,211	600,008	1,355,500
Washington.....	49,572,512	30,286,280	17,450,301	1,734,742	1,307,585	1,194,360	(1)
All other states.....	113,666,766	114,402,681	88,613,427	59,292,073	52,217,472	24,518,454	11,744,970
Alaska.....	245,380	154,666	58,440	(1)	(1)	(1)	(1)
Arizona.....	960,778	547,790	248,790	215,918	10,000	(1)	(1)
Colorado.....	1,753,701	1,572,329	1,363,749	1,051,295	324,370	(1)	(1)
Idaho.....	2,834,606	908,670	631,790	349,635	56,850	(1)	(1)
Illinois.....	7,681,470	7,190,114	5,135,155	5,063,037	4,546,769	2,681,295	1,374,708
Indian Territory.....	588,678	189,373	41,950	(1)	(1)	(1)	(1)
Indiana.....	14,559,632	19,079,071	20,278,023	14,260,830	12,324,755	4,452,114	2,213,707
Iowa.....	5,610,772	8,487,261	12,056,302	6,185,628	5,794,285	2,185,206	470,700
Kansas.....	20,700	79,581	85,521	1,736,381	682,697	1,563,487	(1)
Kentucky.....	14,530,000	13,338,533	7,904,428	4,064,361	3,662,086	2,465,826	1,502,434
Missouri.....	10,903,783	10,540,590	8,359,925	5,265,617	6,363,112	3,085,026	1,479,124
Montana.....	3,024,674	2,846,268	1,182,510	627,695	430,667	(1)	(1)
Nebraska.....	19,624	37,390	154,945	278,205	265,062	335,340	(1)
New Mexico.....	1,315,304	462,005	389,761	173,630	121,225	45,150	20,000
Ohio.....	12,567,962	19,780,337	15,279,843	13,864,460	10,235,180	5,279,883	3,916,060
Oklahoma.....	2,292,633	2,614,491	27,260	(a)	(b)	(c)	(c)
South Dakota.....	275,190	4,470,661	4,451,882	5,435,792	672,280	(1)	(1)
Tennessee.....	21,580,120	16,709,104	9,073,686	3,744,905	3,390,687	2,228,503	725,387
T Utah.....	133,044	186,905	249,940	375,104	661,431	145,505	14,620
West Virginia.....	14,633,472	10,190,118	5,515,065	2,431,857	1,478,399	(1)	(1)
Wyoming.....	426,433	729,524	124,462	40,990	268,000	(1)	(1)
District of Columbia.....	(1)	(1)	(1)	50,000	30,000	21,125	27,990
Nevada.....	(1)	(1)	(1)	243,200	432,500	(1)	(1)

1 None reported.
2 Includes Nevada.

3 Part of Indian Territory prior to 1890.
4 Includes North Dakota.

5 Dakota territory.
6 Included with Oklahoma.

It is characteristic of the lumber industry that the locality of its raw material practically determines the point of its manufacture. The ever-widening circle of the demand for lumber and the constant and rapid decrease in the supply of merchantable timber have been the controlling causes of the migratory movements disclosed in Table 23.

Prior to 1850 the bulk of the lumber product of the United States was manufactured in its northeastern portion. Down to 1860 the supremacy of this section in the industry had not been seriously threatened, and even in 1870 it retained the first rank in lumber production. A sharp contraction in the value of its output was experienced, however, during the following decade. The actual shrinkage from 1870 to 1880 was \$19,564,865, or 25.1 per cent, the product declin-

ing in relative importance from 37.1 to 25 per cent of the output of the country. A substantial gain of \$20,834,006 over 1880 in the value of its product was again recorded in 1890, an increase of 35.7 per cent, which, however, was due as much to appreciation of values as to increase in quantity. Largely owing to the same cause the actual value of the output of this section has not changed materially since 1890, though its relative contribution to the total product of the country has diminished steadily from 18.1 per cent in 1890 to 16 per cent in 1900 and 14.6 per cent in 1905.

The exploitation of the white pine forests of the Lake states, which commenced about 1850, had by 1860 attained a scale of marked importance, and during the decade 1860 to 1870 occurred the greatest relative growth in the operations of this region. In

1880 the Lake states assumed the first place, with a product valued at \$77,768,313, or 33.3 per cent of the total output of the United States. The development of the industry in this region had been phenomenal, its product having multiplied between 1860 and 1880 almost six times, and between 1850 and 1880 more than twenty times. Its greatest actual increase, however, was not recorded until ten years later, when its output rose to \$169,163,545, or 38.6 per cent of the product of the country, a gain in the decade for these states of \$91,395,232, or 117.5 per cent, the largest absolute increase made by any of the groups for any census period. Though retaining first place in the industry at the census of 1900, with a product valued at \$154,487,580, these states had nevertheless passed their point of heaviest relative as well as actual production, their output having declined between 1890 and 1900 from 38.6 per cent to 27.8 per cent of the lumber product. In 1905 it had still further decreased to 20.4 per cent of the total.

The Southern states were the leading lumber producers at the census of 1905, with an output valued at \$183,162,380, or 31.6 per cent of the total for the United States. The industry in these states is an old one. In 1850 they contributed more than one-seventh of the total lumber product of the country, and a steady growth in this section is shown at each succeeding census. Prior to 1880, however, its influence on the lumber market of the country was relatively unimportant. The wane of the industry in the Lake region lent additional stimulus to its development in the Southern states, and the largest percentage of increase shown for this section for any census period was that for the decade 1880 to 1890, when the value of products increased \$38,556,503, or 129.9 per cent. During the succeeding ten years its output grew from \$68,245,808 to \$143,174,089, or 109.8 per cent. These states increased their lumber product from 1900 to 1905 by \$39,988,291, or 27.9 per cent, and present conditions indicate that their maximum output has not yet been reached.

Beyond the volume of business resulting from mining activity, as disclosed by the census of 1850, the industry made little headway in the Pacific Coast states during the next three census periods. By 1880, however, it was demonstrated that the lumber products of this region could be delivered at a profit to the markets of the middle West and even to those of the Atlantic seaboard. This marked the beginning of the lumber industry on a large commercial scale in these states. Between 1880 and 1890 the value of the output of the mills of this region almost quadrupled. From 1890 to 1900 it grew from \$32,775,713 to \$54,261,234, a gain of \$21,485,521, or 65.6 per cent; and in 1905 it rose to \$80,332,311, an increase for the five years of \$16,071,077, or 29.6 per cent. This region is fast becoming a center of great activity in

lumber manufacture. While in point of value its contribution to the total output of the United States at the census of 1905 was only 13.8 per cent, in view of the rapid diminution of the supply of merchantable timber in other sections it is probable that the relative importance of these states in the lumber production of the country will increase greatly.

As a measure of the enormous growth in the lumber industry in the United States during the comparatively brief period covered by Table 23, it is interesting to note that at the census of 1905 the production of the Southern group of states alone was nearly four-fifths as great as the lumber product of the entire country in 1880, about equal to that of 1870, nearly double the total for 1860, and more than three times the output of 1850.

LOGGING.

Logging was a simple operation in the early days of merchant milling, when the timber stood close around the mill and the logs could be readily drawn or "snaked" to it. Moreover, the old-fashioned mill, with its limited capacity, required little timber to stock it, and often several years would elapse before the haul became too long to be profitable. When this point was reached, the mill was moved to a new site, where the cutting out was repeated. A reversal of this process followed, however, when the mills increased in size and cost and their location necessarily became more permanent. Logging operations multiplied as the distance from stump to mill increased. Improved methods and implements were introduced as new obstacles were encountered and overcome, and out of the growing difficulties and constantly changing conditions has been evolved the complicated but highly systematized logging industry of the present day.

While the systems of logging used in different localities vary with the size and character of the timber and the nature of the country, they are in many respects similar. Logging is conducted in the Northeastern and the Lake states chiefly during the fall and winter months, in order to take advantage of the snow and ice for transporting and of the swollen rivers in the early spring for driving. On the Pacific coast, where the methods employed, except in the mountain regions of California, are not influenced materially by climatic conditions, the operations proceed without material change in volume throughout the year, while in the Southern states logging in all its branches is carried on in all seasons.

The general conditions in the industry in the Northeastern and the Lake states are very similar. In a typical camp in these regions the felling of the trees begins in the early fall and continues until the winter sets in. After they are felled the trees are trimmed of their branches, cut into advantageous lengths, generally from 12 to 20 feet, and "tonged out" or snaked



STEAM LOG LOADER, FLAGSTAFF, ARIZONA.



LOG TRAINS OF REDWOOD, HUMBOLDT COUNTY, CALIFORNIA.

by horses and chain to the skidways, where they are piled into high tiers on the skids ready to be loaded upon sleighs when the snow comes. While on the skids the logs are measured, or "scaled," and their contents in board feet recorded by the scaler, after which a man stamps with a marking hammer on both ends of the logs the mark of the owner.

On the approach of cold weather the main logging road leading from the woods to the banking ground on the river or to the railroad is laid out to a width of about 20 feet. The grade is kept in favor of the loaded sleigh as much as possible, and, where practicable, the road is laid out over swamp lands. The length of the log road does not generally exceed 5 miles, though occasionally the haul is as great as 10 or 12 miles. In sections where the timber is too remotely situated to allow of sleighing directly to the river or mill a light temporary railroad is projected into the area to be cut. From the main track spurs are run out into the timber. The construction and maintenance of log or sled roads involves a heavy outlay, since over much of their course, especially through swamp lands, they are "corduroyed" or floored with small logs laid crosswise. Bridges are constructed across small streams, and along the hillsides the roads are dug out or graded to a level. During the day men are constantly at work leveling irregularities, and at night when the weather is cold enough to freeze, the roads are sprinkled from a large water tank drawn on a sleigh until a good ice bottom is formed, while on the steep grades sand and gravel are thickly spread to retard the speed of the loaded sleighs. Over this "boulevard" of ice the sleigh with its load of logs, weighing from 4 to 7 tons, can be drawn easily by a single team.

The transportation of the logs from the woods to the banking ground or railroad is continued throughout the winter, until the melting of the ice on the road puts a stop to the work. The logs are banked along the river in large piles in such a way as to be easily rolled into the water, or they are unloaded from the sleighs directly on the frozen surface of the river and remain there until the breaking of the ice in spring, when they are floated or driven down the river to the mill. When the logs reach the mill they are caught by a boom stretched across the river and turned into pockets, or log ponds. The rivers being common highways, logs from many different camps are frequently caught by the mill booms, where each owner in turn sorts and runs into a pocket those bearing his mark, while the others are allowed to pass.

In the Lake states, to a much greater extent than in New England and the Adirondacks, steam appliances have supplanted horses and oxen in performing certain of the operations in the woods. Where logging railroads are used the logs are sometimes drawn out of the woods to the track and loaded on the cars by steam. For this work complicated machines, called "steam

skidders," are used. These are fitted with 2,000-foot wire cables and are so constructed that they move along the track, stopping at intervals to thrust their long tentacles out into the timber in every direction and snake in the heavy sticks. The end of the cable is dragged out to the logs by being attached to the harness of a horse. It is fastened to the end of the log by heavy grabs, so constructed as to prevent the end of the log from becoming caught by obstacles in its path. The machine has a steam crane for lifting the logs to the trucks. Logging railroads have become a necessity in both these regions since lumbering in them began to shift from conifers to hard woods, the greater weight of the latter making river driving impracticable.

In the yellow pine and hard wood districts of the Southern states but little river driving is done. Logging railroads are used almost exclusively in transporting the logs to the mills, and the methods employed are similar to those used in the Lake states. Although logging by rail is a more expensive method than river driving, it possesses the advantage of making the industry practically independent of weather conditions, and thus insures a steady supply of logs, a consideration of paramount importance in a large modern mill.

The substantial increase in the output of cypress lumber in recent years is due largely to the marked improvement in the methods and equipment employed in getting the timber to the mills. One of the most effective of the many ingenious appliances used in logging cypress is the pull boat employed where conditions do not permit of the use of logging railroads and steam skidders. In principle and construction this machine is similar to the steam skidder described above, except that the operations are conducted from a heavy flatboat anchored near the edge of a lake or river, the logs being dragged by means of the wire cables for a distance of one-half mile or more through the marshes to open water.

Logging in the Pacific Coast states, where the timber grows to enormous size, necessitates the employment of methods very different in some respects from those used in other parts of the country. The felling and cutting of the trees into lengths are effected in a way similar to that followed in other lumbering regions, the ax, crosscut saw, and wedge being the tools used. Before the log is started on its way to the mill the bark is chopped from the side on which it is to be dragged. Horses and oxen, still commonly used in eastern camps and formerly employed to move the logs in the camps of these states, have been almost entirely supplanted by steam appliances. Here the donkey engine, a modification of the steam skidder, furnishes the motive power for moving the heavy sticks. It consists of a small upright engine fitted with a drum or capstan on which is wound a steel wire cable from one-half inch to an inch in thickness and from 500 to 3,000 feet in

length. Skid roads are constructed at heavy expense to facilitate the handling of the logs. To reduce the friction of the sliding timber, these roadways are frequently corduroyed with small logs laid at intervals of 2 or 3 feet. The yarding engine drags the log from the place of fall to the skid road leading out from the cutting area. The cable from the landing engine is then fastened to the log, which is dragged swiftly over the skid road to either the mill, the nearest stream where the logs are made into rafts and floated to the mill, or the branch railway landing. Nothing but the breaking of the cable can stop the progress of the log. Turns in the road are made by running the cable over blocks fastened to trees and stumps. When these are reached the hook tender signals, the engine stops until the block is removed, and the log then resumes its journey. The cable from the landing engine is drawn back to the yarding engine by a smaller cable, which trails after the log. Where the length of the haul requires it, several landing engines are placed at intervals along the skid road, and each in turn drags the log the length of its cable. Sometimes the logs are fastened end to end in long strings and dragged over the skid road as though one stick. The same engines are utilized in loading the cars where logging railroads are used. A block is suspended above the car, and over it is passed a cable with heavy hooks on the end. The hooks are fastened in the log, and as the cable is reeled the log is drawn on an incline from the landing to the car. Men guide the logs with iron-shod poles.

In some parts of the mountainous regions of California, where the size of the timber and the extremely unfavorable conditions render logging impracticable, the process of stocking the mill is reversed. The mill is located in the heart of the mountains and its finished product is conveyed to the outside world through flumes, sometimes 60 miles in length.

SAWMILLS.

The modern sawmill plant, with its numerous devices to supplant manual labor through mechanical appliances which bring the ponderous material to the saw and carry the finished product to the yard, is essentially a product of American inventive genius.

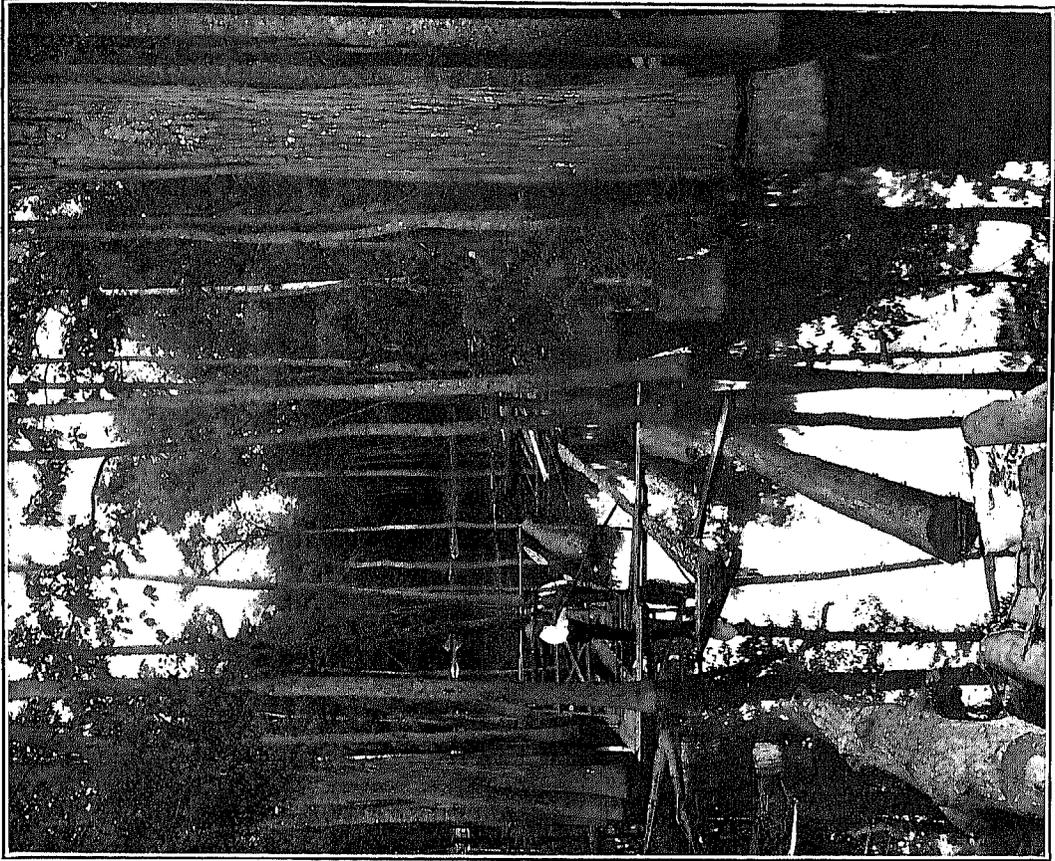
The first sawmills used in the colonies were imported from Holland. These mills were of the type known as sash sawmills and consisted of a straight band of steel, properly toothed, and strained taut by means of a frame, or sash, into which it was fitted. The frame was pulled downward by a water wheel, which supplied the motive power, and pulled back by means of a large elastic pole. The next step in the evolution of the sawmill was the introduction of the type known as the muley sawmill. The saw itself in this type of mill also consisted of a toothed band of steel, but it was differently mounted, much of the weight and cumbersome-ness of the reciprocating parts in the former type being done away with in the latter.

The sash and muley sawmills were the prevailing types in use until about the middle of the nineteenth century, although the circular or rotary saw, the next innovation, made its appearance in the United States early in the century. This type of saw, which originated in Europe, consists of a circular disk of steel with teeth around its rim. In the principle that the cutting movement was continuous it was a radical departure from the sash and muley types, with their vertical reciprocating movement by which substantially one-half of the operating time was lost in the recovery of the saw for its next downward stroke.

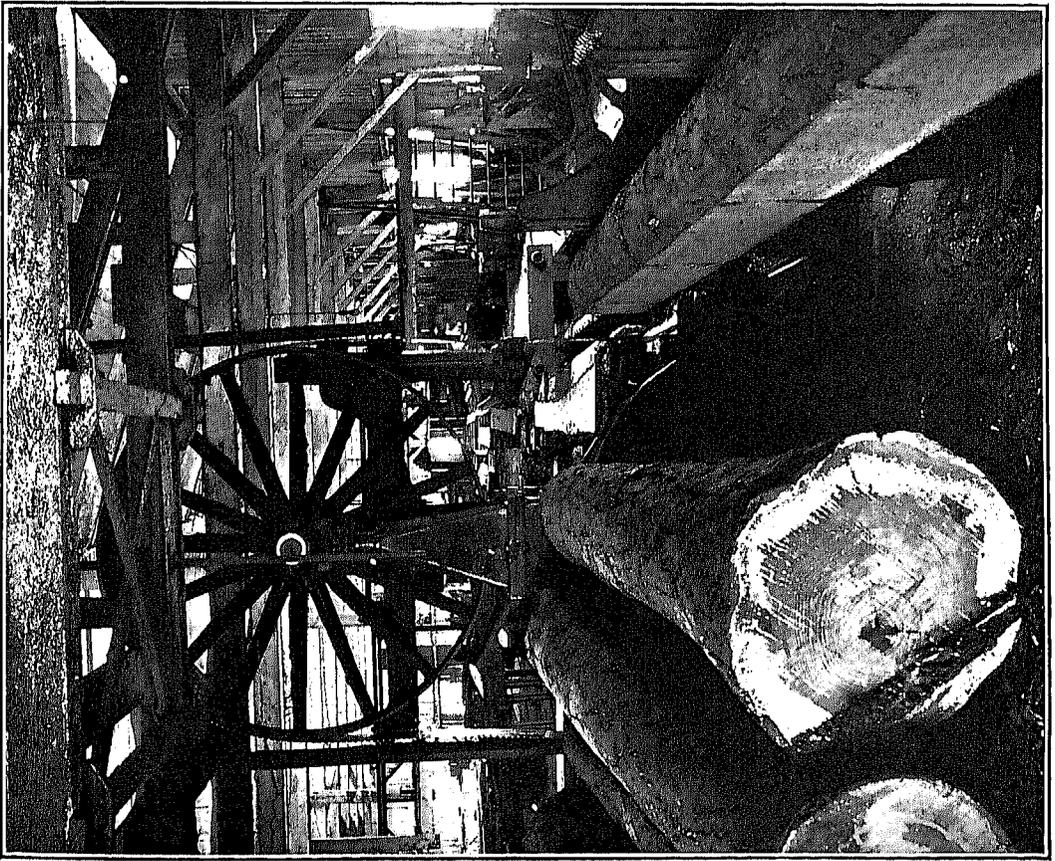
The band saw, the latest and most effective type of log sawing machinery, was first employed in cutting hard wood lumber in the Maumee valley of Ohio in 1872. This type consists of a frame, or standard, carrying two wheels, mounted one above the other, over which a continuous band of steel works exactly like a belt between two pulleys. This steel band is the saw, and in its operation, as in that of the circular saw, the cutting process is continuous. The band saw is sometimes toothed on both edges so that a board is cut from the log at both the forward and backward movements of the carriage.

A type extensively used in modern mills, as a rule in a supplemental capacity to the band saw or circular saw, is the gang saw. In principle it is the old sash mill, with its vertical reciprocating movement, but with its single saw replaced by a gang of such saws, ranging in number up to ten, or sometimes more. These saws are fixed side by side in an iron frame, and the distance between them is adjusted according to the thickness of the boards into which the log is to be cut. The log is slabbled off on two sides or squared by the band saw or circular saw and then delivered to the gang saw, where with one passage it is converted into boards.

In a typical modern sawmill plant the manufacturing process is conducted in the second story of the building. The log is drawn from a pond up an incline to the mill floor by an endless chain device called "the bull chain," which is operated by steam and stopped and started by levers. The log is first deposited on a platform parallel with and slightly above the level of the carriage, onto which it is rolled. It is placed in the exact position desired and made fast by setting works, consisting of head blocks and dogs operated by steam and controlled by levers. If it is desired to turn the log on the carriage because of crooks or other defects or after one side has been slabbled off, the operation is performed by a device known as the "nigger," which, operated by steam and controlled by levers, plunges up from underneath and, striking with great force, tosses and turns the log on the carriage until it lies in the desired position. When the log is in place, the carriage, which is operated by steam, passes alongside of the saw, and a slab or board is cut off. The carriage then returns at a high rate of speed to the



LUMBERING CYPRESS, TELFAIR COUNTY, GEORGIA.



LOG GOING THROUGH MILL, BERKELEY, NORTH CAROLINA.

starting point, and the movement is repeated. If, however, a double band saw, one cutting at both edges, is used, the log is moved up according to the thickness of the cut, and another board is sawed off on the return of the carriage.

The movements of the log on the carriage and those of the carriage itself, which are effected by steam, are controlled by levers manipulated by the sawyer, while the devices which fix and hold the log in place are operated by levers in the hands of the dogger man, who rides on the carriage. Mechanical carriers take the boards and refuse from the saws. The boards are conveyed to the edger saw, which cuts their rough edges to a commercial shape. Without halting in their course they are carried to the trimmer, which, with its complicated system of levers and lift or drop saws, cuts off the uneven ends and reduces them to standard lengths. The boards, still without a stop in the operation, are then carried out to the yard. Slabs containing sufficient material are taken from the carrier at a convenient point where a small circular saw is located, and are cut into proper lengths for lath and shingle material, and then passed on to be converted into these products. The time consumed in the passage of a log of average size from the pond to the yard and its conversion into commercial lumber seldom exceeds three minutes.

FOREIGN TRADE.

Exports.—Forest products were with furs the first and only commodities exported by the colonies in the early years of their history. The bulk of the forest products exported went to England and her other colonies, for sawmills were not operated in England until many years after their introduction into America. Data relating to the kinds and quantities of lumber exports during this period and during the early years of the Republic, while fragmentary, reveal foreign trade in these commodities of considerable volume. In 1675¹ a cargo of lumber, valued at £400 sterling, was shipped from New York to England. Shipbuilding material from the start formed a large part of the exports of forest products. Soon after the establishment of the colonies, England realized the value of their forests as a source of materials for her shipbuilding industry and became solicitous for the preservation of them. "In 1711 and 1721 severe ordinances were enacted, prohibiting the cutting of any trees proper for masts on the possessions of the crown."²

¹ William F. Fox, "A History of the Lumber Industry in the State of New York," page 14.

² F. A. Michaux, "North American Sylva," Vol. III, pages 164 and 165.

The magnitude of the export trade of the United States in forest products at the beginning of the nineteenth century, as well as the varied character of the commodities handled and the wide distribution of the industry of their production, are indicated by the following extracts:

In a table of importation from the United States presented to the Parliament of Great Britain, the timber introduced in 1807 is reckoned at 1,302,980 dollars, of which I suppose the white pine to have formed a fifth. * * * In this statement the wood imported from New Brunswick is not included, nor the vast quantity sent from the United States to the West India Islands not dependent on Great Britain.³

White-oak staves are exported from all the ports of the Northern and Middle states, and from New Orleans. Those which come from Baltimore, Norfolk, and New Orleans are far superior to those of the Northern states; the difference results naturally from that of the soil and climate. The quantity of oak staves exported to England and the West Indies appears, by two official documents that I have examined, to be considerable. In 1808 the value received by England amounted to more than 146,000 dollars, and the number of staves sent to the West Indies exceeded 53 millions. I am unable to fix the proportion of the two species of white and of red oak; probably more of the first are sent to England, and of the second to the Colonies.⁴

The long-leaved pine is the only species exported from the Southern states to the West Indies. A numerous fleet of small vessels is employed in this traffic, particularly from Wilmington in North Carolina and Savannah in Georgia. The stuff destined for the Colonial market is cut into every form required in the construction of houses and of vessels; what is sent to England is in planks from 15 to 30 feet long and 10 or 12 inches broad; they are called ranging timbers, and are sold at 8 or 10 dollars a hundred cubic feet. The vessels freighted with this timber repair chiefly to Liverpool, where it is said to be employed in the building of ships and of wet docks; it is called Georgia-pitch pine, and is sold 25 or 30 per cent higher than any other pine imported from the United States.⁵

The yellow pine, in boards from an inch to two inches and a half thick, forms a considerable article of exportation to the West Indies and Great Britain. In the advertisements of Liverpool it is designated by the name of New York pine, and in those of Jamaica by that of yellow pine; in both places it is sold at a lower price than the long-leaved pine of the Southern states, but much higher than the white pine.⁶

After the formation of the Republic, markets for the surplus lumber products of the United States multiplied until at the present time these commodities are shipped to practically every civilized country of the world, though England still remains the principal purchaser. The value of the unmanufactured wood exported to the leading countries in 1905 is shown in Table 24, which also gives the percentage which the value of exports to each country formed of the total value exported.

³ *Ibid.*, Vol. III, page 171.

⁴ *Ibid.*, Vol. I, pages 23 and 24.

⁵ *Ibid.*, Vol. III, pages 137 and 138.

⁶ *Ibid.*, Vol. III, page 123.

TABLE 24.—Exports of unmanufactured wood, by countries: 1905.¹

COUNTRY.	EXPORTS OF UNMANUFACTURED WOODS.	
	Value.	Per cent of total.
Total.....	\$45,439,347	100.0
United Kingdom.....	11,142,577	24.5
Domtium of Canada.....	5,307,841	11.7
South America.....	5,288,090	11.6
Netherlands.....	3,640,062	8.0
Mexico.....	3,199,649	7.0
Germany.....	3,035,959	6.7
West Indies.....	2,808,342	6.2
France.....	2,183,183	4.8
Oceania.....	1,704,816	3.8
Africa.....	1,540,887	3.0
Italy.....	1,335,859	2.9
Central America.....	872,527	1.9
Asia.....	851,370	1.9
All other countries.....	2,728,185	6.0

¹Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

Table 25 shows the value of unmanufactured wood exported from the United States from 1870 to 1905.

TABLE 25.—Exports of unmanufactured wood, by value: 1870 to 1905.¹

YEAR.	Value.	YEAR.	Value.
1905.....	\$45,439,347	1887.....	\$15,025,870
1904.....	52,447,305	1886.....	15,934,547
1903.....	44,072,284	1885.....	16,083,827
1902.....	36,162,158	1884.....	18,925,408
1901.....	41,345,042	1883.....	20,048,624
1900.....	39,305,578	1882.....	18,314,421
1899.....	31,774,241	1881.....	14,150,147
1898.....	28,415,033	1880.....	12,261,682
1897.....	31,032,384	1879.....	11,016,300
1896.....	24,520,033	1878.....	12,053,168
1895.....	20,800,100	1877.....	14,785,836
1894.....	20,938,445	1876.....	13,463,422
1893.....	20,607,543	1875.....	13,686,715
1892.....	19,727,782	1874.....	17,302,767
1891.....	20,282,718	1873.....	15,063,162
1890.....	21,764,884	1872.....	12,265,682
1889.....	20,760,301	1871.....	10,515,795
1888.....	17,806,981	1870.....	11,121,123

¹Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

The bulk of the lumber product of the United States is consumed at home. The exports of unmanufactured woods, however, have increased in value rapidly during recent years, and the percentage of the total production disposed of in this way is becoming important. In 1870 the exports constituted 5.3 per cent of the total lumber production, and the proportion had not materially changed in 1880 and 1890, being 5.3 and 5 per cent, respectively. In 1900, however, the quantity exported formed 7.1 per cent of the total production, and in 1905, 7.8 per cent. The most marked increase appears in the exports to Europe, which in 1895 amounted to only \$12,033,442, and in 1905 to \$23,955,225, an increase of 99.1 per cent. A segregation of these totals shows that the exports of unmanufactured woods to the United Kingdom rose from \$6,147,493 in 1895 to \$11,142,577 in 1905, an increase of \$4,995,084, or 81.3 per cent; to Germany, from \$1,562,077 to \$3,035,959, an increase of \$1,473,882, or 94.4 per cent; to the Netherlands, from \$943,029 to \$3,640,062, an increase of \$2,697,033,

or 286 per cent; to Belgium, from \$412,314 to \$1,170,838, an increase of \$758,524, or 184 per cent; and to France, from \$892,042 to \$2,183,183, an increase of \$1,291,141, or 144.7 per cent.

The percentage that the exports of unmanufactured woods formed of all exports, except for 1880, has shown little variation. In 1870 they formed 2.2 per cent of the total; in 1880, 1.5 per cent; in 1890, 2.6 per cent; in 1900, 2.9 per cent; and in 1905, 3 per cent.

Imports.—Until the middle of the nineteenth century the imports of unmanufactured wood consisted almost wholly of the cabinet woods in the log, mahogany chiefly, with rosewood, granadilla, lancewood, cedar, ebony, and satinwood in smaller quantities. Since 1870 the cabinet woods have been on the free list, and prior to that time an import duty was levied on them only during comparatively short periods. The bulk of these woods imported into the United States is supplied now, as formerly, by the forests of Haiti, Santo Domingo, Cuba, Porto Rico, other West Indies, Mexico, British Honduras, and Central American states.

In Table 26 are shown the imports of cabinet woods from 1895 to 1905.

TABLE 26.—Imports of cabinet woods, by kind and value: 1895 to 1905.¹

YEAR.	Total value.	MAHOGANY.		All other (value).
		Quantity (M feet B. M.).	Value.	
1905.....	\$3,055,617	31,844	\$1,077,894	\$1,077,723
1904.....	4,124,011	50,370	2,000,382	1,434,229
1903.....	4,035,300	48,387	2,783,070	1,251,621
1902.....	3,361,275	43,705	2,361,483	999,792
1901.....	2,093,340	32,281	1,752,012	1,240,737
1900.....	2,430,702	28,228	1,572,260	858,483
1899.....	2,001,277	24,714	1,244,021	846,356
1898.....	1,600,336	14,670	700,140	900,187
1897.....	1,201,466	15,129	656,076	544,490
1896.....	1,600,106	17,367	813,063	886,103
1895.....	1,245,203	11,554	570,473	665,730

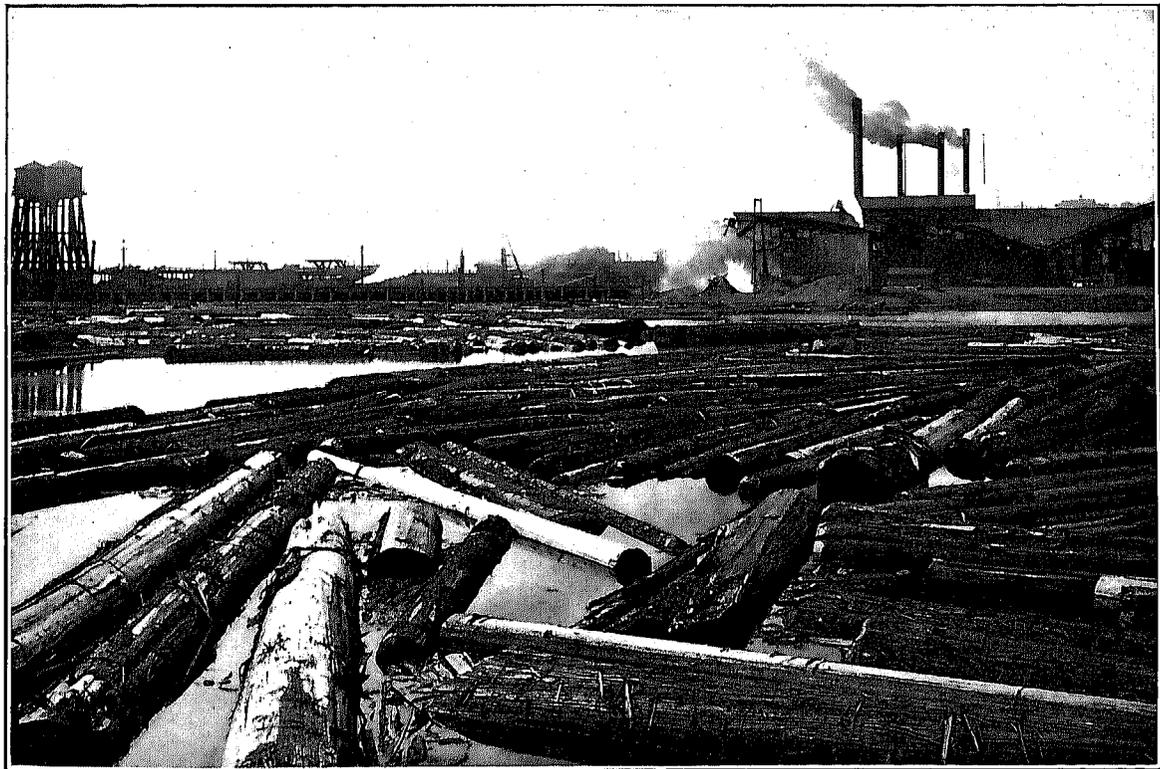
¹Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

For many years the bulk of these woods was shipped from the forests where cut to the ports of the United Kingdom, and from there distributed to the markets of the world. This practice is still followed in a measure, especially with African mahogany. Of the total value of cabinet woods imported into the United States in 1905, the United Kingdom contributed \$928,248; Central American states, \$590,070; the West Indies, \$589,553; Mexico, \$442,719; and all other countries, \$505,027.

When the timber supply, especially white pine, of the Northeastern states began to be exhausted the forests of Canada were drawn upon. The imports of unmanufactured wood products from this source, however, did not attain a volume of relative importance until after 1850.



LOG POND AND MILL, OCILLA, GEORGIA.



CEDAR POND AND MILL, TACOMA, WASHINGTON.

Under the treaty of 1854 with Canada, which provided for free trade in all natural products, pine logs, rough pine lumber, and all other unmanufactured wood products imported from Canada were put on the free list. Since 1846 pine logs had been admitted under an ad valorem duty of 30 per cent and rough pine lumber under a duty of 20 per cent. The treaty went into effect on March 15, 1855, and was maintained until March 17, 1866, when the balance of trade having been changed against the United States, the treaty was terminated and a duty of 20 per cent placed on imports. By the act of July 14, 1870, Congress removed this duty on pine logs, and since that time all logs have been on the free list. No change, however, was made by this act in the duty on rough lumber and other sawed and hewn products.

In 1872 a specific tariff was for the first time placed on lumber. This duty amounted to \$1 per thousand feet on whitewood, hemlock, and sycamore, and \$2 on white pine and other varieties. From the enactment of this law there was no change in the tariff legislation with respect to logs and rough lumber, with the exception of an additional tax placed on dressed lumber, until the McKinley tariff went into effect in October, 1890. The growing scarcity of timber on the American side of Lakes Huron and Erie while immense forests were within easy reach on the Canadian side, had made the question of import tariff rates on logs and lumber one of vital significance to the lumber manufacturers in that region. After the placing in 1872 of the specific tariff of \$2 per thousand feet on white pine lumber imported into the United States, the Canadian government placed an export duty on logs, which practically shut off from the mills along the border on the American side the supply of material from Canada. By the McKinley tariff the duty on white pine lumber was reduced from \$2 to \$1, under a tacit agreement with the Canadian authorities that their export duty on logs should be abolished. While the shipments of lumber into the United States were not materially affected, the importation of logs from Canada increased rapidly from the passage of this law until 1898. The Wilson tariff, which went into effect on August 28, 1894, placed rough lumber and other wood products on the same basis as logs, namely, on the free list, and this arrangement obtained until July 24, 1897, when the Dingley tariff became a law. By this act the duties of \$2 per thousand feet on white pine lumber and of \$1 on sycamore, basswood, and whitewood, originally imposed in 1872, were restored. This was followed, as before, by retaliatory legislation on the part of Canada, which practically put a stop to the importation of logs from that country into the United States. No changes in the tariff schedules respecting unmanufactured woods have been made since the Dingley tariff went into effect.

In Table 27 is shown the value of unmanufactured wood imported into the United States from 1871 to 1905, the bulk of which came from the Dominion of Canada.

