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# TURPENTINE AND ROSIN

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# TURPENTINE AND ROSIN INDUSTRY.

## GENERAL STATISTICS.

Scope of the report.—This report covers the production of commercial spirits of turpentine and rosin by the distillation of the resinous exudation of the pine tree, the crude resin being derived from the longleaf pine (*Pinus palustris*), which is indigenous to a large coastal area stretching from North Carolina to eastern Texas, and, to a less extent, from the Cuban or slash pine (*Pinus heterophylla*) and the loblolly pine (*Pinus taeda*). Similar products, such as "wood spirits," rosin oil, and tar, obtained directly from the pine wood by destructive distillation or by the "steam

process," are not covered by the statistics of production here presented, though small quantities of wood spirits figure in the statistics of turpentine exported.

Comparison with earlier censuses.—Table 1 summarizes the statistics of the turpentine and rosin industry for each census from 1869 to 1909, inclusive.

The financial figures for 1869 are given in currency, which at that time was worth only about 80 cents, gold, to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

	NUMBER OR AMOUNT.						PER CENT OF INCREASE. <sup>1</sup>					
	1909	1904	1899	1880	1879	1869	1899-1909	1904-1909	1899-1904	1880-1899	1879-1880	1869-1879
Number of establishments.....	1,585	1,287	1,503	( <sup>2</sup> ) 670	( <sup>2</sup> ) 508	( <sup>2</sup> ) 227	5.5	23.2	-14.4	124.3	31.0	123.8
Persons engaged in the industry.....	44,524	37,526	45,945	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	-3.1	18.6	-18.3	.....	.....	.....
Proprietors and firm members.....	2,567	1,997	2,192	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	17.1	23.5	-8.9	.....	.....	.....
Salaried employees.....	2,446	2,147	1,889	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	29.5	13.9	13.7	.....	.....	.....
Wage earners (average number).....	39,511	33,382	41,864	( <sup>2</sup> ) 15,266	( <sup>2</sup> ) 10,535	( <sup>2</sup> ) 2,638	-5.6	18.4	-20.3	174.2	44.9	299.4
Primary horsepower.....	4,129	1,175	866	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	376.8	251.4	35.7	.....	.....	.....
Capital.....	\$12,400,978	\$6,961,185	\$11,847,495	\$4,062,375	\$1,866,390	\$902,225	4.7	78.1	-41.2	191.6	117.7	106.9
Expenses.....	\$19,032,630	\$14,948,573	\$15,834,840	\$5,986,846	( <sup>2</sup> )	( <sup>2</sup> )	20.2	27.3	-5.6	164.5	.....	.....
Services.....	\$11,018,760	\$9,534,922	\$9,172,177	\$2,933,491	\$1,623,061	\$476,284	20.1	15.6	4.0	212.7	80.7	240.8
Salaries.....	\$1,655,391	\$1,152,222	\$778,094	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	112.6	43.7	48.0	.....	.....	.....
Wages.....	\$9,363,369	\$8,382,700	\$8,393,483	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	11.6	11.7	-0.1	188.8	.....	.....
Materials.....	\$4,910,838	\$3,774,637	\$6,180,492	\$2,874,693	\$2,324,637	\$2,146,090	-20.6	30.1	-39.0	115.2	23.7	8.3
Miscellaneous.....	\$3,403,042	\$1,639,014	\$476,171	\$178,662	( <sup>2</sup> )	( <sup>2</sup> )	551.7	89.3	244.2	166.5	.....	.....
Value of products.....	\$25,295,017	\$23,937,024	\$20,344,688	\$8,077,379	\$5,876,983	\$3,585,225	24.3	5.7	17.7	151.9	37.4	63.9
Value added by manufacture (value of products less cost of materials).....	\$20,384,179	\$20,162,387	\$14,158,306	\$5,202,686	\$3,552,346	\$1,439,135	44.0	1.1	42.4	172.1	46.5	146.8
Quantity of principal products:												
Spirits of turpentine (gallons).....	28,988,954	30,687,051	37,733,500	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	-23.2	-5.5	-18.7	.....	.....	.....
Rosin (barrels of 280 pounds gross).....	3,263,857	3,508,347	4,346,094	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	-24.9	-7.0	-19.3	.....	.....	.....

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted comparable figures are not available.  
<sup>2</sup> Comparable figures not available.  
<sup>3</sup> The capital reported for 1899 included timber land, valued at \$5,622,040.

The 1,585 establishments in the turpentine and rosin industry in 1909 gave occupation to 44,524 persons, of whom 39,511 were wage earners. The value of products was \$25,295,017; the cost of materials, however, was only \$4,910,838, or 19.4 per cent of the value of products, the value added by manufacture being \$20,384,179. The relatively small proportion which the cost of materials forms of the value of products in this industry is due to the fact that the principal material is taken directly from the trees by the establishments in the industry and that most establishments reported the cost of gathering this material among the other expenses of the industry and not as a part of the cost of materials. In a certain sense the processes by which the crude gum is obtained from the pine trees are scarcely manufacturing processes, but it is quite impossible in many cases to distinguish the expenses connected with this branch of the business from those connected with the distillation of the gum.

The increase in the five-year period 1904-1909 of 23.2 per cent in the number of establishments and 78.1 per cent in the capital invested is attributable principally to the development of new territory,

especially in the Gulf states, and the building of additional, and as a rule larger, plants. The installation of more expensive apparatus, such as that required for gathering the crude gum by the cup system, was also a factor to some extent in causing an increase in the capital invested. In the value of products there was an increase of only 5.7 per cent between 1904 and 1909, which was due entirely to the higher prices obtained for rosin, as smaller quantities both of turpentine and of rosin were reported in 1909 than in 1904. The number of persons employed, however, and the amounts paid for salaries and wages, materials, and miscellaneous expenses show much larger percentages of increase than the value of products, the decrease in output referred to being the result mainly of temporary and local conditions affecting the production of 1909, such as unfavorable weather for turpentine operations and destructive storms in Mississippi and Louisiana. The largest relative increase in any item of expense, 89.3 per cent, is shown for "miscellaneous expenses" and the smallest, 11.7 per cent, for wages. This is explained in part by the fact that the cost of convict labor was, in most cases, included in salaries and wages in 1904, but was almost uniformly reported under

"miscellaneous expenses" in 1909. In addition, the cost of feed for live stock, which is included under the heading of "miscellaneous expenses," was more fully reported in 1909 than in 1904.

During the five-year period 1899-1904 an increase of 17.7 per cent took place in the value of products; this was due wholly to increased prices, however, as there was a decrease of nearly one-fifth in the output both of turpentine and of rosin. Of the various items of expense some show a large percentage of increase for this period and others a decrease. This is probably due to the fact that some expenses were included under different headings at the two censuses.

While the Bureau of the Census issued no regular report on the turpentine and rosin industry for the years between 1904 and 1909, trade reports, and statistics gathered by the Forest Service of the Department of Agriculture, indicate that considerable development occurred during these years. According to the Forest Service reports the market value of turpentine and rosin produced amounted in 1907 to \$35,600,400 and in 1908 to \$31,895,950. These figures are not strictly comparable with the census figures for 1904 and 1909, however, as they represent the value of the products delivered at the market point, which is considerably greater than the value at the place of manufacture, which constitutes the basis of the census figures.

Development of the industry.—The primitive method of charring wood under sod in kilns or pits to extract tar and pitch was employed by the earlier settlers of the eastern coast of Virginia and the Carolinas. Because the use of tar and pitch at this period was practically restricted to shipbuilding they were called "naval stores," by which term they, as well as spirits of turpentine and rosin, are still known. The process of "bleeding" the longleaf pine, or extracting from it crude resin, was, according to the most authentic available data, first undertaken in North Carolina during the early or middle part of the eighteenth century. Most of the resin thus gathered was shipped abroad to be refined, although a part of it was distilled in some of the larger cities of this country. With the introduction of the copper still in 1834 it became possible to

convert the raw material into commercial spirits of turpentine and rosin near the base of supply, which greatly lessened the cost of manufacture. The output of these products increased rapidly after this, and varied uses for the products developed in the arts and in manufactures. Spirits of turpentine and rosin are now used chiefly as ingredients in such commodities as paint, oil, varnish, soap, paper, rubber, oilcloth, linoleum, sealing wax, fly paper, ink, lubricating compounds, and medicinal preparations. In recent years tar and pitch have come to be of little importance, owing mainly to the diminished demand for them since the general displacement of wooden by iron and steel ships.

At the census of 1810, which was the first to obtain statistics of this industry, 94,900 gallons of "essence of turpentine," valued at \$138,000, were reported, this being the product of 24 stills in North Carolina. The records of the Treasury Department show, however, that as far back as 1790 large quantities of turpentine, rosin, tar, and pitch were being exported each year, and there is evidence of the exportation of such products at a considerably earlier date.

In 1849 the industry was largely confined to the eastern part of North Carolina. This state contained 785 establishments, or 91.7 per cent of the total number in the industry in that year, and its products were valued at \$2,476,252, or 86.7 per cent of the total for the United States. Of the other establishments reported, the majority were in South Carolina, a few being located in Georgia, Florida, Mississippi, Alabama, and Louisiana. Since its early development in North Carolina the industry has gradually extended southward and westward, following the course of the longleaf-pine belt. North Carolina continued to be the leading state in respect to value of turpentine and rosin products until 1879, when it was outranked by South Carolina. In 1889 and 1899, Georgia led in value of products, but at the last two censuses Florida has ranked first and Georgia second.

Summary, by states.—Table 2 presents the more important statistics for 1909 by states and gives also the percentage of increase in the principal items for the two five-year periods between 1899 and 1909 and for the decade.

**Table 2**

STATE.	Number of establishments: 1909	WAGE EARNERS.				VALUE OF PRODUCTS.				VALUE ADDED BY MANUFACTURE.				PER CENT OF INCREASE. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Wage earners (average number).			Value of products.			Value added by manufacture.		
				1909	1904			1909	1904			1909	1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904
United States.....	1,583	39,511	100.0	.....	.....	\$25,295,017	100.0	.....	.....	\$20,384,179	100.0	.....	.....	-5.6	18.4	-20.3	24.3	5.7	17.7	44.0	1.1	42.4
Florida.....	592	18,143	45.9	1	1	11,937,518	47.2	1	1	9,968,450	48.9	1	1	20.4	16.7	3.1	84.5	20.6	53.0	60.0	8.6	74.9
Georgia.....	592	12,787	32.4	2	2	6,938,957	27.4	2	2	5,679,314	27.9	2	2	-33.4	9.0	-38.9	-14.4	-10.0	-5.0	-2.4	-13.3	12.5
Alabama.....	175	3,519	8.9	3	3	2,471,999	9.8	3	3	1,986,207	9.7	3	4	-5.3	20.6	-21.4	21.5	1.0	19.7	43.6	3.3	39.0
Mississippi.....	64	2,573	6.5	4	4	1,474,629	5.8	4	4	1,125,520	5.5	4	3	12.5	-2.3	15.1	-16.8	-37.7	33.5	4.7	-42.9	83.4
Louisiana.....	23	1,688	4.3	5	5	1,173,848	4.6	5	7	1,015,199	5.0	5	6	458.9	615.3	-21.9	920.9	453.8	84.3	.....	480.6	.....
North Carolina.....	79	139	0.4	8	7	673,954	2.7	6	5	191,018	0.9	7	7	-65.2	-6.1	-63.0	-36.2	-9.3	-29.6	-19.7	15.8	-30.7
South Carolina.....	56	443	1.1	6	6	406,286	1.6	7	6	242,500	1.2	6	5	-50.0	162.1	-30.9	-48.5	-29.3	-27.2	-23.7	21.0	-36.9
Texas.....	3	219	0.6	7	.....	217,826	0.9	8	.....	175,971	0.9	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