TABLE 27.—Imports of unmanufactured woods: 1871 to 1905.¹

YEAR.	Value.	YEAR.	Value.
1905.....	\$22,047,054	1887.....	\$11,425,330
1904.....	20,489,432	1886.....	10,907,201
1903.....	22,257,840	1885.....	11,276,427
1902.....	19,620,812	1884.....	13,220,550
1901.....	15,605,049	1883.....	13,107,108
1900.....	15,837,342	1882.....	12,910,019
1899.....	11,883,178	1881.....	10,281,036
1898.....	11,541,370	1880.....	8,413,101
1897.....	17,709,060	1879.....	5,333,277
1896.....	17,048,557	1878.....	4,904,489
1895.....	14,690,416	1877.....	4,684,049
1894.....	14,347,420	1876.....	5,420,432
1893.....	17,512,100	1875.....	6,997,008
1892.....	15,288,578	1874.....	10,006,108
1891.....	15,437,120	1873.....	12,171,853
1890.....	13,561,788	1872.....	9,461,680
1889.....	14,066,141	1871.....	9,146,500
1888.....	13,084,426		

¹Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

Table 28 shows the quantity and value of logs and round timber imported from Canada from 1896 to 1905, and indicates how these imports diminished in quantity under the legislation enacted by the Dominion Government following the passage of the Dingley bill.

TABLE 28.—Logs and round timber imported from Canada: 1896 to 1905.¹

YEAR.	Quantity (M feet B. M.).	Value.
1905.....	97,189	\$721,400
1904.....	65,205	536,210
1903.....	72,233	602,709
1902.....	106,128	904,659
1901.....	82,670	777,951
1900.....	101,294	897,922
1899.....	198,135	1,763,306
1898.....	275,381	2,423,209
1897.....	333,104	2,607,506
1896.....	315,009	2,563,644

¹Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

Practically all the rough lumber imported into the United States comes from Canada, that country contributing 98.2 per cent of the total in 1905. Table 29 gives the imports of this commodity from 1889 to 1905, and shows the effect on their volume of the McKinley bill and subsequent tariff legislation.

TABLE 29.—Boards, planks, deals, etc., imported from Canada: 1889 to 1905.¹

YEAR.	Quantity (M feet B. M.).	Value.
1905.....	704,956	\$10,714,417
1904.....	585,194	8,729,135
1903.....	718,909	10,565,029
1902.....	664,976	9,233,226
1901.....	490,400	6,342,050
1900.....	680,069	7,464,208
1899.....	423,705	4,186,515
1898.....	353,134	3,499,569
1897.....	883,270	9,087,312
1896.....	785,871	8,501,991
1895.....	600,790	6,859,078
1894.....	514,461	6,184,204
1893.....	742,351	8,217,331
1892.....	668,134	7,539,766
1891.....	757,149	8,408,046
1890.....	659,708	7,744,954
1889.....	647,842	7,804,168

¹Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

In Table 30 are presented the detailed statistics of the lumber industry for 1905.

TABLE 30.—LUMBER AND TIMBER PRODUCTS—DETAILED

STATE OR TERRITORY.	NUMBER OF ESTABLISHMENTS.			CAPITAL.					
	Total.	Saw-mills.	Independent logging or timber camps.	Aggregate.	Logging or timber camps.				
					Total.	Land.	Buildings.	Machinery, tools, live stock, equipment, etc.	Cash and sundries.
1 United States.....	19,127	18,277	850	\$517,224,128	\$90,454,494	\$655,140	\$1,027,817	\$50,890,520	\$27,072,017
2 Alabama.....	590	572	18	12,625,688	3,151,639	18,037	58,268	2,653,728	421,006
3 Alaska.....	6	6	.....	205,238	7,391	.....	.....	3,000	4,300
4 Arizona.....	5	5	.....	1,428,339	250,972	.....	500	250,347	1,125
5 Arkansas.....	852	837	15	27,634,651	5,021,334	5,124	70,846	3,896,689	1,069,975
6 California.....	308	289	19	25,700,392	4,976,748	137,740	140,750	4,202,755	495,503
7 Colorado.....	87	86	1	1,445,132	235,015	975	8,715	192,012	34,213
8 Connecticut.....	114	101	13	830,567	127,859	.....	400	66,280	61,170
9 Delaware.....	75	74	1	292,175	32,000	.....	50	37,100	4,850
10 Florida.....	198	176	22	11,550,390	2,754,274	6,570	31,596	2,495,585	220,523
11 Georgia.....	703	695	98	10,717,658	3,238,059	15,410	40,705	3,005,312	170,542
12 Idaho.....	95	91	4	3,131,901	188,848	100	4,390	80,212	95,230
13 Illinois.....	290	265	4	6,016,586	623,478	5,050	11,835	174,002	332,591
14 Indian Territory.....	41	39	2	183,704	14,910	.....	100	6,700	5,110
15 Indiana.....	774	772	2	9,170,298	269,755	610	6,145	90,039	199,970
16 Iowa.....	49	40	.....	7,784,070	537,050	3,500	2,000	94,300	437,850
17 Kansas.....	4	4	.....	8,135	.....	.....	.....	.....	.....
18 Kentucky.....	854	825	29	11,790,697	2,047,409	6,570	37,914	578,919	1,424,006
19 Louisiana.....	421	387	34	37,385,028	7,391,346	12,345	114,857	5,732,304	1,441,840
20 Maine.....	752	716	36	15,083,365	1,076,050	50,765	68,135	698,821	1,157,329
21 Maryland.....	203	203	.....	1,735,837	338,434	.....	835	291,178	39,336
22 Massachusetts.....	290	284	12	3,283,773	185,510	1,550	1,815	96,745	85,400
23 Michigan.....	790	693	73	33,507,207	6,292,748	92,284	.....	2,963,013	3,147,452
24 Minnesota.....	222	190	32	28,953,854	4,804,540	58,853	135,369	1,796,956	2,813,362
25 Mississippi.....	618	600	0	23,430,225	5,660,550	12,174	96,406	4,308,547	1,240,423
26 Missouri.....	374	363	11	8,021,437	1,348,244	5,054	46,350	927,469	368,471
27 Montana.....	41	38	3	4,005,052	620,688	1,000	21,445	317,510	180,124
28 Nebraska.....	4	4	.....	25,314	5,000	.....	.....	5,000	.....
29 New Hampshire.....	380	379	7	6,070,442	993,593	2,300	35,050	681,317	274,996
30 New Jersey.....	114	111	3	825,375	80,835	.....	75	47,790	33,000
31 New Mexico.....	23	23	.....	1,880,257	369,279	9,855	35,329	308,154	16,941
32 New York.....	820	813	7	12,590,876	1,930,590	1,930	47,156	657,518	1,229,806
33 North Carolina.....	1,212	1,190	13	10,098,358	2,097,259	3,010	35,815	1,910,093	118,341
34 Ohio.....	820	821	8	11,370,750	1,233,704	.....	4,910	198,759	1,050,036
35 Oregon.....	402	348	54	11,038,323	1,683,432	4,345	30,220	1,080,056	668,841
36 Pennsylvania.....	1,212	1,185	27	22,677,322	4,561,310	5,470	119,715	2,935,134	1,501,900
37 Rhode Island.....	22	20	2	150,141	20,050	.....	.....	10,520	9,530
38 South Carolina.....	430	432	7	7,237,725	1,191,450	4,225	49,925	943,028	194,272
39 South Dakota.....	18	18	.....	163,062	40,638	.....	2,460	33,750	4,488
40 Tennessee.....	1,632	1,009	23	16,638,882	2,417,822	21,190	48,910	808,150	1,530,513
41 Texas.....	299	294	5	18,420,242	3,605,090	8,949	210,133	2,953,720	303,188
42 Utah.....	41	41	.....	87,425	7,915	.....	.....	6,870	1,045
43 Vermont.....	418	417	1	5,400,750	638,125	15,450	32,875	290,691	290,109
44 Virginia.....	804	789	15	9,839,646	1,601,695	2,300	21,530	1,452,244	125,921
45 Washington.....	1,004	809	195	40,953,816	8,971,176	79,230	173,086	5,757,089	2,901,791
46 West Virginia.....	633	620	13	12,442,475	2,978,228	365	41,882	2,014,613	921,368
47 Wisconsin.....	576	549	27	37,677,205	3,887,294	59,970	112,680	2,047,062	1,067,780
48 Wyoming.....	28	24	4	312,396	218,340	1,500	3,330	13,000	200,640
49 All other states and territories ¹	4	3	1	476,038	182,500	.....	3,000	177,000	2,500

¹Includes establishments distributed as follows: Nevada, 2; Oklahoma, 2.

LUMBER AND TIMBER PRODUCTS.

SUMMARY, BY STATES AND TERRITORIES: 1905.

CAPITAL—continued.					Pro- prietors and firm members.	SALARIED OFFICIALS, CLERKS, ETC.										
Saw and planing mills.						Aggregate.	Logging or timber camps.									
Total.	Land.	Buildings, dry kilns, etc.	Machinery, tools, and implements.	Cash and sundries.			Total.		Officers of corporations.		General superintendents, managers, clerks, etc.					
							Num- ber.	Salaries.	Num- ber.	Salaries.	Num- ber.	Salaries.	Men.	Women.		
\$426,760,634	\$21,212,213	\$47,803,847	\$104,361,608	\$253,301,876	24,054	18,485	\$19,873,002	3,953	\$3,673,355	255	\$452,172	3,649	\$3,196,204	49	\$24,070	1
9,474,040	532,319	1,468,261	3,615,032	3,858,437	767	651	686,013	137	123,160	17	24,268	119	98,292	1	600	2
197,938	11,800	38,000	64,220	83,918	5	4	8,000									3
1,167,367	11,100	282,801	191,287	682,179	5	24	52,340	7	6,800			7	6,800			4
22,013,317	547,511	2,096,403	5,851,505	12,917,897	1,015	1,193	1,240,865	218	182,654	6	5,300	211	176,994	1	360	5
20,732,554	850,688	2,754,025	5,284,337	11,837,504	294	610	802,820	177	218,160	17	33,050	169	184,110	1	1,000	6
1,209,217	21,010	86,973	405,051	696,183	88	65	52,720	18	14,755	2	1,950	14	12,355	2	450	7
711,708	43,480	59,050	171,325	437,853	146	34	27,378	8	7,500			8	7,500			8
200,175	8,195	12,605	91,275	88,100	93	1	468									9
8,802,056	435,194	1,198,230	2,872,164	4,296,468	214	548	596,524	113	105,841	4	8,500	100	97,341			10
7,479,599	222,179	937,410	3,360,402	2,050,608	1,049	603	670,815	121	94,015	7	10,000	114	84,015			11
2,043,143	105,552	498,030	988,104	1,351,358	110	89	107,525	22	21,030	3	3,200	19	18,730			12
30,083,108	264,263	798,436	1,060,467	3,300,912	329	209	207,266	25	19,271	2	3,000	21	15,557	2	714	13
168,884	2,441	16,200	85,360	64,883	56	9	5,840	1	1,000			1	1,000			14
8,879,543	469,531	656,110	1,729,808	6,024,094	1,028	443	398,704	19	18,598	3	5,000	14	12,618	2	980	15
7,246,429	392,527	320,995	683,050	5,849,848	58	105	132,838	8	2,000			8	2,000			16
8,135	450	775	3,300	3,610	5											17
9,752,288	471,067	808,190	2,281,911	6,101,120	1,103	617	489,312	98	89,280	6	13,635	91	74,745	1	900	18
30,083,682	1,133,799	4,526,518	7,087,033	16,736,362	378	1,730	2,091,979	356	375,024	32	46,294	324	329,630			19
13,167,345	1,095,275	2,050,762	2,695,614	7,265,694	984	500	369,242	207	95,139	6	7,259	200	87,380	1	500	20
1,397,403	38,806	145,302	434,722	778,673	284	39	43,392	6	5,480			6	5,480			21
3,098,263	343,772	378,872	544,244	1,831,375	396	42	69,373	7	2,240			7	2,240			22
32,304,459	2,004,114	2,366,092	5,126,676	22,807,577	953	1,051	1,145,545	112	124,567	10	37,300	90	84,978	6	2,289	23
24,149,314	707,593	1,446,306	2,913,086	19,082,329	247	774	948,231	274	252,084	14	31,000	258	218,798	2	2,283	24
17,772,675	614,570	3,161,319	5,735,005	8,261,781	727	1,096	1,185,616	242	232,422	8	17,300	233	214,222	1	900	25
6,673,193	478,582	598,191	1,537,510	4,068,910	498	447	450,845	110	92,778	9	10,750	98	80,078	3	1,950	26
4,075,364	224,185	624,196	764,026	2,462,357	42	134	187,627	45	44,583			44	44,163	1	420	27
19,414	3,500	2,550	5,104	8,200	4	1	978									28
5,085,879	253,360	479,463	1,087,049	3,266,027	500	82	80,660	41	36,100	3	8,500	38	27,600			29
744,540	114,790	101,725	216,850	311,175	131	8	4,248	1	500			1	500			30
1,516,978	44,660	269,328	406,512	794,478	23	76	92,819	15	16,625	2	3,800	13	12,825			31
10,663,376	804,183	1,170,313	2,185,819	6,503,061	1,036	290	298,591	58	45,831	2	3,500	56	42,331			32
8,001,090	396,668	978,035	3,226,627	3,429,769	1,667	592	498,013	123	93,538	7	10,533	116	83,005			33
10,026,046	688,930	682,890	1,851,303	6,802,927	1,093	420	349,689	39	34,883	10	1,200	37	33,133	1	50	34
9,354,881	941,564	1,231,362	3,339,051	3,842,904	518	335	400,185	90	55,600	1	12,700	49	42,420	1	480	35
18,116,093	550,793	1,489,889	3,670,775	12,404,636	1,607	592	584,194	129	118,006	3	3,550	121	112,631	5	1,825	36
136,091	4,225	2,050	30,050	98,266	26	1	1,200									37
6,046,275	133,795	732,423	2,507,984	2,672,163	556	301	281,164	78	56,557	2	2,200	76	54,357			38
123,264	4,250	9,700	41,020	68,294	16	8	6,320	2	1,360			2	1,360			39
14,221,060	736,922	913,069	2,022,504	9,648,565	1,489	611	601,557	78	75,602	7	12,300	68	61,802	3	1,500	40
14,860,252	1,079,216	2,335,734	4,343,311	7,101,991	350	936	1,056,589	172	187,759	3	12,300	168	174,819	1	640	41
79,510	6,730	5,180	40,525	27,075	72	6	1,470									42
4,771,025	336,933	655,185	1,237,231	2,542,276	523	79	63,924	18	16,825	2	5,000	16	11,825			43
8,237,651	234,042	736,377	2,981,619	4,285,613	1,096	375	345,776	93	72,910	5	7,533	85	64,522	2	855	44
31,082,640	2,569,288	4,845,077	11,297,765	13,270,510	985	1,167	1,430,762	250	321,211	38	63,520	208	256,171	4	1,520	45
9,464,247	234,935	713,815	2,026,643	6,488,854	859	477	462,180	102	123,834	7	0,092	153	114,392	2	380	46
83,790,061	1,056,248	2,487,428	4,673,473	25,672,852	593	1,208	1,385,015	278	256,133	13	29,068	259	222,685	6	4,380	47
94,050	7,548	12,317	39,073	35,118	35	24	27,900	23	26,700	4	9,600	19	17,100			48
293,538	3,800	10,000	41,500	220,238	1	8	13,580	2	3,200			2	3,200			49

MANUFACTURES.

TABLE 30.—LUMBER AND TIMBER PRODUCTS—DETAILED

STATE OR TERRITORY.	SALARIED OFFICIALS, CLERKS, ETC.—continued.								WAGE-EARNERS AND WAGES.			
	Saw and planing mills.								Aggregate.			
	Total.		Officers of corporations.		General superintendents, managers, clerks, etc.							
					Men.		Women.					
	Number.	Salaries.	Number.	Salaries.	Number.	Salaries.	Number.	Salaries.	Greatest number.	Least number.	Average number.	Wages.
1 United States.....	14,532	\$16,199,737	2,222	\$4,232,978	11,610	\$11,604,013	700	\$362,746	640,309	367,276	404,026	\$183,021,510
2 Alabama.....	514	562,853	125	212,142	370	342,441	10	8,270	22,325	14,257	13,682	5,062,139
3 Alaska.....	4	8,000	4	25,000	4	8,000	1	1,000	131	52	63	71,870
4 Arizona.....	17	45,540	4	10,500	12	10,500	1	1,000	576	406	520	394,767
5 Arkansas.....	975	1,067,211	101	160,338	851	885,545	23	12,330	34,280	20,776	22,298	9,561,843
6 California.....	433	584,650	73	137,250	343	417,825	17	9,585	21,322	10,912	13,181	8,043,637
7 Colorado.....	47	37,005	8	6,850	33	26,885	6	1,430	1,832	1,035	1,058	623,365
8 Connecticut.....	26	19,878	1	1,000	20	17,504	6	2,374	1,464	941	1,069	463,031
9 Delaware.....	1	468	1	468	1	468	1	468	762	462	322	102,410
10 Florida.....	435	400,683	97	173,374	329	319,473	9	3,830	13,660	8,917	10,408	3,747,572
11 Georgia.....	482	482,800	87	147,804	383	330,610	12	4,386	21,610	15,022	15,364	4,971,300
12 Idaho.....	67	85,595	7	14,590	50	70,405	1	600	2,802	1,725	1,303	813,080
13 Illinois.....	184	187,605	31	56,917	135	123,639	18	7,139	6,877	4,030	4,495	1,904,069
14 Indian Territory.....	8	8,840	7	7,000	1	1,840	1	60	533	430	312	148,617
15 Indiana.....	424	380,106	76	105,752	294	251,302	54	23,052	10,788	6,783	6,892	2,838,410
16 Iowa.....	97	130,838	24	55,000	60	71,461	7	3,477	3,132	1,952	1,935	940,895
17 Kansas.....	410	400,032	68	105,400	340	284,045	22	10,407	22	8	11	4,306
18 Kentucky.....	1,374	1,716,655	215	465,083	1,111	1,222,165	48	27,877	17,087	10,435	9,718	8,810,017
19 Louisiana.....	263	274,103	51	79,311	224	185,804	18	8,988	34,615	22,455	20,353	12,120,065
20 Maine.....	33	37,012	3	6,800	30	31,112	1	1,000	25,946	12,028	12,028	5,429,798
21 Maryland.....	35	67,133	5	36,500	25	24,746	5	2,887	3,330	2,304	1,070	800,132
22 Massachusetts.....	939	1,024,978	160	302,582	720	688,768	50	26,628	3,455	1,868	1,942	961,368
23 Michigan.....	590	696,147	77	210,070	460	475,927	17	10,150	45,838	19,411	27,400	13,057,977
24 Minnesota.....	854	953,194	97	162,145	701	776,359	26	14,000	9,551	9,551	17,213	8,051,071
25 Mississippi.....	337	358,067	63	127,400	252	217,046	22	13,531	28,303	21,842	21,233	8,780,355
26 Missouri.....	89	143,044	8	20,725	77	119,295	4	3,024	12,553	7,800	0,091	3,637,462
27 Montana.....	1	478	1	478	1	478	1	478	3,015	840	2,180	1,479,255
28 Nebraska.....	1	44,500	7	0,336	30	32,856	4	2,308	43	14	11	6,381
29 New Hampshire.....	41	3,748	6	6,000	35	3,748	1	6,000	8,035	4,102	4,594	2,017,131
30 New Jersey.....	61	70,104	11	22,600	47	51,494	3	2,100	1,419	825	900	387,960
31 New Mexico.....	232	252,700	40	91,520	172	155,904	14	5,336	1,813	881	1,134	535,983
32 New York.....	439	494,475	101	139,130	328	355,584	10	5,752	15,974	6,003	8,180	3,049,389
33 North Carolina.....	391	314,806	62	73,275	282	222,474	47	19,157	24,001	15,330	14,401	4,399,878
34 Ohio.....	275	344,585	62	60,680	204	230,505	19	14,100	6,462	6,462	6,462	2,878,770
35 Oregon.....	408	466,188	34	67,005	304	381,009	35	18,054	11,447	6,834	7,284	4,017,820
36 Pennsylvania.....	1	1,200	1	1,200	1	1,200	1	1,200	24,744	10,725	10,074	7,050,875
37 Rhode Island.....	223	224,007	36	72,817	182	149,795	5	1,005	208	160	108	95,763
38 South Carolina.....	6	4,000	1	1,000	4	3,300	1	700	13,371	0,505	0,656	2,578,320
39 South Dakota.....	533	525,055	80	136,962	430	372,153	23	13,840	368	195	164	97,096
40 Tennessee.....	704	868,830	51	131,340	712	737,010	1	480	23,758	15,382	14,900	5,400,023
41 Texas.....	6	1,470	6	1,470	6	1,470	6	1,470	18,051	13,048	13,332	6,879,744
42 Utah.....	61	47,000	3	6,200	50	37,177	8	3,722	208	104	80	47,347
43 Vermont.....	282	272,866	37	74,838	231	192,328	14	5,705	8,210	3,053	4,210	1,809,503
44 Virginia.....	917	1,109,551	140	257,643	729	828,238	30	23,070	18,527	12,005	12,100	3,943,642
45 Washington.....	315	338,346	60	106,733	236	233,185	10	8,428	41,115	26,307	28,023	18,613,318
46 West Virginia.....	930	1,128,882	151	292,024	718	799,122	61	37,730	18,051	10,788	10,460	4,704,108
47 Wisconsin.....	1	1,200	1	1,200	1	1,200	1	1,200	50,455	20,889	28,118	13,857,446
48 Wyoming.....	1	1,200	1	1,200	1	1,200	1	1,200	560	150	297	145,313
49 All other states and territories.....	6	10,380	1	2,500	4	7,400	1	480	157	91	97	63,182

LUMBER AND TIMBER PRODUCTS.

SUMMARY, BY STATES AND TERRITORIES: 1905—Continued.

WAGE-EARNERS AND WAGES—continued.												
Logging or timber camps.				Saw and planing mills.								
Men 16 years and over.				Total.				Men 16 years and over.				
Greatest number.	Least number.	Average number.	Wages.	Greatest number.	Least number.	Average number.	Wages.	Greatest number.	Least number.	Average number.	Wages.	
247,346	126,000	146,506	\$66,989,795	393,023	241,207	268,030	\$116,031,724	387,058	238,229	254,613	\$115,328,402	1
7,907	5,013	5,220	1,786,113	14,358	9,244	9,462	3,276,026	13,861	8,809	9,028	3,194,332	2
10	10	5	2,460	121	42	58	69,410	118	41	57	60,010	3
242	158	108	144,893	334	308	322	249,874	333	307	321	249,474	4
10,209	5,556	6,749	2,959,418	24,071	15,220	15,549	6,602,425	23,731	15,047	15,314	6,554,319	5
11,297	5,179	6,416	4,301,177	10,025	5,733	6,765	4,342,460	9,918	5,609	6,095	4,317,607	6
550	289	284	185,285	1,282	746	774	438,080	1,267	733	762	433,256	7
886	618	635	285,813	578	423	434	207,218	578	423	434	207,218	8
342	153	125	35,645	450	309	197	66,765	450	309	197	66,765	9
4,778	2,891	3,531	1,214,769	8,891	6,026	6,877	2,532,863	8,768	5,968	6,798	2,519,591	10
8,990	5,017	6,254	2,034,381	12,620	9,105	9,110	4,936,919	12,416	8,976	8,966	2,913,035	11
697	564	292	165,452	2,105	1,161	1,071	647,628	2,094	1,152	1,064	645,534	12
1,069	857	936	435,025	5,268	3,233	3,559	1,463,743	5,231	3,214	3,538	1,464,260	13
122	111	98	56,605	411	319	214	91,512	411	319	214	91,512	14
1,291	637	734	317,330	9,497	6,146	6,168	2,541,030	9,421	6,086	6,111	2,530,529	15
403	130	88	30,755	2,729	922	1,847	916,110	2,637	890	1,785	902,818	16
				22	8	11	4,306	22	8	11	4,306	17
6,501	3,704	3,938	1,674,809	11,184	6,731	5,780	2,136,108	11,025	6,681	5,684	2,118,770	18
11,228	6,723	8,408	3,969,588	23,887	15,632	17,855	8,159,477	23,061	15,455	17,627	8,112,002	19
12,491	5,068	4,880	2,121,392	13,455	6,654	7,148	3,308,406	13,386	6,608	7,109	3,300,203	20
1,344	852	855	421,726	1,992	1,442	1,144	438,406	1,911	1,421	1,114	434,445	21
1,225	611	583	260,523	2,230	1,257	1,359	691,845	2,205	1,247	1,344	688,207	22
19,581	5,572	10,472	4,530,872	26,257	13,839	16,988	8,218,105	25,889	13,630	16,780	8,171,871	23
15,545	4,654	7,487	3,435,809	15,610	4,807	9,726	5,215,292	15,581	4,875	9,705	5,210,778	24
10,242	8,742	8,185	3,491,607	17,380	13,100	13,048	5,288,658	17,131	12,923	12,852	5,244,280	25
4,000	2,021	2,031	1,107,799	8,553	5,788	6,400	2,529,003	8,202	5,624	6,235	2,484,305	26
1,813	297	1,004	605,003	1,802	552	1,176	874,252	1,801	551	1,175	874,102	27
13	5	3	1,500	30	9	8	5,881	30	9	8	5,881	28
4,221	1,630	2,122	908,743	3,814	2,472	2,472	1,108,888	3,789	2,448	2,448	1,102,538	29
722	340	384	102,020	697	485	516	225,040	696	484	515	224,728	30
679	340	400	210,053	1,134	541	728	310,930	1,088	529	711	314,487	31
7,170	2,440	3,176	1,337,240	8,804	4,523	5,010	2,312,149	8,761	4,500	4,985	2,305,000	32
8,041	4,632	4,670	1,402,494	10,590	10,598	9,821	2,907,414	16,306	10,448	9,676	2,877,245	33
2,330	1,289	1,272	563,319	8,552	5,173	5,170	2,315,451	8,509	5,151	5,150	2,311,252	34
4,050	2,296	2,350	1,502,775	7,391	4,538	4,934	3,055,051	7,333	4,501	4,898	3,043,066	35
11,002	6,018	7,353	3,453,010	13,652	9,807	9,321	4,500,850	13,426	9,678	9,165	4,464,707	36
156	75	109	51,284	112	94	80	44,479	112	94	89	44,479	37
5,320	3,018	3,944	1,003,532	8,051	5,887	5,712	1,674,738	7,955	5,829	5,655	1,568,380	38
193	70	88	62,010	175	125	76	44,130	175	125	76	44,130	39
6,518	4,346	4,486	1,820,335	17,240	11,036	10,414	3,670,588	16,839	10,809	10,122	3,622,093	40
5,995	4,086	4,234	1,921,274	12,956	8,902	9,008	3,058,470	12,905	8,930	9,065	3,052,459	41
78	39	20	9,638	210	155	60	37,700	205	144	64	36,218	42
3,179	1,266	1,205	521,220	5,040	2,687	3,011	1,288,277	5,004	2,670	2,901	1,282,518	43
7,519	4,816	4,743	1,489,659	11,008	7,789	7,447	2,453,983	10,760	7,625	7,290	2,426,495	44
16,142	8,932	10,229	7,095,437	24,973	17,375	17,794	11,517,881	24,863	17,321	17,736	11,497,360	45
7,417	4,548	4,852	2,253,992	9,283	6,240	5,608	2,540,116	9,208	6,166	5,568	2,532,217	46
21,965	7,076	10,588	5,112,810	28,490	13,813	17,530	8,744,636	28,275	13,683	17,372	8,706,445	47
427	91	242	113,802	142	59	55	31,421	141	58	54	31,211	48
69	29	42	30,637	88	62	55	32,545	88	62	55	32,545	49

MANUFACTURES.

TABLE 30.—LUMBER AND TIMBER PRODUCTS—DETAILED

STATE OR TERRITORY.	WAGE-EARNERS AND WAGES—continued.								AVERAGE NUMBER OF WAGE-EARNERS EMPLOYED DURING EACH MONTH.				
	Saw and planing mills—Continued.								Logging or timber camps.				
	Women 16 years and over.				Children under 16 years.				Men 16 years and over.				
	Greatest number.	Least number.	Average number.	Wages.	Greatest number.	Least number.	Average number.	Wages.	January.	February.	March.	April.	May.
1 United States.....	1,317	851	911	\$236,995	3,748	2,187	2,506	\$406,327	160,029	107,058	154,834	133,485	134,210
2 Alabama.....	219	217	218	52,962	278	218	216	28,732	5,072	5,383	5,306	5,307	5,187
3 Alaska.....					3	1	1	400		10	10	10	10
4 Arizona.....					1	1	1	400	207	180	197	217	215
5 Arkansas.....	8	8	5	1,426	332	165	230	46,086	6,383	6,555	6,189	6,097	6,312
6 California.....	39	31	22	11,750	68	33	48	13,203	2,887	2,846	3,293	6,094	9,159
7 Colorado.....	13	11	11	4,514	2	2	1	310	240	241	248	278	258
8 Connecticut.....									682	673	681	631	615
9 Delaware.....									117	144	160	164	144
10 Florida.....	59	13	19	5,200	84	45	60	8,102	3,692	3,801	3,759	3,633	3,371
11 Georgia.....					204	129	144	23,284	6,313	6,414	6,621	6,581	6,306
12 Idaho.....	10	8	6	1,844	1	1	1	250	465	210	180	100	206
13 Illinois.....	3	3	2	640	34	16	19	3,843	875	895	922	882	902
14 Indian Territory.....									106	104	104	102	105
15 Indiana.....	21	19	11	3,636	55	31	36	6,915	719	803	682	637	676
16 Iowa.....	25		11	2,680	67	32	51	10,712	377	275	147	41	33
17 Kansas.....													
18 Kentucky.....	9	9	7	1,446	150	91	89	15,802	3,374	3,521	3,832	3,074	3,013
19 Louisiana.....	8		2	400	318	177	226	47,075	7,867	8,211	8,379	8,426	8,774
20 Maine.....	44	33	27	6,154	25	13	12	2,049	9,715	8,874	8,233	2,330	2,103
21 Maryland.....	20		7	1,000	61	21	23	2,901	734	754	824	946	933
22 Massachusetts.....	19	7	11	3,023	5	3	4	615	894	902	815	663	512
23 Michigan.....	89	69	72	15,845	279	140	130	30,339	16,454	15,608	12,447	6,820	6,347
24 Minnesota.....	4	4	3	430	25	18	18	3,094	14,462	14,236	11,997	5,309	3,067
25 Mississippi.....	46	39	42	11,891	203	138	164	32,487	7,815	7,833	7,844	8,030	8,450
26 Missouri.....	82	38	60	15,391	209	126	165	29,607	2,486	2,573	2,105	2,571	2,527
27 Montana.....	1	1	1	150					1,582	1,514	979	902	796
28 Nebraska.....									9	9	5	3	2
29 New Hampshire.....	33	23	23	5,610	1	1	1	240	3,567	3,476	2,855	1,769	1,529
30 New Jersey.....					1	1	1	312	505	514	483	462	367
31 New Mexico.....					46	12	17	2,443	406	389	465	343	371
32 New York.....	35	9	20	5,350	8	5	5	809	5,232	5,280	2,796	1,590	1,305
33 North Carolina.....	25	17	13	1,835	229	133	132	18,334	4,327	4,404	4,709	4,880	4,600
34 Ohio.....	22	12	8	1,058	21	10	12	2,241	1,231	1,308	1,271	1,244	1,248
35 Oregon.....	32	15	19	5,022	26	22	17	6,363	2,048	2,636	2,185	2,607	2,676
36 Pennsylvania.....	81	58	67	20,740	145	71	89	21,400	6,921	6,883	7,202	7,313	8,165
37 Rhode Island.....									147	146	145	141	133
38 South Carolina.....	14	6	6	970	82	52	51	5,388	3,636	4,001	4,110	4,226	3,856
39 South Dakota.....									109	109	107	82	83
40 Tennessee.....	166	103	115	22,869	235	124	177	24,726	4,191	4,115	4,454	4,571	4,685
41 Texas.....	12	5	3	432	39	27	30	5,579	4,176	4,132	4,277	4,305	4,279
42 Utah.....	9	7	3	995	5	4	2	466	23	10	22	8	8
43 Vermont.....	25	11	15	4,903	11	6	5	856	2,357	2,341	1,637	703	441
44 Virginia.....					248	104	167	27,488	3,771	3,994	4,071	5,084	5,090
45 Washington.....	63	38	41	15,298	27	16	17	5,214	8,839	10,393	11,256	11,697	11,728
46 West Virginia.....	19	9	8	1,380	56	35	32	6,510	4,190	4,335	4,660	4,887	5,193
47 Wisconsin.....	51	27	32	8,437	104	103	126	29,754	18,269	17,203	13,394	6,599	7,148
48 Wyoming.....	1	1	1	210					325	293	256	233	140
49 All other states and territories.....									12	12	12	37	62

LUMBER AND TIMBER PRODUCTS.

SUMMARY, BY STATES AND TERRITORIES: 1905—Continued.

AVERAGE NUMBER OF WAGE-EARNERS EMPLOYED DURING EACH MONTH—continued.							AVERAGE NUMBER OF WAGE-EARNERS, INCLUDING PIECEWORKERS, EMPLOYED DURING EACH MONTH.											
Logging or timber camps—Continued.							Saw and planing mills.											
Men 16 years and over—Continued.							Men 16 years and over.											
June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
131,482	125,046	125,935	136,021	152,112	162,991	165,149	215,104	221,709	242,906	266,388	281,725	281,712	272,539	272,733	271,504	263,203	245,643	220,070
5,232	4,555	4,653	5,106	5,153	5,389	5,337	10,123	9,040	9,031	8,645	8,075	8,625	8,419	8,760	9,223	9,204	9,200	9,322
218	103	184	174	181	205	10	17	29	29	75	83	98	81	81	77	82	31	13
6,497	6,880	7,131	7,432	7,445	7,372	6,695	319	317	335	331	324	311	307	304	319	329	327	329
9,758	9,782	9,580	8,334	6,725	5,011	3,517	14,320	14,729	15,603	15,526	15,484	14,984	15,008	16,089	16,149	15,593	15,418	14,805
758	392	338	310	284	247	222	4,159	4,208	4,814	5,416	8,263	8,824	8,843	8,762	8,244	7,387	6,243	5,177
582	506	525	620	710	700	665	624	597	702	756	800	827	857	927	840	810	727	677
98	83	83	118	143	138	108	462	479	485	478	466	431	350	353	380	415	453	450
3,311	3,313	3,360	3,541	3,531	3,592	3,498	126	171	215	244	232	184	167	179	220	234	227	165
6,071	6,009	6,055	6,101	6,172	6,237	5,988	6,506	6,746	6,928	7,010	7,172	7,109	6,847	6,831	6,895	6,621	6,544	6,367
128	171	169	172	565	549	481	9,016	9,163	9,365	9,199	8,820	8,788	8,608	8,579	9,030	9,064	8,693	8,677
592	889	889	975	1,088	1,080	934	433	515	663	1,000	1,406	1,587	1,713	1,554	1,379	1,150	918	890
105	100	88	93	90	100	94	2,800	3,074	3,229	3,565	3,638	3,715	3,740	3,822	4,000	3,940	3,017	3,255
661	625	718	793	810	861	773	158	178	196	214	248	252	253	241	250	219	185	174
22	20	16	22	27	35	41	5,359	5,493	6,239	6,563	6,570	6,340	6,300	6,217	6,162	6,200	6,060	5,727
							824	837	977	1,795	2,253	2,390	2,454	2,384	2,320	2,342	1,885	1,853
3,929	3,737	3,694	4,441	4,544	4,371	3,926	4	4	17	16	10	5	8	10	16	19	17	6
8,855	8,604	8,742	8,525	8,601	8,444	8,368	4,207	4,641	5,741	6,599	6,449	6,323	5,972	5,921	5,971	5,723	5,629	5,032
1,404	735	807	2,655	0,137	8,457	9,984	10,630	17,033	17,518	17,573	17,940	17,063	17,058	17,060	18,282	18,162	17,980	17,425
915	801	850	884	801	801	717	4,221	4,692	6,443	8,425	9,324	9,182	8,606	8,300	8,170	7,563	6,307	5,946
416	275	304	429	505	629	712	912	937	1,138	1,318	1,352	1,258	1,142	1,084	1,121	1,101	1,058	967
6,667	6,675	6,779	8,591	10,438	13,182	15,659	1,400	1,402	1,413	1,452	1,364	1,251	985	1,147	1,341	1,426	1,416	1,471
2,206	2,113	2,030	3,368	7,437	11,052	12,619	12,197	12,080	14,111	18,523	21,289	22,050	20,683	19,971	18,017	16,806	14,183	10,844
8,294	8,107	8,193	8,423	8,447	8,550	8,224	4,193	4,539	5,785	6,908	7,539	7,609	7,431	7,067	7,233	7,806	8,501	4,410
2,544	2,701	2,710	2,919	2,890	2,693	2,344	12,205	12,157	12,617	13,245	13,147	13,001	13,187	13,158	13,166	13,178	12,806	12,297
							5,844	6,053	6,330	6,280	6,577	6,508	6,400	6,442	6,432	6,265	6,043	5,586
624	420	668	1,046	1,165	1,247	1,105	814	794	963	1,164	1,350	1,430	1,405	1,403	1,451	1,314	1,033	793
1,458	824	1,017	1,412	2,105	2,393	3,059	18	14	11	6	7	8	5	5	5	5	5	4
345	318	304	101	351	431	487	2,650	2,729	2,910	2,961	2,790	2,472	2,019	1,834	2,108	2,210	2,261	2,414
331	312	300	593	406	505	322	450	446	543	532	523	508	497	507	484	510	500	500
1,382	1,562	2,235	3,056	4,150	4,619	4,806	545	594	719	813	796	755	706	741	745	687	755	676
4,683	4,594	4,635	4,802	4,702	4,804	4,600	3,672	3,529	4,597	5,617	6,363	6,176	5,772	5,557	5,570	5,005	4,300	3,662
1,248	1,195	1,193	1,315	1,336	1,335	1,340	4,806	4,273	4,906	5,586	5,521	5,489	5,306	5,356	5,511	5,473	5,326	4,815
2,075	2,587	2,527	2,380	2,238	2,228	2,013	3,761	3,832	4,266	5,090	5,681	5,822	5,651	5,632	5,385	4,921	4,500	4,205
8,265	7,896	7,374	7,131	7,164	7,084	6,838	7,448	7,597	8,331	9,804	10,291	10,134	9,655	9,696	9,802	9,482	9,177	8,503
89	85	85	80	86	86	91	100	101	96	96	96	93	75	57	70	85	90	100
3,832	3,854	3,753	3,748	3,803	4,038	4,162	100	101	96	96	96	93	75	57	70	85	90	100
64	65	64	61	78	108	136	5,306	5,671	5,646	5,717	5,899	5,709	5,689	5,738	5,520	5,616	5,759	5,590
4,611	4,495	4,503	4,675	4,637	4,544	4,345	65	65	83	85	81	83	98	76	81	81	54	65
4,116	4,184	4,315	4,267	4,353	4,255	4,140	9,213	9,393	9,966	10,507	10,430	10,637	10,418	10,583	10,721	10,143	9,905	9,548
11	30	32	25	28	26	17	8,766	8,982	9,147	9,091	9,230	9,028	9,064	9,147	9,254	9,152	9,061	8,858
404	364	374	678	1,191	1,703	2,267	2,515	2,724	3,120	3,777	3,990	3,503	2,974	2,803	2,849	2,747	2,475	2,355
4,931	4,746	4,629	5,195	5,283	5,076	4,245	5,922	6,279	7,141	7,534	7,628	7,566	7,371	7,408	8,060	8,076	7,727	6,708
10,647	8,743	9,039	10,122	10,825	10,123	9,336	15,807	16,993	18,442	19,034	19,322	18,670	17,186	17,814	18,105	17,619	17,558	16,282
5,481	5,473	5,288	4,754	4,737	4,600	4,527	4,400	4,527	5,473	5,860	6,071	6,100	5,070	6,021	5,837	5,830	5,396	5,222
6,007	5,924	5,334	7,125	10,159	13,618	15,775	13,213	13,882	16,685	19,519	20,484	22,077	20,420	19,918	18,442	17,451	14,570	11,798
105	106	129	260	321	363	373	34	30	32	39	60	78	82	87	69	53	40	35
63	63	63	65	64	39	12	30	30	30	60	80	80	59	50	52	68	82	30

LUMBER AND TIMBER PRODUCTS.