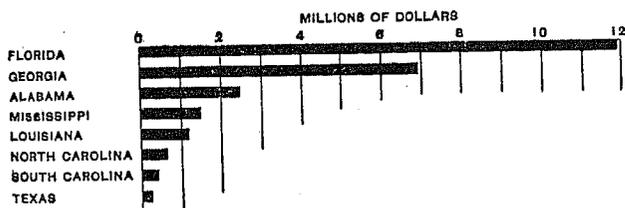
<sup>1</sup> Percentages are based on figures in Table 26. A minus sign (-) denotes decrease. Per cent not shown where base is less than 100 for wage earners, or less than \$100,000 for value of products or value added by manufacture.

The percentages given in the table show conspicuously the decline of the industry in the older turpentine producing states, North Carolina, South Carolina, and Georgia, and its growth in the newer producing territory, Florida, Louisiana, and Alabama. By far the greater part of the increase in the turpentine and rosin industry between 1899 and 1909 took place in Florida, for while Louisiana shows a very high percentage of increase, the value of its products even in 1909 represented only 4.6 per cent of the total. The decline of the industry in North Carolina, South Carolina, and Georgia between 1899 and 1909 was a continuation of a movement which began still earlier.

The value added by manufacture, as already indicated, forms a much larger proportion of the value of products in this than in most other industries. For the United States as a whole it was, in 1909, equal to 80.6 per cent of the total value of products; for Florida the corresponding percentage was 83.5; for Georgia, 81.8; for Alabama, 80.3; for Mississippi, 76.3; for Louisiana, 86.5; for North Carolina, 28.3; for South Carolina, 59.7; and for Texas, 80.8. The low proportions in the case of North and South Carolina are explained by the fact that for practically all of the establishments in North Carolina and for about half of those in South Carolina the total cost of procuring the crude gum, including the wages paid to woodsmen, etc., was reported as cost of materials.

The following diagram shows graphically the value of products reported for each state in 1909:

VALUE OF PRODUCTS OF THE TURPENTINE AND ROSIN INDUSTRY, BY STATES: 1909.



Persons engaged in the industry.—Table 3 shows, for 1909, the number of persons engaged in the turpentine and rosin industry, classified according to occupational status and sex, and in the case of wage earners according to age. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

The average number of persons engaged in the industry during 1909 was 44,524, of whom 39,511, or 88.7 per cent, were wage earners, 3,713, or 8.3 per cent, were proprietors and officials, and 1,300, or 2.9 per cent, were clerks, including stenographers and other subordinate salaried employees, this class including the "woods riders," who supervise and keep

account of the work of the woodsmen. Of the total number of persons engaged in the industry, 44,426, or 99.8 per cent, were males and 98, or two-tenths of 1 per cent, were females. Most of the females were either proprietors or firm members, or wage earners, only 4 being reported as clerks. The average number of boys under 16 years of age employed as wage earners was 586.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.		
	Total.	Male.	Female.
All classes.....	44,524	44,426	98
Proprietors and officials.....	3,713	3,683	30
Proprietors and firm members.....	2,567	2,537	30
Salaried officers of corporations.....	86	86	.....
Superintendents and managers.....	1,060	1,060	.....
Clerks.....	1,300	1,296	4
Wage earners (average number).....	39,511	39,447	64
16 years of age and over.....	38,918	38,861	57
Under 16 years of age.....	593	586	7

In addition to the persons shown in Table 3 as engaged in the industry, 1,262 convicts were reported as employed under contract during the year. (See Table 7.) Including these, there were 45,786 persons engaged in the industry during 1909.

The organization of a turpentine farm consists of a manager or superintendent, woods riders and woodsmen, a "still" and his helpers, and teamsters. The woodsmen's duties consist in cutting boxes, hanging cups, "chipping," "dipping," "raking," etc., and they work in squads consisting usually of from 10 to 20 men, under the supervision of a woods rider, who directs, inspects, and records the work done. Where establishments are owned by individuals or partners the owners generally manage the place and often do the woods riding.

While experiments have been made from time to time with foreign labor, the negro has proven, thus far, the most practicable workman for this industry. The arduous nature of the work precludes the employment of women and children to any extent.

The average number of wage earners for each state, for 1909, 1904, and 1899, is given in Table 26. The distribution of the average number by sex and age is not shown for the individual states, but Table 27 gives such a distribution of the number employed on December 15, or the nearest representative day. Female wage earners were reported for the representative day from only three of the eight states in which the industry is carried on, and more than four-fifths of the children reported for that day were in two states—Florida and Georgia.

In order to compare the distribution of persons engaged in the industry according to occupational status in 1909 with that in 1904, it is necessary to use the

classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 4.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.				
	1909		1904		Per cent of increase: 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
<b>Total</b> .....	44,524	100.0	37,526	100.0	18.6
Proprietors and firm members..	2,567	5.8	1,997	5.3	28.5
Salariat employees.....	2,446	5.5	2,147	5.7	13.9
Wage earners (average number)..	39,511	88.7	33,382	89.0	18.4

Proprietors and firm members show the greatest percentage of increase for the five-year period (28.6). The percentage of increase shown for wage earners (18.4), however, is somewhat below the true figure, owing to the fact that in 1904 some convicts were included among the wage earners, while in 1909 all such laborers were reported separately.

Table 5 shows the average number of wage earners distributed according to age, and in the case of those

16 years of age and over according to sex, for 1909, 1904, and 1899.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY.					
	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
<b>Total</b> .....	39,511	100.0	33,382	100.0	41,864	100.0
16 years of age and over.....	38,918	98.5	33,253	99.6	41,548	99.2
Male.....	38,861	98.4	33,237	99.6	41,375	98.8
Female.....	57	0.1	16	( <sup>1</sup> )	173	0.4
Under 16 years of age.....	593	1.5	129	0.4	316	0.8

<sup>1</sup> Less than one-tenth of 1 per cent.

Wage earners employed, by months.—Table 6 gives the number of wage earners employed on the 15th (or the nearest representative day) of each month during the year 1909 for the five states in which an average of 500 or more wage earners were employed during the year.

STATE.	WAGE EARNERS EMPLOYED IN THE INDUSTRY: 1909												
	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
<b>United States</b> .....	39,511	37,112	37,340	38,489	39,974	40,378	40,555	40,634	40,583	40,378	39,749	39,597	39,343
Alabama.....	3,519	2,831	2,951	3,215	3,032	3,793	3,860	3,840	3,841	3,775	3,733	3,505	3,198
Florida.....	18,143	17,615	17,650	17,722	18,130	18,280	18,355	18,456	18,398	18,370	18,168	18,265	18,337
Georgia.....	12,787	12,288	12,424	12,660	12,943	13,016	13,012	13,000	12,999	12,922	12,766	12,721	12,694
Louisiana.....	1,038	1,407	1,409	1,714	1,771	1,741	1,757	1,814	1,821	1,821	1,651	1,700	1,647
Mississippi.....	2,573	2,447	2,418	2,507	2,625	2,663	2,656	2,608	2,597	2,572	2,586	2,600	2,607

NOTE.—The month of maximum employment for each state is shown by boldface figures and that of minimum employment by italic figures.

The number of employees required by an establishment in the turpentine and rosin industry averages about the same throughout the year, the work being distributed as follows: Cutting boxes or hanging cups in the winter months, chipping and dipping in the spring and summer, and scraping and raking in the fall. This fact is reflected in the decided uniformity in the numbers shown in Table 6 for the several months of the year. In the industry as a whole the largest number of wage earners employed during any month of 1909 was 40,634 in July and the smallest 37,112 in January, the minimum number forming 91.3 per cent of the maximum.

Convict labor.—In two states convict labor was employed in 1909 under contract in the production of turpentine and rosin. Table 7 shows the average number of convicts employed in 1909 and their cost to the operator, including hire and keep.

	Total.	Alabama.	Florida.
Average number of convicts employed.....	1,262	181	1,081
Total paid for convicts, including expense of their keep.....	\$656,822	\$78,126	\$578,696

At previous censuses convicts were included to some extent with other employees, but at the census of 1909

they were reported separately and the amount paid the state under the contracts for their labor and also the expenses of their maintenance were included with "miscellaneous expenses," under the heading of "contract work."

Prevailing hours of labor.—In the census statistics of manufactures wage earners are classified according to the prevailing hours of labor per week, reported on the schedules as the hours normally worked by wage earners in the establishments in which they were employed. In making this classification, as explained in the Introduction, all the wage earners in a given establishment are classified as a group according to the hours prevailing in that establishment, even though some of the employees may have worked a greater or smaller number of hours; in other words, no attempt has been made to take account of variations in hours within the same establishment. For most industries, however, the result is believed to indicate the number of hours actually worked by the great mass of employees, but in the turpentine and rosin industry, where the piece-work system of wage payments is in very general use and the woodsmen usually work irregular hours, the classification on this basis is probably of doubtful significance. The tabulation has nevertheless been made and the results are presented in Table 8.

**Table 8**  
AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY: 1909

STATE.	In establishments with prevailing hours—							
	Total.	48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
United States.....	39,511	14,786	2,647	1,022	280	19,607	897	172
Alabama.....	3,519	1,243	187	248	24	1,393	359	65
Florida.....	18,143	8,344	1,983	635	147	6,859	149	26
Georgia.....	12,787	2,764	428	139	109	9,032	241	74
Louisiana.....	1,088	262	.....	.....	.....	1,277	149	.....
Mississippi.....	2,573	1,830	24	.....	.....	621	98	.....

Character of ownership.—Table 9 presents data with respect to the character of ownership of the establishments engaged in this industry.

Of the total number of establishments reported for the industry in 1909, 49.8 per cent were operated by firms, as compared with 48.2 per cent in 1904. The value of the products of such establishments represented 48.2 per cent of the total in 1909 and

52.2 per cent in 1904. Of the total number of wage earners in 1909, 27.9 per cent were employed in establishments operated by individuals, 49 per cent in those operated by firms, and 23.1 per cent in those owned by corporations.

**Table 9**

CHARACTER OF OWNERSHIP.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	1,585	1,287	\$25,295,017	\$23,937,024
Individual.....	599	535	6,966,127	7,777,752
Firm.....	790	620	12,184,834	12,498,683
Corporation.....	196	132	6,144,056	3,660,589
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	37.8	41.6	27.5	32.5
Firm.....	49.8	48.2	48.2	52.2
Corporation.....	12.4	10.3	24.3	15.3

<sup>1</sup> Includes two establishments under "Other" forms of ownership, to avoid the disclosure of individual operations.

Table 10 gives statistics for establishments classified according to form of ownership for each state in which an average of more than 500 wage earners were employed in 1909.