SUMMARY, BY STATES AND TERRITORIES: 1905—Continued.

MISCELLANEOUS EXPENSES.							MATERIALS USED.						
Total.	Rent of works.	Taxes.	Rent of offices, interest, insurance, and all other sundry expenses not hitherto included.	Animals used in logging.		Contract work.	Aggregate cost.	Logging or timber camps.					
				Number.	Cost of keep.			Total cost.	Stumpage value of timber cut for logs or bolts.		Other stumpage, for files, poles, etc. (cost).	Supplies (cost).	
									M feet B. M.	Cost.			
\$82,886,280	\$447,002	\$5,008,238	\$30,510,255	131,520	\$12,212,047	\$34,706,938	\$183,786,210	\$80,412,828	27,940,097	\$72,347,227	\$3,562,710	\$4,502,891	1
2,588,920	18,722	93,587	801,784	11,587	804,051	810,776	3,909,616	1,937,361	1,100,362	1,718,066	38,295	180,100	2
8,573	1,254	349	6,970	.....	.....	.....	77,014	500	1,000	500	.....	.....	3
120,177	.....	7,704	30,257	123	21,130	61,017	162,361	137,544	50,957	120,134	7,508	9,902	4
5,040,775	18,106	247,086	1,990,205	6,665	638,182	2,146,206	6,829,651	3,062,945	1,490,729	2,661,303	96,883	244,769	5
2,617,329	5,180	229,452	1,325,551	3,351	323,815	733,325	2,652,951	1,877,015	1,098,550	1,523,339	99,492	257,214	6
275,837	2,031	12,829	115,410	605	83,764	61,803	490,370	158,602	96,713	137,060	2,869	12,773	7
236,070	400	3,850	77,386	427	44,246	110,182	499,802	391,812	57,569	239,178	148,594	4,100	8
57,171	407	893	11,026	266	14,615	30,230	143,979	62,415	25,581	35,512	1,275	.....	9
1,641,874	6,880	92,292	650,826	3,307	304,701	527,085	2,870,497	1,468,125	674,234	1,230,710	28,875	208,540	10
2,059,604	11,956	80,550	570,615	10,195	1,060,070	336,413	2,996,891	2,255,954	1,145,344	1,922,365	163,070	170,510	11
683,872	621	73,181	236,348	222	21,940	351,782	771,437	164,123	90,755	126,193	30,250	7,680	12
643,776	7,302	27,396	411,053	576	34,871	162,194	3,326,460	336,342	96,625	283,196	48,243	4,903	13
84,402	50	850	32,470	64	2,823	48,200	206,765	30,170	2,706	8,198	21,005	997	14
971,310	22,031	71,021	573,314	771	59,355	244,089	7,648,250	1,067,280	137,451	1,051,511	35,262	10,155	15
813,609	260	37,592	278,166	272	22,615	475,066	2,781,420	455,009	87,244	445,906	1,503	7,900	16
1,906	35	156	1,775	.....	.....	.....	4,875	.....	.....	.....	.....	.....	17
1,707,672	9,904	55,519	651,298	3,020	213,370	867,521	5,354,554	1,562,200	355,365	1,326,068	168,093	67,139	18
6,401,242	20,092	294,398	3,005,041	6,710	687,350	2,393,761	8,799,944	5,276,056	2,088,971	4,727,272	110,463	438,321	19
2,538,186	32,482	105,166	812,997	4,411	332,530	1,255,011	7,084,181	2,425,643	621,943	2,300,852	74,255	50,536	20
250,154	639	8,010	75,725	624	53,401	111,479	1,043,346	465,245	101,612	423,593	34,417	7,235	21
450,532	10,010	27,776	222,066	734	72,671	127,009	2,428,441	476,915	103,392	433,628	37,738	5,549	22
5,557,963	18,222	744,039	2,070,159	6,399	773,778	1,951,765	14,182,066	6,467,277	1,488,661	5,636,684	524,113	306,480	23
6,339,459	13,275	479,647	1,641,328	5,185	478,998	3,720,211	12,302,578	6,862,475	1,392,660	6,478,318	183,015	201,142	24
3,644,663	4,022	200,068	1,453,760	12,427	804,207	1,122,066	5,893,360	3,331,534	1,492,789	2,983,786	97,008	250,740	25
2,007,299	8,700	55,403	635,357	3,086	344,843	962,987	2,660,497	940,473	538,110	707,939	77,159	95,375	26
505,015	495	43,606	185,851	716	76,903	198,070	426,825	323,174	218,094	289,122	12,340	26,712	27
2,320	25	210	1,485	12	600	.....	5,369	.....	750	2,250	.....	100	28
1,274,885	6,085	57,996	225,500	2,170	180,021	805,223	2,817,671	1,731,729	359,971	1,541,372	162,923	27,429	29
135,070	1,291	5,051	38,300	303	33,478	59,050	313,611	209,731	33,579	179,423	28,643	1,065	30
221,133	200	24,829	108,002	202	20,657	58,445	254,277	199,900	70,944	172,168	2,297	25,435	31
1,454,607	40,893	69,015	512,770	2,805	206,713	555,400	5,309,793	1,884,639	394,355	1,792,247	71,007	21,385	32
2,379,742	19,949	67,810	594,996	5,026	484,735	1,212,252	4,470,020	2,120,795	1,056,777	2,027,335	8,455	84,975	33
1,612,773	19,101	60,343	804,214	1,688	139,206	680,840	5,099,015	1,821,380	200,522	1,704,545	41,867	14,068	34
1,209,294	11,110	93,418	603,512	1,349	131,500	279,754	4,412,422	702,594	658,857	629,802	10,773	62,019	35
5,749,729	10,797	165,137	1,210,473	4,581	496,900	3,896,422	10,005,505	7,260,612	1,544,519	6,735,841	395,028	129,743	36
83,091	.....	977	10,108	100	12,646	59,390	100,177	95,230	12,848	52,060	42,020	250	37
791,396	2,066	34,993	373,542	3,226	297,407	84,288	1,617,713	852,954	469,831	777,349	13,159	62,449	38
61,741	65	1,230	8,318	173	21,818	30,310	38,987	31,636	13,686	27,011	3,435	1,190	39
2,466,319	18,420	54,168	981,105	3,425	291,137	1,121,489	8,520,212	2,145,978	510,980	1,780,730	329,723	35,525	40
2,461,832	8,068	86,975	752,055	6,440	525,263	1,089,471	3,642,484	2,599,099	1,260,419	2,241,919	127,303	230,387	41
7,709	1,119	551	3,409	53	2,530	100	55,264	4,040	2,014	3,770	.....	270	42
774,931	5,370	38,367	252,393	2,203	193,409	310,332	2,183,098	813,027	201,756	793,347	4,785	14,895	43
1,631,468	10,382	51,596	643,605	4,390	430,956	485,929	3,339,475	1,936,517	840,774	1,810,158	50,801	75,558	44
5,439,304	35,250	334,002	2,682,430	2,234	341,188	2,046,425	16,325,954	4,103,675	3,127,729	3,333,627	17,973	752,075	45
2,492,212	22,078	70,070	718,610	2,555	297,802	1,382,752	3,763,461	2,453,402	732,515	2,289,175	67,791	131,496	46
5,125,145	13,167	789,999	1,970,796	6,600	589,675	1,761,598	15,818,278	7,814,076	1,796,555	7,445,044	110,469	252,563	47
151,148	96	2,149	48,649	83	3,988	96,266	40,420	31,337	5,900	6,840	22,509	1,988	48
19,801	.....	2,576	7,766	48	3,930	6,529	117,143	26,448	11,289	16,873	2,765	6,810	49

TABLE 30.—LUMBER AND TIMBER PRODUCTS—DETAILED

MATERIALS USED—continued.											
Sawmills (including veneer mills, stave mills, etc.).											
STATE OR TERRITORY.	Total cost.	Logs (scaled measurement) purchased.		Bolts, purchased.		Fuel (cost).	Rent of power and heat (cost).	Mill supplies (cost).	All other materials (cost).	Freight (cost).	
		M feet B. M.	Cost.	Cords.	Cost.						
1 United States...	\$93,476,012	8,592,608	\$75,880,379	1,850,380	\$7,052,201	\$180,923	\$25,764	\$5,697,667	\$2,604,540	\$1,936,348	
2 Alabama.....	1,769,713	160,446	1,263,922	23,479	120,905	2,000	64	170,801	170,647	29,224	
3 Alaska.....	77,114	6,669	66,834					4,390		5,890	
4 Arizona.....	20,724	1,188	5,563					5,204	0,957		
5 Arkansas.....	3,392,802	312,634	1,825,091	152,200	975,362	640		277,112	221,654	62,943	
6 California.....	601,694	25,457	175,359	19,726	102,512	12,880	1,530	173,803	122,183	13,427	
7 Colorado.....	314,082	42,300	280,800			150		15,300	0,823	8,000	
8 Connecticut.....	81,563	7,829	71,106			1,425		6,462	1,030		
9 Delaware.....	24,218	3,505	19,145	1,175	3,263			1,762	35	13	
10 Florida.....	1,302,802	140,628	1,065,091	2,650	11,030	3,243	1,180	190,395	17,377	11,521	
11 Georgia.....	642,868	52,205	385,282	6,361	38,050			184,373	29,928	4,965	
12 Idaho.....	542,021	107,401	516,668	1,013	6,593		1,000	17,085	1,575		
13 Illinois.....	2,218,232	159,542	2,110,576	22,750	61,330	7,359		38,267	18,084	31,787	
14 Indian Territory.....	176,470	24,365	152,470	2,240	13,433			4,662	75	5,800	
15 Indiana.....	6,307,800	402,780	5,695,582	73,742	247,445	10,482	1,328	181,080	25,060	246,842	
16 Iowa.....	2,004,444	138,218	2,036,917	40	90	5,557		42,718	1,140	8,022	
17 Kansas.....	4,875	850	4,600					175	100		
18 Kentucky.....	3,488,486	270,626	2,945,128	60,865	210,138	2,175	94	89,323	117,380	118,248	
19 Louisiana.....	3,215,559	359,727	2,498,475	10,900	51,770	1,100		490,236	90,683	68,205	
20 Maine.....	4,458,668	357,574	4,015,297	70,035	272,201	1,670	3,380	101,789	52,878	11,444	
21 Maryland.....	400,944	37,274	431,830	6,878	25,553	3,050		17,708	9,713		
22 Massachusetts.....	1,860,287	90,707	1,795,043	1,524	6,324	14,540	50	33,872	9,653	805	
23 Michigan.....	7,218,232	602,250	5,431,808	140,104	395,832	18,248	200	438,135	473,077	470,842	
24 Minnesota.....	5,220,310	397,007	4,759,005	13,600	38,685	12,247	46	174,892	111,717	123,690	
25 Mississippi.....	2,351,215	245,120	1,714,615	16,419	132,865	3,330		280,301	151,453	67,661	
26 Missouri.....	1,528,408	163,482	1,029,350	73,299	265,808	7,836	50	112,012	11,712	101,634	
27 Montana.....	83,031	9,488	49,760	780	2,264			27,837	3,170		
28 Nebraska.....	3,019	242	2,267				200	371	181		
29 New Hampshire.....	1,029,133	102,471	857,215	5,302	25,732	944	1,012	48,482	14,198	81,550	
30 New Jersey.....	83,870	7,463	72,325	400	2,000	560	210	5,269	3,306	200	
31 New Mexico.....	40,652	3,100	24,600					16,027	25		
32 New York.....	3,028,722	224,170	2,760,845	25,733	81,151	14,892	5,613	77,940	79,947	8,325	
33 North Carolina.....	1,888,927	267,885	1,652,611	9,983	42,089	3,548	650	134,501	45,780	19,688	
34 Ohio.....	2,904,935	192,363	2,599,860	41,120	159,027	15,395		72,610	20,041	45,190	
35 Oregon.....	3,563,060	534,333	3,314,383	11,990	41,750		2,100	144,634	50,383	9,810	
36 Pennsylvania.....	2,493,129	215,752	2,105,824	24,609	49,806	10,488	1,438	224,163	92,657	8,663	
37 Rhode Island.....	4,947	420	3,300					1,417	230		
38 South Carolina.....	672,992	92,928	599,351	210	620	10	21	90,818	5,038	67,134	
39 South Dakota.....	7,211	581	5,283					1,503	425		
40 Tennessee.....	5,545,727	375,412	3,879,643	201,609	1,108,461	9,648	558	168,620	306,703	72,094	
41 Texas.....	808,179	72,289	417,996	5,268	12,352			295,927	81,624	280	
42 Utah.....	51,146	8,225	49,660					1,456			
43 Vermont.....	1,046,884	115,561	976,450	910	4,815	350	412	41,258	14,919	8,680	
44 Virginia.....	924,741	95,495	683,496	36,162	113,249	1,550	300	97,130	13,425	15,681	
45 Washington.....	11,914,320	1,436,537	8,661,723	700,675	2,123,826		1,908	789,100	252,384	85,319	
46 West Virginia.....	964,924	90,406	816,858	5,380	21,230	1,232		112,724	4,854	14,026	
47 Wisconsin.....	6,877,469	614,759	6,058,925	79,474	274,659	23,094	730	379,832	31,601	108,637	
48 Wyoming.....	8,858	1,225	7,225					1,398	225	10	
49 All other states and territories.....	90,655	1,975	90,660					655			

LUMBER AND TIMBER PRODUCTS.

SUMMARY, BY STATES AND TERRITORIES: 1905—Continued.

MATERIALS USED—continued.						PRODUCTS.						
Planing mills and remanufactures.						Logging or timber camps.						
Total cost.	Rough lumber, purchased.		Mill supplies (cost).	All other materials (cost).	Freight (cost).	Aggregate value.	Total value.	Logs (scaled measurement) cut for use in sawmill (M feet B. M.). ¹		Fence posts.		
	M feet B. M.	Cost.						M feet B. M.	Value.	Number.	Value.	
\$9,896,470	575,540	\$7,132,068	\$1,359,013	\$1,243,274	\$162,115	\$530,022,690	\$51,531,951	24,582,093	3,398,675	\$25,475,389	17,483,268	\$1,253,167
202,542	15,434	120,047	58,267	23,628	600	15,939,814	788,089	1,033,078	73,200	503,442	30,000	3,000
300			300			246,380		1,000				
4,093			1,051	2,442		960,778	35,942	50,957				
463,904	39,787	369,636	70,129	24,067	72	28,065,171	1,397,754	1,437,257	57,314	415,785	10,259	920
174,242	6,177	70,026	54,304	40,393	519	18,275,891	1,325,710	1,065,685	31,265	328,730	2,363,063	124,713
22,686	1,215	15,090	4,966	2,600		1,753,791	19,225	95,213	1,500	7,500		
26,427	932	25,745	582	100		1,562,254	527,618	52,109	5,825	57,219	128,554	10,313
27,346	1,350	13,500	241	13,605		430,443	21,075	25,581			5,400	650
93,340	4,524	48,298	20,404	15,288	350	10,901,650	304,237	659,205	19,191	132,932	11,120	1,209
98,069	3,925	39,970	43,737	12,470	1,892	14,435,563	1,267,184	1,116,895	25,917	245,773	2,660	552
64,363	5,682	54,403	7,115	2,875		2,834,506	272,249	81,123	11,082	83,003	1,005,000	32,400
722,175	38,410	453,011	7,220	213,118	18,826	7,081,470	97,829	439,550	1,770	16,822	31,696	3,378
125			125			588,078		142,905		250	200	25
243,211	11,128	223,489	9,910	7,952	1,860	14,569,662	181,415	132,657	825	31,362	47,400	4,420
231,967	17,930	206,778	9,153	7,907	8,126	5,010,772	40,666	85,242	2,000	30,000	1,300	165
						20,700						
303,868	17,633	259,331	12,022	27,173	4,442	14,539,000	2,174,364	312,285	41,351	569,621	10,750	1,165
305,329	5,155	71,379	183,623	48,616	1,811	35,102,374	1,868,346	1,981,921	112,329	683,941		
199,820	8,495	171,990	16,248	10,082	1,500	17,937,683	1,830,031	404,678		1,387,807	10,400	1,003
87,157	5,572	73,897	3,690	9,561		2,760,339	172,010	101,692			13,978	1,924
91,230	5,186	81,534	4,287	3,428	1,000	4,903,714	313,300	93,644	10,391	105,484	12,125	1,587
496,557	37,427	369,612	48,738	44,358	33,849	40,569,335	4,883,022	1,328,325	160,068	1,562,500	6,505,427	448,076
219,793	0,229	166,688	49,392	13,413	300	33,183,309	5,475,997	1,084,530	311,220	3,606,177	3,928,997	262,587
210,611	32,862	105,744	69,239	34,401	1,227	24,035,539	1,358,441	1,483,502	9,329	92,313	41,200	2,120
181,616	13,144	119,551	33,016	24,720	4,329	10,903,783	547,874	593,981	32,055	166,777	44,870	3,024
15,620			11,500	4,120		3,024,674	245,560	197,043	21,538	102,100		
						19,624		750				
56,809	4,000	49,711	4,043	1,555	1,500	7,519,431	1,047,787	321,418	43,772	407,215	8,250	805
20,010	1,716	19,455	435	120		1,116,884	167,243	33,135	484	11,010	30,791	7,476
13,725	600	7,200	6,275	250		1,315,364	14,817	76,944			1,000	250
306,342	18,525	332,565	12,731	50,471	545	13,310,413	901,915	341,849	51,692	462,428	110,384	12,112
450,328	30,389	376,836	37,982	30,765	4,745	15,731,379	250,478	1,040,148	19,892	127,730	3,230	498
372,700	16,906	338,249	8,603	21,906	3,942	12,507,992	333,310	252,644	10,686	175,342	285,993	39,420
146,788	4,990	46,938	48,666	49,331	1,833	12,488,908	1,484,969	435,530	223,357	1,377,052	45,015	2,821
251,764	10,557	195,932	20,208	25,224	1,400	31,642,390	3,590,563	1,476,674	73,298	707,311	323,034	29,431
						401,170	176,365	12,588	260	2,300	23,400	3,965
91,767	7,285	63,920	25,405	1,610	832	6,791,451	142,551	467,859	4,196	35,817	1,027	244
140			140			275,190	63,080	12,757	929	9,290		
828,507	50,383	727,791	29,403	54,291	17,052	21,580,120	2,049,253	499,949	11,942	219,124	757,098	96,395
234,696	8,062	64,733	129,913	40,050		16,278,240	1,280,443	1,235,667	27,138	182,446	235,950	26,730
						133,044	400	2,872	42	400		
323,157	17,583	246,074	17,717	57,916	550	5,888,441	81,755	199,183	1,725	17,058	22,900	2,915
478,217	40,033	438,846	16,810	15,407	7,154	13,040,860	478,935	817,229	24,050	193,226	29,711	4,874
307,959	4,563	52,778	146,587	103,202	5,392	49,672,512	9,989,766	1,502,874	1,624,815	9,588,517	82,100	4,185
						14,933,472	1,069,753	705,166	29,518	258,430	39,512	6,358
310,075	12,744	260,430	8,580	6,528	34,537	44,305,766	2,443,487	1,612,398	190,411	1,559,596	1,272,883	110,827
1,120,733	57,007	829,991	106,471	189,331	940	426,433	308,723	5,690				
225			225			292,933	18,722	11,289				
40			40									

¹ For total value of saw logs produced, see Table 6.

MANUFACTURES.

TABLE 30.—LUMBER AND TIMBER PRODUCTS—DETAILED

PRODUCTS—continued.												
Logging or timber camps—Continued.												
STATE OR TERRITORY.	Hemlock bark.		Oak bark.		Railway ties.		Telegraph and telephone poles.		Charcoal.		All other products (value).	Amount received for contract work.
	Cords.	Value.	Cords.	Value.	Number.	Value.	Number.	Value.	Bushels.	Value.		
1 United States ...	391,691	\$2,347,463	69,873	\$470,722	36,445,308	\$12,413,793	2,080,482	\$2,383,275	1,587,443	\$112,401	\$4,152,166	\$2,923,575
2 Alabama.....					945,404	242,605	1,300	705			37,137	1,200
3 Alaska.....												
4 Arizona.....					87,446	35,942						
5 Arkansas.....					2,486,754	804,091					19,933	156,425
6 California.....			16,695	189,353	1,363,440	340,154	4,919	6,950			166,511	169,305
7 Colorado.....					15,500	5,975					750	5,000
8 Connecticut.....	550	2,820			633,960	240,510	61,538	160,534	6,000	600	32,110	23,512
9 Delaware.....					10,780	6,465		800	60,000	4,775	7,350	
10 Florida.....					342,813	119,772		140	2,000	500	48,854	846
11 Georgia.....			12	96	2,762,493	899,764	4,194	6,735			107,944	6,320
12 Idaho.....					50,000	12,000	84,207	141,446			1,600	
13 Illinois.....					676,840	274,552	91	83			141,515	3,200
14 Indian Territory.....					300,000	132,880						
15 Indiana.....			118	900	357,670	126,318	80	40			16,975	1,400
16 Iowa.....					26,000	14,400					2,101	
17 Kansas.....												
18 Kentucky.....	180	1,120	1,943	12,424	3,765,777	1,461,718	10,200	10,335			89,181	28,800
19 Louisiana.....					1,173,600	388,644	55,000	68,600			218,218	508,943
20 Maine.....	19,080	99,548	65	200	162,332	43,567	19,281	26,288	25,300	2,024	248,148	21,386
21 Maryland.....	9,365	54,765	12,625	10,640	142,345	56,237	2,840	2,631	43,600	3,070	35,341	7,108
22 Massachusetts.....	738	4,790			263,275	84,763	3,284	4,735	3,000	500	44,358	67,143
23 Michigan.....	93,808	601,494			2,069,436	936,310	821,551	830,841	250,000	16,800	306,582	179,819
24 Minnesota.....					1,108,633	386,111	347,125	275,030			230,300	715,783
25 Mississippi.....					2,812,000	1,125,368	1,500	900			137,800	
26 Missouri.....					1,110,028	322,750	25,300	18,030	37,614	2,633	30,660	4,000
27 Montana.....					100,701	48,230	120,000	40,000				55,230
28 Nebraska.....												
29 New Hampshire.....	3,645	22,570	56	380	85,856	30,221	3,094	6,635	1,000	150	464,206	115,605
30 New Jersey.....			140	626	77,075	32,011	12,675	61,475			53,845	800
31 New Mexico.....					71,083	11,860		1,379				
32 New York.....	23,650	141,949	270	2,220	164,175	65,478	16,726	39,385			167,028	11,315
33 North Carolina.....	129	674	763	4,386	105,500	32,836	3,590	5,900			13,113	65,242
34 Ohio.....			960	7,465	268,203	92,838	2,800	5,000			8,445	4,800
35 Oregon.....					85,700	21,527	12,553	20,614			62,055	
36 Pennsylvania.....	121,103	755,693	15,950	121,320	1,796,270	712,486	66,375	126,710	662,184	63,774	780,213	263,625
37 Rhode Island.....	150	900			217,200	94,134	10,730	34,200	45,100	5,811	35,055	
38 South Carolina.....					167,470	47,863	1,220	1,190			28,606	28,825
39 South Dakota.....					66,000	37,918					15,872	
40 Tennessee.....	2,537	14,601	4,540	27,470	3,785,126	1,437,048	67,240	68,967			170,548	14,200
41 Texas.....					3,974,601	1,038,293	40,207	24,024			8,000	
42 Utah.....												
43 Vermont.....	5,402	33,360			7,700	2,376	1,263	838	121,645	11,764	13,335	100
44 Virginia.....	265	1,248	7,706	89,209	403,932	146,194	8,971	20,404			57,800	15,030
45 Washington.....					20,700	4,160	22,224	28,007			146,691	218,206
46 West Virginia.....	55,583	328,854	8,034	53,973	281,028	103,040	22,484	57,332			131,008	128,858
47 Wisconsin.....	55,416	283,068			337,649	96,915	220,601	282,753			30,723	70,605
48 Wyoming.....					787,166	275,507					33,216	
49 All other states and territories.....					39,405	18,722						

LUMBER AND TIMBER PRODUCTS.

SUMMARY, BY STATES AND TERRITORIES: 1905—Continued.

PRODUCTS—continued.													
Sawmills.													
Total value.	Sawed lumber used or dressed in planing mill ¹ (M feet B. M.).	Sawed lumber sold (or to be sold) rough.		Staves.		Headings.		Hoops.		Shingles.			
		M feet B. M.	Value.	Thousands.	Value.	Sets.	Value.	Thousands.	Value.	Thousands.	Value.		
\$371,282,413	10,325,370	21,904,736	\$288,935,200	2,464,659	\$19,082,641	125,353,528	\$7,436,259	546,879	\$3,159,973	14,393,352	\$23,712,609	1	
10,101,148	409,526	806,082	8,092,710	30,828	441,620	703,800	37,857	1,625	13,000	112,093	207,101	2	
210,176	2,424	5,550	203,690							926	6,477	3	
721,892	10,147	45,454	665,835									4	
16,642,247	748,701	910,863	11,010,179	287,730	2,772,964	10,928,596	1,169,701	22,876	161,676	269,706	547,301	5	
11,975,177	257,406	802,841	10,453,148	5,379	28,223	452,191	20,419			737,589	874,285	6	
1,250,087	30,262	109,832	1,148,029								950	2,875	7
953,667	3,259	46,862	761,624			47,500	4,750			6,225	17,843	8	
309,040	3,395	25,196	276,436			3,068	10,000			350	2,200	9	
8,332,247	183,701	623,680	7,525,016	8,516	47,641	3,964	232,900			14,121	188,652	451,884	10
10,481,738	224,234	892,163	9,459,340	21,432	112,897	647,051	36,446	500	1,125	364,378	672,572	11	
1,071,676	101,868	93,139	993,974								41,972	66,044	12
4,368,597	54,046	144,102	2,434,204	126,096	744,716	3,217,868	158,418	14,542	124,533	12,408	28,893	13	
432,773	590	29,110	380,138								300	750	14
13,561,263	19,925	476,948	10,521,893	158,523	707,110	5,581,957	297,767	52,004	364,215	3,600	7,695	15	
2,333,242	166,240	112,496	2,050,972	800	4,800					35,404	69,847	16	
20,700		915	15,075									17	
11,081,945	34,307	476,226	8,453,707	101,397	1,440,873	5,365,029	242,609	22,625	126,104	48,775	88,655	18	
17,043,378	1,318,628	1,135,042	14,413,281	36,380	289,945	2,530,475	128,980			801,896	1,633,958	19	
13,289,468	138,214	653,189	9,399,818	30,898	373,193	3,953,012	161,181	721	3,892	467,726	955,900	20	
2,177,503	14,625	142,240	1,889,210	18,664	75,937	71,500	2,985	395	8,120	6,677	29,761	21	
3,856,833	23,700	103,234	3,310,890	3,785	17,407	386,000	17,373	2,231	8,830	9,186	24,585	22	
30,768,916	264,875	1,555,683	21,765,967	270,138	1,745,788	20,760,572	899,269	148,720	1,028,451	1,285,175	2,398,071	23	
14,249,044	778,506	795,595	11,704,974	7,450	46,000	1,492,260	76,138	1,000	8,300	296,127	423,940	24	
16,188,480	517,133	1,193,318	14,743,402	36,580	529,510	3,824,012	459,899			56,654	112,301	25	
8,236,611	169,045	371,327	4,984,700	197,271	1,362,111	15,126,397	969,742	33,907	227,357	74,036	153,728	26	
1,256,654	111,406	107,864	1,157,299								4,536	7,827	27
19,024		1,020	15,617										28
5,680,397	40,156	361,795	4,789,187	21,703	106,234	2,107,100	48,887	4,398	32,390	16,027	35,433	29	
876,135	3,511	31,812	619,972								31,411	145,637	30
1,030,964	18,399	62,514	877,286								950	1,000	31
9,685,422	102,227	394,054	6,601,327	69,226	454,448	4,499,618	265,141	1,430	19,860	53,241	120,791	32	
10,969,304	296,253	970,297	9,819,281	13,637	55,298	846,000	39,200	2,000	10,000	192,189	566,709	33	
10,839,422	24,906	317,424	7,183,960	248,370	1,058,598	4,077,888	174,364	204,822	837,095	2,820	9,840	34	
5,050,712	427,374	555,013	4,523,891	6,000	47,000	460,000	23,000	45	1,350	117,511	174,883	35	
25,146,407	155,328	1,524,920	21,595,248	256,759	1,354,600	9,275,464	475,026	1,625	12,375	111,270	271,144	36	
224,805		14,178	207,116	600	8,000						620	1,838	37
4,549,576	164,490	407,010	4,104,698	1,050	6,900						71,736	186,296	38
109,047	1,595	11,679	162,731								270	680	39
16,818,334	65,228	657,484	11,109,593	219,466	2,786,108	5,516,317	783,084	23,079	167,822	34,936	61,045	40	
3,657,201	1,061,538	842,345	3,323,403	3,900	118,000	70,000	8,000			75,923	133,428	41	
125,589	415	10,553	115,569								550	1,180	42
2,881,646	145,548	161,266	2,352,071	12,450	66,171	87,500	2,395	15	100	16,290	34,852	43	
9,581,491	154,574	751,173	8,169,308	95,648	502,063	9,811,816	362,164	40	600	30,338	187,422	44	
25,463,282	1,040,724	1,421,903	12,280,710	30,789	112,231	1,500,000	44,000	700	4,900	8,357,457	12,203,631	45	
12,448,284	75,703	680,287	10,960,773	44,573	655,208	651,680	37,720			24,630	62,666	46	
24,772,822	951,838	1,466,089	20,432,314	60,981	368,325	11,134,699	489,416	2,278	10,318	445,698	759,031	47	
90,664	1,440	5,990	83,260								1,071	3,240	48
240,211	1,000	12,030	232,336										49

¹For total value of sawed lumber produced, see Table 11.

TABLE 30.—LUMBER AND TIMBER PRODUCTS—DETAILED

STATE OR TERRITORY.	PRODUCTS—continued.									
	Sawmills—Continued.						Planing mills.			
	Laths.		Veneers.		All other products (value).	Amount received for custom sawing.	Total value.	Finished lumber, flooring, ceiling, etc. (value).	Remanufactured products (value).	Amount received for custom planing, etc.
	Thousands.	Value.	Square feet.	Value.						
1 United States.....	2,647,847	\$5,435,068	988,537,777	\$6,005,207	\$11,383,077	\$6,041,479	\$157,208,326	\$137,591,563	\$10,134,805	\$481,958
2 Alabama.....	24,569	42,045	2,200,000	20,000	385,244	101,571	4,900,577	4,795,680	160,523	4,365
3 Alaska.....							35,204	28,204		7,000
4 Arizona.....	5,635	13,907			42,090		202,044	202,044		
5 Arkansas.....	52,594	89,013	34,013,000	77,600	175,370	41,443	10,025,170	9,263,469	758,536	3,165
6 California.....	16,962	17,260			517,429	64,407	4,974,098	3,512,830	1,437,134	25,034
7 Colorado.....	17,171	45,182			47,410	5,091	484,470	380,079	100,800	3,000
8 Connecticut.....	475	2,115			127,732	40,003		47,985	31,504	1,480
9 Delaware.....	320	705	1,320,000	0,080	4,610	5,895	103,328	19,050	84,028	250
10 Florida.....	20,975	38,756			240,700	14,701	2,294,594	2,025,540	234,500	4,554
11 Georgia.....	28,569	30,373	6,000,000	45,708	68,567	55,011	2,086,641	2,011,850	72,150	2,041
12 Idaho.....	16,137	40,000			12,032	48,330	1,400,581	1,409,062	20,000	619
13 Illinois.....	10,572	51,202	100,953,446	621,130	153,320	52,561	2,273,323	612,933	1,059,002	1,298
14 Indian Territory.....					14,080	4,125	12,400	2,700	8,500	1,200
15 Indiana.....	2,000	8,321	90,774,655	1,015,580	435,431	203,275	810,084	508,538	202,756	15,090
16 Iowa.....	58,807	157,507			39,778	11,838	3,230,864	2,839,340	391,344	180
17 Kansas.....					1,850	3,775				
18 Kentucky.....	15,837	39,875	40,186,626	179,948	195,241	204,873	1,332,601	904,253	330,215	8,223
19 Louisiana.....	151,403	294,825	12,300,000	51,490	213,433	17,457	10,280,650	15,973,527	256,923	50,200
20 Maine.....	237,173	533,511	45,908,150	143,424	1,478,575	239,974	2,818,184	1,540,811	1,262,416	14,957
21 Maryland.....	13,016	26,394	10,000,000	90,000	29,620	30,500	400,820	236,055	160,480	4,285
22 Massachusetts.....	4,877	14,209	15,692,941	114,549	172,400	107,500	733,521	488,843	235,327	9,351
23 Michigan.....	236,343	496,187	157,085,000	769,816	1,135,491	574,098	4,017,397	3,043,395	928,320	45,682
24 Minnesota.....	368,843	785,965			181,194	602,563	13,458,268	13,042,434	387,681	28,153
25 Mississippi.....	60,410	86,836	11,025,000	98,000	102,914	58,018	6,488,018	6,136,675	345,043	6,900
26 Missouri.....	22,599	37,865	27,423,985	294,858	155,959	50,291	2,119,298	2,000,720	109,327	9,251
27 Montana.....	15,648	20,333			12,120	53,075	1,522,460	1,374,655	147,007	798
28 Nebraska.....					1,305	2,702				
29 New Hampshire.....	19,082	51,277	683,000	2,752	412,572	202,165	791,247	425,404	352,672	13,181
30 New Jersey.....	12,977	37,150			45,397	28,009	73,506	66,006	4,100	3,400
31 New Mexico.....	12,054	34,615			110,593	600	269,583	220,125	40,458	
32 New York.....	55,233	140,604	122,134,335	718,026	802,520	502,705	2,723,076	2,116,530	580,106	20,440
33 North Carolina.....	31,907	47,899	22,022,313	232,620	82,173	117,124	4,511,597	4,273,544	230,087	7,966
34 Ohio.....	8,671	21,734	21,802,044	201,844	451,025	301,462	1,395,260	918,948	451,240	25,072
35 Oregon.....	76,915	127,018			140,174	13,396	5,948,227	5,188,800	766,242	3,125
36 Pennsylvania.....	219,630	521,718	16,800,000	34,000	643,994	237,702	2,905,420	2,553,257	328,342	23,821
37 Rhode Island.....					3,676	4,175				
38 South Carolina.....	20,177	32,770			39,221	86,518	2,099,324	2,030,499	50,102	18,753
39 South Dakota.....	955	3,107			1,404	1,125	43,063	42,648		415
40 Tennessee.....	21,215	45,669	120,817,500	620,876	1,003,547	189,090	2,712,533	1,691,430	1,008,043	13,000
41 Texas.....	9,597	9,738	1,600,000	6,400	51,462	6,770	11,340,596	11,280,911	51,460	8,225
42 Utah.....	929	2,293			1,652	4,805	7,055	6,370		685
43 Vermont.....	18,640	53,577	8,000,000	23,500	248,799	100,181	2,025,040	2,007,739	811,993	15,308
44 Virginia.....	37,994	74,773	5,000,000	27,250	131,095	120,810	2,080,434	1,620,499	1,353,553	0,382
45 Washington.....	229,720	380,100	81,000	1,296	383,814	52,000	14,119,464	13,330,388	797,204	21,872
46 West Virginia.....	66,325	137,088	17,500,000	55,000	214,650	325,173	1,410,435	1,326,800	83,180	6,395
47 Wisconsin.....	416,282	824,249	94,664,182	641,855	588,053	653,201	17,179,457	14,197,858	2,035,517	40,082
48 Wyoming.....	560	2,345				1,819	27,040	26,540		500
49 All other states and territories.....					10,875		25,000	25,000		

TIMBER REGIONS OF THE UNITED STATES.

By HENRY GANNETT, Geographer, United States Geological Survey.