**Table 10**

STATE.	NUMBER OF ESTABLISHMENTS OWNED BY—			WAGE EARNERS IN ESTABLISHMENTS OWNED BY—			VALUE OF PRODUCTS OF ESTABLISHMENTS OWNED BY—			VALUE ADDED BY MANUFACTURE IN ESTABLISHMENTS OWNED BY—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	599	790	196	11,022	19,359	9,130	\$6,966,127	\$12,184,834	\$6,144,056	\$5,421,756	\$9,913,443	\$5,048,880
Alabama.....	72	78	25	1,073	1,633	763	727,984	1,193,848	550,167	565,496	965,591	454,820
Florida.....	161	342	90	4,255	9,892	3,996	2,657,523	6,451,526	2,828,469	2,218,034	5,364,630	2,385,783
Georgia.....	261	306	25	5,092	6,973	722	2,792,941	3,764,182	381,834	2,273,014	3,099,271	307,029
Louisiana.....	3	8	12	64	209	1,415	26,947	146,427	1,000,474	22,347	124,639	808,243
Mississippi.....	15	22	27	242	338	1,943	159,349	251,589	1,063,691	118,976	197,304	809,180

Considerable variation appears in the relative importance of the establishments operated by individuals, firms, and corporations, respectively, in the different states. Thus in Alabama, Florida, and Georgia firm ownership predominated, more than 50 per cent of both the average number of wage earners and the value of products being reported by firms in the two states last mentioned. In Mississippi and Louisiana, where the industry is of more recent development, establishments operated by corporations gave employment to 75.5 per cent and 83.8 per cent, respectively, of the wage earners and reported 72.1 per cent and 85.2 per cent, respectively, of the value of products. In North Carolina and South Carolina, the states where the industry had its beginning, establishments owned by individuals still constituted the most important class in 1909. In North Carolina they formed 70.9 per cent of all establishments in the industry, employed 66.9 per cent of the wage earners, and reported 63.1 per cent of the total value of products. The corresponding percentages for South Carolina were 55.4, 45.8, and 43.3, respectively.

Establishments classified according to size.—Table 11 presents statistics for 1909 and 1904 for establish-

ments in the industry classified according to the value of their products.

**Table 11**

VALUE OF PRODUCTS PER ESTABLISHMENT.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	1,585	1,287	\$25,295,017	\$23,937,024
Less than \$5,000.....	249	143	775,812	424,039
\$5,000 and less than \$20,000.....	971	684	11,216,577	8,582,532
\$20,000 and less than \$100,000.....	355	453	11,818,484	14,029,269
\$100,000 and over.....	10	7	1,684,144	901,184
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	15.7	11.1	3.1	1.8
\$5,000 and less than \$20,000.....	61.3	53.1	44.3	35.9
\$20,000 and less than \$100,000.....	22.4	35.2	45.9	58.6
\$100,000 and over.....	0.6	0.5	6.7	3.8

The table shows a considerable increase in the relative importance of establishments having products valued at \$5,000 but less than \$20,000, and a slight increase in the relative importance of the smallest establishments—those with products valued at less than \$5,000—and of the largest establishments—those which had products valued at \$100,000 or over. The proportion of the smaller establishments—those with products valued at less than \$20,000—was much larger in North Carolina and South Carolina than in the other states.

In some respects, and especially from the standpoint of conditions under which persons engaged in manufacturing work, the best classification of establishments to bring out the feature of size is a classification according to the number of wage earners employed. Table 12 gives such a classification of the establishments in each state for which more than 500 wage earners were reported at the census of 1909.

Of the 1,585 establishments reported, only 19, or 1.2 per cent, employed no wage earners. The largest number of establishments comprised in any group was

that of establishments employing from 6 to 20 wage earners (655, or 41.3 per cent of the total), and the next largest, that of establishments employing from 21 to 50 wage earners (603, or 38 per cent of the total number). Only 1 establishment employed over 500 wage earners, the number reported for this being 655.

Of the total number of wage earners reported, 19,245, or 48.7 per cent, were in establishments employing from 21 to 50, and 9,430, or 23.9 per cent of the total, were in establishments employing from 6 to 20.

STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING IN 1909—															
			No wage earners.		1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.	
	Es-tab-lish-ments.	Wage earners (average number)	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.
United States.....	1,585	39,511	19	194	468	655	9,430	603	19,245	88	5,673	23	3,487	2	553	1	655	
Alabama.....	175	3,510	2	20	92	81	1,147	57	1,824	5	306	1	150					
Florida.....	593	18,143	10	18	67	198	3,047	208	9,044	57	3,003	12	1,782					
Georgia.....	592	12,787	2	35	134	319	4,515	214	6,620	21	1,414	1	104					
Louisiana.....	23	1,688				7	108	9	371	1	86	5	823	1	300			
Mississippi.....	64	2,573	2	9	13	27	375	18	501	3	164	3	522	1	253	1	63	

**Expenses.**—As stated in the Introduction, the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of depreciation, and consequently can not properly be used for determining profits. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total expenses in 1909 to have been \$19,032,630, divided as follows: Wages, \$9,363,359, or 49.2 per cent; salaries, \$1,655,391, or 8.7 per cent; materials, \$4,910,838, or 25.8 per cent; and miscellaneous expenses, which include the cost of advertising, ordinary repairs of buildings and machinery, and insurance, traveling expenses, and other sundry expenses, \$3,103,042, or 16.3 per cent. As shown by Table 27, decided differences in the proportions of the several classes of expenses appear among the states. These differences are due chiefly to the fact (already mentioned) that in some states the cost of extracting gum from the trees was quite uniformly reported under the items of wages, salaries, and miscellaneous expenses, while in other states many establishments included the cost of extraction under cost of materials or bought the gum from others.

**Engines and power.**—The amount of power used in the turpentine and rosin industry was first reported at the census of 1899. Table 13 shows the number of engines or other motors, according to their character, employed in generating power, and their total horsepower, as reported at the censuses of 1909, 1904, and 1899.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	1,214	176	116	4,120	1,175	866	100.0	100.0	100.0
Owned.....	1,214	176	116	4,122	1,175	866	99.8	100.0	100.0
Steam.....	1,152	175	110	3,864	1,128	706	93.0	96.0	81.5
Gas.....	58			231			5.6		
Water wheels..	3	1		11	3		0.3	0.3	
Water motors..	1		(1)	3		(1)	0.1		
Other.....				13	44	100	0.3	3.7	18.5
Rented (other than electric).....				7			0.2		

<sup>1</sup> Not reported.

This table indicates that the total primary power increased 2,954 horsepower, or 251.4 per cent, from 1904 to 1909, and 309 horsepower, or 35.7 per cent, from 1899 to 1904. Little power is required by this industry, many establishments reporting no mechanical power at all; and where power is employed, a small plant, consisting of a boiler and a steam pump, used in forcing water from a well, stream, or lake to the tank of the still, often provides all that is necessary for the operation of the plant. No electric motors were reported.

Table 14 shows, for 1909, the amount of each of the several kinds of power and of the different kinds of fuel used in the five leading states.

The states in which the largest amount of power was used were Florida and Georgia, which together reported 80.5 per cent of the total for the industry.

Table 14

STATE.	PRIMARY HORSEPOWER: 1909							FUEL USED: 1909				
	Number of establishments reporting.	Total horsepower.	Owned by establishments reporting.					Rented (other than electric).	Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.					
United States.....	1,134	4,129	4,122	3,884	231	14	13	7	515	134,366	521	10,050
Alabama.....	69	384	384	375	4	5	.....	.....	225	16,310	3	.....
Florida.....	508	1,016	1,913	1,787	108	5	13	3	260	59,854	237	.....
Georgia.....	495	1,407	1,407	1,333	65	4	.....	.....	40	39,255	68	50
Louisiana.....	18	105	105	105	.....	.....	.....	.....	.....	4,852	.....	.....
Mississippi.....	38	286	286	236	50	.....	.....	.....	.....	7,035	200	10,000
All other states.....	6	31	27	23	4	.....	.....	4	.....	7,060	13	.....

Fuel consumed.—The principal fuel employed is wood, which is used chiefly in heating the furnace of the still. The quantity reported for 1909 was 134,366 cords, but this amount does not represent all of the wood consumed as fuel, since large quantities were undoubtedly used of which no record was kept. The

value of the wood used is not included in the expenditure for fuel and rent of power, which is shown in Table 27, as it was for the most part cut from land owned or leased by the establishment and no cost was involved, apart from the cutting and hauling, which were done by the regular wage earners.

SPECIAL DATA AS TO PRODUCTS, METHODS OF PRODUCTION, ETC.

Products.—The special schedule used in collecting statistics for the turpentine and rosin industry required a detailed statement of the quantity of crude gum distilled and the quantity and value of the turpentine and rosin produced, and also data in regard

to the timber land controlled and the number of crops worked.

Table 15 shows, by states, for 1909, 1904, and 1899, the quantity and value of the spirits of turpentine and rosin produced and the value of all other products.

TURPENTINE AND ROSIN—PRODUCTS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Total value.	SPIRITS OF TURPENTINE.		ROSIN.		Dross and all other products, value.
			Quantity (gallons).	Value.	Quantity (barrels of 280 pounds).	Value.	
United States.....	1909	\$25,295,017	28,988,954	\$12,654,228	3,263,857	\$12,576,721	\$64,068
	1904	23,937,024	30,687,051	15,170,499	3,508,347	8,725,619	40,906
	1899	20,344,888	37,733,500	14,960,235	4,348,594	5,129,268	255,385
Alabama.....	1909	2,471,999	2,840,242	1,253,737	309,763	1,214,054	4,203
	1904	2,434,305	3,108,118	1,501,563	360,469	930,053	2,749
	1899	2,033,705	3,703,900	1,460,582	416,293	490,882	82,241
Florida.....	1909	11,937,518	13,809,785	5,847,478	1,555,749	6,057,524	32,516
	1904	9,901,905	12,872,889	6,425,826	1,445,902	3,447,418	28,661
	1899	6,469,605	11,838,900	4,800,033	1,310,554	1,639,472	30,100
Georgia.....	1909	6,938,057	8,056,752	3,555,965	904,103	3,371,676	10,316
	1904	7,703,643	9,542,316	4,795,331	1,104,968	2,901,583	8,729
	1899	3,110,468	15,289,550	6,024,064	1,612,594	2,055,550	30,864
Louisiana.....	1909	1,173,848	1,231,254	592,641	139,486	573,306	7,901
	1904	211,820	245,300	124,005	30,023	87,715	100
	1899	115,324	215,200	85,415	23,843	27,319	2,590
Mississippi.....	1909	1,474,629	1,588,786	732,334	192,508	739,799	2,496
	1904	2,355,720	3,160,371	1,473,580	362,835	892,028	162
	1899	1,772,435	3,213,350	1,233,934	409,809	461,165	57,336
North Carolina.....	1909	673,954	781,197	369,587	83,070	304,232	135
	1904	743,421	993,665	430,198	116,314	283,073	150
	1899	1,053,695	1,994,150	772,772	371,347	271,352	11,571
South Carolina.....	1909	406,288	460,186	205,517	51,401	199,273	1,496
	1904	574,150	784,412	370,046	87,836	203,749	355
	1899	787,656	1,478,450	503,445	203,593	183,528	40,683
Texas.....	1909	217,826	220,752	95,969	27,777	116,857	5,000
	1904	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....

<sup>1</sup>In addition, 682,702 gallons of turpentine, valued at \$243,491, was produced by the process of wood distillation. (See census report on "Forest Products of the United States," 1909.)

The production of turpentine and rosin was reported for seven states in 1899 and 1904 and for eight in 1909, Texas being the added state. At the censuses of 1904 and 1909 Florida was the leading

state in the industry; the output of this state in 1909 was valued at \$11,937,518, or 47.2 per cent of the total value reported for the United States. The state next in rank, on the basis of value of products, was

Georgia, followed by Alabama, Mississippi, Louisiana, North Carolina, South Carolina, and Texas, in the order named.