The country, considered in a broad way, naturally separates itself into certain timber regions, as follows:

(1) The Northeastern states, including New England, New York, New Jersey, and Pennsylvania. The northeastern part of this region is forested with conifers, mainly white pine, spruce, and hemlock, becoming mixed in the southern part with hard woods, while in southern New Jersey yellow pines are found.

(2) The Lake states—Michigan, Wisconsin, and Minnesota—whose northern portions are, or were, forested mainly with white pine, merging into hard woods in the southern parts.

(3) The Southern states, which are characterized by a broad belt of yellow pine of several species, stretching from southern New Jersey, southwest and west, to Texas and Indian Territory, while the lowlands on the coast and the Mississippi bottoms are covered with cypress, and the mountain regions are mainly covered with hard woods.

(4) The Central states, characterized by a growth of hard woods, with a varying admixture of conifers.

(5) The Rocky Mountain region, where the timber is in the main confined to the mountains and consists almost entirely of conifers of several species, but largely of yellow pine.

(6) The Pacific Coast region, that is, those parts of Washington, Oregon, and California lying west of the Cascade Range and the Sierra Nevada. These forests, which are by far the heaviest in the United States, if not in the world, consist almost entirely of conifers, the prevalent tree in Washington and northern Oregon being the Douglas fir, with some cedar, spruce, and hemlock; while in the southern part of the latter state yellow and sugar pine appear and increase southward. In California yellow pine is the predominating tree, with some sugar pine, incense cedar, and several species of fir, and with *Sequoia gigantea* in small groves in the southern Sierra Nevadas; while the redwood is found in a narrow strip along the coast north of San Francisco bay.

In Table 1 are presented the statistics of timber lands and cut over and burnt lands owned by lumbermen, as reported at the census of 1905.

The table shows the amount of capital reported as invested, by states, geographic divisions, and for the United States in timber lands and cut over and burnt

lands, and also in the same detail the stand, in millions of feet, board measure, of merchantable timber distributed by species. The total thus reported in the United States, 257,122.6 million feet, is probably more than one-tenth the amount now standing in the country.

The total area covered by these holdings, 57,842 square miles, is about one-seventeenth of the estimated wooded area of the country. By "wooded area" is not meant the area covered by merchantable forests, which is quite a different matter, and one concerning which little is known.

The amount given for Michigan represents probably more than one-half the timber yet remaining in the state. That reported for Wisconsin is about one-seventh of that estimated to be still standing, which, according to the estimate of Dr. Filibert Roth, is 45 billion feet. That for Minnesota is about one-fifth the amount estimated for the state by General Andrews, chief fire warden, who estimated in 1896 that the state contained 24,790 million feet of merchantable timber. The states of Oregon, Washington, and South Dakota have been canvassed as to their timber supplies by the United States Geological Survey. The mills of Oregon report a stand of 13,580.8 million feet, board measure, as owned, while cruisions in the state indicate its total stand of timber to be 215,000 million feet, or more than sixteen times as much. The estimate of the stand in Washington is 195,688 million feet, of which 52,834.4 million feet, between one-third and one-fourth, is reported. In South Dakota the timber is practically all in the Black Hills, in the western part of the state, and is estimated at 1,502 million feet. Of this 9 million only, or a little over one-half of 1 per cent, is reported. Nearly all this body of timber is contained within a Federal forest reserve. The above are the only estimates of the total stands of states available for comparison with the returns from the mill companies, and, as is seen, they afford little basis for discussion. They serve to demonstrate only that, as was stated above, the average stand of the lands reported is much greater than that of the states as a whole, but how much greater does not appear. They show, moreover, that in old lumber regions like Michigan the lands are reported much more fully than in newer ones, such as the Pacific Coast states.

TABLE 1.—TIMBER LANDS, WITH STAND OF MERCHANTABLE TIMBER IN MILLIONS OF FEET, BOARD MEASURE,

	STATE OR TERRITORY.	CAPITAL INVESTED.		
		Total.	Timber lands.	Cut or burnt over lands.
1	United States.....	\$451,762,922	\$427,720,927	\$24,041,995
2	Northeastern group.....	59,704,907	56,610,276	3,094,631
3	Maine.....	9,103,107	8,748,038	355,069
4	New Hampshire.....	12,142,490	11,392,452	750,038
5	Vermont.....	5,143,523	4,994,770	148,753
6	Massachusetts.....	1,159,858	984,983	174,875
7	Rhode Island.....	84,165	74,355	9,810
8	Connecticut.....	240,745	222,520	18,225
9	New York.....	6,835,797	6,483,652	352,145
10	Pennsylvania.....	24,719,072	23,408,111	1,250,961
11	New Jersey.....	130,745	112,345	24,400
12	Delaware.....	130,405	120,050	10,355
13	Lake group.....	*85,908,544	79,808,800	6,129,675
14	Michigan.....	29,779,597	28,390,184	1,389,413
15	Wisconsin.....	28,973,061	24,854,703	4,118,898
16	Minnesota.....	27,245,286	26,623,022	621,364
17	Southern group.....	188,040,775	179,233,888	9,406,887
18	Maryland.....	1,257,650	1,214,120	43,530
19	Virginia.....	5,259,208	5,002,132	257,076
20	North Carolina.....	12,219,054	11,071,459	247,595
21	South Carolina.....	7,999,291	7,874,933	124,358
22	Georgia.....	9,674,390	9,033,114	641,276
23	Florida.....	13,297,830	12,676,237	621,593
24	Alabama.....	14,074,377	13,335,453	738,924
25	Mississippi.....	29,069,010	27,105,946	1,963,064
26	Louisiana.....	53,321,701	51,579,154	1,742,637
27	Arkansas.....	20,509,755	27,629,724	1,871,031
28	Texas.....	12,907,419	11,811,616	1,155,803
29	Central group.....	27,052,015	25,875,428	1,176,587
30	Ohio.....	490,835	402,772	28,063
31	Indiana.....	357,553	341,853	15,700
32	Illinois.....	843,060	813,790	29,270
33	West Virginia.....	11,099,891	11,577,457	422,434
34	Kentucky.....	3,077,007	3,021,420	55,587
35	Tennessee.....	6,112,087	5,902,045	150,042
36	Missouri.....	3,570,982	3,096,091	474,891
37	Pacific group.....	77,043,817	73,539,377	4,104,440
38	California.....	32,345,100	30,884,180	1,460,920
39	Oregon.....	8,007,139	7,310,205	1,377,873
40	Washington.....	36,691,569	35,335,031	1,265,638
41	Miscellaneous group.....	12,722,804	12,593,080	129,775
42	Arizona.....	218,975	218,975	.....
43	Colorado.....	363,505	319,095	44,440
44	Idaho.....	*3,020,965	3,009,815	*11,150
45	Indian Territory.....	24,300	24,300	.....
46	Iowa.....	31,025	16,775	14,250
47	Kansas.....	1,000	1,000	.....
48	Montana.....	5,911,911	5,890,581	21,330
49	Nebraska.....	1,250	1,250	.....
50	New Mexico.....	2,149,750	2,117,750	32,000
51	South Dakota.....	*26,000	*24,200	1,800
52	Utah.....	5,745	3,125	2,620
53	Wyoming.....	68,378	66,253	2,125

* Less than one-tenth of a million.

* Includes \$4,000 cut or burnt over lands in Nevada.

LUMBER AND TIMBER PRODUCTS.

AND CUT AND BURNT OVER LANDS, REPORTED AS OWNED BY LUMBERMEN, BY STATES AND TERRITORIES: 1905.

QUANTITY OF STANDING TIMBER, IN MILLIONS OF FEET B. M.												
Total.	Yellow pine.	Douglas fir.	Hemlock.	Redwood.	White pine.	White oak.	Spruce.	Maple.	Cypress.	Cedar.	All other.	
257,122.0	98,046.2	61,383.0	15,159.2	13,298.7	12,803.8	11,151.0	10,851.0	9,469.7	8,847.4	5,777.2	10,335.4	1
15,069.5	71.5	3.1	5,881.8		1,296.8	510.6	6,469.3	243.7	(1)	13.7	579.0	2
3,850.2		3.1	1,069.4		266.3	0.3	2,458.8	2.7		2.7	46.9	3
2,081.5			15.3		426.4	3.8	1,565.3	41.0			29.7	4
1,787.7			116.0		8.2		1,416.7	19.5			227.3	5
242.4			3.2		211.1	9.1	6.7	0.5		0.1	11.5	6
19.3					5.6	9.2					4.5	7
51.0			3.0		9.8	21.8					16.4	8
1,802.9			329.1		120.4	21.0	1,021.2	128.9			182.3	9
5,177.8	40.0		4,345.8		249.0	433.9	0.6	51.1			57.4	10
23.7	0.7					9.1				10.9	3.0	11
33.2	30.8					2.4			(1)			12
30,198.4			6,762.4		11,012.5	166.8	66.3	9,212.0		704.7	2,273.7	13
17,906.8			3,528.5		2,618.2	6.3	63.2	9,142.9		658.2	1,880.5	14
6,917.8			3,233.9		3,087.6	148.4		69.1		9.0	369.8	15
5,373.8					5,306.7	12.1	3.1			37.5	14.4	16
90,107.6	70,982.1		513.9			6,194.8	275.0	10.5	8,711.7	63.0	3,356.6	17
362.3	65.1		2.4			276.0		10.0			8.8	18
2,573.5	1,948.9					186.5	275.0		4.6		158.5	19
6,344.2	5,330.3		141.5			329.2			39.1	51.5	452.6	20
4,387.3	3,363.1					194.0			727.7	0.3	102.2	21
4,605.5	3,690.3		370.0			28.5			390.2		31.5	22
8,026.7	7,784.4								842.3			23
7,664.9	6,698.0					498.4		0.5	33.0		435.0	24
13,200.0	11,618.9					1,133.3			221.3		236.4	25
21,901.7	15,246.4					79.4			6,276.8		290.1	26
14,020.1	9,071.6					3,150.7			176.7		1,621.1	27
6,511.5	6,165.1					323.8					11.4	28
11,428.6	355.5		1,969.1		404.5	4,277.9	1,048.3	3.5	135.7	2.1	3,142.0	29
112.4					51.5	39.5					21.4	30
59.0					0.5	27.5		1.5			29.5	31
183.2						68.1		1.0	0.6		113.5	32
5,169.8	45.0		1,666.0		44.0	1,921.5	1,048.3	1.0			444.0	33
1,220.2	62.6		167.0			549.4			1.4	(1)	430.8	34
2,393.6	100.7		136.1			1,184.0			1.2	2.1	969.5	35
2,200.4	147.2				398.5	487.9			132.5		1,124.3	36
98,952.5	19,894.1	56,867.0	32.0	13,298.7			2,963.3			4,983.7	913.1	37
32,537.3	17,044.5	1,270.8		13,298.7			10.2				913.1	38
13,580.8	1,083.0	9,562.2					2,682.1			263.5		39
52,834.4	1,769.6	46,044.6	32.0				271.0			4,720.2		40
11,366.0	6,743.0	4,512.3				0.9	28.8			10.0	71.0	41
204.6	204.6											42
210.8	188.0						22.8					43
4,211.3	4,209.3									2.0		44
3.5											3.5	45
1.7						0.8					0.9	46
0.1						0.1						47
5,050.2	463.9	4,512.3								8.0	66.0	48
0.5											0.5	49
1,607.6	1,601.6						6.0				40.1	50
49.2	9.1											51
2.9												52
63.6	63.6											53

*Includes \$1,000 timber lands in North Dakota.

†Includes one-tenth of a million in North Dakota.

WHITE PINE.

This, the most valuable of the common species of timber, has its home in northern New England and in the northern half of the Lake states—Michigan, Wisconsin, and Minnesota. Much of New York, especially the Adirondack region, contained white pine originally, but from this state it has almost entirely disappeared. Its habitat stretches southward, following the line of the Appalachian mountains down through the higher parts of Pennsylvania, well into West Virginia, in which state there are still considerable bodies of this timber, and it is found in small amount in the high mountains of North Carolina.

White pine, formerly the most abundant tree in New England, has become, by persistent lumbering through many decades, greatly reduced in quantity. In Maine the holdings of lumbermen, which probably include most of the remaining stand of this species, amount to only a trifle more than a quarter of a billion feet. In New Hampshire the holdings reported amount to 87 millions, or one-fourth of those of Maine. In Vermont they are trifling, and in Massachusetts 48 millions, all of which is doubtless second or third growth. The holdings reported from New York are still less than those of Massachusetts, being only 37 millions. In Pennsylvania the holdings reported are only 77 million feet.

In West Virginia, which is known to contain quite a body of untouched white pine, situated in the most elevated region of the state, there are only 10 millions reported by the lumber companies.

The greatest bodies of white pine in the country are still to be found in the northern portion of the Lake states, the upper half of the lower peninsula of Michigan, the entire area of the upper peninsula, and in general terms the northern halves of the states of Wisconsin and Minnesota. Before lumbering commenced, these regions were covered with a fairly dense stand of almost pure white pine, merging near the lower borders into hard-wood forests. Lumbering operations have progressed westward from the East. The lower peninsula of Michigan has been nearly depleted of this timber; the upper peninsula has been cut to a large extent; while Wisconsin has suffered less, and Minnesota still less, from the operations of lumbermen. In these three states it is estimated that the enormous amount of 200,000 millions of feet, board measure, of white pine has been cut since 1873, as is shown by Table 2, extracted from the American Lumberman.

Of the stand of white pine remaining, we have estimates in Wisconsin and Minnesota, but none in Michigan later than that of Professor Sargent made in 1880, when he estimated that the amount of pine standing in Michigan was 35 billion feet, at the same

time placing that of Wisconsin at 41 billion feet. In 1897 an estimate was made of the standing timber of Wisconsin by Dr. Filibert Roth, of the United States Department of Agriculture, in cooperation with the geological survey of Wisconsin. He found 15 billion feet of white pine standing in the state at that time. Several estimates of the stand in Minnesota have been made, the earliest one which comes under my notice having been made by Professor Sargent in connection with the United States census of 1880. His figures gave a total of 8,170 million feet then standing. In 1896 Gen. C. C. Andrews, state fire warden, estimated the amount at 16,849 million feet, or a little more than double that made by Sargent sixteen years earlier. Three years later, in 1899, Mr. H. B. Ayres, acting for the United States Geological Survey, estimated that there was standing 11,190 million feet, his estimate agreeing closely with that of General Andrews. There is probably 50 billion feet of white pine standing in the country. The total amount reported as owned by lumbermen is 12,803.8 million feet.

TABLE 2.—Cut of white pine in Michigan, Wisconsin, and Minnesota: 1873 to 1905.

YEAR.	Total cut (M feet B. M.).	YEAR.	Total cut (M feet B. M.).
Total.....	200,098,454	1880.....	8,183,048
1905.....	3,663,963	1888.....	8,254,201
1904.....	4,220,917	1887.....	7,757,917
1903.....	4,701,852	1886.....	7,425,308
1902.....	5,204,305	1885.....	7,053,085
1901.....	5,336,438	1884.....	7,035,033
1900.....	5,410,333	1883.....	7,624,790
1899.....	6,050,508	1882.....	7,552,159
1898.....	6,155,300	1881.....	6,708,837
1897.....	6,233,454	1880.....	5,651,295
1896.....	5,725,763	1879.....	4,800,945
1895.....	7,050,060	1878.....	3,629,473
1894.....	6,821,510	1877.....	3,595,323
1893.....	7,326,264	1876.....	3,870,048
1892.....	8,594,223	1875.....	3,068,553
1891.....	7,879,048	1874.....	3,751,306
1890.....	8,507,623	1873.....	3,993,780

SPRUCE.

Spruce in the Eastern states is found mainly in New England, in New York, and in West Virginia, where in recent years, since the partial destruction of white pine, it has become the principal commercial timber, the amount annually cut far exceeding that of pine. The estimated stand in these states is, in round numbers, 50 billion feet, of which 7,517.6 million feet was reported as owned by lumbermen. The cut in these states in the census year was 965 million feet.

Spruce is found also in the Rocky Mountain region, where in some places it forms a notable component of the forest.

It is found also in western Washington and Oregon, scattered sparsely through the forests in the interior, and upon the Pacific coast, where it forms a large and important component of the forests.

HEMLOCK.

Hemlock occupies much the same range as does white pine, being found in the New England and other Northeastern states, and extending down the Appalachian mountains as far as southwest Virginia or North Carolina. It is found also in the neighborhood of the Great Lakes in considerable quantity. It exists in large quantities in the forests of the Pacific coast, but heretofore has been cut, at least under its proper name, to a trifling extent only, although it is a valuable timber and will be appreciated hereafter.

Growing nowhere as a pure forest, but everywhere intermingled with other species, its stand is a difficult thing to even guess, but is doubtless not less than 100 billion feet. The total amount in the country reported by lumbermen is 15,159.2 million feet.

CYPRESS.

Cypress is a tree of low, marshy regions. It occurs along the Atlantic and Gulf coasts from the Dismal Swamp, in southeastern Virginia, nearly to the Rio Grande. It is found in the lowlands and marshes of the Mississippi from southeastern Missouri to the mouth of the river.

Little is known of the amount of this timber, though it is of great value. The total amount reported as owned by lumbermen was 8,847.4 million feet, and this is probably but a small fraction, probably not more than 10 per cent, of the total stand.

SOUTHERN YELLOW PINE.

Yellow pine, of the species known as long-leaved, short-leaved, loblolly, and Cuban, is found in all the Southern states, but more than nine-tenths of it is in the Carolinas, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, and Arkansas. In these states it occupies the Atlantic plain, with the exception of the low, marshy strips near the coast occupied by cypress, while inland it extends beyond the Fall Line to varying distances in the Piedmont region, passing slowly by different stages of admixture into the hard-wood forests of the interior. Over most of its range it forms pure forests of open stand, with little or no undergrowth. The area occupied by pure pine forests in the nine states above enumerated is approximately 150,000 square miles, or about 100,000,000 acres. The average stand of timber on this area, from the best information obtainable, is not far from 3,000 feet, board measure, per acre, giving a total stand on this area of 300 billions of feet. The holdings by lumbermen of yellow pine in 1905 in these states showed a total of 70,982.1 million feet, or about one-fourth of the total estimated stand. The cut in the census year 1905 was 11,102 million feet, or 4 per cent of the estimated stand, and 16 per cent of the amount held by lumbermen.

HARD WOODS.

The central part of the United States, including the eastern portion of the upper Mississippi valley, is a region of hard woods, composed of a great variety of species. The principal of these, from an economic point of view, are the oaks, which, with gum, poplar, maple, cottonwood, elm, and ash, make up the great bulk of the forest. The forest is nowhere composed of any one species, but is made up not only of various species of hard woods, but of more or less conifers. The area in which hard woods form a predominant element of the forest is large, comprising several hundred thousand square miles, but it is ill defined. The stand differs greatly in different parts; hence it is impossible to make even a guess at the amount of timber of this species. The amount reported as owned by lumbermen is in the neighborhood of 28 billion feet, about one-half of which consists of oak. This amount reported by lumbermen doubtless forms only a small part of the stand, which may be five or ten times as great.

WESTERN YELLOW PINE.

Western yellow pine (*Pinus ponderosa*) is the commonest pine of the Rocky Mountain and Pacific Coast states. Its range extends from the Black Hills of South Dakota on the east nearly to the coast, and from the southern to the northern boundaries of the country. While many other species are found intermingled with it in the forests, it is in most localities the predominant tree, excepting in Oregon and Washington west of the Cascade range and in the redwood belt of California. In some localities it appears as a pure growth, in others mingled with other species. Its tendency, however, is to form pure growths of open forests with little underbrush. It endures moderately arid conditions, its lower limit representing approximately the isohyetal line of 20 inches. In Washington and northern Oregon its western extension is limited by the Cascade range, the moist conditions of the western side of that region enabling the Douglas fir and associate species to monopolize the ground, and in about the middle latitude of Oregon the increasing temperature and diminishing rainfall enable it to cross the Cascade range and to mingle with Douglas fir in the southwestern part of the state. Throughout California, excepting in the redwood strip, it is the predominant tree, occupying in the Sierra Nevada a belt whose lower limit ranges from 3,000 feet in the southern end of the range to 1,500 feet in its northern end, and extending upward to 8,000 or 9,000 feet. The southern portion of the Cascade range contains a mixed forest, in which yellow pine is a predominant element. It is found in the ranges of southern California above an altitude of 5,000 feet.

In size the tree varies greatly with localities. In the Black Hills, where it forms pure growth, it is small,

while in the Sierra Nevada and coast ranges in southern California it is a good sized tree, commonly 3 to 5 feet in diameter, but with individual trees much larger, ranging up to 200 and 250 feet in height, and cutting 3 to 5 clear logs per tree.

Most of the logging in this species, as well as in the sugar pine, is done for local consumption and in a small way; consequently there are few distinctive features associated with it.

The total supply of western yellow pine, which is mainly in Washington, Oregon, and California, is estimated to be about 125 billion feet. Of this, 26,637 million feet, or about one-fifth, was reported as owned by lumbermen.

SUGAR PINE.

Sugar pine (*Pinus lambertiana*) is found mainly on the western slope of the Sierra Nevada, in a belt ranging from 3,000 feet above the sea in the southern portion of the range to 1,500 feet in the northern part, its upper limit being between 8,000 and 9,000 feet above the sea. It is also found in the northern part of the coast ranges in the same state in considerable quantities, as well as in the southern portion of Oregon. It is never found in pure forests, but always intermingled with other species, the principal of which is yellow pine, which commonly forms from two-thirds to three-fourths of the forest. Some Douglas fir and incense cedar is also commonly intermingled.

The sugar pine is a large tree, from 5 to 10 feet in diameter, and 250 feet in height, and a large proportion of it is clear. The wood is fine, greatly resembling in many respects the white pine of the East, and splits easily, for which reason it was in early days largely used for shakes, and much of it was culled from the forest in the mining days for this purpose, involving an enormous waste of valuable timber.

Heretofore it has been cut mainly for local consumption, but at present two or three large companies operating in the Sierra Nevada regions are cutting this timber, as well as the other components of the forest, in large amounts.

DOUGLAS FIR.

The Douglas fir (*Pseudotsuga taxifolia*) is found quite generally distributed over the Rocky Mountain country, where it forms, however, but a minor component of the forest. Its home is in western Oregon and Washington, west of the Cascade range, whence it extends nearly to the Pacific coast. In altitude it extends from the sea level on Puget sound and the Columbia river up to from 3,000 to 6,000 feet, dropping as the latitude increases. Under conditions most favorable to its development it forms pure forest, as in the country bordering upon Puget sound, and thence southward

to the Columbia. In other localities the proportion of fir to other trees differs greatly, and in southern Oregon, where it is largely mixed with yellow and sugar pine, the proportion becomes small. The tree is one of the largest on the Pacific coast, being exceeded in size only by the *Sequoia gigantea*, or big tree, and the redwood. The Douglas fir ranges from 200 to 300 feet in height and up to 20 feet in diameter, although the average diameter is much less. Growing in close stand the clear height is great, six logs being frequently cut from a tree. The stand is heavy, 50,000 feet to the acre on entire townships being not uncommon. The timber is of great strength, and is used largely for dimension timber in bridges, and for other purposes where great strength is required. It is transported east in considerable quantities for this purpose. It is also shipped to Asiatic and Australian ports and to South America.

The stand of Douglas fir is estimated at about 300 billion feet, of which 61,383 million feet were reported by the lumbermen.

REDWOOD.

Redwood (*Sequoia sempervirens*) is found only in a narrow strip closely bordering the Pacific coast, from the southern line of Oregon southward through California nearly to San Francisco bay, with a few comparatively small patches south of the bay. The strip ranges in width from 5 to 25 miles, never extending inland beyond the influence of the coast fogs. The area of the strip is approximately 2,000 square miles. The characteristics of its habitat are those of extreme moisture, with much rain in the winter season and fogs at all times of the year.

The forest is nearly pure, practically the only admixture consisting of a small percentage of red fir, or, as it is there designated, Oregon pine. The trees are large, with an average diameter of about 5 to 10 feet, while many individuals exceed 20 feet in diameter. In height they range up to 300 feet, from one-half to two-thirds of which is clear lumber. The forest is extremely dense, the average stand being nearly 60,000 feet per acre, while many tracts of considerable size carry from 100,000 to 150,000 feet per acre. Indeed, in the yield of lumber, this forest is probably the densest on earth, exceeding the fir forests of Oregon and Washington.

Lumbering is carried on at many points in the strip, at Crescent City, Humboldt bay, and in various points in Mendocino and Sonoma counties. The principal center of this lumber industry, however, is about Humboldt bay, of which Eureka is the metropolis. The lumbering and milling are carried on in this neighborhood by large companies, and the most modern meth-

ods and machinery are there employed. The mills are of the most modern type, equipped with gang and band saws, while the machinery for moving the logs and lumber is very complete. Indeed, the redwood mills about Eureka probably represent the highest development of this branch of manufacture in the world.

Redwood is a strong and very durable lumber, and is used in California for a great variety of purposes—

for house building, for water pipes, for shingles, and for inside finishing. It is shipped not only to all parts of California, but to Australia, Japan, and South America. There is only a limited local consumption of the wood, by far the greater part of it entering into commerce.

The supply of redwood is estimated at 75 billion feet, of which 13,298.7 million feet was reported as owned by lumbermen.

TURPENTINE AND ROSIN

(647)

TURPENTINE AND ROSIN.

This report contains a statistical discussion of the manufacture of turpentine and rosin as reported at the census of 1905, and comparisons with previous censuses, also a discussion relative to the immediate future of the industry. An historical and descriptive article on the turpentine and rosin industry appeared in the Twelfth Census Report, Manufactures, Part III, page 1003.

The number of establishments engaged in the manufacture of spirits of turpentine and rosin reported at the census of 1905 includes only those whose products were valued at not less than \$500. In some instances, where two or more establishments were operated under

the same management, they have been tabulated as one.

In addition to those reported at the census of 1905 as engaged in the manufacture of spirits of turpentine and rosin there were 4 establishments engaged primarily in the manufacture of lumber, but producing turpentine and rosin as minor products to the value of \$26,780. These are distributed as follows: 1 in Florida, 2 in Georgia, and 1 in Mississippi.

Table 1 is a comparative summary of the statistics for the industry obtained at the censuses of 1850 to 1905, with the per cent of increase for each census period.

TABLE 1.—COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1850 TO 1905.

	CENSUS.							PER CENT OF INCREASE.					
	1905 ¹	1900	1890	1880	1870	1860	1850	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments.....	1,287	1,503	670	508	227	625	856	*14.4	124.3	31.9	123.8	*63.7	*27.0
Capital.....	\$0,961,185	\$11,847,495	\$4,062,375	\$1,866,390	\$902,225	\$4,013,758	\$1,663,692	*41.2	191.6	117.7	106.9	*77.5	141.3
Salaried officials, clerks, etc., number.....	2,147	1,880	*40	(°)	(°)	(°)	(°)	13.7	3,755.1	-----	-----	-----	-----
Salaries.....	\$1,152,222	\$778,694	*26,944	(°)	(°)	(°)	(°)	48.0	2,790.0	-----	-----	-----	-----
Wage-earners, average number.....	33,382	41,864	15,266	10,535	2,638	4,214	3,437	*20.3	174.2	44.9	269.4	*37.4	22.6
Total wages.....	\$8,382,700	\$8,393,483	\$2,908,547	\$1,623,061	\$476,284	\$770,696	\$447,348	*0.1	188.8	79.1	240.8	*38.2	72.3
Men 16 years and over.....	33,237	41,375	15,031	9,955	2,526	4,079	3,369	*19.7	175.3	51.0	294.1	*38.1	21.1
Wages.....	\$8,305,468	\$8,338,044	\$2,891,392	(°)	(°)	(°)	(°)	0.3	188.4	-----	-----	-----	-----
Women 16 years and over.....	16	173	141	338	81	135	68	*90.8	22.7	*58.3	317.3	*40.0	98.5
Wages.....	\$2,210	\$21,630	\$10,344	(°)	(°)	(°)	(°)	*89.8	109.1	-----	-----	-----	-----
Children under 16 years.....	129	316	94	242	31	(°)	(°)	*59.2	236.2	*61.2	680.6	-----	-----
Wages.....	\$15,022	\$33,809	\$4,811	(°)	(°)	(°)	(°)	*55.6	602.7	-----	-----	-----	-----
Miscellaneous expenses.....	\$1,639,014	\$476,171	\$178,662	(°)	(°)	(°)	(°)	244.2	166.5	-----	-----	-----	-----
Cost of materials used.....	\$3,774,637	\$6,186,492	\$2,874,693	\$2,324,637	\$2,146,000	\$4,324,414	\$1,484,318	*39.0	115.2	23.7	8.3	*50.4	191.3
Value of products.....	\$23,037,024	\$20,344,888	\$8,077,379	\$5,876,983	\$3,585,225	\$6,468,369	\$2,855,657	17.7	151.9	37.4	63.9	*44.6	126.5

¹ Exclusive of the statistics of 4 establishments which were engaged primarily in the manufacture of lumber. These establishments manufactured turpentine and rosin to the value of \$26,780.

² Decrease.

³ Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.

⁴ Not reported separately.

⁵ Not reported.

Measured by the value of products the industry shows a continuous growth at each census except that of 1870. The decrease shown in that year is accounted for by the unsettled conditions resulting from the Civil War. From 1870 to 1900 the value of products increased from \$3,585,225 to \$20,344,888, or nearly fivefold, and in each decade since 1870 the increase in value of products has been accompanied by an increase in the quantity of products. In 1905, however, there was a decrease as compared with 1900 in the quantity of products, while the value increased 17.7 per cent.

The decrease in the capital invested in 1905 as compared with 1900 is due largely to a difference in the items included under this head. In 1900 the value of

orchard lands was included in the capital, while for 1905 only the value of such lands was included as were used in the operation of the establishments, and this condition must be kept in mind in making comparisons between the statistics of capital as reported for 1905 and those for 1900. The number of salaried officials in 1905 increased 13.7 per cent over 1900 and their salaries 48 per cent; the number of wage-earners decreased 20.3 per cent and their wages only one-tenth of 1 per cent. The miscellaneous expenses show an increase of 244.2 per cent, while the cost of materials decreased 39 per cent.

Table 2 is a comparative summary, by states, of the statistics for 1900 and 1905.

TABLE 2.—COMPARATIVE SUMMARY, BY STATES: 1905 AND 1900.

STATE	Census.	Number of establishments.	Capital.	WAGE-EARNERS AND WAGES.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Average number.	Wages.			
United States.....	1905 1900	1,287 1,503	\$6,961,185 11,847,495	33,382 41,864	\$8,382,700 8,303,483	\$1,630,014 476,171	\$3,774,637 6,186,492	\$23,937,024 20,344,888
Alabama.....	1905 1900	144 152	767,048 1,176,301	2,919 3,716	745,283 780,573	162,132 59,214	511,407 650,681	2,434,365 2,033,705
Florida.....	1905 1900	406 366	2,939,275 5,526,618	15,541 15,073	3,713,584 3,049,200	657,976 201,756	724,654 1,222,932	9,901,905 6,469,605
Georgia.....	1905 1900	432 524	2,373,880 3,785,432	11,736 19,199	3,041,498 3,772,848	593,056 178,774	1,156,000 2,202,665	7,705,643 8,110,468
Louisiana.....	1905 1900	15 10	75,570 74,539	236 302	69,615 54,180	23,632 959	37,295 33,275	211,820 115,324
Mississippi.....	1905 1900	124 145	598,146 798,373	2,633 2,288	737,008 530,410	177,611 18,655	303,791 607,530	2,365,720 1,772,435
North Carolina.....	1905 1900	87 174	115,629 217,423	148 400	38,700 70,697	8,729 8,516	577,853 818,139	743,421 1,055,695
South Carolina.....	1905 1900	79 132	91,637 208,719	160 883	37,012 135,575	15,878 8,297	373,568 471,261	574,150 787,056

There was a decrease in the number of establishments in all the states except Florida and Louisiana, and the increase in these states is due to the fact that their forests have not until recently been so extensively worked as those of other states. The present tendency is toward building plants of very large capacity, and the largest establishments reported for 1905 are located in Florida. In 1900 Georgia ranked first in the value of products, but for 1905 Florida had taken this position.

Table 3 is a summary, by states, of establishments, by character of ownership, for 1900 and 1905.

TABLE 3.—Number of establishments, by character of ownership, with per cent in each class, by states: 1905 and 1900.

STATE AND CHARACTER OF OWNERSHIP.	1905		1900	
	Number of establishments.	Per cent.	Number of establishments.	Per cent.
United States.....	1,287	100.0	1,503	100.0
Individual.....	535	41.5	713	47.5
Firm.....	620	48.2	726	48.3
Incorporated company.....	130	10.1	62	4.1
Joint stock company.....	2	0.2	2	0.1
Alabama.....	144	100.0	152	100.0
Individual.....	68	47.2	67	44.1
Firm.....	69	47.9	79	52.0
Incorporated company.....	7	4.9	5	3.3
Joint stock company.....	0	0.0	1	0.6
Florida.....	406	100.0	366	100.0
Individual.....	105	25.9	123	33.6
Firm.....	230	56.8	230	62.8
Incorporated company.....	65	16.0	13	3.6
Georgia.....	432	100.0	524	100.0
Individual.....	200	46.3	232	44.3
Firm.....	218	50.5	272	51.9
Incorporated company.....	14	3.2	20	3.8
Louisiana.....	15	100.0	10	100.0
Individual.....	4	26.7	2	20.0
Firm.....	4	26.7	7	70.0
Incorporated company.....	7	46.6	1	10.0

TABLE 3.—Number of establishments, by character of ownership, with per cent in each class, by states: 1905 and 1900—Continued.

STATE AND CHARACTER OF OWNERSHIP.	1905		1900	
	Number of establishments.	Per cent.	Number of establishments.	Per cent.
Mississippi.....	124	100.0	145	100.0
Individual.....	35	28.2	64	44.1
Firm.....	62	50.0	63	43.5
Incorporated company.....	26	21.0	17	11.7
Joint stock company.....	1	0.8	1	0.7
North Carolina.....	87	100.0	174	100.0
Individual.....	68	78.2	140	80.4
Firm.....	16	18.4	33	19.0
Incorporated company.....	3	3.4	1	0.6
South Carolina.....	79	100.0	132	100.0
Individual.....	55	69.6	85	64.4
Firm.....	15	19.0	42	31.8
Incorporated company.....	8	10.1	5	3.8
Joint stock company.....	1	1.3	0	0.0

The only increase in the number of establishments in 1905 as compared with 1900 is in the class owned by incorporated companies. Florida and Louisiana are the only states in which the entire number of establishments increased.

Table 4 is a summary, by states, of the statistics of the industry at the census of 1905, grouping the establishments according to the value of products, with the number and per cent in each group.

The tendency toward consolidation is very marked in Florida. Of the 7 establishments having a capital of at least \$100,000 engaged in this industry, 3 are located in that state and more than one-half of the establishments having a capital of over \$20,000 each. In the other turpentine producing states the smaller establishments predominate, although the tendency toward concentration is noticeable in Mississippi. It is noteworthy that the percentage of the total value

of products for each class of establishments given in Table 4 corresponds very closely with the percentage of capital invested in each class. This would indicate uniform methods of manufacture. The only appreciable advantage which large establishments appear to have over the smaller is in reducing the cost of mate-

rials used. Because of their size the establishments in Florida have naturally the greatest average value of products, the average per plant being \$24,389, compared with \$19,078 for Mississippi, \$17,837 for Georgia, \$16,905 for Alabama, \$14,121 for Louisiana, \$8,545 for North Carolina, and \$7,268 for South Carolina.

TABLE 4.—SUMMARY FOR ESTABLISHMENTS GROUPED BY VALUE OF PRODUCTS, WITH PER CENT IN EACH GROUP, BY STATES: 1905.

STATE AND VALUE OF PRODUCTS.	ESTABLISHMENTS.		CAPITAL.		WAGE-EARNERS AND WAGES.				MISCELLANEOUS EXPENSES.		COST OF MATERIALS USED.		VALUE OF PRODUCTS.	
	Number.	Per cent.	Amount.	Per cent.	Average number.	Per cent.	Wages.	Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.	Per cent.
United States.....	1,287	100.0	\$9,961,185	100.0	33,382	100.0	\$8,382,700	100.0	\$1,639,014	100.0	\$3,774,637	100.0	\$23,937,024	100.0
Less than \$5,000.....	143	11.1	174,441	2.5	388	1.2	86,977	1.0	24,126	1.5	100,442	5.2	424,039	1.8
\$5,000 but less than \$20,000.....	684	53.2	2,445,153	35.1	12,297	36.8	3,016,655	36.0	624,372	38.1	1,794,164	47.6	8,582,532	35.8
\$20,000 but less than \$100,000.....	453	35.2	4,106,191	59.0	19,624	58.8	5,008,308	59.8	918,428	56.0	1,612,876	42.7	14,020,239	58.6
\$100,000 but less than \$1,000,000.....	7	0.5	235,400	3.4	1,073	3.2	270,700	3.2	72,088	4.4	171,155	4.5	901,184	3.8
Alabama.....	144	100.0	767,048	100.0	2,919	100.0	745,283	100.0	162,132	100.0	511,467	100.0	2,434,365	100.0
Less than \$5,000.....	12	8.3	22,813	3.0	40	1.7	11,572	1.6	5,587	3.5	13,201	2.6	42,662	1.8
\$5,000 but less than \$20,000.....	98	68.1	402,185	52.4	1,540	52.7	390,604	52.4	70,306	43.0	320,728	62.7	1,270,317	52.4
\$20,000 but less than \$100,000.....	34	23.6	342,050	44.6	1,330	45.6	343,047	46.0	77,239	47.6	177,538	34.7	1,115,389	45.8
Florida.....	406	100.0	2,939,275	100.0	15,541	100.0	3,713,584	100.0	657,976	100.0	724,654	100.0	9,901,995	100.0
Less than \$5,000.....	10	2.5	31,400	1.1	81	0.5	15,750	0.4	4,210	0.6	3,225	0.4	30,595	0.3
\$5,000 but less than \$20,000.....	163	40.1	679,580	23.1	4,148	26.7	926,633	25.0	199,164	30.3	163,409	22.6	2,267,577	22.9
\$20,000 but less than \$100,000.....	230	56.7	2,076,095	70.6	10,534	67.8	2,580,701	69.5	419,306	63.7	501,520	69.2	7,167,750	72.4
\$100,000 but less than \$1,000,000.....	3	0.7	152,200	5.2	778	5.0	100,500	5.1	35,200	5.4	56,500	7.8	435,074	4.4
Georgia.....	432	100.0	2,373,880	100.0	11,730	100.0	3,041,498	100.0	593,056	100.0	1,156,009	100.0	7,705,643	100.0
Less than \$5,000.....	29	6.7	47,444	2.0	185	1.6	41,070	1.4	9,337	1.6	18,240	1.6	101,802	1.3
\$5,000 but less than \$20,000.....	298	68.9	973,600	41.0	5,504	46.9	1,404,900	46.2	276,528	46.6	555,453	48.0	3,411,540	44.3
\$20,000 but less than \$100,000.....	135	31.3	1,352,746	57.0	6,047	51.5	1,594,619	52.4	307,191	51.8	582,316	50.4	4,192,304	54.4
Louisiana.....	15	100.0	75,570	100.0	236	100.0	60,615	100.0	23,632	100.0	37,295	100.0	211,820	100.0
\$5,000 but less than \$20,000.....	15	100.0	75,570	100.0	236	100.0	60,615	100.0	23,632	100.0	37,295	100.0	211,820	100.0
Mississippi.....	124	100.0	598,146	100.0	2,633	100.0	737,098	100.0	177,611	100.0	393,791	100.0	2,365,720	100.0
Less than \$5,000.....	16	12.9	23,400	3.9	17	0.7	5,000	0.7	1,058	0.6	27,150	6.9	45,654	1.9
\$5,000 but less than \$20,000.....	61	49.2	195,371	32.7	735	27.9	201,300	27.3	39,759	22.4	154,347	39.2	681,663	28.8
\$20,000 but less than \$100,000.....	47	37.9	379,315	63.4	1,881	71.4	530,618	72.0	136,794	77.0	212,294	53.9	1,638,403	69.3
North Carolina.....	87	100.0	115,629	100.0	148	100.0	38,700	100.0	8,729	100.0	577,853	100.0	743,421	100.0
Less than \$5,000.....	36	41.4	22,076	19.1	22	14.9	5,547	14.3	1,216	13.9	82,988	14.4	112,467	15.1
\$5,000 but less than \$20,000.....	47	54.0	74,543	64.5	80	54.0	20,153	52.1	3,641	41.7	361,200	62.5	464,954	62.6
\$20,000 but less than \$100,000.....	4	4.6	19,010	16.4	46	31.1	13,000	33.6	3,872	44.4	133,575	23.1	166,000	22.3
South Carolina.....	79	100.0	91,637	100.0	169	100.0	37,012	100.0	15,878	100.0	373,568	100.0	574,150	100.0
Less than \$5,000.....	39	49.4	27,248	29.7	33	19.5	6,648	18.0	2,712	17.1	51,538	13.8	89,029	15.7
\$5,000 but less than \$20,000.....	35	44.3	49,689	54.2	99	58.6	20,411	55.1	11,977	75.4	214,512	57.4	336,931	58.7
\$20,000 but less than \$100,000.....	5	6.3	14,700	16.1	37	21.9	9,953	26.9	1,189	7.5	107,518	28.8	147,200	25.6

¹ Includes 1 establishment with products valued at \$100,000 but less than \$1,000,000.
² Includes 1 establishment with products valued at less than \$5,000, and 2 establishments with products valued at \$20,000 but less than \$100,000.

Products.—Table 5 shows, by states, the quantity of crude turpentine distilled, the total value of products, the quantity, value, and average value per unit of spirits of turpentine and rosin, and the value of dross and all other products for 1905. The three classes of crude

turpentine are (1) virgin dip, which is the gum in a liquid state obtained during the first year the tree is worked; (2) other dip, liquid gum obtained after the first year the tree is worked; (3) scrape, a dried gum obtained by scraping the scarred surfaces of the worked trees.

TABLE 5.—QUANTITY OF CRUDE TURPENTINE DISTILLED AND QUANTITY AND VALUE OF PRODUCTS, BY STATES: 1905.

STATE.	Number of establishments.	CRUDE TURPENTINE, DISTILLED.				Total value.	PRODUCTS.							
		Total (barrels, 280 pounds).	Virgin dip (barrels, 280 pounds).	Other dip (barrels, 280 pounds).	Scraps (barrels, 280 pounds).		Spirits of turpentine.			Rosin.			Dross (value).	All other products (value).
							Quantity (gallons).	Value.	Average value per gallon (cents).	Quantity (barrels, 280 pounds).	Value.	Average value per barrel (280 pounds).		
United States.	1,287	5,294,130	1,326,731	2,741,973	1,225,435	\$23,937,024	30,687,051	\$15,170,409	48.4	3,508,347	\$8,725,619	\$2.40	\$17,733	\$23,173
Alabama.....	144	526,567	148,157	245,096	133,314	2,434,365	3,108,118	1,501,563	48.3	360,469	930,053	2.53	1,845	904
Florida.....	406	2,228,686	576,294	1,150,757	501,635	9,901,905	12,872,860	6,425,826	49.0	1,445,002	3,447,418	2.38	9,989	18,672
Georgia.....	432	1,653,182	399,822	890,395	366,965	7,705,643	9,542,316	4,795,331	50.3	1,104,968	2,601,583	2.63	5,199	3,530
Louisiana.....	15	44,733	12,795	18,539	13,399	211,820	245,300	124,005	50.6	30,023	87,715	2.92	100	.....
Mississippi.....	124	525,664	135,008	262,674	127,982	2,365,720	3,160,371	1,473,530	46.6	362,856	892,028	2.46	150	12
North Carolina.....	87	177,282	29,190	106,734	41,358	743,421	933,665	480,108	48.3	116,314	293,073	2.20	150	.....
South Carolina.....	79	138,025	26,465	71,778	40,782	674,160	704,412	370,046	48.4	87,836	203,749	2.32	300	55

Crude turpentine and rosin are generally shipped in barrels of 280 pounds gross, and if it be assumed that the net weight is 240 pounds per barrel and that the weight of a gallon of spirits of turpentine is 7½ pounds, the proportion of the products derivable by distillation would be 17.5 per cent spirits, 66.3 per cent rosin, and 16.2 per cent dross and waste. Because of the fact that in 1900 spirits of turpentine and rosin were reported in barrels regardless of capacity, while for 1905 spirits

were returned in gallons and rosin in barrels of 280 pounds, it is not practicable to compare the statistics for the two censuses. If, however, the quantity of spirits of turpentine reported for 1900 be reduced to gallons on the basis of 51 gallons to the barrel, and the statistics of rosin be reduced to barrels of 280 pounds, assuming that the average barrel, in 1900, contained 475 pounds, the following comparative statistics for the United States are obtained:

Quantity and value of turpentine and rosin: 1905 and 1900.

	QUANTITY.				VALUE.			
	1905	1900	Decrease.	Per cent of decrease.	1905	1900	Increase.	Per cent of increase.
Spirits of turpentine.....	30,687,051	38,488,170	7,801,119	20.3	\$15,170,409	\$14,900,235	\$210,204	1.4
Rosin.....	3,508,347	4,348,094	839,747	19.3	8,725,619	5,129,268	3,596,351	70.1

The quantity of rosin shown for 1900 represents the entire quantity returned as produced. The total value of this product for that year, however, does not include some of the lowest grades of rosin, which did not enter into commerce. In many localities where transportation facilities were poor and the distilleries were remote from market centers, low grade rosin was not of sufficient value in 1900 to justify the expense of preparing for and transporting to market. Since 1900 there has been a marked increase in the value of rosin, brought about by increased consumption and decreased supply.

Consumption and exports.—Measured by the difference between the production during the calendar year 1904 and the exports for the year ending June 30, 1905, and assuming a relatively fixed ratio in the quantity of these products annually left over, the consumption of spirits of turpentine and rosin in the United States would be as shown in the following statement:

	Spirits of turpentine (gallons).	Rosin (barrels, 280 pounds).
Production.....	30,687,051	3,508,347
Exports.....	16,894,813	2,310,275
Consumption.....	14,792,238	1,198,072

Of the total quantity of spirits of turpentine and rosin produced, according to the above statement, 48.2 per cent of the turpentine and 34.1 per cent of the rosin were consumed in the United States.

The imports of these products in 1905 were insignificant, only 43,063 gallons of spirits of turpentine and no rosin being imported. It should be remembered that the production statistics of this report do not include "wood turpentine," a product obtained from the destructive distillation of pine, small quantities of which enter the statistics of exports of spirits of turpentine.

Table 6 shows the quantity and value of the exports of spirits of turpentine and rosin in five-year periods from 1865 to 1900, and yearly from 1901 to 1905.

TABLE 6.—Quantity and value of spirits of turpentine and rosin exported: 1865 to 1905.¹

YEAR.	SPIRITS OF TURPENTINE. ²		ROSIN.	
	Gallons.	Value.	Barrels.	Value.
1905.....	15,894,813	\$8,902,101	2,310,275	\$7,069,084
1904.....	17,292,808	9,446,155	2,585,108	6,621,870
1903.....	16,378,787	8,014,322	2,396,498	4,817,205
1902.....	19,177,788	7,431,248	2,535,902	4,202,104
1901.....	20,240,851	7,715,029	2,820,815	4,742,457
1900.....	18,080,582	8,554,922	2,389,364	3,842,190
1895.....	14,652,738	3,998,277	1,874,750	3,379,823
1890.....	11,248,920	4,590,631	1,619,704	2,797,410
1885.....	8,987,226	2,690,231	1,285,482	2,228,114
1880.....	7,091,200	2,132,154	1,040,345	2,368,180
1875.....	5,599,624	1,924,544	937,527	2,774,419
1870.....	3,246,697	1,357,302	583,316	1,776,625
1865.....	51,863	106,967	11,278	158,138

¹Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."
²The quantity and value of crude turpentine exported is included in the statistics from 1865 to 1900, and also of pitch exported from 1884 to 1900.

From the statistics in Table 6 it appears that the exports of both spirits of turpentine and rosin, with but few exceptions, increased in quantity until 1901, when the high water mark was reached.

Table 7 shows, by customs districts, the quantity of spirits of turpentine and rosin exported during the years ending June 30, 1900 and 1905.

TABLE 7.—Quantity of spirits of turpentine and rosin exported, by customs districts: 1905 and 1900.¹

CUSTOMS DISTRICT.	1905		1900	
	Spirits of turpentine (gallons).	Rosin (barrels).	Spirits of turpentine (gallons).	Rosin (barrels).
Total.....	15,894,813	2,310,275	18,080,582	2,300,118
Mobile, Ala.....	266	31,571	153,018	58,510
Alaska.....	100			
Arizona.....	242	1		
San Diego, Cal.....	125		45	1
San Francisco, Cal.....	7,698	210		533
Apalachicola, Fla.....			30,755	52,765
Fernandina, Fla.....	7,306,422	804,302	157,708	14,482
Key West, Fla.....	4,804	90		
Pensacola, Fla.....	412,450	182,205	476,107	109,281
St. Johns, Fla.....			150	15
Tampa, Fla.....			130,421	6,888
Brunswick, Ga.....	1,340,289	163,785	3,173,410	333,010
Savannah, Ga.....	3,519,142	403,000	11,449,618	1,074,424
New Orleans, La.....	393,985	22,420	212,031	47,743
Bangor, Me.....	17,235		34,103	45
Passamaquoddy, Me.....		1,985		775
Baltimore, Md.....		94,492	111	174,414
Boston and Charlestown, Mass.....	13,594	2,753	2,044	17,131
Detroit, Mich.....	72,828	2,181	25,363	2,003

¹Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

TABLE 7.—Quantity of spirits of turpentine and rosin exported, by customs districts: 1905 and 1900—Continued.

CUSTOMS DISTRICT.	1905		1900	
	Spirits of turpentine (gallons).	Rosin (barrels).	Spirits of turpentine (gallons).	Rosin (barrels).
Huron, Mich.....	293,289		282,353	440
Superior, Mich.....		29		
Pearl River, Miss.....	421,380	115,803		
Montana and Idaho.....			11	
Pamlico, N. C.....				4
Wilmington, N. C.....	43,948	67,859	53,974	138,763
North and South Dakota.....	62,782	2,788	39,649	1,162
Buffalo Creek, N. Y.....	33,069	12,707	15,426	4,595
Champlain, N. Y.....	82,450	11,205	27,728	15,334
New York, N. Y.....	1,572,519	309,221	1,587,010	220,610
Niagara, N. Y.....	7,319			
Oswegatchie, N. Y.....	10,394	183		901
Cuyahoga, Ohio.....	1,885		40	
Philadelphia, Pa.....	55,022	52,320	121	
Charleston, S. C.....				21,248
Corpus Christi, Tex.....	225	45		
Galveston, Tex.....			2	
Brazos de Santiago, Tex.....	585	177	90	97
Paso del Norte, Tex.....	292	47		
Saluria, Tex.....	759	2	567	
Memphremagog, Vt.....	30,690	1,897	9,768	2,242
Vermont, Vt.....	177,393	26,791	226,008	10,474
Newport News, Va.....	8,750			
Puget Sound, Wash.....	2,682	20	2,525	490

As shown in Table 7, the export trade in this industry has naturally changed to the customs district nearest the states of largest production. The principal customs districts in the order of their importance from which spirits of turpentine was exported in 1905 are Fernandina, Fla., Savannah, Ga., New York, N. Y., Brunswick, Ga., Pearl River district, Miss., Pensacola, Fla., and New Orleans, La. In 1900 Savannah, Ga., was the most important exporting port for spirits of turpentine.

For twenty years the center of the naval stores industry has been at Savannah, Ga., to which point it moved from Wilmington, N. C., in the eighties. Savannah is still the market from which the world's prices emanate, although its exports are annually growing less. The rapid growth of Jacksonville, Fla., as a naval stores center during the five years following 1900 is reflected in the exports from Fernandina. This locality has the same advantage in the European trade of being on the Atlantic seaboard and is nearer the field of production. A large part of the traffic in naval stores which in 1900 went through Savannah and Brunswick now goes through the port of Fernandina.

Tables 8 and 9 present, respectively, the annual exports of spirits of turpentine and rosin, by countries to which exported, for the years ending June 30, 1901 to 1905.

MANUFACTURES.

TABLE 8.—QUANTITY AND VALUE OF SPIRITS OF TURPENTINE EXPORTED, BY COUNTRIES: 1901 TO 1905.¹

COUNTRY.	1905		1904		1903		1902		1901	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
Total.....	15,894,813	\$8,002,101	17,202,808	\$9,446,155	16,378,787	\$8,014,322	19,177,788	\$7,431,248	20,240,851	\$7,715,020
EUROPE.										
Austria-Hungary.....	10,000	6,085	10,230	6,215	21,856	10,680	21,000	9,255	53,252	24,902
Belgium.....	2,362,605	1,204,693	2,409,171	1,200,909	2,386,331	1,150,728	2,428,516	944,782	2,879,500	1,058,994
Germany.....	2,241,649	1,261,633	2,532,207	1,402,082	2,179,059	1,009,808	2,852,909	1,101,175	3,206,325	1,220,880
Italy.....	204,369	114,303	314,510	177,420	609,531	251,673	374,047	146,687	743,978	312,761
Netherlands.....	1,819,552	984,181	1,473,100	782,884	1,808,594	920,567	2,425,860	950,784	2,171,712	818,175
Spain.....	22,990	10,812			220					
United Kingdom.....	6,873,806	3,849,080	8,220,682	4,438,770	7,327,610	3,553,172	9,135,807	3,419,704	8,783,059	3,221,757
All other Europe.....	2,880	1,750	370	240	3,072	1,842	617	269	130	60
NORTH AMERICA.										
Bermuda.....	1,118	664	937	605	1,134	611	965	422	1,190	520
British Honduras.....	1,798	1,013	1,561	866	1,005	828	1,538	700	1,022	471
Dominion of Canada.....	811,626	452,130	673,428	380,170	848,928	425,541	748,030	304,805	607,428	289,840
Newfoundland and Labrador.....	4,474	2,966	5,495	3,361	5,387	3,220	4,374	1,690	5,271	2,474
Central American states:										
Costa Rica.....	7,261	4,327	10,148	6,346	8,791	5,180	4,957	2,527	8,074	3,781
Guatemala.....	3,349	2,595	2,778	2,226	3,097	2,103	4,709	2,892	523	278
Honduras.....	1,048	663	1,237	788	480	207	674	337	775	416
Nicaragua.....	5,521	3,598	3,416	2,300	2,895	1,820	4,734	2,680	3,054	1,881
Panama.....	18,841	11,113	4,257	2,730						
Salvador.....	949	1,065	859	859	250	181	147	91	70	41
Mexico.....	13,826	7,822	12,113	7,276	10,743	6,688	6,738	3,365	6,927	3,374
Miquelon, Langloy, etc.....	602	385							306	141
West Indies:										
British.....	18,215	10,060	17,307	10,531	21,133	11,717	18,002	8,700	16,216	7,737
Cuba.....	136,645	65,540	115,155	57,296	84,135	30,920	106,284	41,023	112,850	47,155
Danish.....	401	237	436	263	850	511	786	360	732	306
Dutch.....	999	569	636	424	705	448	597	298	461	218
French.....	60	37	142	76	112	73	20	10	341	164
Haiti.....	3,602	2,247	3,140	1,913	3,154	1,781	3,113	1,368	5,100	2,222
Santo Domingo.....	1,650	1,043	2,100	1,311	1,333	737	1,752	748	1,775	836
SOUTH AMERICA.										
Argentina.....	200,166	177,261	308,062	186,015	265,000	144,698	163,050	76,306	282,605	131,380
Bolivia and the Guianas.....	4,545	2,831	3,001	2,465	4,451	2,721	3,240	1,518	5,325	2,481
Brazil.....	152,374	91,735	154,708	98,077	131,784	74,142	130,875	61,637	108,046	78,400
Chile.....	88,760	55,425	113,848	71,070	102,159	61,254	44,585	20,830	101,663	47,290
Colombia.....	10,086	6,339	8,082	4,448	12,448	7,576	4,648	9,116	11,244	5,427
Ecuador.....	12,038	7,477	5,447	3,010	5,090	3,274	3,650	1,747	11,345	5,376
Peru.....	45,401	24,564	39,825	25,238	16,835	11,374	10,450	7,348	41,743	19,600
Uruguay.....	33,600	19,295	34,740	20,855	40,100	22,246	21,081	9,964	46,725	22,204
Venezuela.....	11,866	7,369	15,209	9,826	7,206	4,116	8,741	4,213	14,012	7,018
ASIA.										
Chinese Empire.....	33,205	20,185	13,220	8,780	6,052	3,941	21,062	10,383	23,450	10,728
East Indies.....	67,000	41,830	64,300	41,658	57,060	33,096	37,380	16,963	27,530	13,024
Hongkong.....	5,000	3,100	570	283	75	37	3,160	1,308		
Japan.....	12,885	7,784	26,270	14,162	12,000	6,040	18,091	8,205	28,060	13,181
All other Asia.....	380	222	260	150	680	405	1,550	900	200	82
OCEANIA.										
All Oceania.....	457,231	279,061	479,134	299,933	100,707	111,342	447,455	200,980	597,576	284,580
AFRICA.										
British Africa.....	87,935	58,406	92,321	64,970	182,831	119,301	91,632	49,133	90,026	46,924
Turkey in Egypt.....	5,000	3,100	250	125						
All other Africa.....	7,895	5,310	15,045	10,148	12,735	7,076	7,095	3,925	3,630	1,920

¹ Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."TABLE 9.—QUANTITY AND VALUE OF ROSIN EXPORTED, BY COUNTRIES: 1901 TO 1905.¹

COUNTRY.	1905		1904		1903		1902		1901	
	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.
Total.....	2,310,275	\$7,060,084	2,585,108	\$6,621,870	2,306,498	\$4,817,205	2,535,062	\$4,202,104	2,820,815	\$4,742,457
EUROPE.										
Austria-Hungary.....	88,767	275,546	93,532	226,850	66,476	102,775	106,554	148,231	114,117	172,645
Belgium.....	56,978	157,450	59,490	141,036	144,069	249,611	126,051	180,915	134,574	210,399
Germany.....	675,599	2,025,806	758,795	1,858,017	557,006	1,076,646	578,301	902,763	782,805	1,320,993
Italy.....	95,489	301,160	92,272	238,742	100,030	200,265	81,421	136,463	88,893	142,859
Netherlands.....	280,027	803,008	258,748	612,001	260,947	417,305	234,485	330,786	275,370	406,962
Russia.....	60,698	196,726	94,068	271,831	261,483	431,123	127,850	196,003	184,878	281,576
Spain.....	17,480	52,645	9,876	27,605	10,547	14,875	13,345	15,370	0,802	14,165
United Kingdom.....	552,563	1,704,185	666,615	1,782,280	705,318	1,462,804	850,880	1,423,653	809,012	1,348,304
All other Europe.....	7,462	22,703	11,447	20,310	7,055	13,894	10,207	26,960	17,556	28,773

¹ Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

TABLE 9.—QUANTITY AND VALUE OF ROSIN EXPORTED, BY COUNTRIES: 1901 TO 1905—Continued.

COUNTRY.	1905		1904		1903		1902		1901	
	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.
NORTH AMERICA.										
Dominion of Canada.....	61,960	\$205,473	64,905	\$186,954	61,812	\$166,882	45,551	\$110,401	51,129	\$111,531
All Central American states.....	3,946	13,681	3,779	11,770	3,782	9,549	3,634	9,137	4,126	9,168
West Indies:										
British.....	379	1,305	444	1,393	763	2,723	748	1,607	1,008	2,337
Cuba.....	14,981	52,842	16,145	46,806	14,793	33,317	9,913	18,320	7,162	13,645
Danish.....	11	37	1	4			2	6	4	10
Dutch.....	92	346	10	36		170	1	2		69
French.....	5	24	9	31	51	135				13
Haiti.....	845	3,347	1,771	5,825	1,830	6,129	2,451	6,689	2,015	5,222
Santo Domingo.....	3,421	10,726	2,244	6,840	2,880	7,761	1,708	4,918	1,851	4,141
All other North America.....	4,109	14,852	3,130	10,165	4,633	12,393	2,198	6,286	3,031	6,982
SOUTH AMERICA.										
Argentina.....	61,987	215,889	81,217	268,305	55,233	140,172	26,362	64,628	163,973	200,450
Brazil.....	91,350	302,340	131,688	395,711	82,061	180,798	119,278	225,172	102,975	192,022
Chile.....	5,691	17,645	9,770	28,787	6,419	18,836	7,864	19,600	5,472	12,860
Colombia.....	4,995	15,149	5,549	16,955	4,195	11,521	3,630	8,511	5,598	12,703
Peru.....	8,887	30,475	6,751	18,646	10,940	24,358	6,482	13,015	6,724	14,112
Uruguay.....	39,590	118,741	27,209	76,520	20,341	41,341	23,506	47,019	25,697	54,410
Venezuela.....	8,440	30,555	9,607	30,905	5,599	20,586	9,695	29,693	10,951	25,723
All other South America.....	655	2,573	41	126	92	236	379	845	222	499
ASIA.										
Chinese Empire.....	1,861	6,470	377	1,260	2,939	6,301	2,361	5,414	1,379	2,904
East Indies.....	68,607	190,793	40,762	118,209	2,890	8,990	30,284	105,872	27,723	42,918
Hongkong.....	855	2,926	974	3,284	392	937	546	1,251	788	1,641
Japan.....	10,615	67,237	21,906	69,944	6,869	20,792	17,312	37,322	7,666	17,187
All other Asia.....	95	345			52	160	1,890	5,028	85	176
OCEANIA.										
All Oceania.....	67,980	218,832	74,864	194,783	53,630	126,890	52,938	126,429	31,992	76,711
AFRICA.										
British Africa.....	1,832	6,797	762	2,599	638	1,603	864	1,837	1,804	3,880
All other Africa.....	120	395	111	323	172	507	287	659	351	715

The leading purchasers of spirits of turpentine from the United States are the United Kingdom, Belgium, Germany, and the Netherlands, whose combined takings in 1905 amounted to 83.7 per cent of the total quantity exported; 51.7 per cent of the total quantity taken by these countries went to the United Kingdom. During the same year 65.3 per cent of the total quantity of rosin exported went to Germany, the United Kingdom, and the Netherlands, 44.8 per cent of which was taken by Germany, 36.6 per cent by the United Kingdom, and 18.6 per cent by the Netherlands.

While there has been a decrease in the quantity of exports of both products during the past five years, the decrease in the exports of rosin to the United Kingdom has been so much greater than the decrease of rosin exported to Germany that the latter country now ranks first in the quantity taken.

Future of the industry.—The turpentine industry had its origin in the "long leaf pine belt" of the South and is still confined to that section. The forests of North Carolina and South Carolina were first invaded, then those of Georgia. At the present time the trend is south into Florida and west into Alabama, Louisiana, and Mississippi. The annually decreasing supply of raw material, referred to in the statistical description, indicated by the decrease in the quantity of rosin and turpentine manufactured during recent years, and

the increase in the price of these products have created a growing sentiment against forest devastation. Again, a new and more economical method of gathering resin has been adopted, and a new field has been exploited in the destructive distillation of old stumpage.

The fear of exhausting the raw material of the live trees has led to the adoption in some localities of the Herty cup and gutter system of tapping. The advantages claimed for the cup and gutter system are: (1) It protects the tree against the destructive action of storms and fires; (2) it increases both the quality and quantity of the product.¹ In Florida and Louisiana many lumber companies now allow only the improved method of gathering resin to be used in their forests.

Pine trees will produce resin in paying quantities for about four years only, and the incessant tapping of new trees has so reduced the visible supply in the South that experts estimate that the industry there, if carried on at the present rate, can not last over fifteen or twenty years more. In the meantime the forests of France, Spain, and Russia are being worked, higher prices having greatly stimulated the industry in European countries.

In the United States the Oregon fir tree is being tested as a resin producer, and if the results are satis-

¹ Bureau of Forestry, Department of Agriculture, Bulletin 40.

factory, the supply of rosin and spirits of turpentine may be increased from this source. By the destructive distillation of the stumps of pine trees a variety of products are being produced, among which is "wood turpentine," which contains the essentials of spirits of turpentine. With the removal of some prejudices

now existing in the trade as to the use of this product as a substitute for spirits of turpentine, the supply of turpentine will be made sufficient to meet the demand for many years.

Table 10 shows detailed statistics of the industry, by states, for the census of 1905.

TABLE 10.—TURPENTINE AND ROSIN—DETAILED SUMMARY, BY STATES: 1905.

	United States.	Alabama.	Florida.	Georgia.	Louisiana.	Mississippi.	North Carolina.	South Carolina.
Number of establishments.....	1,287	144	406	432	15	124	87	79
Capital, total.....	\$9,961,185	\$767,048	\$2,939,275	\$2,373,880	\$75,570	\$598,146	\$115,629	\$91,637
Land.....	\$183,548	\$13,150	\$63,253	\$46,229	\$22,820	\$30,295	\$4,133	\$3,668
Buildings.....	\$926,350	\$88,705	\$443,185	\$251,950	\$4,800	\$118,595	\$11,635	\$7,480
Machinery, tools, and implements.....	\$1,743,778	\$218,860	\$663,681	\$636,505	\$14,290	\$134,252	\$36,200	\$36,000
Cash and sundries.....	\$4,107,509	\$440,333	\$1,760,156	\$1,439,196	\$33,660	\$315,004	\$63,661	\$40,499
Proprietors and firm members.....	1,997	229	668	707	13	183	110	87
Salaries of officials, clerks, etc.:								
Total number.....	2,147	194	1,073	627	20	220	4	9
Total salaries.....	\$1,152,222	\$99,234	\$573,538	\$314,738	\$12,320	\$145,592	\$2,700	\$4,100
Officers of corporations—								
Number.....	47	3	31	11		2		
Salaries.....	\$49,740	\$1,060	\$36,080	\$8,200		\$3,500		
General superintendents, managers, clerks, etc.—								
Total number.....	2,100	191	1,042	616	20	218	4	9
Total salaries.....	\$1,102,482	\$97,274	\$537,458	\$306,538	\$12,320	\$142,092	\$2,700	\$4,100
Men—								
Number.....	2,008	100	1,042	616	20	218	3	9

TURPENTINE AND ROSIN.

657

TABLE 10.—TURPENTINE AND ROSIN—DETAILED SUMMARY, BY STATES: 1905—Continued.

	United States.	Alabama.	Florida.	Georgia.	Louisiana.	Mississippi.	North Carolina.	South Carolina.
Products, total value	\$23,937,024	\$2,434,365	\$9,901,905	\$7,705,643	\$211,820	\$2,365,720	\$743,421	\$574,150
Spirits of turpentine—								
Gallons.....	30,687,051	3,108,118	12,872,869	9,542,316	245,300	3,160,371	993,665	764,412
Value.....	\$15,170,499	\$1,501,563	\$6,425,826	\$4,795,331	\$124,005	\$1,473,530	\$480,198	\$370,046
Rosin—								
Barrels (280 pounds).....	3,508,347	360,469	1,445,902	1,104,968	30,023	362,836	116,314	87,836
Value.....	\$8,725,619	\$930,053	\$3,447,418	\$2,901,583	\$87,715	\$892,028	\$263,073	\$203,749
Dross.....	\$17,733	\$1,845	\$9,989	\$5,199	\$100	\$150	\$150	\$300
All other products.....	\$23,173	\$904	\$18,672	\$3,530	.....	\$12	.....	\$55
Power:								
Number of establishments reporting.....	182	27	32	61	.....	59	1	2
Total horsepower.....	1,175	151	349	362	.....	300	4	9
Owned—								
Engines—								
Steam—								
Number.....	175	25	32	62	.....	53	1	2
Horsepower.....	1,128	141	346	361	.....	267	4	9
Water wheels—								
Number.....	1	.....	1	.....	.....	.....	.....	.....
Horsepower.....	3	.....	3	.....	.....	.....	.....	.....
Other power, horsepower.....	44	10	.....	1	.....	33	.....	.....
Furnished to other establishments, horsepower.....	8	.....	.....	8	.....	.....	.....	.....

PAPER AND WOOD PULP

(659)

PAPER AND WOOD PULP.

The manufacture of wood pulp, which was first reported at the census of 1870, was treated as a separate industry until the census of 1900, when it was combined with the manufacture of paper, and it is so treated in this report, which presents statistics relat-

ing to the manufacturing of paper and wood pulp as reported at the census of 1905.

Table 1 presents the statistics for this industry as returned at the censuses of 1850 to 1905, with the percentage of increase for each census period.

TABLE 1.—COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1850 TO 1905.

	CENSUS.							PER CENT OF INCREASE.					
	1905	1900	1890	1880	1870	1860	1850	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments ..	761	763	649	742	677	555	443	10.3	17.6	112.5	9.6	22.0	25.3
Capital ..	\$277,444,471	\$167,507,713	\$89,829,548	\$48,130,652	\$34,556,014	\$14,052,683	\$7,260,864	65.6	80.5	80.0	39.3	145.9	93.5
Salaried officials, clerks, etc., number ..	3,778	2,935	1,348	(³)	(³)	(³)	(³)	28.7	117.7	.....	.....	.....	.....
Salaries ..	\$6,097,632	\$4,500,911	\$1,770,657	(³)	(³)	(³)	(³)	35.5	154.2	.....	.....	.....	.....
Wage-earners, average number ..	65,904	49,646	31,050	25,631	18,021	10,911	6,785	32.9	50.9	21.1	42.2	65.2	60.8
Total wages ..	\$32,019,212	\$20,740,426	\$13,204,828	\$8,970,133	\$7,208,691	\$2,767,212	\$1,497,792	54.3	57.1	47.2	24.4	160.5	84.8
Men 16 years and over ..	56,827	41,547	24,015	17,317	11,032	6,519	3,835	38.8	73.0	38.7	57.0	90.2	70.0
Wages ..	\$20,402,799	\$18,753,326	\$11,459,318	(³)	(³)	(³)	(³)	57.1	63.6	.....	.....	.....	.....
Women 16 years and over ..	8,882	7,630	6,767	7,048	6,153	4,392	2,950	12.0	17.2	111.5	24.3	40.1	48.9
Wages ..	\$2,490,588	\$1,958,135	\$1,705,287	(³)	(³)	(³)	(³)	27.6	14.8	.....	.....	.....	.....
Children under 16 years ..	255	109	208	606	836	(³)	(³)	50.9	136.9	159.8	120.3	.....	.....
Wages ..	\$56,825	\$34,965	\$40,223	(³)	(³)	(³)	(³)	62.5	113.1	.....	.....	.....	.....
Miscellaneous expenses ..	\$16,440,041	\$10,184,106	\$6,770,681	(³)	(³)	(³)	(³)	61.4	50.4	.....	.....	.....	.....
Cost of materials used ..	\$111,251,478	\$70,530,236	\$44,228,480	\$34,862,132	\$30,058,568	\$11,602,266	\$5,553,929	57.7	59.5	20.9	16.0	159.1	108.9
Value of products ..	\$188,715,189	\$127,320,162	\$78,937,184	\$57,306,800	\$48,840,285	\$21,216,802	\$10,187,177	48.2	61.3	37.6	17.4	130.2	108.3

¹ Decrease.
² Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
³ Not reported separately.
⁴ Not reported.

The figures shown for 1850 and 1860 are for paper alone, as at those censuses no separate statistics were collected relating to the manufacture of wood pulp, which was little used in the manufacture of paper in this country prior to 1870.

A comparison of the figures in Table 1 for 1850 and 1905 indicates the great expansion of the paper and wood pulp industry. The number of establishments has increased from 443 to 761, an increase of 318, or 71.8 per cent; the capital has increased \$270,183,607, or nearly fortyfold; the number of wage-earners, 59,179, or about ninefold; wages, \$30,521,420, or about twentyfold; and the value of products, \$178,528,012, or about seventeenfold.

The increase in the number of establishments does not appear remarkable, but it must be borne in mind that the concentration of manufacture into large plants which has been so marked in recent years has particularly affected the paper and wood pulp industry, and thus has greatly restricted the increase in number of establishments. The extent to which this

is true is well brought out in the following tabular statement, which shows the average amount of capital invested and the average value of products per establishment at each census from 1850 to 1905:

CENSUS.	AVERAGE PER ESTABLISHMENT.	
	Capital.	Value of products.
1905 ..	\$364,579	\$247,983
1900 ..	210,538	160,876
1890 ..	138,412	121,629
1880 ..	64,878	77,314
1870 ..	51,043	72,156
1860 ..	25,320	38,228
1850 ..	16,390	22,966

The increase per establishment of the average capital and the average value of products was steady but not marked until the decade from 1880 to 1890, when a very large increase was reported for both items. The increase between 1890 and 1900 was even greater, while the increase for the five years ending 1905 was

still more notable. The average annual increase per establishment in capital invested between 1890 and 1900 was \$8,113, and between 1900 and 1905, \$29,008; while for value of products the average annual increase per establishment between 1890 and 1900 was \$4,525, and between 1900 and 1905, \$16,221.

Table 1 shows large increases for each census from 1850 to 1905 for all items except number of establishments, number of women and children employed, and the wages paid to them, which show decreases for several of the census periods.

The present report is, however, concerned chiefly with the progress made in the paper and wood pulp industry between the census of 1900 and that of 1905. In this period the capital invested increased \$109,936,758, or 65.6 per cent; the number of wage-earners,

16,318, or 32.9 per cent; the wages, \$11,272,786, or 54.3 per cent; the cost of materials used, \$40,721,242, or 57.7 per cent; and the value of products, \$61,389,027, or 48.2 per cent.

The increases for this period are striking, especially when compared with the large increases for the preceding decade. In none of the items just enumerated was the actual increase for the longer period as large as the increase for the shorter, except in the number of wage-earners.

THE INDUSTRY BY STATES.

Table 2 is a comparative summary of the general statistics, by states, for 1900 and 1905, and shows in detail the kind, quantity, and value of products.