The total quantity of spirits of turpentine reported in 1909 was 23.2 per cent less than that reported in 1899, and its value 15.4 per cent less. The quantity of rosin reported shows a corresponding decrease of 24.9 per cent, but its value, owing to a marked increase in the price, shows an increase of 145.2 per cent for the decade. The average value of turpentine in 1899 was \$0.396 per gallon; in 1904, \$0.494; and in 1909, \$0.437. The average value of rosin per barrel of 280 pounds gross, as computed from the totals reported, was \$1.18 in 1899, \$2.49 in 1904, and \$3.85 in 1909. The decrease in production throughout the decade was shared by all of the states for which figures are shown in Table 15, except Florida and Louisiana.

The marked decrease in the production of turpentine and rosin in North Carolina and South Carolina during the decade 1899-1909 was the result of the gradual extermination of the pine forests. The few small tracts of pine remaining in those states are for the most part owned by farmers, who box the trees and sell the crude gum to distilleries or to dealers, or else have it distilled on a toll basis.

The decreases in Georgia, which were much more important in point of absolute amount than those in the Carolinas, are also attributable to the working out of the timber. The industry in this state is conducted principally by small operators, many of whom take up new land in the Gulf states as their timber becomes exhausted, or else clear their land and devote their energies to farming or other pursuits.

The increase in production in Florida is the result of the development of new territory, especially in the western part of the state. Florida will probably remain the leading state in this industry for a considerable period, if not indefinitely, for its whole area, with the exception of a small belt in the southern part of the peninsula, is peculiarly adapted to the growth of the resinous pine. The extension of transportation facilities during the past few years has put great tracts of pine forest within easy reach of the markets. The timber is larger and the growth denser in the western than in the eastern and southern sections of the state. While the small operator predominates in Florida, there were 12 establishments in the state in 1909 which gave employment to an average of over 100 wage earners, as shown by Table 12.

Alabama shows for the decade a decrease of about one-fourth in the production both of turpentine and of rosin. The turpentine section of this state has been pretty thoroughly worked, as the industry was of considerable importance there as early as 1860, but much valuable timber still remains in the hands of a few large lumber mill owners and holding companies, who are inclined to restrict their operations when prices are low or other conditions unfavorable.

Mississippi shows a production for 1909 only about half that of 1904, this decline being due largely to two severe storms which swept the timbered section of the state in 1906 and 1909, respectively, doing inestimable damage and forcing many concerns out of business. As transportation facilities have been extended, about half of the available timber in Mississippi has been worked. Most of the remainder has passed, as in Alabama, into the possession of a few lumber mill owners, who work their holdings or not according to market conditions.

Though Louisiana ranked only fifth among the states in the industry in 1909, it has developed very rapidly, particularly during the 10-year period 1899-1909, the increase in the production of turpentine amounting to 472.1 per cent and in that of rosin to 486.3 per cent. The vast forests of longleaf pine in western Louisiana and eastern Texas have never been worked for turpentine until within the last few years. They are controlled principally by large mill owners, who have refused to allow the timber to be boxed, but since the introduction of the cup system many of these owners have either engaged in the turpentine industry themselves or have leased their timber to others.

In 1910 the Bureau of the Census, in response to a demand from certain quarters, instituted what was intended to be an annual census of the production of turpentine and rosin, but the investigations were not continued after that year. The data were collected from naval-stores "factors," who are the middle men between the producers and the buyers, from jobbers, and from a few manufacturers who sell their products direct to the consumers. The difference between this method of collecting the data and that used at the decennial census, when all individual producers were canvassed, possibly renders the statistics for 1910 not wholly comparable with those for 1909. Table 16 gives the statistics for 1910, by states.

STATE.	PRODUCTION: 1910			
	Turpentine.		Rosin.	
	Quantity (gallons).	Value.	Quantity (barrels of 280 pounds).	Value.
United States.....	27,735,700	\$17,080,205	3,404,146	\$18,254,637
Alabama.....	2,350,700	1,514,958	308,805	1,075,498
Florida.....	14,884,500	9,453,632	1,819,313	9,714,240
Georgia.....	6,979,800	4,509,089	868,790	4,636,797
Louisiana and Texas.....	948,500	582,236	82,496	456,315
Mississippi.....	1,738,150	1,088,337	211,675	1,195,850
North Carolina.....	427,050	272,228	53,611	262,598
South Carolina.....	409,000	259,725	59,450	312,431

**Equipment and methods of operation.**—The manufacture of turpentine and rosin is generally conducted on what is called a "turpentine farm." The farm consists principally of a tract of timber land, in many cases leased by the operator for the turpentine privileges, and is equipped with a still, cooper shop, tools, dip barrels, draft animals, houses and shanties for the

use of employees, etc. The equipment of a farm, exclusive of land or leases, costs from \$5,000 up, the average value being about \$10,000.

There are two chief systems of extracting gum from the trees, called the "box system" and the "cup system." The first step in the gathering of the gum by the box system is the cutting of a box or cavity into the base of the tree by means of an axe, to receive the liquid gum, which is called "dip." The box is usually from 6 to 12 inches wide, about 7 inches deep, and about  $3\frac{1}{2}$  inches from front to back; the number cut into a tree varies from one to four, according to the size of the tree. Box cutting usually begins in December and January and lasts until March. This operation is followed by "chipping," which is the wounding or scarifying of the trunk of the tree directly above the box, a strip of bark and sapwood about three-fourths of an inch wide and from one-half to one inch deep being removed from the tree. This work is accomplished by means of a "hack," a specially constructed tool consisting of a sharp steel blade made in the form of the letter U and attached to a stout wooden handle. The first chipping takes place on the upper edge of the wound made by cutting and "cornering" the box. The stroke with the hack is made from either side diagonally downward, terminating in the center and immediately above the box. An exposed surface the width of the box is thus created, which is termed a "face." Chipping begins in March and April and continues at regular intervals for about 32 weeks. The gathering of the gum, the flow of which is continuous throughout the chipping season, begins shortly after the first wound is made and is continued at intervals of two or three weeks. The dip is transferred from the box by means of a flat, trowel-shaped instrument called a "dipper" into buckets and from the buckets into dip barrels placed at convenient intervals in the forest, which when filled are hauled to the still. A season's chipping extends the face of the tree upward a distance of about 24 inches. After a tree has been worked about three seasons the face extends so far up the tree that it becomes necessary to use a "puller," which is an instrument similar to the hack except that it has a long handle.