TABLE 2.—COMPARATIVE SUMMARY,

STATE.	Census.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS AND WAGES.		Miscellaneous expenses.	Cost of materials used.	PRODUCTS.	
				Number.	Salaries.	Average number.	Wages.			Aggregate value.	paper. Total value.
1 United States.....	1905	761	\$277,444,471	3,778	\$6,097,032	65,964	\$32,019,212	\$16,440,041	\$111,251,478	\$188,715,189	\$163,646,420
2	1900	763	167,507,713	2,935	4,500,911	49,646	26,746,426	10,184,106	70,530,236	127,326,162	107,009,046
3 California ¹	1905	3	1,176,427	12	20,280	259	181,412	50,768	274,369	640,027	640,027
4 Connecticut.....	1905	50	5,892,684	154	230,408	1,750	843,333	522,352	2,738,430	5,030,147	5,002,331
5	1900	49	3,968,152	115	151,600	1,425	633,413	279,062	1,982,080	3,565,021	3,493,596
6 Delaware.....	1905	6	3,176,498	22	69,900	547	252,268	47,830	1,270,240	1,004,550	1,354,550
7	1900	6	2,143,108	19	61,675	451	193,783	90,785	1,028,274	1,509,718	1,160,405
8 Illinois.....	1905	19	3,992,877	73	120,009	950	462,453	166,645	1,415,845	2,442,504	2,359,450
9	1900	15	1,564,858	35	37,370	623	250,303	72,050	798,370	1,431,618	1,431,618
10 Indiana.....	1905	39	6,511,005	112	131,538	1,620	664,151	280,307	2,517,023	3,016,008	3,910,638
11	1900	39	5,379,227	134	180,394	1,816	723,972	226,156	2,470,623	4,170,497	3,690,968
12 Iowa.....	1905	4	307,913	13	11,936	152	60,114	11,484	130,647	252,832	252,832
13	1900	4	182,045	11	11,770	180	63,589	13,350	100,615	243,776	243,776
14 Kansas ¹	1905	3	131,540	8	7,940	91	45,947	18,372	78,330	202,290	202,290
15 Maine.....	1905	37	41,273,915	350	604,774	7,574	4,052,910	2,257,650	13,868,147	22,051,124	17,909,764
16	1900	35	17,473,160	258	445,348	4,851	2,102,972	1,394,907	7,118,945	13,223,275	9,394,646
17 Maryland.....	1905	16	6,350,458	47	76,068	1,008	397,181	184,097	2,453,318	3,206,348	2,410,821
18	1900	21	2,720,877	35	58,793	937	326,474	105,571	1,730,910	2,589,540	1,754,060
19 Massachusetts.....	1905	87	41,073,769	627	1,184,610	11,705	5,587,862	2,060,680	17,946,720	32,012,247	31,537,370
20	1900	93	26,692,922	510	801,152	9,061	3,938,400	1,693,505	11,918,802	22,141,461	21,549,232
21 Michigan.....	1905	30	8,397,570	163	218,369	3,052	1,303,112	498,632	4,581,471	7,340,631	6,874,724
22	1900	27	4,565,741	107	142,812	2,014	709,826	264,373	2,707,827	4,217,869	3,871,120
23 Minnesota ¹	1905	4	1,490,002	22	31,450	396	234,378	60,884	676,540	1,145,818	1,024,768
24 New Hampshire.....	1905	25	14,041,014	147	208,930	2,522	1,315,310	650,683	5,327,734	8,630,291	5,848,326
25	1900	29	8,163,081	113	173,060	2,391	1,036,856	530,956	3,953,334	7,244,733	4,303,505
26 New Jersey.....	1905	38	7,122,852	129	232,958	1,620	786,731	280,681	3,022,484	5,043,462	4,011,597
27	1900	34	3,670,717	93	162,738	1,190	553,463	242,793	1,715,312	3,195,302	3,188,122
28 New York.....	1905	177	56,461,739	750	1,131,729	12,418	6,402,323	2,848,610	22,805,751	37,750,605	31,700,400
29	1900	179	37,340,390	604	858,662	9,268	4,066,771	2,398,994	14,563,222	20,715,628	21,418,285
30 Ohio.....	1905	53	14,433,114	222	327,364	3,883	1,682,830	1,396,939	6,153,761	10,961,527	10,022,137
31	1900	51	7,872,913	196	277,984	3,184	1,118,940	470,380	3,768,572	6,543,513	6,142,680
32 Oregon.....	1905	4	2,967,630	45	132,366	653	318,113	225,741	624,520	1,530,440	1,515,549
33	1900	5	2,161,186	28	101,417	710	282,806	147,417	582,078	1,365,090	1,290,186
34 Pennsylvania.....	1905	65	21,468,927	324	517,955	5,906	2,839,487	1,535,291	8,509,546	15,411,032	14,120,062
35	1900	73	16,424,107	281	386,478	4,840	1,989,128	1,060,321	6,374,315	12,207,990	11,355,637
36 Vermont.....	1905	28	5,628,676	99	123,103	1,280	616,735	233,971	2,530,706	3,831,448	3,482,426
37	1900	27	4,853,806	88	120,408	1,216	571,018	265,569	1,684,922	3,384,773	2,650,025
38 Virginia.....	1905	9	5,517,200	65	133,585	993	363,010	260,123	1,788,756	3,034,395	1,453,735
39	1900	7	2,281,903	34	58,250	392	102,993	57,829	410,640	850,380	651,114
40 West Virginia.....	1905	7	2,215,436	37	47,018	545	229,972	85,604	759,962	1,208,066	346,642
41	1900	6	926,463	22	25,540	281	98,329	44,193	274,316	527,527	168,500
42 Wisconsin.....	1905	52	24,468,918	287	435,474	6,338	2,987,777	1,079,718	10,692,290	17,844,174	15,070,757
43	1900	47	16,580,140	199	307,927	4,240	1,649,610	664,591	6,712,740	10,895,576	9,037,461
44 All other states.....	² 1905	8	3,343,401	61	93,178	684	382,704	168,270	1,075,778	1,935,218	1,935,218
45	³ 1900	16	2,603,917	53	63,443	660	251,100	111,739	628,330	1,212,353	1,000,210

¹ Included in "all other states" in 1900.² Includes establishments distributed as follows: Colorado, 1; District of Columbia, 1; Georgia, 1; Missouri, 1; South Carolina, 1; Texas, 1; Washington, 2.

PAPER AND WOOD PULP.

BY STATES: 1905 AND 1900.

PRODUCTS—continued.													
Paper—Continued.													
News.		Book.		Fine.		Wrapping.		Boards.		Other paper products.		Wood pulp and fiber made for sale (value).	All other products (value).
Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.		
912,822	\$35,006,400	515,547	\$37,403,501	146,832	\$22,240,170	644,201	\$30,435,592	520,051	\$16,959,557	366,553	\$20,602,140	\$23,144,574	\$1,024,195
569,212	20,091,874	351,702	24,870,951	112,707	15,895,974	535,252	24,542,373	365,617	10,353,319	233,103	12,154,555	18,497,701	919,415
						7,328	375,940	3,507	143,587	1,920	120,500		
		6,009	585,879	6,439	804,055	7,056	502,544	64,610	2,354,053	5,535	405,800		36,816
		7,849	756,471	2,298	361,412	14,219	743,747	30,762	1,158,499	4,079	473,467		71,425
		17,255	1,274,491	590	53,950	19	700			212	25,355	550,000	
		14,421	1,097,722							1,065	71,683	420,313	
3,015	128,108					16,386	417,727	53,500	1,522,415	14,910	201,200	44,200	38,854
						32,980	544,575	37,428	814,081	3,650	72,962		
7,315	316,764	1,807	119,424			28,144	874,463	83,414	2,217,116	24,222	382,871	3,390	3,000
6,490	320,000	4,110	270,898			23,010	786,540	93,775	2,041,881	4,233	271,679	454,279	25,250
						4,972	116,162	3,000	77,350	2,996	59,320		
						4,990	166,776			3,850	77,000		
						3,000	65,000	6,082	137,290				
215,307	7,721,804	67,307	5,159,239	4,400	385,000	89,818	4,075,497	13,477	523,598	2,525	104,566	4,888,800	92,551
122,738	4,122,050	30,041	2,600,211			39,659	2,092,298	14,843	520,087			3,828,629	
		28,827	1,986,753			1,084	29,188	4,174	112,207	7,035	282,673	885,527	
810	49,748	14,873	1,017,164			8,045	422,584	5,172	106,719	4,638	157,845	810,480	25,000
19,059	904,769	123,508	9,891,151	80,775	14,071,411	16,150	1,417,015	27,020	1,338,346	29,112	3,013,778	415,975	58,902
22,194	840,705	60,029	5,501,788	68,055	11,208,628	22,238	1,441,291	17,238	954,111	25,765	1,512,709	426,672	165,557
8,167	337,747	52,308	3,647,183	2,647	250,062	32,654	1,565,861	26,382	812,781	6,179	255,090	407,286	58,231
150	10,200	48,206	2,359,790	1,592	161,427	20,370	811,750	14,051	348,947	4,361	188,006	346,516	623
25,379	921,421									2,946	103,347	100,000	21,050
80,522	3,176,191	12,039	814,679	414	18,677	27,141	1,184,128	8,268	350,277	2,681	304,374	3,031,345	50,620
57,878	2,078,604	11,070	724,653			16,933	784,422	5,618	241,184	6,788	475,242	2,916,853	24,375
		4,720	330,417			18,720	1,471,713	37,692	1,174,348	29,844	1,635,119	330,233	101,632
		3,050	249,640	60	6,000	18,959	1,015,645	21,105	703,180	12,641	1,213,657		7,180
347,546	13,465,093	44,515	2,814,271	55	6,604	157,186	7,180,993	90,004	3,347,317	80,644	4,880,122	5,021,342	428,863
204,957	6,879,013	35,842	2,213,380	1,225	136,959	157,385	7,466,185	40,394	1,368,585	65,608	3,354,154	5,232,451	64,802
4,104	190,600	21,461	1,604,079	8,722	1,057,920	44,037	1,786,172	60,269	1,716,740	46,038	3,609,620	413,151	526,239
7,517	354,550	10,742	1,158,095	4,095	578,172	49,854	2,303,199	53,886	1,167,360	13,209	580,598	174,809	226,124
24,195	1,088,775					7,910	426,774					14,600	
21,416	856,640					8,274	375,960			1,510	57,580	15,510	
1,140	59,445	68,163	5,103,981	22,065	2,322,427	58,192	3,154,038	26,308	688,358	80,090	2,710,813	844,098	446,872
1,031	51,543	61,863	4,766,699	19,944	1,749,511	36,110	2,024,486	20,486	595,414	58,152	2,167,984	710,539	201,724
34,306	1,397,204			948	54,785	17,633	891,100	4,599	183,704	13,859	955,567	343,386	5,636
26,166	930,818	4,431	181,671			20,295	973,792	3,763	183,236	4,364	386,508	728,748	
1,576	77,180	11,026	724,158	166	12,956	2,450	104,600	4,199	161,658	3,344	373,183	1,580,690	
1,320	72,600	799	51,223	720	55,506	762	15,250	2,236	55,735	4,780	400,800	199,272	
						2,054	232,804	3,709	93,790	285	19,988	916,090	35,325
				50	6,000	1,525	89,000	3,500	73,600			299,027	60,000
121,740	5,187,635	52,283	2,839,787	17,333	2,066,243	94,454	4,200,058	167	4,592	10,618	772,442	2,754,203	19,214
90,075	3,253,391	25,057	1,653,974	13,991	1,489,199	46,880	2,048,805			10,119	592,092	1,855,953	2,162
18,752	942,604	4,220	358,009	2,248	179,080	7,897	362,089			1,549	93,376		
6,560	272,000	3,119	216,593	677	53,100	12,755	436,068	1,300	20,800	3,641	109,589	67,650	45,492

* Includes establishments distributed as follows: California, 2; Colorado, 2; Georgia, 2; Kansas, 2; Minnesota, 2; North Dakota, 1; South Carolina, 1; Texas, 2; Washington, 2.

Table 2 shows that in the manufacture of paper and wood pulp New York, which was first in 1900, was first also at the census of 1905, with products valued at more than one-fifth of the total value. Massachusetts was second in both years and Maine third; Wisconsin was fourth, as reported in 1905, and fifth in 1900; while Pennsylvania was fifth, as reported in 1905, and fourth in 1900. The increase in value of products for each of these states was large, that for New York being \$11,034,977, or 41.3 per cent; for Massachusetts, \$9,870,786, or 44.6 per cent; for Maine, \$9,727,849, or 73.6 per cent; for Wisconsin, \$6,948,598, or 63.8 per cent; and for Pennsylvania, \$3,143,132, or 25.6 per cent.

New York was first in the amount of capital invested, followed by Maine, Massachusetts, and Wisconsin in the order named. In 1900 Massachusetts ranked ahead of Maine, but the increase for the latter state was so much larger as to give it the second rank at the census of 1905. The increase for Maine was the largest shown by any state, being \$23,800,755, or 136.2 per cent; while the next largest, that for New York, was \$19,112,349, or 51.2 per cent. The increase for Massachusetts was \$14,380,847, or 53.9 per cent. The large increase for Maine is doubtless due in part to the fact that the factories of that state are engaged largely in the manufacture of the coarser and heavier products, such as news, book, and wrapping paper, and pulp, which require the use of heavy and costly machinery.

In the average number of wage-earners, wages, and cost of materials used, the leading states were New York, Massachusetts, Maine, and Wisconsin.

CAPITAL.

Table 3 shows, for 1900 and 1905, the capital invested, with the proportion invested in each item, and per cent of increase.

TABLE 3.—Capital, with per cent each item forms of the total, and per cent of increase: 1905 and 1900.

	1905		1900		Per cent of increase.
	Amount invested.	Per cent of total.	Amount invested.	Per cent of total.	
Total	\$277,444,471	100.0	\$167,507,713	100.0	66.0
Land.....	34,234,084	12.3	21,467,286	12.8	61.0
Buildings.....	62,898,690	22.7	35,440,184	21.2	77.8
Machinery, tools, and imple- ments.....	103,872,408	37.4	60,351,066	36.0	72.4
Cash and sundries.....	76,438,599	27.6	50,249,177	30.0	52.1

At the census of 1905, as compared with 1900, the greatest rate of increase was 77.8 per cent, which occurred in capital invested in buildings, and the largest absolute increase was \$43,521,342, and is shown for machinery, tools, and implements.

MATERIALS USED.

Table 4 shows in detail the kind, quantity, and cost of materials used in the manufacture of paper and pulp, for 1900 and 1905, with per cent of increase.

TABLE 4.—Materials used, by kind, quantity, and cost, with per cent of increase: 1905 and 1900.

	1905	1900	Per cent of increase.
Materials used, total cost.....	\$111,251,478	\$70,530,236	57.7
Domestic pulp wood:			
Spruce—			
For ground wood—			
Cords.....	881,106	598,229	47.3
Cost.....	\$0,355,563	\$2,855,872	122.5
For sulphite and soda fiber—			
Cords.....	861,425	501,889	51.5
Cost.....	\$5,582,289	\$2,731,070	104.4
Poplar—			
For soda fiber—			
Cords.....	213,058	236,820	110.0
Cost.....	\$1,500,971	\$1,103,132	36.6
Other—			
Cords.....	527,595	220,155	139.6
Cost.....	\$2,508,982	\$783,085	220.0
Canadian pulp wood:			
Spruce—			
For ground wood—			
Cords.....	245,087	120,820	102.8
Cost.....	\$2,178,012	\$808,187	160.4
For sulphite and soda fiber—			
Cords.....	293,218	228,264	28.5
Cost.....	\$2,396,405	\$1,404,308	70.6
Poplar—			
For soda fiber—			
Cords.....	35,313	20,133	75.4
Cost.....	\$251,600	\$90,992	176.6
Other—			
Cords.....	4,005	(2)	.....
Cost.....	\$25,449	(2)	.....
Rags, including cotton and flax waste and sweepings:			
Tons.....	294,552	234,514	25.6
Cost.....	\$8,864,007	\$0,595,427	34.4
Old or waste paper:			
Tons.....	588,543	356,193	65.2
Cost.....	\$7,430,335	\$4,809,400	62.6
Manila stock, including jute bagging, ropes, waste, threads, etc.:			
Tons.....	107,029	99,801	7.8
Cost.....	\$2,592,332	\$2,437,256	2.7
Straw:			
Tons.....	304,585	307,305	117.1
Cost.....	\$1,592,830	\$1,395,059	7.7
Wood pulp and fiber, purchased:			
Ground wood pulp—			
Tons.....	317,280	261,962	21.1
Cost.....	\$5,764,269	\$4,361,211	31.9
Soda wood fiber—			
Tons.....	120,078	94,042	28.6
Cost.....	\$5,047,105	\$3,430,800	47.1
Sulphite wood fiber—			
Tons.....	433,100	273,104	58.6
Cost.....	\$10,507,122	\$10,112,189	63.8
Other chemical fiber—			
Tons.....	6,278	14,808	157.6
Cost.....	\$204,078	\$405,255	143.1
Other stock.....	\$1,063,000	\$817,076	140.2
Sulphur:			
Tons.....	130,400	(2)	.....
Cost.....	\$3,221,834	(2)	.....
Other chemicals.....	\$6,111,546	\$0,846,033	126.8
Pyrites:			
Tons.....	2,036	(2)	.....
Cost.....	\$31,925	(2)	.....
Slings:			
Tons.....	52,171	(2)	.....
Cost.....	\$1,838,035	\$820,245	122.5
Clay:			
Tons.....	201,218	(2)	.....
Cost.....	\$2,005,570	\$1,403,460	40.4
Fuel.....	\$13,178,567	\$6,879,797	91.6
Rent of power and heat.....	\$70,169	\$611,006	188.5
Mill supplies.....	\$2,520,950	\$2,606,797	14.3
All other materials.....	\$11,034,537	\$4,420,507	149.0
Freight.....	\$1,444,084	\$2,433,676	140.7

¹ Decrease.

² Not reported separately.

Increases in cost are shown in Table 4 for the totals of all items except mill supplies, freight, and rent of power and heat. At the census of 1905 the cost of wood was greater than in 1900 by over 100 per cent

for every variety except domestic poplar, which increased 36.6 per cent; and Canadian spruce for sulphite and soda fiber, which increased 70.6 per cent.

The pulp and fiber purchased was the principal item of cost reported in both 1905 and 1900, forming 24.8 per cent of the total cost in the later and 26 per cent in the earlier year. This decrease in the proportion to the whole is due largely to the fact that wood pulp and fiber, as reported at the census of 1905, was produced more largely in the establishment requiring it than in 1900. The quantity of wood pulp and fiber reported in 1905 as purchased increased 233,696 tons, or 36.3 per cent, over 1900, and the value, \$9,263,700, or 50.4 per cent. Sulphite wood fiber was the principal kind of pulp purchased, and formed 49.4 per cent of the total quantity purchased in 1905 and 42.4 per cent in 1900. In the aggregate amount of pulp made for own use and purchased, however, sulphite fiber was second in quantity to ground wood pulp.

The cost of wood of all kinds formed 18.7 per cent of the total cost of materials reported in 1905 and 13.9 per cent in 1900. The principal kind of wood used was spruce, which formed 74.4 per cent of the total quantity reported in 1905 and 76 per cent in 1900. The quantity of spruce used increased 761,634 cords, and the value, \$8,648,432. Poplar decreased 8,582 tons in quantity but increased \$564,477 in value. Poplar formed 8.1 per cent of the total quantity of wood reported in 1905 and 12.9 per cent in 1900. Woods other than spruce and poplar were used more largely than in 1900, forming 17.4 per cent of the total quantity at the census of 1905 and 11.1 per cent in 1900. The quantity of other woods reported in 1905 was more than twice as large as the quantity of poplar, although in 1900 the latter was considerably greater.

Of the total wood reported in 1905, 81.1 per cent was domestic and 18.9 per cent Canadian; in 1900 the proportion for domestic was 81.4 per cent and for Canadian 18.6 per cent. Canadian spruce formed 23.7 per cent of the total spruce reported in 1905 and 23.1 per cent in 1900; while Canadian poplar formed 14.2 per cent of the total poplar in 1905 and 7.8 per cent in 1900. It is evident that the pulp mills of this country depend upon Canada more largely for spruce than for poplar, undoubtedly because the demand for poplar is smaller and can be more easily supplied at home. On the whole, Canadian wood was used by American pulp mills to only a slightly greater extent, as reported at the census of 1905, than in 1900.

The proportion of the total cost of materials formed by the cost of all other ingredients, including rags, old paper, manila stock, straw, and other stock, was 20 per cent for 1905 and 22.8 per cent for 1900. In the earlier years of the industry in the United States these ingredients were the principal materials used in paper manufacture, but their relative importance has decreased as the use of wood pulp has developed.

Fuel was a large item of cost, forming 11.8 per cent of the total cost of materials reported in 1905, and 9.8 per cent in 1900. The increase for the five years was \$6,298,770, or 91.6 per cent.

"All other materials" also shows a large increase, forming 9.9 per cent of the total cost of materials reported in 1905 and 6.3 per cent in 1900. The cost of chemicals and pyrites together, although showing an increase, formed only 7.5 per cent of the total cost at the census of 1905, as compared with 9.7 per cent in 1900.

PRODUCTS.

Table 5 shows in detail the kind, quantity, and value of products of the paper and wood pulp industry for 1900 and 1905, with per cent of increase.

TABLE 5.—Products, by kind, quantity, and value, with per cent of increase: 1905 and 1900.

	1905	1900	Per cent of increase.
Products, total value.....	\$188,715,189	\$127,823,162	48.2
News paper:			
In rolls for printing—			
Tons.....	840,802	454,572	85.0
Value.....	\$32,703,308	\$15,754,002	108.0
In sheets for printing—			
Tons.....	72,020	114,040	137.2
Value.....	\$3,143,162	\$4,336,882	127.5
Book paper:			
Book—			
Total—			
Tons.....	434,500	282,093	54.0
Value.....	\$31,156,728	\$10,406,804	60.1
Wood fiber, chief ingredient—			
Tons.....	354,540	(2)	.....
Value.....	\$24,840,224	(2)	.....
Rags, chief ingredient—			
Tons.....	79,960	(2)	.....
Value.....	\$6,316,504	(2)	.....
Cover:			
Tons.....	22,160	18,740	18.1
Value.....	\$2,023,986	\$1,665,376	21.5
Plate, lithograph, map, woodcut, etc.:			
Tons.....	10,837	22,366	111.3
Value.....	\$1,458,349	\$2,018,958	127.8
Cardboard, bristol board, card middles, tickets, etc.:			
Tons.....	39,060	28,404	37.1
Value.....	\$2,704,444	\$1,719,813	60.7
Fine paper:			
Writing paper—			
Tons.....	131,934	90,204	46.3
Value.....	\$19,321,045	\$12,222,870	58.1
All other—			
Tons.....	14,898	22,503	133.8
Value.....	\$2,928,125	\$3,073,104	120.3
Wrapping paper:			
Manila—			
Tons.....	86,826	80,419	12.0
Value.....	\$9,130,080	\$5,929,794	3.5
Heavy—			
Tons.....	96,962	82,875	17.0
Value.....	\$4,035,588	\$4,143,240	12.6
Straw—			
Tons.....	54,232	91,794	140.9
Value.....	\$1,889,348	\$2,027,518	31.5
Bogus, or wood, manila—			
Tons.....	228,371	203,820	12.0
Value.....	\$10,090,772	\$9,148,077	10.4
All other—			
Tons.....	177,870	87,398	164.1
Value.....	\$8,774,804	\$3,293,174	166.5
Boards:			
Wood pulp—			
Tons.....	60,863	44,187	37.7
Value.....	\$2,347,260	\$1,406,130	66.9
Straw—			
Tons.....	167,278	157,534	6.2
Value.....	\$4,307,560	\$3,187,342	37.0
News—			
Tons.....	38,500	82,119	20.1
Value.....	\$1,174,216	\$930,531	26.2
All other—			
Tons.....	253,950	131,777	92.7
Value.....	\$9,070,531	\$4,829,316	87.8

¹ Decrease.

² Not reported separately.

TABLE 5.—Products, by kind, quantity, and value, with per cent of increase: 1905 and 1900—Continued.

	1905	1900	Per cent of increase.
Products—Continued.			
Other paper products:			
Tissue paper—			
Tons.....	43,925	28,406	54.6
Value.....	\$5,056,438	\$3,486,652	45.0
Blotting paper—			
Tons.....	8,702	4,351	100.0
Value.....	\$1,046,700	\$580,750	80.2
Building, roofing, asbestos, and sheathing papers—			
Tons.....	145,024	96,915	49.6
Value.....	\$4,845,628	\$3,025,907	60.1
Hanging papers—			
Tons.....	62,606	54,330	15.2
Value.....	\$3,013,464	\$2,265,345	33.0
Miscellaneous—			
Tons.....	106,296	40,101	116.5
Value.....	\$6,720,820	\$2,795,841	140.7
Ground wood pulp:			
Made for own use, tons.....	665,570	306,322	127.1
Made to sell as such—			
Tons.....	273,400	280,052	12.4
Value.....	\$4,323,495	\$4,433,600	12.5
Soda fiber:			
Made for own use, tons.....	66,404	78,100	15.0
Made to sell as such—			
Tons.....	130,366	99,014	31.7
Value.....	\$5,159,615	\$3,612,602	42.8
Sulphite fiber:			
Made for own use, tons.....	370,082	144,452	162.4
Made to sell as such—			
Tons.....	376,040	271,585	38.8
Value.....	\$13,661,464	\$10,451,400	30.7
All other products.....	\$1,024,195	\$919,415	109.3

¹ Decrease.

Perhaps the best index of the progress of an industry is the increase or decrease in value of products.

In this as in the other items the paper and wood pulp industry shows a remarkable growth, the increase in value of products being \$61,389,027, or 43.2 per cent.

Table 5 shows that the paper products were relatively more important at the census of 1905 than at that of 1900. The value of paper and paper products formed 86.7 per cent of the total value at the later and 84.8 per cent at the earlier census; while the proportion for wood pulp and fiber shows a corresponding decrease. The decrease in the proportion for wood pulp and fiber does not mean a decrease in the manufacture of these, for the quantity and value increased largely.

News paper.—News paper was the principal kind of paper in quantity at both censuses. The value formed 21.9 per cent of the total value of paper at the census of 1905 and 18.6 per cent in 1900.

The increase in value of news paper produced was \$15,814,586, or 78.7 per cent. News paper in rolls, which forms the great bulk of the news paper made, increased \$17,008,316, or 108 per cent, in value, while news paper in sheets decreased \$1,193,730, or 27.5 per cent.

Table 6 shows, by states, the quantity and value of news paper made in rolls and in sheets, for 1900 and 1905.

TABLE 6.—PRODUCTION OF NEWS PAPER, BY STATES: 1905 AND 1900.

STATE.	TOTAL.				IN ROLLS FOR PRINTING.				IN SHEETS FOR PRINTING.			
	1905		1900		1905		1900		1905		1900	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
United States.....	912,822	\$35,906,460	569,212	\$20,091,874	840,802	\$32,763,308	454,572	\$15,754,002	72,020	\$3,143,152	114,640	\$4,336,882
Illinois.....	3,015	128,108	6,400	320,000	2,370	100,362	3,500	175,000	645	27,746	2,900	145,000
Indiana.....	7,315	316,764	122,738	4,122,050	1,315	58,704	7,635,428	112,095	6,000	258,000	0,743	365,450
Maine.....	215,307	7,721,804	810	49,748	213,476	7,635,428	410	3,750,600	1,831	80,438	400	24,948
Maryland.....												
Massachusetts.....	19,659	904,769	22,194	840,705	19,659	904,769	22,194	840,705				
Michigan.....	8,167	337,747	150	10,200	4,000	105,000	(1)	(1)	4,167	172,747	150	10,200
Minnesota.....	25,379	921,421	(1)	(1)	18,230	655,180	(1)	(1)	7,149	266,241	(1)	(1)
New Hampshire.....	80,522	3,176,101	57,878	2,078,604	79,332	3,116,188	45,043	1,006,955	1,100	60,003	12,235	471,640
New York.....	347,546	13,465,093	204,957	6,879,013	330,423	12,719,853	102,153	5,405,452	17,123	745,240	42,804	1,473,561
Ohio.....	4,104	190,000	7,517	354,556	1,852	85,500	4,239	218,159	2,252	105,100	3,278	130,397
Oregon.....	24,195	1,088,775	21,416	850,646	23,797	1,070,865	18,620	744,806	308	17,910	2,796	111,840
Pennsylvania.....	1,140	50,445	1,031	51,543	570	24,795	243	12,128	570	25,050	788	39,415
Vermont.....	34,306	1,397,204	26,166	930,818	34,304	1,393,524	22,685	822,685	92	3,680	3,481	108,133
Virginia.....	1,576	77,180	1,320	72,000	344	17,105			1,232	59,985	1,320	72,000
Wisconsin.....	121,749	5,187,635	90,075	3,253,391	93,149	3,915,176	58,850	2,020,102	28,600	1,272,459	31,225	1,233,289
All other states.....	18,752	942,664	6,500	272,000	17,981	900,709	3,040	127,600	771	41,955	3,520	144,400

¹Included in "all other states."

At both censuses New York, Maine, Wisconsin, and New Hampshire, in the order named, were the leading states in the manufacture of news paper. The total quantity produced in these 4 states was 83.8 per cent of the total quantity reported in 1905 and 83.6 per cent in 1900, while the value formed 82.3 per cent of the total value for 1905 and 81.3 per cent for 1900.

New York was by far the most important state, reporting 38.1 per cent of the total quantity and 37.5 per cent of the total value for 1905, and 36 per cent of

the quantity and 34.2 per cent of the value for 1900. Massachusetts and Ohio show decreases in quantity, and Indiana, Ohio, and Pennsylvania in value. The total production of news paper in these states, however, is relatively unimportant.

Book paper.—Table 7 shows, by states, the quantity and value of book paper reported in 1900 and 1905.

The quantity of book paper increased 152,407 tons, or 54 per cent, while the value increased \$11,689,924, or 60.1 per cent. The book paper manufactured chiefly

from rags, for which no separate return was made in 1900, had a product of 79,960 tons, valued at \$6,316,504, at the census of 1905, as shown in Table 19.

TABLE 7.—Production of book paper, by states: 1905 and 1900.

STATE.	1905		1900	
	Tons.	Value.	Tons.	Value.
United States.....	434,500	\$31,156,728	282,003	\$19,466,804
Connecticut.....	1,345	123,000	2,427	264,041
Delaware.....	7,332	528,343	11,931	903,422
Indiana.....	1,807	119,424	3,887	253,868
Maine.....	66,797	5,112,739	30,041	2,600,211
Maryland.....	28,827	1,980,753	14,873	1,017,164
Massachusetts.....	93,439	7,515,045	39,551	3,120,867
Michigan.....	48,742	3,392,859	44,433	2,048,178
New Hampshire.....	12,039	814,679	9,137	618,145
New Jersey.....	4,720	330,417	3,650	249,640
New York.....	29,062	1,932,347	27,611	1,706,566
Ohio.....	17,825	1,273,062	13,861	942,642
Pennsylvania.....	57,779	4,278,002	52,366	3,849,919
Virginia.....	11,026	724,168		
Wisconsin.....	49,989	2,725,520	25,206	1,615,549
All other states.....	3,741	300,290	3,119	216,593

Massachusetts, Maine, Pennsylvania, Michigan, and Wisconsin, in the order named, led in the production of book paper. Massachusetts produced 21.5 per cent of the total quantity of book paper reported in 1905, as compared with only 14 per cent in 1900. This state made the greatest gains in the manufacture of book paper, the increase in quantity being 53,888 tons, or 136.2 per cent, and in value, \$4,394,178, or 140.8 per cent. Maine also made large gains, and increases were reported from Pennsylvania, although the latter state fell from first to third rank. The average value of book paper per ton was \$71.70 for 1905 and \$69 for 1900.

Cover and heavy printing paper.—Table 8 shows, by states, the quantity and value of cover paper, plate, lithograph, woodcut, and similar papers and of cardboard, bristol board, card middles, etc., for 1900 and 1905.

TABLE 8.—PRODUCTION OF HEAVY PAPERS, AND CARD AND BRISTOL BOARDS, ETC., BY STATES: 1905 AND 1900.

STATE.	COVER PAPER.				PLATE, LITHOGRAPH, MAP, WOODCUT, AND SIMILAR PAPERS.				CARDBOARD, BRISTOL BOARD, CARD MIDDLES, TICKETS, ETC.			
	1905		1900		1905		1900		1905		1900	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
United States.....	22,150	\$2,023,080	18,749	\$1,005,376	19,837	\$1,458,343	22,366	\$2,018,958	30,000	\$2,764,444	28,494	\$1,719,813
Connecticut.....	2,895	350,102	3,020	405,247	185	44,400	29	6,000	1,584	68,317	1,773	80,223
Delaware.....	7,732	578,088	500	37,500	2,191	167,460	1,440	115,550		550		41,250
Indiana.....							100	7,000			117	10,000
Maine.....					600	46,500						
Massachusetts.....	2,448	248,820	4,035	307,001	4,117	315,855	11,879	1,007,466	23,504	1,811,431	13,564	1,006,454
Michigan.....	537	38,500	2,904	221,084	2,769	197,608	809	81,528	200	18,216		
New Hampshire.....											1,033	105,908
New York.....	4,325	438,009	3,649	306,509	150	10,080	200	16,000	10,948	432,935	4,382	184,315
Ohio.....	2,779	240,385	2,474	186,624			247	19,749	857	144,632	160	12,680
Pennsylvania.....	570	45,600	1,414	136,297	7,907	581,376	7,356	743,705	1,907	288,913	727	36,778
Vermont.....											4,431	181,671
Virginia.....											799	61,223
Wisconsin.....	376	10,203	93	5,114	1,918	95,064	300	24,000			58	9,311
All other states.....	488	57,719										

Although the production of cover paper was of small importance at both censuses, there was an increase of 3,401 tons, or 18.1 per cent, in quantity and \$358,610, or 21.5 per cent, in value. The manufacture of cover paper was confined largely to Delaware, New York, Connecticut, Massachusetts, and Ohio. These states ranked in the order named. The increase for Delaware was very large, being from 500 tons, valued at \$37,500 in 1900, to 7,732 tons, valued at \$578,688, at the census of 1905.

The manufacture of plate, lithograph, map, woodcut, and other similar papers decreased largely. The total value reported in 1905 was only \$1,458,343. The decrease in quantity was 2,529 tons, or 11.3 per cent, and in value, \$560,615, or 27.8 per cent. Pennsylvania, Massachusetts, Michigan, and Delaware produced the great bulk of the products. Massachusetts shows a large decrease, as this state, which produced over

one-half of the total quantity in 1900, produced less than one-fourth at the census of 1905.

The production of cardboard, bristol board, card middles, etc., was of comparatively little importance at either census, the total production at the census of 1905 being valued at \$2,764,444. The quantity reported in 1905 increased 10,566 tons, or 37.1 per cent, over 1900 and the value, \$1,044,631, or 60.7 per cent. The manufacture of card and bristol boards is concentrated to a large degree in Massachusetts, New York, and Pennsylvania, which together reported 93.1 per cent of the total quantity and 91.6 per cent of the total value. Massachusetts alone produced 60.2 per cent of the total quantity reported at the census of 1905 and 65.5 per cent of the total value.

Wrapping paper.—Table 9 shows, by states, the production of wrapping paper by kind, quantity, and value for 1900 and 1905.

TABLE 9.—PRODUCTION OF WRAPPING

STATE.	TOTAL.				MANILA.				HEAVY.			
	1905		1900		1905		1900		1905		1900	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
1 United States.....	644,291	\$30,435,592	535,252	\$24,542,373	86,826	\$6,136,080	89,419	\$5,929,764	96,992	\$4,035,588	82,875	\$4,143,240
2 California.....	7,328	375,940										
3 Connecticut.....	7,060	502,544	14,219	743,747	5,428	441,239	2,700	135,322	425	10,000	3,064	134,568
4 Delaware.....	19	760			19	760						
5 Illinois.....	16,386	417,727	32,980	544,375					4,179	184,154		
6 Indiana.....	28,144	874,463	23,010	780,540	1,296	98,896	5,010	264,429	6,294	218,010	3,158	88,950
7 Iowa.....	4,972	116,162	4,990	166,776								
8 Kansas.....	3,000	65,000										
9 Maine.....	89,813	4,075,497	39,659	2,082,298	8,419	489,350			11,708	496,178	953	27,830
10 Maryland.....	1,084	29,188	8,045	422,584	4	158			176	4,900	69	2,260
11 Massachusetts.....	16,150	1,417,915	22,238	1,441,201	7,517	942,813	6,697	540,388	3,074	124,026	10,254	668,118
12 Michigan.....	32,654	1,565,861	20,370	811,760	8,885	480,597	4,840	238,311	2,131	75,260	4,976	200,566
13 New Hampshire.....	27,141	1,184,128	16,933	784,422			1,956	119,862	494	17,280	930	32,219
14 New Jersey.....	18,720	1,471,713	18,959	1,015,645	7,279	704,765	7,377	711,312	2,000	101,531	3	195
15 New York.....	157,186	7,180,993	157,385	7,400,185	20,888	980,273	22,700	1,410,059	12,741	466,846	38,556	2,164,495
16 Ohio.....	44,037	1,786,172	49,854	2,303,199	10,056	777,055	18,570	1,368,700	6,314	164,873	5,648	175,473
17 Oregon.....	7,016	426,774	8,274	375,960			300	24,000	101	8,595	90	3,660
18 Pennsylvania.....	58,192	3,164,038	36,110	2,024,486	5,064	582,976	6,930	585,224	31,043	1,366,455	5,921	265,034
19 Vermont.....	17,633	861,106	20,265	973,792			5,722	188,826	2,379	83,265	873	23,134
20 Virginia.....	2,450	104,600	762	15,250	100	4,000						
21 West Virginia.....	2,054	232,864	1,525	89,000	2,054	232,864	600	60,000			800	24,000
22 Wisconsin.....	94,454	4,200,068	46,889	2,048,805	8,703	378,655	5,598	257,331	9,429	427,105	6,493	301,600
23 All other states.....	7,897	362,089	12,755	436,068	274	15,679	200	10,400	4,355	187,500	1,089	30,898

* Included in "all other states."

PAPER AND WOOD PULP.

PAPER, BY STATES: 1905 AND 1900.

STRAW.				BAGUS, OR WOOD, MANILA.				ALL OTHER.				
1905		1900		1905		1900		1905		1900		
Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	
54,232	\$1,380,348	01,704	\$2,027,518	228,371	\$10,000,772	203,826	\$0,148,677	177,870	\$8,774,804	67,338	\$3,203,174	1
				6,280	335,100	(¹)	(¹)	1,048	40,840			2
				970	31,500	1,832	81,426	233	10,805	0,533	802,431	3
12,207	233,573	29,003	440,261							2,087	104,314	4
12,025	256,300	8,021	178,429	7,079	265,467	5,563	225,032	1,510	35,100	658	29,700	5
3,958	87,746	4,700	160,776									6
1,800	36,000	(¹)	(¹)									7
				60,631	2,935,069	31,849	1,008,605	1,014	28,416	200	6,000	8
150	4,500	850	25,730	755	10,630	4,856	283,006	1,200	30,000	6,857	455,863	9
		1,187	9,500	671	33,674	2,256	107,762	3,000	154,000	2,270	111,579	10
								4,888	317,402	1,844	109,523	11
1,202	31,130	2,305	40,150	2,050	91,219	4,663	215,423	18,326	881,655	3,586	117,300	12
				20,947	1,166,898	13,963	620,401			84	2,940	13
				650	15,511	3,000	90,000	8,791	559,906	250	37,000	14
4,309	155,070	14,650	543,084	75,262	3,356,980	74,724	3,092,370	43,926	2,217,924	0,695	240,577	15
				6,100	208,150	7,610	324,078	12,489	428,484	7,400	223,754	16
9,078	207,610	10,610	211,234	5,000	285,000	4,500	225,000	400	40,000	1,200	48,000	17
2,325	93,170	2,184	75,000	1,571	72,808	11,457	557,003	18,514	1,008,807	6,097	563,115	18
1,100	32,812	1,805	54,110	8,517	445,289	13,700	761,832	6,737	302,562			19
				2,350	100,600							20
										762	15,250	21
										125	5,000	22
5,508	240,008	2,861	52,807	16,838	705,820	17,981	600,929	53,886	2,448,470	13,056	746,048	23
300	11,520	3,000	59,200	1,000	27,067	3,872	256,850	1,908	120,263	1,034	78,720	24

Wrapping paper, which was first in value of products in 1900, was third at the census of 1905, although the production increased 109,039 tons, or 20.4 per cent. The increase in value was \$5,893,219, or 24 per cent.

Bogus, or wood, manila wrapping paper was the principal specified kind of wrapping paper reported in 1905 and in 1900. The increase in the quantity was 24,545 tons, or 12 per cent, and in the value, \$951,095, or 10.4 per cent. New York, Maine, and New Hampshire, in the order named, were the leading states at the census of 1905, reporting 73.8 per cent of the total quantity, compared with 59.1 per cent in 1900. New York alone reported 33 per cent of the total in 1905 and 36.7 per cent in 1900. Maine shows the greatest increase, reporting 29.2 per cent of the total quantity in 1905, compared with 15.6 per cent in 1900. The average value per ton for the United States was \$44.23 at the census of 1905 and \$44.88 in 1900.

The production of manila wrapping paper decreased 2,593 tons, or 2.9 per cent, in quantity, but increased \$206,316, or 3.5 per cent, in value. New York, Ohio, Michigan, and Wisconsin, in the order named, were the leading states in quantity produced, and New York, Massachusetts, Ohio, and New Jersey, in value. New York, Ohio, and Indiana show large decreases, both in quantity and value; while Massachusetts, Michigan, and Connecticut show large increases. The average value per ton was \$70.67 at the census of 1905 and \$66.31 in 1900. There was a great variation in the average value for the different states—from \$125.42 per ton for Massachusetts to \$39.50 for Maryland.

The production of heavy wrapping paper increased 14,117 tons in quantity, but decreased \$107,652 in value. The average value per ton was \$41.61 at the census of 1905 and \$49.99 in 1900. According to value of production, Pennsylvania, Maine, and New York, in the order named, were the leading states in 1905. The first 2 of these states show remarkable increases, both in the quantity and value, the increase for Pennsylvania being \$1,101,421, or 415.6 per cent, and for Maine, \$468,348, or nearly seventeenfold. On the other hand, New York and Massachusetts, which were the leading states in 1900, show remarkable decreases. New York reported 52.2 per cent of the total value in 1900, but only 11.6 per cent at the census of 1905.

Straw wrapping paper was relatively of little importance in 1900 and of even less importance at the census of 1905, there being a decrease of 37,562 tons, or 40.9 per cent, in quantity and \$638,170, or 31.5 per cent, in value. Indiana, Wisconsin, Illinois, and Ohio were the leading states, and, together, reported over two-thirds of the total quantity and value. New York,

which was the leading state in 1900, shows a decrease of 10,281 tons, or 70.2 per cent, in quantity and of \$387,114, or 71.3 per cent, in value. Illinois, the second state in 1900, shows a decrease of 17,786 tons, or 59.3 per cent, in quantity and of \$206,688, or 46.9 per cent, in value. Indiana and Wisconsin show large increases. None of the New England states reported the manufacture of straw wrapping paper, which is confined largely to the straw producing states of the middle West.

Under the caption "all other" is embraced an assortment of wrapping paper not elsewhere specified. This item shows very large increases in both quantity and value. The value formed 28.8 per cent of the total value of wrapping paper reported in 1905 and 13.4 per cent of the total in 1900. The increase in quantity was 110,532 tons, or 164.1 per cent, and in value, \$5,481,630, or 166.5 per cent.

Wisconsin, New York, Pennsylvania, and Michigan, in the order named, were the leading states in the manufacture of "all other" wrapping paper. Each of these states shows a large increase in both quantity and value. The increases for New York were 37,231 tons, or over fivefold, in quantity and \$1,971,347, or over sevenfold, in value. These increases more than offset the decreases shown for this state in manila wrapping paper. Michigan also shows large increases, that in quantity being 14,740 tons, or over fourfold, and in value \$764,295, or over sixfold. These increases are much greater than the decreases shown for this state in heavy and in bogus, or wood, manila wrapping paper. Maine, which was third in the value of all other wrapping paper produced in 1900, and Connecticut, which was fourth, show large decreases in quantity and in value. These decreases, however, are much less for Maine than the increases in the manufacture of specified kinds of wrapping paper. The average value of "all other" wrapping paper per ton was \$49.33 at the census of 1905 and \$48.91 in 1900.

Fine paper.—Table 10 shows, by states, the quantity and value of fine paper reported in 1900 and 1905.

The manufacture of fine paper was fourth in importance at both censuses. The total quantity reported in 1905 shows an increase of 34,125 tons, or 30.3 per cent, over the quantity reported in 1900; and the value, an increase of \$6,353,196, or 40 per cent. This branch of paper manufacture is concentrated to a larger degree than any other. At the census of 1905 Massachusetts alone reported 55 per cent of the total quantity of fine paper produced and 67.3 per cent of the total value. Pennsylvania, Wisconsin, and Ohio ranked second, third, and fourth, respectively, but the total value of fine paper for Pennsylvania was less than one-sixth that for Massachusetts.

TABLE 10.—PRODUCTION OF FINE PAPER, BY STATES: 1905 AND 1900.

STATE.	TOTAL.				WRITING PAPER.				ALL OTHER.			
	1905		1900		1905		1900		1905		1900	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
United States.....	146,832	\$22,240,170	112,707	\$15,895,974	131,934	\$19,321,045	90,204	\$12,222,870	14,898	\$2,928,125	22,503	\$3,673,104
Connecticut.....	6,439	864,055	2,298	361,412	3,430	471,260	2,001	323,672	3,009	392,786	297	37,740
Delaware.....	500	53,950							590	53,950		
Maine.....	4,400	385,000			4,400	385,000						
Massachusetts.....	80,775	14,971,411	68,055	11,298,628	76,503	13,484,650	54,791	8,751,550	4,272	1,486,761	13,204	2,547,072
Michigan.....	2,647	256,062	1,592	161,427	2,190	215,971	1,592	161,427	457	40,091		
New Hampshire.....	414	18,677							414	18,677		
New Jersey.....			60	6,000			60	6,000				
New York.....	55	6,604	1,255	136,959	55	6,604	519	70,115			705	66,844
Ohio.....	8,722	1,057,920	4,095	578,172	6,552	816,815	3,315	444,479	2,170	241,105	780	133,663
Pennsylvania.....	22,095	2,322,427	19,644	1,749,511	19,857	1,738,457	16,824	1,379,594	2,238	583,970	3,120	369,917
Vermont.....	948	54,785							948	54,785		
Virginia.....	160	12,956	720	55,506	166	12,956	720	55,506				
West Virginia.....			50	6,000			50	6,000				
Wisconsin.....	17,333	2,066,243	13,991	1,489,199	17,333	2,066,243	10,332	1,024,521			3,659	464,678
All other states.....	2,248	179,080	677	53,160	1,448	123,080			800	56,000	677	53,160

Writing paper increased 41,730 tons, or 46.3 per cent, in quantity and \$7,098,175, or 58.1 per cent, in value; while "all other" fine paper decreased 7,605 tons, or 33.8 per cent, in quantity and \$744,979, or 20.3 per cent, in value. Massachusetts reported 58 per cent of the total quantity of writing paper reported in 1905 and 69.8 per cent of the total value. The increase in quantity for Massachusetts between 1900 and 1905 was 21,712 tons and in value, \$4,733,094. Of all the states presented in Table 10 decreases are shown only for New York and Virginia, where the production was small, while New Jersey did not report paper of this class at the census of 1905.

Massachusetts was first in the manufacture of "all other" fine paper at both censuses, but while in 1900 this state reported 58.9 per cent of the total quantity of such paper produced and 69.3 per cent of the value, in 1905 it reported only 28.7 per cent of the quantity produced and only 50.8 per cent of the value. The decrease was 8,992 tons, or 67.8 per cent, in quantity and \$1,060,311, or 41.6 per cent, in value. Pennsylvania, Connecticut, and Ohio ranked second, third, and fourth, respectively, in the value of "all other" fine paper produced, but the value for Pennsylvania was only a little more than one-third that for Massachusetts. Connecticut shows great gains both in the quantity produced and in the value.

The average value of writing paper per ton was \$146.44 at the census of 1905 and \$135.50 in 1900. The average value of writing paper manufactured in Massachusetts was \$176.26 per ton. The average value of "all other" fine paper per ton was \$196.54 at the census of 1905 and \$163.23 in 1900. The average value of "all other" fine paper manufactured in Massachusetts was \$348.02 per ton.

Boards.—Table 11 shows, by states, the total production of boards, by kind, quantity, and value, for 1900 and 1905.

Boards ranked fifth in value among the enumerated products of the paper and pulp industry. Between 1900 and 1905 the quantity manufactured increased 155,034 tons, or 42.4 per cent, and the value \$6,606,238, or 63.8 per cent. Each class of boards shows a large increase in quantity and in value. The principal class was "all other" board, the value of which formed 53.4 per cent of the total value of all boards at the census of 1905, and 46.6 per cent at that of 1900. The increase for this class was 122,173 tons in quantity and \$4,241,215 in value. It will be observed that 78.8 per cent of the total increase in quantity for all boards and 64.2 per cent of the total increase in value was reported for "all other" board. New York, Connecticut, Illinois, and Ohio, in the order named, were the leading states, all of them showing large increases, these increases for New York being 48,062 tons, or nearly threefold, in quantity and \$1,738,800, or about threefold, in value.

Strawboard was the most important specified class of boards at both censuses. Although the quantity produced increased only 9,744 tons, or 6.2 per cent, the value increased \$1,180,218, or 37 per cent. Indiana, Ohio, and Illinois, in the order named, were the leading states in the manufacture. These states are in the great straw producing section of the country—the middle West—and produced nearly seven-tenths of the entire quantity of strawboard reported at the census of 1905 and about two-thirds of the total value. Indiana alone produced over one-third of the total quantity. The average value of strawboard per ton was \$26.11 as reported in 1905 and \$20.23 in 1900.

MANUFACTURES.

TABLE 11.—PRODUCTION OF PAPER

STATE.	TOTAL.				WOOD PULP.			
	1905		1900		1905		1900	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
1 United States.....	520,651	\$16,050,557	365,017	\$10,353,319	60,863	\$2,347,250	44,187	\$1,406,130
2 California.....	3,507	143,587						
3 Connecticut.....	64,610	2,364,063	30,702	1,158,409	16,569	554,140		
4 Illinois.....	63,590	1,522,415	37,428	814,081	200	6,000	900	38,250
5 Indiana.....	83,414	2,217,116	93,775	2,041,881	3,322	110,483	8,137	212,600
6 Iowa.....	3,000	77,360						
7 Kansas.....	6,082	137,200						
8 Maine.....	13,477	623,508	14,843	520,087	10,178	347,159	11,802	336,335
9 Maryland.....	4,174	112,207	5,172	108,719				
10 Massachusetts.....	27,020	1,338,340	17,238	954,111	2,656	209,867	2,846	144,435
11 Michigan.....	26,382	812,781	14,051	348,947	11,500	370,070	5,350	134,500
12 New Hampshire.....	8,268	350,277	5,618	241,184				
13 New Jersey.....	37,602	1,174,348	21,165	703,180				
14 New York.....	90,094	3,347,317	40,304	1,368,585	11,011	508,000	12,133	411,655
15 Ohio.....	60,260	1,716,740	53,886	1,167,360	700	30,400		
16 Pennsylvania.....	26,398	688,358	20,486	595,414			300	6,000
17 Vermont.....	4,509	183,704	3,763	183,236	2,993	108,580	2,710	122,355
18 Virginia.....	4,199	161,658	2,236	55,735	1,507	97,959		
19 West Virginia.....	3,709	93,790	3,500	73,560				
20 Wisconsin.....	167	4,592			107	4,592		
21 All other states.....			1,300	20,800				

¹Included in "all other states."

Wood pulp board increased 16,676 tons, or 37.7 per cent, in quantity and \$941,120, or 66.9 per cent, in value. Connecticut, New York, and Michigan, in the order named, were the leading states in value of production, reporting over one-half of both the quantity and value at the census of 1905. Connecticut reported 16,569 tons of wood pulp board at the census of 1905, valued at \$554,140. No wood pulp board was reported by this state in 1900. Michigan reported a larger quantity than New York but a smaller value. The increase for the state was 6,150 tons in quantity and \$235,570 in value. The average value of wood pulp board per ton was \$38.57 as reported in 1905 and \$31.82 in 1900.

News board was relatively of little importance as returned at the census of 1905. The production increased 6,441 tons, or 20.1 per cent, in quantity and \$243,685, or 26.2 per cent, in value. New Jersey and New York ranked first and second, respectively, producing 59.9 per cent of the total quantity and 61.1 per cent of the total value. New Jersey shows a slight decrease in quantity and in value, while New York shows large increases. Connecticut, which was second in value of products in 1900, shows large decreases in both quantity and value. The average value of news board per ton was \$30.45 at the census of 1905 and \$28.97 in 1900.

Other paper products.—Table 12 shows, by states, the production of all other paper products by kind, quantity, and value for 1900 and 1905.

Tissue paper was the principal item enumerated under the head of "other paper products." Between 1900 and 1905 the manufacture of tissue paper increased 15,519 tons, or 54.6 per cent, in quantity and \$1,569,786, or 45 per cent, in value. This branch of the paper industry was concentrated largely in New York, New Jersey, and Wisconsin, which together produced over two-thirds of the total quantity manufactured at the census of 1905 and almost two-thirds of the total value. These 3 states ranked in the order named. New York, which alone manufactured 41.2 per cent of the total

quantity, shows an increase of 9,686 tons, or 115.1 per cent, in quantity and \$995,966, or 129.5 per cent, in value. Wisconsin also shows large increases. It is noteworthy that the average value of tissue paper per ton decreased from \$122.74 in 1900 to \$115.12 at the census of 1905.

The manufacture of building paper, which term also includes roofing, asbestos, and sheathing paper, increased 48,109 tons, or 49.6 per cent, in quantity and \$1,819,661, or 60.1 per cent, in value. Pennsylvania produced 46.7 per cent of the total quantity of building paper reported in 1905 and 38.1 per cent of the total value. New Jersey, which was third in value of products, manufactured less than one-third of the quantity reported by Pennsylvania. The average value per ton was \$33.41 for 1905 and \$31.22 for 1900.

The quantity of hanging, or wall, paper manufactured increased 8,276 tons, or 15.2 per cent, and the value \$748,119, or 33 per cent. The manufacture is concentrated largely in New York, which reported in 1900 72.9 per cent of the total quantity produced and in 1905, 68.2 per cent. The average value per ton was \$48.13 at the census of 1905 and \$41.70 in 1900.

Although blotting paper is relatively of little importance, there was an increase as reported in 1905 over 1900 of 4,351 tons, or 100 per cent, in quantity and of \$466,040, or 80.2 per cent, in value. The manufacture is concentrated largely in Virginia, which in 1905 reported 38.4 per cent of the total quantity and 35.7 per cent of the total value. The average value per ton decreased from \$133.48 for 1900 to \$120.29 for 1905.

Miscellaneous paper is by far the most important item reported under "other paper products," and shows the largest increases, both in quantity and in value. The increase in quantity was 57,195 tons, or 116.5 per cent, and in value, \$3,933,979, or 140.7 per cent. Ohio and Massachusetts reported in 1905, 61.3 per cent of the total value of such paper and in 1900 only 16.3 per cent. These 2 states ranked in the order named and show remarkable increases, as the above proportions indicate.

MANUFACTURES.

TABLE 12.—PRODUCTION OF TISSUE, BLOTTING, BUILDING, HANGING,

STATE.	TISSUE.				BLOTTING.			
	1905		1900		1905		1900	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
1 United States.....	43,025	\$5,056,438	28,406	\$3,486,652	8,702	\$1,046,790	4,351	\$580,760
2 California.....	1,000	80,000						
3 Connecticut.....	2,169	406,675	1,740	283,378	750	111,107	635	99,000
4 Delaware.....								
5 Illinois.....								
6 Indiana.....	740	90,264	325	31,065				
7 Iowa.....								
8 Maine.....								
9 Maryland.....								
10 Massachusetts.....	2,430	410,650	2,479	416,440	1,207	168,575	788	111,627
11 Michigan.....			40	3,015			13	1,380
12 Minnesota.....								
13 New Hampshire.....	2,508	292,605	3,973	339,120				
14 New Jersey.....	6,162	953,022	4,480	943,877				
15 New York.....	18,191	1,704,911	8,415	768,946				
16 Ohio.....	1,461	172,421	630	62,131	1,050	134,029	825	74,508
17 Oregon.....								
18 Pennsylvania.....	320	31,101	1,377	201,747	1,660	198,900	103	12,360
19 Vermont.....	3,045	274,411	1,918	180,303			180	29,410
20 Virginia.....			60	5,400	3,344	373,183	1,807	251,400
21 West Virginia.....								
22 Wisconsin.....	5,089	571,378	2,960	250,331				
23 All other states.....					601	60,096		

¹Included in "all other states."

PAPER AND WOOD PULP.

AND MISCELLANEOUS PAPERS, BY STATES: 1905 AND 1900.

BUILDING, ETC.				HANGING.				MISCELLANEOUS.				
1905		1900		1905		1900		1905		1900		
Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	
145,024	\$4,845,628	96,915	\$3,025,967	62,606	\$3,013,464	54,330	\$2,265,345	106,296	\$6,720,820	49,101	\$2,795,841	1
920	40,500											2
1,481	43,076	1,789	41,147			113	11,208	1,135	134,042	402	37,765	3
		700	13,200					212	25,355	365	58,483	4
7,954	177,087							6,956	113,213	3,650	72,962	5
				2,000	80,000			21,482	212,607	3,908	240,614	6
2,996	59,320	2,500	50,000							1,350	27,000	7
2,524	81,161	456	13,308	4,152	189,513	4,124	139,791	2,525	104,596			8
7,153	917,682	14,372	615,638	3,046	182,433	2,264	143,080	359	8,099	58	4,746	9
3,303	100,604	1,337	34,439					15,186	1,325,438	5,852	226,524	10
								2,876	154,486	2,971	148,272	11
175	5,650	(1)	(1)									12
20,832	595,647	7,133	235,400					2,771	97,697	(1)	(1)	13
10,963	352,521	8,044	260,051					173	11,769	2,815	136,122	14
				42,722	1,978,650	39,593	1,562,465	2,880	86,450	1,028	33,380	15
15,400	499,692	7,275	213,603					8,858	799,049	9,556	762,693	16
		1,410	53,580									17
67,797	1,817,702	45,923	1,313,436					28,127	2,799,584	4,530	230,266	18
				7,814	409,560	4,416	192,731	100	4,000	100	4,000	19
				1,118	100,699	900	82,803	2,508	223,490	6,333	447,710	20
								9,696	680,457	1,366	93,986	21
						2,800	126,000					22
										113	18,000	23
2,608	80,846	2,608	80,846	1,754	72,699	129	7,267	285	19,988			24
948	33,289	3,368	94,919					267	41,609	4,431	247,648	25
										273	5,670	26

Pulp and fiber.—Table 13 shows, by states, the total quantity of wood pulp and fiber produced at the censuses of 1900 and 1905.

TABLE 13.—*Production of wood pulp and fiber, by states: 1905 and 1900.*

STATE.	Census.	Total (tons).	Ground wood pulp (tons).	Soda fiber (tons).	Sulphite fiber (tons).
United States.....	1905 1900	1,921,768 1,179,535	968,976 586,374	196,770 177,124	756,022 416,037
California ¹	1905	7,500	3,000	.....	4,500
Delaware.....	1905 1900	13,206 8,823	.....	13,206 8,823	.....
Illinois ²	1905	6,500	6,500	.....	.....
Indiana.....	1905 1900	2,687 23,032	2,687 10,418	..... 12,614	.....
Maine.....	1905 1900	456,921 231,619	230,340 129,878	53,257 44,102	173,324 57,579
Maryland.....	1905 1900	22,658 19,934	.....	22,658 3,947	..... 15,087
Massachusetts.....	1905 1900	28,445 24,904	14,007 13,110	2,000 1,771	12,438 10,083
Michigan.....	1905 1900	38,612 20,707	14,079 6,676	..... 1,033	24,533 12,008
Minnesota ²	1905	22,470	22,470	.....	.....
New Hampshire.....	1905 1900	173,888 119,590	58,093 31,738	.....	115,195 87,852
New Jersey ¹	1905	10,281	.....	.....	10,281
New York.....	1905 1900	606,014 394,635	379,020 245,293	26,966 24,346	200,019 124,996
Ohio.....	1905 1900	29,274 13,805	4,425 4,950	..... 1,835	24,849 7,020
Oregon.....	1905 1900	31,549 1,154	21,877 1,154	.....	9,672
Pennsylvania.....	1905 1900	83,114 85,433	19,000 4,505	53,082 61,062	10,432 19,266
Vermont.....	1905 1900	60,747 94,951	51,839 48,153	..... 9,000	8,908 7,798
Virginia.....	1905 1900	42,307 6,117	1,850	15,657 4,001	24,800 1,510
West Virginia.....	1905 1900	28,695 13,471	9,137 6,794	.....	19,558 6,677
Wisconsin.....	1905 1900	241,537 137,098	124,746 77,305	3,744	113,047 59,793
All other states.....	1905 1900	15,354 14,202	5,288 6,400	5,000 3,330	4,406 4,472

¹ None reported in 1900.

² Included in "all other states" in 1900.

The statistics for wood pulp and fiber shown in Table 13 include the figures for mills making pulp only as well as the figures for mills which manufacture both paper and pulp.

In the production of pulp and fiber New York, Maine, Wisconsin, and New Hampshire were, in the order named, the leading states in 1905 reporting 76.9 per cent of the total quantity. The production for New York and Maine combined was 55.3 per cent of the

total and for New York alone, 31.5 per cent. The largest increase was for Maine, and was 225,302 tons, or 97.3 per cent. The increase for New York was 211,379 tons; for Wisconsin, 104,439 tons; and for New Hampshire, 54,298 tons.

Ground wood pulp was first in importance at both censuses, forming 50.4 per cent of the total quantity of pulp and fiber reported in 1905 and 49.7 per cent in 1900. As compared with 1900 the quantity of ground wood reported in 1905 increased 382,602 tons, or 65.2 per cent. New York, Maine, and Wisconsin together produced 75.8 per cent of the total wood pulp reported in 1905 and 77.2 per cent in 1900. New York alone produced 39.1 per cent of the total in 1905. Each of the above-named states shows a large increase, that for New York being 133,736 tons, or 54.5 per cent; for Maine, 100,462 tons, or 77.4 per cent; and for Wisconsin, 47,441 tons, or 61.4 per cent.

Sulphite fiber constituted 39.4 per cent of the total pulp and fiber reported in 1905 and 35.3 per cent in 1900. The increase at the census of 1905 over 1900 in the quantity produced amounted to 339,985 tons, or 81.7 per cent. New York, Maine, New Hampshire, and Wisconsin, in the order named, were the leading states at the census of 1905, their combined output being 79.6 per cent of all the sulphite fiber reported in 1905. The largest increase was shown for Maine, and was 115,745 tons, or 201 per cent. The increase for New York was 75,023 tons; for Wisconsin, 53,254 tons; and for New Hampshire, 27,343 tons. Sulphite fiber formed the great bulk of the pulp and fiber produced in Michigan, New Hampshire, Ohio, Virginia, and West Virginia.

Soda fiber formed only 10.2 per cent of the total pulp and fiber produced as reported at the census of 1905, as compared with 15 per cent in 1900. Nevertheless, the quantity produced increased 19,646 tons, or 11.1 per cent. Pennsylvania and Maine produced 54.3 per cent of the total quantity in 1905. New York and Maryland ranked third and fourth, respectively. These 4 states manufactured 79.6 per cent of the total production. Maryland shows an increase of 18,711 tons; Virginia, 11,056 tons; and Maine, 9,095 tons. In Pennsylvania there was a decrease of 7,980 tons. Soda fiber was the only class of pulp and fiber made in Delaware and Maryland as reported in 1905, and formed the great bulk of the product of Pennsylvania.

Table 14 shows, by states, the quantity and value of pulp and fiber made to sell, for 1900 and 1905.

TABLE 14.—PRODUCTION OF WOOD PULP AND FIBER MADE TO SELL, BY STATES: 1905 AND 1900.

STATE.	Cen- sus.	TOTAL.		GROUND WOOD PULP.		SODA FIBER.		SULPHITE FIBER.	
		Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
United States.....	1905 1900	780,706 660,651	\$23,144,574 18,497,701	273,400 280,052	\$4,323,495 4,433,699	130,306 99,014	\$5,159,615 3,612,602	376,940 271,585	\$13,661,464 10,451,400
Delaware.....	1905 1900	13,208 8,823	550,000 430,313			13,206 8,823	550,000 430,313		
Illinois ¹	1905	2,210	44,200	2,210	44,200				
Indiana.....	1905 1900	100 16,539	3,360 454,279	160 3,925	3,360 75,370			12,614 378,409	
Maine.....	1905 1900	108,117 139,053	4,888,809 3,228,029	64,480 78,954	922,206 1,168,887	45,376 32,956	1,773,899 1,269,141	58,261 27,143	2,192,704 1,390,601
Maryland.....	1905 1900	22,658 18,089	885,527 810,480			22,658 2,702	885,527 130,896		15,937 670,534
Massachusetts.....	1905 1900	8,738 8,940	415,975 420,672			1,771	70,840	8,738 7,069	415,975 353,832
Michigan.....	1905 1900	11,158 8,134	407,289 346,516	2,015 256	64,469 5,284			9,143 6,895	342,817 279,228
Minnesota ¹	1905	5,000	100,000	5,000	100,000				
New Hampshire.....	1905 1900	92,459 88,295	3,031,345 2,916,853	504 7,577	10,800 205,575			91,895 80,718	3,020,545 2,711,278
New Jersey ¹	1905	10,281	330,233					10,281	330,233
New York.....	1905 1900	235,442 214,299	5,621,342 5,232,451	128,695 122,607	1,921,371 1,896,783	17,379 15,034	623,231 555,746	89,308 70,668	3,076,740 2,779,922
Ohio.....	1905 1900	9,849 4,370	413,151 174,809					9,849 4,370	413,151 174,809
Oregon.....	1905 1900	900 954	14,900 15,510	900 954	14,900 15,510				
Pennsylvania.....	1905 1900	18,880 16,829	844,098 710,539			17,465 11,668	787,098 470,214	1,415 4,061	57,000 228,225
Vermont.....	1905 1900	23,529 42,389	343,386 728,748	23,529 29,389	343,386 460,748			4,000	100,000
Virginia.....	1905 1900	40,147 4,920	1,580,660 199,272	1,065	21,000	14,282 3,413	539,800 128,030	24,800 1,516	1,019,800 71,233
West Virginia.....	1905 1900	28,695 13,471	916,099 299,027	9,137 6,794	156,052 112,381			19,558 6,077	760,047 180,640
Wisconsin.....	1905 1900	89,277 63,657	2,754,203 1,855,953	35,645 23,396	721,751 478,561			53,632 35,261	2,032,452 1,377,302
All other states.....	1900	1,230	67,650					1,230	67,650

¹None reported in 1900.

Of the total pulp and fiber reported at the census of 1905, 40.6 per cent was made to sell; the proportion in 1900 was 55.2 per cent. A considerably larger proportion of pulp and fiber was used in the factories producing it as reported in 1905 than in 1900. This indicates that there is a growing tendency to combine the manufacture of wood pulp and the finished product.

The ground wood pulp made to sell decreased 6,652 tons in quantity and \$110,204 in value. The proportion made to sell formed only 28.2 per cent of the total ground wood pulp as reported in 1905 and 47.8 per cent of the total in 1900.

Although sulphite fiber was second in importance in the total production of pulp and fiber it was first in the production made for sale. Of the wood pulp and fiber made to sell, sulphite fiber constituted 48.3 per cent in quantity and 59 per cent in value. At the census of 1905, as compared with 1900, this production had increased by 105,355 tons, or 38.8 per cent, in quantity

and \$3,210,064, or 30.7 per cent, in value. Despite these large increases, the quantity was only 19.6 per cent of the total quantity of pulp and fiber made both for use and for sale, as compared with 23 per cent in 1900. The quantity made by establishments for their own use had therefore increased more largely than that made for sale.

Soda fiber made to sell increased 31,352 tons, or 31.7 per cent, in quantity and \$1,547,013, or 42.8 per cent, in value. Among the three classes of pulp products made for sale the value of soda fiber was much greater than the value of ground wood pulp, though the quantity was considerably less. Of the total soda fiber reported in 1905, 66.3 per cent was made for sale, as compared with 55.9 per cent in 1900.

The following tabular statement shows, for the United States and the 6 states leading in production for sale in 1905, the percentage which the quantity of each class of pulp and fiber products made for sale formed of the total production for 1900 and 1905:

Wood pulp and fiber made for sale—per cent of total production, for six leading states and the United States: 1905 and 1900.

STATE.	TOTAL PULP AND FIBER.		GROUND WOOD PULP.		SULPHITE FIBER.		SODA FIBER.	
	1905	1900	1905	1900	1905	1900	1905	1900
United States.....	40.6	55.2	28.2	47.8	49.9	65.3	66.3	55.9
New York.....	38.9	54.3	34.0	50.0	44.7	61.3	64.4	61.8
Maine.....	39.8	60.0	28.0	60.8	33.6	47.1	85.2	74.6
New Hampshire.....	53.2	73.8	1.0	23.9	79.8	91.9	(1)	(1)
Wisconsin.....	37.0	46.4	28.6	36.7	47.4	59.0	(1)	(1)
Vermont.....	38.7	65.3	45.4	61.0	(1)	51.3	(1)	100.0
Pennsylvania.....	22.7	10.7	(1)	24.4	13.0	21.1	32.5	18.9

¹ No production reported.

The proportion of pulp and fiber made to sell was considerably less as reported in 1905 than in 1900 for each of the specified states except Pennsylvania. This fact is more significant when it is noted that New York and Maine, which together reported 55.3 per cent of the total production in 1905, show large decreases in the proportion made for sale. None of the states in 1905 reported the sale of more than 38.9 per cent of the total production except New Hampshire, which reported 53.2 per cent.

The proportion of the total ground wood pulp sold, as reported at the census of 1905, was considerably less than the proportion sold in 1900. A smaller proportion of this class of pulp products was sold than of any other.

The sale of sulphite fiber, which is rapidly becoming of as much importance as ground wood pulp, was also relatively less at the census of 1905 than that of 1900. No state reported in 1905 the sale of as much as one-half of its production except New Hampshire, which reported 79.8 per cent, but New Hampshire, like the other states, showed a large decrease in the proportion sold.

In the United States as a whole the proportion of soda fiber sold was greater by 10.4 per cent as reported in 1905 than in 1900. An increase is also shown for the several states mentioned in the foregoing tabular statement. Pennsylvania, the first state in the production of such fiber, although showing an increased proportion sold, nevertheless reported the sale of a little less than one-third of its production. Maine, in which the production of soda fiber was only slightly less than in Pennsylvania, reported the sale of 85.2 per cent of its production.

The average value per ton of ground wood pulp made to sell was \$15.81 as reported in 1905 and \$15.83 in 1900. The average value of the sulphite fiber sold decreased from \$38.48 in 1900 to \$36.24 in 1905, while the average value of soda fiber increased from \$36.49 to \$39.58.

Table 15 shows, by states, the quantity of wood pulp and fiber made for own use in 1900 and 1905.

TABLE 15.—Production of wood pulp and fiber made for own use, by states: 1905 and 1900.

STATE.	Census.	Total (tons).	Ground wood pulp (tons).	Soda fiber (tons).	Sulphite fiber (tons).
United States.....	1905	1,141,062	605,576	66,404	379,082
	1900	528,884	306,322	78,110	144,452
California ¹	1905	7,500	3,000	.....	4,500
Illinois ¹	1905	4,200	4,200	.....	.....
Indiana.....	1905	2,527	2,527	.....	.....
	1900	0,493	0,493	.....	.....
Maine.....	1905	288,804	165,860	7,881	115,063
	1900	92,566	50,024	11,200	30,436
Maryland ²	1900	1,245	.....	1,245	.....
Massachusetts.....	1905	10,707	14,007	2,000	3,700
	1900	16,024	13,010	.....	3,014
Michigan.....	1905	27,454	12,004	.....	15,390
	1900	12,523	0,420	.....	0,103
Minnesota ³	1905	17,470	17,470	.....	.....
New Hampshire.....	1905	81,420	58,120	.....	23,300
	1900	31,295	24,161	.....	7,134
New York.....	1905	370,572	250,334	0,587	119,651
	1900	180,336	122,080	0,312	48,388
Ohio.....	1905	10,425	4,425	.....	15,000
	1900	0,435	4,950	1,835	2,650
Oregon.....	1905	30,040	20,977	.....	9,072
	1900	200	200	.....	.....
Pennsylvania.....	1905	64,234	19,000	36,217	9,017
	1900	68,004	3,405	40,004	15,205
Vermont.....	1905	37,218	28,310	.....	8,908
	1900	22,602	18,704	.....	3,798
Virginia.....	1905	2,100	785	1,375	.....
	1900	1,188	.....	1,188	.....
Wisconsin.....	1905	152,200	89,101	3,744	59,415
	1900	73,441	48,900	.....	24,532
All other states.....	1905	15,354	5,288	5,600	4,466
	1900	12,072	0,400	3,330	3,242

¹ None reported in 1900.

² None reported in 1905.

³ Included in "all other states" in 1900.

EQUIPMENT AND CAPACITY.

Table 16 shows the number of Fourdrinier and cylinder machines, digestors, and grinders, and the total yearly capacity of mills, for the censuses of 1900 and 1905.

TABLE 16.—Machinery, and capacity of mills: 1905 and 1900.

	1905	1900
Paper machines:		
Total number.....	1,367	1,232
Total width, inches.....	108,053	93,296
Fourdrinier—		
Number.....	752	663
Width, inches.....	67,003	56,436
Cylinder—		
Number.....	617	569
Width, inches.....	41,290	20,800
Digestors, total number for mills making soda or sulphite.....	517	426
Grinders, number for mills making ground wood pulp.....	1,362	1,168
Yearly capacity of mills:		
In paper, tons.....	3,857,003	2,782,219
In pulp, tons.....	2,044,753	1,530,481

The total number of paper making machines, both Fourdrinier and cylinder, increased 135, or 11 per cent. The increase for Fourdrinier machines was 89 and for cylinder machines 48. The total width of the machines increased 15,657 inches, or 16.8 per cent, the increase for Fourdrinier machines being 11,227 inches and for cylinder machines 4,430 inches. The number of digestors reported in 1905 shows an increase of 91 over the number reported in 1900, and the number of grinders an increase of 194.

The yearly capacity of the mills producing paper as reported at the census of 1905 increased 1,075,684 tons over 1900, and the yearly capacity of the mills producing pulp and fiber increased 1,108,322 tons.

POWER.

Table 17 shows the power used in the paper and pulp industry, for 1900 and 1905.

TABLE 17.—Power used: 1905 and 1900.

	1905	1900
Number of establishments reporting.....	761	763
Total horsepower.....	1,122,504	764,847
Owned:		
Engines—		
Steam—		
Number.....	2,487	2,016
Horsepower.....	370,852	255,854
Gas and gasoline—		
Number.....	24	13
Horsepower.....	1,016	1,082
Water wheels—		
Number.....	13,150	3,200
Horsepower.....	1717,089	504,762
Electric motors—		
Number.....	534	91
Horsepower.....	28,856	2,720
Other power, horsepower.....		180
Rented, horsepower.....	2,051	260
Furnished to other establishments, horsepower.....	1,029	3,400

¹ Includes 1 water motor of 10 horsepower.

The total horsepower reported in 1905 shows an increase of 357,717, or 46.8 per cent, over the horsepower reported in 1900. The most important kind of power in the industry has always been waterpower, which formed 64 per cent of the total power reported at the census of 1905, and 66 per cent in 1900. This class of power is used in the coarser and heavier work, principally that of making the pulp. Despite a decrease of 59 in the number of water wheels, the horsepower increased 213,227, or 42.2 per cent. The average horsepower per wheel was 228 in 1905, compared with 157 in 1900; this is a much higher average than is shown for any other kind of power.

Steam furnished 33 per cent of the total power reported in 1905 and 33.5 per cent in 1900. Despite the decrease in proportion, the number of steam engines increased 471, or 23.4 per cent, and the horsepower 114,998, or 44.9 per cent. Electric power is as yet of little importance in the paper and pulp industry; nevertheless it was used in a relatively larger degree as reported at the census of 1905 than in 1900. The

number of motors increased 443, or over fourfold, and the horsepower 26,127, or over ninefold. Power generated by gas and gasoline engines was of little importance at either census.

IMPORTS AND EXPORTS.

Table 18 shows the imports of paper and manufactures of paper, crude paper stock, and wood pulp; and the exports of paper and manufactures of paper, and wood pulp, 1880 to 1905.

TABLE 18.—Imports and exports of paper and wood pulp: 1880 to 1905.¹

YEAR.	PAPER.			WOOD PULP.			
	Imports.		Exports.	Imports. ²		Exports. ³	
	Paper and manufactures of paper (value).	Paper stock, crude (value).	Paper and manufactures of paper (value).	Tons.	Value.	Tons.	Value.
1905...	\$5,023,638	\$3,706,595	\$8,238,088	167,504	\$4,500,955	11,852	\$473,585
1904...	5,519,080	2,900,713	7,543,728	144,790	3,802,908	15,115	593,474
1903...	4,733,030	3,016,084	7,130,014	116,851	3,387,770	11,232	445,228
1902...	4,223,125	2,770,255	7,312,030	67,416	2,059,092	19,174	740,103
1901...	4,002,989	2,183,680	7,438,901	46,757	1,586,402	30,704	1,051,867
1900...	3,795,045	3,201,778	6,215,833	82,441	2,405,030	14,277	458,463
1899...	3,191,689	2,614,914	5,477,884	35,319	671,506	27,906	606,319
1898...	2,838,738	2,870,323	5,494,504	29,846	601,642	25,214	536,070
1897...	3,121,630	3,071,705	3,333,103	41,770	800,880	.....	.....
1896...	3,169,490	3,446,723	2,713,876	46,143	1,052,820	.....	.....
1895...	2,808,638	3,736,020	2,185,257	28,440	958,009	.....	.....
1894...	2,628,351	3,048,094	1,906,634	36,587	1,004,547	.....	.....
1893...	3,580,981	6,272,298	1,540,886	65,665	2,908,884	.....	.....
1892...	3,342,304	5,448,203	1,382,261	41,118	1,820,143	.....	.....
1891...	3,031,454	5,019,533	1,260,169	43,316	1,902,689	.....	.....
1890...	2,610,860	5,201,448	1,226,680	.....	.....	.....	.....
1889...	2,542,383	5,925,047	1,101,035	.....	.....	.....	.....
1888...	2,400,790	5,403,036	1,078,501	.....	.....	.....	.....
1887...	2,028,235	4,540,598	1,118,538	.....	.....	.....	.....
1886...	1,838,822	5,194,951	1,100,616	.....	.....	.....	.....
1885...	1,592,892	5,827,873	972,493	.....	.....	.....	.....
1884...	1,714,410	5,033,047	926,821	.....	.....	.....	.....
1883...	1,958,113	5,329,876	1,614,950	.....	.....	.....	.....
1882...	2,084,289	6,014,183	1,631,370	.....	.....	.....	.....
1881...	1,841,540	5,245,601	1,408,076	.....	.....	.....	.....
1880...	1,671,120	7,037,197	1,201,143	.....	.....	.....	.....

¹ Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

² Reported under the head of "manufactures of wood" previous to 1891.

³ Reported under the head of "manufactures of wood" previous to 1893.

The exports of paper and its manufactures in 1905 were greater than the imports by \$2,614,450, or 46.5 per cent. Since 1900 the former have increased \$2,022,255 and the latter \$1,827,993. No crude paper stock is exported; in 1905 the imports of this material had increased by \$534,817 over 1900, and were 40.3 per cent of the total imports of paper and paper stock.

The imports of wood pulp in 1905 had increased 85,063 tons, or 103.2 per cent, in quantity and \$2,095,325, or 87.1 per cent, in value over those of 1900. They formed 19.1 per cent of the total quantity of pulp and fiber reported in 1905 under materials used as shown in Tables 4 and 19, compared with 12.8 per cent in 1900. The exports decreased 2,425 tons, or 17 per cent, in quantity, but increased \$15,122, or 3.3 per cent, in value. The quantity exported was 7.1 per cent of that imported in 1905, as compared with 17.3 per cent in 1900.

PROGRESS OF THE INDUSTRY.

The use of wood pulp and fiber and the perfecting of the Fourdrinier machine have been the principal factors in the development of the manufacture of paper. The production has been stimulated by, and has itself stimulated, the great increase of books, newspapers, and periodicals. A historical sketch of paper making and a description of the modern process of manufacture will be found in the special report on paper and pulp issued by the Bureau of the Census in 1900. Since then there has been little change in the industry.

The principal material for the manufacture of paper in the United States is spruce and poplar pulp, although other materials, such as straw, waste paper, and manila stock enter into the making of the coarser grades. Rags are used for fine paper. There are two kinds of wood pulp—mechanical, made by grinding the wood on a revolving stone, and chemical, made by reducing chipped wood to pulp by chemical processes. Ground, or mechanical, pulp makes brittle paper and other kinds of pulp are therefore generally used with it. The chemical fibers most used are soda and sulphite, so named from the fact that the wood is reduced by cooking in a solution of caustic soda, or of bisulphite of magnesia or of calcium. Soda fiber is soft and has other desirable qualities, but lacking strength is usually mixed with other fiber. Sulphite is both strong and of good quality.

The general management of European and American mills and the methods of preparing the wood are similar. The difference in manufacture lies wholly in the chemical treatment of the wood in the digester. The direct, or quick, cooking method is the one generally used in the American mills, while the indirect cooking, by means of superheated steam, is the method more generally used in the European establishments. In addition to yielding a much stronger fiber, the European method of treatment has the advantage of effecting a considerable saving in raw materials, such as sulphur and lime. Only about one-half the amount of steam used in the direct cooking is necessary in the indirect method. This saving in steam is said to be sufficient to cover all charges for additional investment in the digester plant.

Starting with raw materials, which cost the same, and eliminating the price of labor, it will be found that the modern mill abroad will produce a ton of sulphite pulp at less cost than the average American mill. The lower cost of labor in Europe is always one of the

advantages of the European mill, but the difference in favor of European manufacturers is becoming smaller, as labor saving devices are being introduced into both the European and American mills. The improved method of indirect cooking with superheated steam, as practiced abroad, undoubtedly offers great advantages, and deserves the attention of the American sulphite manufacturers.¹

The recent introduction of wide, high-speed Fourdriniers is a notable feature in the progress of the paper industry. Machines instead of being speeded to run less than 300 feet of paper per minute are now built to make from 500 to 618 feet of news paper per minute. The width has also been gradually increased from less than 100 inches to at least 164 inches. There has been considerable discussion as to the merits of these wide, high-speed machines, the introduction of which was due to the progressiveness of a few manufacturers, who realized that by producing more paper they would have a distinct advantage over their competitors. The cost of operation is said to be much less per ton of production than for the smaller machines. Moreover, the construction of the wide machine has been so perfected that loss by wear has been reduced to a minimum. The question has been raised as to the quality of the paper produced by the high-speed machines, but it is generally thought they can produce as good a quality as the slower machines.²

Great improvements have been made in recent years in the construction and equipment of paper and wood pulp mills; and the American Paper and Pulp Association in 1906 engaged an expert chemist to report at the annual meetings on subjects connected with the chemistry of paper making.³

The necessity of a technical education and training for paper makers has been recognized for many years by manufacturers, and there is a paper making school at Vienna, in Austria, and one at Manchester, in England. German manufacturers have also taken steps to secure one,⁴ but no such school has yet been established in this country.

The detailed statistics for paper and wood pulp are presented in Table 19, which shows separate totals for each state in which there are 3 or more establishments, and groups the statistics for other states, so as to avoid disclosing the operations of individual establishments.

¹ The Paper Mill and Wood Pulp News, February 10, 1906, page 142.

² The Paper Mill and Wood Pulp News, February 10, 1906, page 90, ff.

³ The Paper Mill and Wood Pulp News, February 10, 1906, page 20.

⁴ The Paper Trade Journal, April 7, 1904, page 532.

TABLE 19.—PAPER AND WOOD PULP—DETAILED

	United States.	California.	Connecticut.	Delaware.	
1	Number of establishments.....	761	3	50	6
2	Capital, total.....	\$277,444,471	\$1,170,427	\$5,802,084	\$3,176,468
3	Land.....	\$34,234,934	\$47,000	\$712,800	\$244,662
4	Buildings.....	\$62,898,500	\$160,500	\$1,421,950	\$402,600
5	Machinery, tools, and implements.....	\$103,872,408	\$482,500	\$2,013,885	\$1,864,789
6	Cash and sundries.....	\$76,438,539	\$406,427	\$1,730,040	\$465,147
7	Proprietors and firm members.....	300	2	29	6
8	Salaried officials, clerks, etc.: Total number.....	3,778	12	154	22
9	Total salaries.....	\$6,097,632	\$20,280	\$231,408	\$60,000
10	Officers of corporations— Number.....	710	3	36	4
11	Salaries.....	\$2,183,370	\$7,500	\$80,500	\$40,000
12	General superintendents, managers, clerks, etc.: Total number.....	3,050	9	118	18
13	Total salaries.....	\$3,913,650	\$12,780	\$149,908	\$20,000
14	Men— Number.....	2,665	8	95	17
15	Salaries.....	\$3,705,951	\$12,360	\$139,011	\$20,600
16	Women— Number.....	394	1	23	1
17	Salaries.....	\$207,705	\$420	\$10,897	\$300
18	Wage-earners, including pieceworkers, and total wages: Greatest number employed at any one time during the year.....	75,634	276	1,985	587
19	Least number employed at any one time during the year.....	56,105	241	1,528	508
20	Average number.....	65,964	259	1,750	547
21	Total wages.....	\$32,010,212	\$181,412	\$843,433	\$252,208
22	Men 16 years and over— Average number.....	50,827	248	1,451	455
23	Wages.....	\$20,462,700	\$177,297	\$761,229	\$233,053
24	Women 16 years and over— Average number.....	8,882	11	293	92
25	Wages.....	\$2,490,588	\$4,115	\$80,856	\$10,215
26	Children under 16 years— Average number.....	255	.....	.....	6
27	Wages.....	\$50,825	.....	\$1,248	.....
28	Average number of wage-earners, including pieceworkers, employed during each month: Men 16 years and over— January.....	54,754	251	1,428	450
29	February.....	64,183	240	1,431	451
30	March.....	55,934	249	1,453	404
31	April.....	60,732	247	1,445	479
32	May.....	58,213	252	1,450	482
33	June.....	57,800	248	1,440	477
34	July.....	57,177	247	1,429	439
35	August.....	57,787	244	1,460	442
36	September.....	58,150	242	1,461	446
37	October.....	58,502	252	1,465	438
38	November.....	57,300	251	1,460	446
39	December.....	56,386	254	1,404	446
40	Women 16 years and over— January.....	8,812	10	293	94
41	February.....	8,860	10	291	90
42	March.....	8,910	10	298	89
43	April.....	8,008	11	305	91
44	May.....	9,036	11	308	94
45	June.....	9,115	11	310	98
46	July.....	8,713	12	293	93
47	August.....	8,734	12	297	92
48	September.....	8,888	12	307	94
49	October.....	8,951	12	303	95
50	November.....	8,824	11	283	89
51	December.....	8,821	10	278	92
52	Children under 16 years— January.....	231	.....	.....	.....
53	February.....	232	.....	.....	.....
54	March.....	250	.....	.....	.....
55	April.....	238	.....	.....	.....
56	May.....	252	.....	.....	.....
57	June.....	200	.....	.....	.....
58	July.....	207	.....	.....	.....
59	August.....	250	.....	.....	.....
60	September.....	277	.....	.....	.....
61	October.....	271	.....	.....	.....
62	November.....	263	.....	.....	.....
63	December.....	263	.....	.....	.....
64	Miscellaneous expenses, total.....	\$16,440,041	\$50,758	\$922,352	\$47,830
65	Rent of works.....	\$108,135	\$14,000	\$6,203	.....
66	Taxes.....	\$1,383,081	\$4,468	\$27,175	\$3,297
67	Rent of offices, interest, insurance, and all other sundry expenses not hitherto included.....	\$14,739,522	\$32,300	\$487,553	\$44,542
68	Contract work.....	.....	.....	.....	.....
69	Materials used, total cost.....	\$118,403	.....	\$1,421	.....
70	Wood— Domestic spruce for ground wood— Cords.....	\$111,251,478	\$274,369	\$2,738,430	\$1,270,240
71	Cost.....	881,106	.....	.....	.....
72	Domestic spruce for sulphite and soda fiber— Cords.....	\$6,355,503	.....	.....	.....
73	Cost.....	851,425	.....	.....	.....
74	Canadian spruce for ground wood— Cords.....	\$5,682,280	.....	.....	.....
75	Cost.....	245,087	.....	.....	.....
76	Canadian spruce for sulphite and soda fiber— Cords.....	\$2,173,612	.....	.....	.....
77	Cost.....	203,218	.....	.....	.....
78	Domestic poplar for soda fiber— Cords.....	\$2,396,405	.....	.....	.....
79	Cost.....	213,058	.....	.....	22,205
80	Canadian poplar for soda fiber— Cords.....	\$1,500,971	.....	.....	\$174,100
81	Cost.....	35,313	.....	.....	.....
82	Other domestic pulp wood— Cords.....	\$251,600	.....	.....	.....
83	Cost.....	527,505	20,000	.....	1,911
84	Other Canadian wood— Cords.....	\$2,508,082	\$80,000	.....	\$14,800
85	Cost.....	4,005	.....	.....	.....
	Total.....	\$25,440	.....	.....	.....

TABLE 19.—PAPER AND WOOD PULP—DETAILED

	United States.	California.	Connecticut.	Delaware.
Materials used—Continued.				
Rags, including cotton and flax waste and sweepings—				
86 Tons.....	204,552	620	8,297	4,280
87 Cost.....	\$8,804,607	\$4,060	\$202,065	\$100,130
Old or waste paper—				
88 Tons.....	588,543	3,042	77,698	447
89 Cost.....	\$7,430,335	\$31,471	\$391,915	\$15,012
Manila stock, including jute bagging, rope, waste, threads, etc.—				
90 Tons.....	107,020	270	6,041	6
91 Cost.....	\$2,602,332	\$4,120	\$132,584	\$85
Straw—				
92 Tons.....	304,585	2,586		
93 Cost.....	\$1,602,886	\$11,637		
Ground wood pulp, purchased—				
94 Tons.....	317,286		2,694	
95 Cost.....	\$5,754,259		\$54,388	
Soda wood fiber, purchased—				
96 Tons.....	120,078		1,405	9,253
97 Cost.....	\$5,047,105		\$62,652	\$305,217
Sulphite wood fiber, purchased—				
98 Tons.....	433,160	60	6,582	4,005
99 Cost.....	\$10,567,122	\$640	\$205,727	\$153,435
Other chemical fiber, purchased—				
100 Tons.....	6,278		220	
101 Cost.....	\$204,078		\$11,515	
102 Other stock.....	\$1,903,000	\$5,316	\$220,049	
Sulphur—				
103 Tons.....	130,400	750		
104 Cost.....	\$3,221,834	\$15,000		
105 Other chemicals.....	\$5,111,540	\$10,856	\$135,877	\$118,833
Pyrites—				
106 Tons.....	2,030		220	
107 Cost.....	\$31,025		\$4,520	
Sizing—				
108 Tons.....	52,171	242	983	210
109 Cost.....	\$1,838,035	\$7,170	\$28,259	\$5,040
Clay—				
110 Tons.....	201,218	1,726	2,423	4,006
111 Cost.....	\$2,006,570	\$25,803	\$19,175	\$43,590
112 Fuel.....	\$13,178,567	\$33,957	\$355,500	\$132,804
113 Rent of power and heat.....	\$70,160	\$20,500		
114 Mill supplies.....	\$2,526,950	\$5,702	\$55,606	\$6,134
115 All other materials.....	\$11,034,537	\$11,141	\$116,913	\$63,235
116 Freight.....	\$1,444,084		\$10,086	\$3,100
117 Products, total value.....	\$188,715,189	\$640,027	\$5,039,147	\$1,004,656
News paper—				
In rolls for printing—				
118 Tons.....	840,802			
119 Value.....	\$32,765,308			
In sheets for printing—				
120 Tons.....	72,020			
121 Value.....	\$3,143,152			
Book paper—				
Book—				
Wood fiber, chief ingredient—				
122 Tons.....	354,540		745	1,342
123 Value.....	\$24,840,224		\$63,000	\$99,590
Rags, chief ingredient—				
124 Tons.....	79,960		600	5,990
125 Value.....	\$6,316,504		\$60,000	\$428,744
Cover—				
126 Tons.....	22,150		2,805	7,732
127 Value.....	\$2,023,980		\$350,162	\$678,088
Plate, lithograph, map, woodcut, etc.—				
128 Tons.....	19,837		185	2,191
129 Value.....	\$1,458,343		\$44,400	\$107,400
Cardboard, bristol board, card middles, tickets, etc.—				
130 Tons.....	30,000		1,544	
131 Value.....	\$2,704,444		\$68,317	
Fine paper—				
Writing paper—				
132 Tons.....	131,934		3,430	
133 Value.....	\$10,321,045		\$471,280	
All other—				
134 Tons.....	14,808		3,000	500
135 Value.....	\$2,028,125		\$392,780	\$53,950
Wrapping paper—				
Manila (rope, jute, tag, etc.)—				
136 Tons.....	80,826		5,428	19
137 Value.....	\$6,136,080		\$441,239	\$760
Heavy (mail wrappers, etc.)—				
138 Tons.....	96,092		425	
139 Value.....	\$4,035,588		\$10,000	
Straw—				
140 Tons.....	54,232			
141 Value.....	\$1,389,348			
Bogus, or wood, manila (all grades)—				
142 Tons.....	228,371	6,280	970	
143 Value.....	\$10,099,772	\$335,100	\$31,500	
All other—				
144 Tons.....	177,870	1,048	233	
145 Value.....	\$8,774,804	\$40,840	\$10,805	
Boards—				
Wood pulp—				
146 Tons.....	60,863		16,569	
147 Value.....	\$2,347,250		\$554,140	
Straw—				
148 Tons.....	167,278	1,724	10,189	
149 Value.....	\$4,307,500	\$64,016	\$292,716	
News—				
150 Tons.....	38,560	1,783	1,765	
151 Value.....	\$1,174,210	\$78,971	\$63,875	
All other—				
152 Tons.....	253,950		36,087	
153 Value.....	\$9,070,531		\$1,443,322	
Other paper products—				
Tissue paper—				
154 Tons.....	43,925	1,000	2,169	
155 Value.....	\$5,056,438	\$80,000	\$400,075	

PAPER AND WOOD PULP.

SUMMARY, BY STATES: 1905—Continued.

Illinois.	Indiana.	Iowa.	Kansas.	Maine.	Maryland.	Massachusetts.	Michigan.	
3,023	102	3,119	300	5,760	2,887	90,468	8,102	86
\$36,835	\$1,487	\$31,105	\$2,400	\$106,378	\$40,378	\$4,837,815	\$109,937	87
35,490	30,257	1,395	750	5,666	9,448	60,424	60,417	88
\$363,754	\$363,835	\$11,167	\$5,000	\$92,745	\$90,251	\$1,009,927	\$1,058,014	89
515	4,048			93	5	14,339	1,900	90
\$7,365	\$93,378			\$1,850	\$67	\$437,761	\$28,000	91
61,930	110,081	10,715	9,797		2,851	1,800	6,984	92
\$300,535	\$920,019	\$46,191	\$41,624		\$12,592	\$11,700	\$32,577	93
2,170	13,831			60,132	2,838	14,950	9,712	94
\$40,033	\$279,081			\$937,741	\$56,219	\$302,997	\$101,713	95
	700			12,813	12,112	30,991	10,799	96
	\$30,800			\$532,544	\$486,164	\$1,712,642	\$489,088	97
3,208	6,319			34,020	13,020	63,313	15,197	98
\$138,188	\$247,885			\$1,252,781	\$543,184	\$2,608,553	\$630,761	99
				303		2,653	201	100
\$24,187	\$111,831			\$11,936		\$124,170	\$7,036	101
3	20			\$79,136	\$7,452	\$216,064	\$26,733	102
\$82	\$383			31,903		4,151	5,124	103
\$54,694	\$84,819	\$3,076	\$5,550	\$737,286		\$97,805	\$126,826	104
				\$817,223	\$180,388	\$558,045	\$168,786	105
	354					35	300	106
	\$3,804					\$366	\$6,000	107
59	088	5		6,510	1,480	0,490	1,596	108
\$1,237	\$10,900	\$100		\$224,102	\$31,550	\$551,865	\$49,596	109
	928			27,295	7,907	30,730	10,318	110
	\$8,071			\$292,460	\$83,033	\$372,208	\$89,532	111
\$201,035	\$304,804	\$33,894	\$15,041	\$1,837,935	\$268,916	\$1,815,681	\$617,974	112
				36,225			\$1,250	113
\$38,572	\$50,516	\$2,244	\$5,992	\$359,767	\$18,858	\$325,751	\$155,583	114
\$90,878	\$174,736	\$2,010	\$2,743	\$1,523,899	\$319,949	\$2,047,581	\$201,898	115
\$17,600	\$3,216	\$870		\$105,755	\$23,133	\$277,842	\$83,349	116
\$2,442,504	\$3,916,998	\$252,832	\$202,290	\$22,951,124	\$3,206,348	\$32,012,247	\$7,340,631	117
2,370	1,315			213,476		10,650	4,000	118
\$100,362	\$58,764			\$7,635,428		\$904,799	\$195,000	119
645	6,000			1,831			4,167	120
\$27,740	\$258,000			\$86,436			\$172,747	121
	1,807			66,797	27,776	72,007	16,935	122
	\$119,424			\$5,112,730	\$1,013,163	\$5,514,986	\$1,167,316	123
					1,051	21,432	31,807	124
					\$73,500	\$2,000,050	\$2,225,543	125
						2,448	537	126
						\$248,820	\$38,500	127
				600	4,117		2,769	128
				\$46,500	\$315,855		\$197,608	129
						23,504	200	130
						\$1,811,431	\$18,216	131
				4,400		76,598	2,100	132
				\$385,000		\$13,464,050	\$215,971	133
						4,272	457	134
						*\$1,486,761	\$40,091	135
	1,236			8,419	4	7,517	8,885	136
	\$98,806			\$489,350	\$158	\$942,813	\$489,597	137
4,179	6,294			11,768	175	3,074	2,131	138
\$184,154	\$218,610			\$496,178	\$4,900	\$124,026	\$75,260	139
12,207	12,025	3,958	1,800		150		1,262	140
\$233,573	\$256,300	\$87,746	\$35,000		\$4,500		\$31,130	141
	7,070			66,631	755	671	2,050	142
	\$265,467			\$2,935,969	\$19,630	\$33,674	\$91,219	143
	1,510	1,014	1,200	3,000		4,888	18,326	144
	\$35,100	\$28,416	\$30,000	\$154,000		\$317,402	\$881,655	145
200	3,322			10,178		2,056	11,500	146
\$6,000	\$110,483			\$347,159		\$209,897	\$370,070	147
22,403	59,114	3,000	6,082		1,884	10,680	2,776	148
\$500,051	\$1,469,355	\$77,350	\$137,290		\$49,953	\$319,401	\$99,423	149
3,566	841				1,385	1,567		150
\$89,747	\$25,222				\$35,354	\$43,900		151
27,416	20,137			3,299	905	12,117	12,106	152
\$360,617	\$612,066			\$176,409	\$26,900	\$765,178	\$373,283	153
	740					2,430		154
	\$90,264					\$419,650		155

TABLE 19.—PAPER AND WOOD PULP—DETAILED

	United States.	California.	Connecticut.	Delaware.
Products—Continued.				
Other paper products—Continued.				
156				
157				
158				
159				
160				
161				
162				
163				
164				
165				
166				
167				
168				
169				
170				
171				
172				
173				
Equipment and capacity:				
Paper machines—				
Fourdrinier—				
174				
175				
176				
177				
178				
179				
180				
181				
182				
183				
184				
185				
186				
187				
188				
189				
Power:				
190				
191				
192				
193				
194				
195				
196				
197				
198				
199				
200				
201				
202				
203				

¹Includes 1 water motor of 10 horsepower.

PAPER AND WOOD PULP.

SUMMARY, BY STATES: 1905—Continued.

Illinois.	Indiana.	Iowa.	Kansas.	Maine.	Maryland.	Massachusetts.	Michigan.	
						1,297		156
						\$168,675		157
7,054		2,996			2,524	7,153	3,303	158
\$177,987		\$59,320			\$84,161	\$917,682	\$100,604	159
	2,000				4,152	3,046		160
	\$80,000				\$189,513	\$182,433		161
6,956	21,482			2,525		15,186	2,870	162
\$113,213	\$212,607			\$104,596	\$8,990	\$1,325,438	\$154,486	163
4,290	2,527			165,860		14,007	12,064	164
2,210	160			64,480			2,015	165
\$44,200	\$3,360			\$922,206			\$64,469	166
				7,881		2,000		167
				45,376		22,058		168
				\$1,773,899		\$885,527		169
				115,063		3,700	15,390	170
				58,261		8,738	9,143	171
\$38,854	\$3,000			\$2,192,704		\$415,975	\$342,817	172
				\$92,551		\$58,902	\$58,621	173
1	8			73		12	34	174
120	755			7,382		1,150	3,473	175
25	93			1,349		120	444	176
29	39	7	3	18		9	21	177
2,229	2,956	400	228	1,038		508	1,258	178
396	680	34	33	126		42	185	179
	28			38		10		180
	35			38		11	3	181
				55		15	24	182
				131		23	74	183
8	9			268		18	20	184
40	24			1,015		60	72	185
125,175	184,761	10,730	10,600	425,848	40,275	331,080	181,108	186
12,000	19,440			305,982		16,110	25,810	187
				91,028	24,550	2,000		188
				174,387		13,000	20,600	189
19	36	4	3	37	16	87	30	190
12,923	20,045	1,005	1,078	164,071	10,271	107,020	31,420	191
64	109	9	10	184	37	362	104	192
7,820	17,733	1,005	1,058	34,976	0,076	53,111	18,692	193
1	7		1				1	194
	534		20				10	195
35	25			446	16	324	94	196
4,991	1,608			116,508	1,267	51,843	12,655	197
8	11			76	30	60	9	198
105	270			11,777	2,928	2,066	63	199
				6				200
				810				201
								202
	100			90		322		203

TABLE 19.—PAPER AND WOOD PULP—DETAILED

	Minnesota.	New Hampshire.	New Jersey.	New York.
1 Number of establishments.....	4	25	38	177
2 Capital, total.....	\$1,400,902	\$14,041,014	\$7,122,852	\$50,461,739
3 Land.....	\$70,724	\$1,742,780	\$1,302,050	\$8,304,107
4 Buildings.....	\$233,500	\$2,477,076	\$1,634,538	\$13,098,732
5 Machinery, tools, and implements.....	\$444,650	\$4,020,928	\$2,638,610	\$10,383,032
6 Cash and sundries.....	\$342,028	\$5,200,280	\$1,456,754	\$15,585,818
7 Proprietors and firm members.....		5	15	85
8 Salaried officials, clerks, etc.:				
9 Total number.....	22	147	129	759
Total salaries.....	\$31,450	\$208,930	\$232,958	\$1,131,720
10 Officers of corporations—				
11 Number.....	8	21	32	155
Salaries.....	\$15,500	\$58,650	\$117,325	\$403,072
12 General superintendents, managers, clerks, etc.—				
13 Total number.....	14	126	97	604
Total salaries.....	\$15,950	\$150,280	\$115,633	\$728,057
14 Men—				
15 Number.....	13	113	77	540
Salaries.....	\$15,530	\$143,210	\$104,308	\$605,304
16 Women—				
17 Number.....	1	13	20	64
Salaries.....	\$420	\$7,070	\$11,325	\$33,293
18 Wage-earners, including pieceworkers, and total wages:				
19 Greatest number employed at any one time during the year.....	431	3,507	1,830	14,576
20 Least number employed at any one time during the year.....	344	2,111	1,406	10,892
21 Average number.....	396	2,522	1,629	12,418
Total wages.....	\$234,378	\$1,315,310	\$780,731	\$6,402,323
22 Men 16 years and over—				
23 Average number.....	350	2,411	1,452	11,800
Wages.....	\$220,920	\$1,284,035	\$740,156	\$6,262,032
24 Women 16 years and over—				
25 Average number.....	16	111	142	514
Wages.....	\$4,458	\$31,275	\$38,255	\$147,432
26 Children under 16 years—				
27 Average number.....			35	14
Wages.....			\$8,320	\$1,950
Average number of wage-earners, including pieceworkers, employed during each month:				
28 Men 16 years and over—				
29 January.....	360	2,302	1,453	11,065
30 February.....	365	2,248	1,465	10,990
31 March.....	346	2,376	1,487	11,296
32 April.....	302	2,535	1,453	11,604
33 May.....	306	2,545	1,430	12,324
34 June.....	302	2,437	1,388	12,485
35 July.....	388	2,405	1,413	12,277
36 August.....	392	2,367	1,420	12,200
37 September.....	391	2,440	1,458	12,477
38 October.....	397	2,447	1,400	12,566
39 November.....	385	2,321	1,480	11,998
December.....	347	2,410	1,460	11,338
40 Women 16 years and over—				
41 January.....	15	111	137	457
42 February.....	16	115	136	462
43 March.....	15	108	128	470
44 April.....	17	106	144	485
45 May.....	12	107	146	548
46 June.....	16	110	148	554
47 July.....	17	100	148	540
48 August.....	17	93	148	552
49 September.....	17	117	143	540
50 October.....	17	117	144	542
51 November.....	17	122	143	494
December.....	16	120	139	497
52 Children under 16 years—				
53 January.....			35	9
54 February.....			35	13
55 March.....			36	24
56 April.....			31	12
57 May.....			31	14
58 June.....			30	13
59 July.....			30	12
60 August.....			35	12
61 September.....			38	15
62 October.....			39	16
63 November.....			40	14
64 December.....			40	14
65 Miscellaneous expenses, total.....	\$60,884	\$650,683	\$286,081	\$2,848,610
66 Rent of works.....	\$2,000	\$1,400	\$0,250	\$78,763
67 Taxes.....	\$5,400	\$30,521	\$23,505	\$241,462
68 Rent of offices, interest, insurance, and all other sundry expenses not hitherto included.....	\$53,394	\$589,052	\$259,026	\$2,478,802
69 Contract work.....		\$5,710		\$40,593
Materials used, total cost.....	\$676,549	\$5,327,734	\$3,022,484	\$22,805,751
70 Wood—				
71 Domestic spruce for ground wood—				
Cords.....	20,531	70,719		274,920
Cost.....	\$180,550	\$440,578		\$2,004,195
72 Domestic spruce for sulphite and soda fiber—				
Cords.....	1,050	117,973	0,175	210,338
Cost.....	\$13,171	\$768,233	\$75,663	\$1,329,151
73 Canadian spruce for ground wood—				
Cords.....		2,421		181,041
Cost.....		\$17,937		\$1,610,472
74 Canadian spruce for sulphite and soda fiber—				
Cords.....		99,402	8,951	139,243
Cost.....		\$784,615	\$55,319	\$1,176,214
75 Domestic poplar for soda fiber—				
Cords.....				18,537
Cost.....				\$124,371
76 Canadian poplar for soda fiber—				
Cords.....				21,802
Cost.....				\$149,544
77 Other domestic pulp wood—				
Cords.....				17,580
Cost.....				\$131,372
78 Other Canadian wood—				
Cords.....				663
Cost.....				\$4,687

1 Includes establishments distributed as follows: Colorado, 1; District of Columbia, 1; Georgia, 1; Missouri, 1; South Carolina, 1; Texas, 1; Washington, 2.

PAPER AND WOOD PULP.

SUMMARY, BY STATES: 1905—Continued.

Ohio.	Oregon.	Pennsylvania.	Vermont.	Virginia.	West Virginia.	Wisconsin.	All other states.	
22,877		50,207	1,000	3,443		24,615	647	86
\$550,545		\$860,616	\$47,273	\$95,660		\$692,331	\$17,807	87
55,475	300	65,726	5,148	1,699	5,941	8,412	6,194	88
\$606,328	\$1,800	\$719,574	\$118,287	\$20,193	\$51,194	\$169,020	\$63,960	89
12,208	300	11,971	1,394		2,270	725	170	90
\$354,112	\$3,000	\$299,409	\$29,509		\$102,045	\$14,085	\$3,275	91
71,036	3,700	4,147				1,426	515	92
\$327,355	\$12,025	\$22,907				\$4,232	\$1,800	93
2,782	1,016	6,747	11,426	1,821		43,814	6,915	94
\$67,820	\$22,413	\$125,403	\$212,240	\$42,200		\$870,180	\$219,491	95
9,031		4,451	84	3,938		5,154	311	96
\$400,933		\$180,892	\$3,583	\$164,795		\$218,008	\$18,413	97
27,344		19,747	11,220	1,023	100	57,996	4,054	98
\$1,100,884		\$860,150	\$402,740	\$41,056	\$2,448	\$2,274,908	\$196,800	99
283		843	238			515	69	100
\$16,013		\$44,555	\$10,281			\$15,459	\$3,237	101
\$130,219		\$74,087	\$198,043	\$26,086	\$14,163	\$205,930	\$3,289	102
1,576	1,627	8,170	1,360	3,771	3,645	18,361	794	103
\$38,734	\$33,710	\$171,628	\$30,424	\$93,906	\$85,102	\$458,948	\$17,434	104
\$273,781	\$30,374	\$909,031	\$60,982	\$181,802	\$72,627	\$327,689	\$86,867	105
750								106
\$15,000								107
3,695	280	4,495	2,117	100		4,514	318	108
\$176,070	\$7,543	\$121,940	\$55,351	\$1,300		\$196,818	\$10,465	109
14,543	676	20,676	3,171	7,259		14,872	1,520	110
\$176,091	\$11,476	\$218,347	\$34,731	\$62,400		\$172,295	\$26,204	111
\$709,028	\$141,554	\$1,195,766	\$224,483	\$221,518	\$93,290	\$1,237,444	\$214,205	112
		\$1,119						113
\$175,269	\$60,440	\$257,803	\$21,528	\$10,448	\$20,021	\$328,607	\$42,618	114
\$800,245	\$52,769	\$865,141	\$597,442	\$298,606	\$26,010	\$862,561	\$42,617	115
\$39,671	\$11,475	\$330,292	\$20,425	\$20,471	\$28,698	\$28,071		116
\$10,961,527	\$1,630,440	\$15,411,032	\$3,831,448	\$3,034,395	\$1,298,066	\$17,844,174	\$1,935,218	117
1,852	23,797	570	34,304	344		93,149	17,981	118
\$85,500	\$1,070,865	\$24,795	\$1,393,524	\$17,195		\$3,915,176	\$900,709	119
2,252	398	570	92	1,232		28,600	771	120
\$105,100	\$17,910	\$25,050	\$3,680	\$59,985		\$1,272,459	\$41,055	121
15,673		54,025		11,026		40,042	3,741	122
\$1,065,234		\$3,870,024		\$724,158		\$2,153,967	\$300,290	123
2,152		3,754				9,047		124
\$207,828		\$408,068				\$571,553		125
2,779		570				376	488	126
\$246,385		\$45,000				\$19,203	\$57,719	127
		7,907				1,918		128
		\$581,376				\$95,064		129
857		1,007						130
\$144,632		\$288,913						131
6,552		10,857		166		17,333	1,448	132
\$316,815		\$1,738,457		\$12,956		\$2,066,243	\$123,080	133
2,170		2,238	948				800	134
\$241,105		\$583,970	\$54,785				\$66,000	135
10,056		5,964		100	2,054	8,703	274	136
\$777,055		\$582,976		\$4,000	\$232,864	\$378,655	\$15,679	137
6,314	101	31,043	2,379			9,429	4,355	138
\$164,873	\$8,595	\$1,366,455	\$83,265			\$427,105	\$187,560	139
9,078	2,325	1,100				5,598	360	140
\$207,610	\$93,179	\$32,812				\$240,008	\$11,520	141
6,100	5,000	1,571	8,517	2,350		16,838	1,000	142
\$208,150	\$285,000	\$72,898	\$445,280	\$100,600		\$705,820	\$27,067	143
12,489	400	18,514	6,737			53,886	1,908	144
\$428,484	\$40,000	\$1,098,897	\$362,552			\$2,448,470	\$120,263	145
760			2,993	1,507		167		146
\$30,400			\$108,580	\$97,959		\$4,592		147
33,953		5		1,352				148
\$866,879		\$150		\$30,349				149
713		2,500		1,340				150
\$23,060		\$62,600		\$33,350				151
24,843		23,893	1,606		3,709			152
\$765,801		\$625,708	\$75,184		\$93,790			153
1,461		320	3,045			5,989		154
\$172,421		\$31,101	\$274,411			\$571,378		155

TABLE 19.—PAPER AND WOOD PULP—DETAILED

	Minnesota.	New Hampshire.	New Jersey.	New York.
Products—Continued.				
Other paper products—Continued.				
156				
157				
158				
159				
160				
161				
162				
163				
164				
165				
166				
167				
168				
169				
170				
171				
172				
173				
174				
175				
176				
177				
178				
179				
180				
181				
182				
183				
184				
185				
186				
187				
188				
189				
190				
191				
192				
193				
194				
195				
196				
197				
198				
199				
200				
201				
202				
203				

¹Includes 1 water motor of 10 horsepower.

PAPER AND WOOD PULP.

SUMMARY, BY STATES: 1905—Continued.

Ohio.	Oregon.	Pennsylvania.	Vermont.	Virginia.	West Virginia.	Wisconsin.	All other states.	
1,050		1,660		3,344			601	156
\$134,929		\$198,900		\$373,183			\$60,096	157
15,400		67,797				2,608	948	158
\$499,692		\$1,847,762				\$86,846	\$33,280	159
		7,814	1,118			1,754		160
		\$409,500	\$100,699			\$72,600		161
28,127		2,503	9,696		285	267		162
\$2,799,584		\$223,490	\$580,457		\$19,988	\$41,609		163
4,425	20,677	19,000	28,310	785		89,101	5,288	164
	900		23,529	1,065	0,137	35,645		165
	\$14,900		\$343,386	\$21,000	\$166,052	\$721,751		166
		36,217		1,375		3,744	5,000	167
		17,405		14,282				168
		\$787,093		\$539,860				169
15,000	9,672	9,017	8,908			59,415	4,466	170
0,849		1,415		24,800	19,558	53,632		171
\$413,151		\$57,000		\$1,019,800	\$700,047	\$2,032,452		172
\$526,239		\$440,872	\$5,636		\$35,325	\$19,214		173
37	6	65	19	8		88	12	174
3,200	582	5,614	1,595	792		8,368	1,119	175
299	100	580	209	97		1,112	160	176
50	1	69	21	4	5	5	5	177
4,048	90	4,326	1,104	360	322	392	340	178
554	8	543	73	120	62	36	32	179
7		73		14			5	180
7		65		23			2	181
8	6	16	6	3	4	50	8	182
22	18	48	14	16	22	204	13	183
5	30	5	100	6	10	197	11	184
27	98	24	345	20	31	601	287	185
281,075	32,725	327,505	84,742	32,950	5,428	345,879	42,760	186
5,321	23,500	4,400	87,509	20,800	9,500	193,720	8,100	187
		73,873		15,000			6,600	188
28,829	14,100	52,274	9,300	18,700	23,780	141,325	12,274	189
53	4	65	28	9	7	52	8	190
37,189	12,735	56,090	43,673	8,220	4,576	103,008	6,252	191
182	10	331	65	40	19	95	33	192
31,821	1,663	48,126	6,255	4,040	2,895	22,722	5,700	193
8		1			2			194
277		25			400			195
45	43	74	166	21	3	506	6	196
4,100	10,982	9,631	36,697	3,760	1,310	83,138	400	197
23	4	71	6	9	1	74	4	198
901	90	1,253	721	420	1	2,068	152	199
		2						200
		55						201
						80		202
			2			205		203