In flowing to the box a certain proportion of the crude resin coagulates on the face of the tree. This residue, which is called "scrape," is allowed to form undisturbed until toward the end of the season, when the flow of the gum has practically ceased. It is then scraped off and caught in a box placed at the base of the tree, and from that transferred to the still in the same manner as dip.

The "cup system" of gathering the gum differs from the "box system" principally in the kind of receptacle used for collecting the crude gum, a clay or metal cup being substituted for the box cut into the tree itself.

There are two kinds of cup systems in use, one being styled the "cup and gutter system" and the other the "cup and apron system." The fundamental principle of the two is the same, the points of difference consisting in the shape of the cup, the manner of adjusting it to the tree, and the equipment used in directing the gum to the cup. The chipping of the tree begins above the location of the cup and continues upward in the same manner as when the box is used. Either metal gutters or aprons, according to the system used, are inserted into the face of the tree in such a way as to direct the exuded gum into the receptacle. The cup is easily detached from the tree, and its contents emptied into a bucket, the gum being scraped from the bottom and sides of the cup by means of a small paddle.

At the close of the producing season the ground in the woods is carefully burned over in order to destroy the undergrowth, grass, and waste accumulation of the forests. This is done as a precautionary measure against fire. Before the burning takes place all resinous and other trash is cleared away from around the trees for a distance of about 3 feet in order to protect them from the fire, this process being known as "raking."

The gathering of the crude gum is followed by its distillation. The still is a large copper kettle, incased in a brick jacket, and provided with a removable goose-neck cap. Beneath the copper still is a grate, which is large enough to accommodate four-foot wood. In a "charge," which requires from three to five hours for its distillation, the still usually contains from five to eight barrels of dip or scrape. As the still is heated and the vapors pass off, water is added to facilitate the evaporation of the spirits of turpentine and to prevent burning. The mixed vapors of spirits of turpentine and water pass off through the gooseneck into a copper worm surrounded by water, the condensed liquid flowing into a barrel where the water and turpentine separate by gravity. The spirits of turpentine is then transferred into tight white-oak barrels or "casks" of about 50 gallons' capacity, and is ready for shipment. The residue in the kettle after the turpentine has been distilled off is rosin, which, while molten, is drawn from a tap at the lower edge of the kettle into a vat sunk into the ground near the still. In its course from the kettle to the vat it passes through three copper mesh strainers of different degrees of fineness, the last of which is covered with a thin layer of cotton batting. The material accumulated in this cotton batting is called "batting dross." This dross was formerly treated as a waste, being generally burned at the still, but within the last few years there has developed some demand for it for use in certain lines of manufacture. The rosin while hot is ladled from the vat into rough pine barrels, in which it is marketed. These are termed "round" barrels and weigh approximately 510 pounds gross, the weight of the barrel itself being about

90 pounds. Sales are made on this basis, but calculations and settlements are based on the "commercial" barrel, which weighs 280 pounds gross. The statistics of this report deal with the commercial barrel. The amount of rosin obtained per barrel of spirits of turpentine averages from three to three and one-half round barrels, or from five and one-quarter to six commercial barrels.

A tree, as a rule, is worked four years, the boxes of the first season's working being generally referred to as "virgin boxes," those of the second year as "yearling boxes," and those of the fourth or fifth year as "old boxes." After timber has been worked for four, or sometimes five, years it is allowed to "rest" for several years—generally about four—during which time the wounds heal and its vitality is restored so that it is in condition to furnish another yield of gum. Then new boxes are cut (this second working of the tree being termed "back boxing"), and chipping proceeds in the same manner as in the first instance. Such timber is worked the same number of seasons and produces about the same grade of products as "round" timber, or that which is being worked for the first time. Much timber is cut at the end of the first period of operation, the owners estimating its lumber value at this time to be greater than its value for the future production of turpentine.

**Crude gum distilled.**—The quantity of crude gum distilled in 1909 is shown in Table 17. The quantity is expressed in barrels, but there was a very wide variation in the size of the barrels and it was found impracticable to reduce them to a common standard or an average size. Except for Florida, where barrels for dip and those for scrape were uniformly reported as of a capacity of 500 and 300 pounds, respectively, there was no uniformity in the capacity of barrels of either kind, the dip barrels ranging from 280 to 600 pounds and the scrape barrels from 200 to 400 pounds.

STATE.	Number of establishments.	CRUDE GUM DISTILLED: 1909		Dip and scrape purchased (barrels). <sup>1</sup>
		Dip (barrels).	Scrape (barrels).	
United States .....	1,585	2,376,803	1,099,789	180,119
Alabama.....	175	236,279	121,286	13,324
Florida.....	593	1,112,195	613,924	2,014
Georgia.....	592	658,736	295,225	13,608
Louisiana.....	23	90,224	43,164	.....
Mississippi.....	64	127,102	62,253	6,609
North Carolina.....	79	101,188	36,237	122,631
South Carolina.....	56	37,479	21,900	21,273
Texas.....	3	15,700	5,800	.....

<sup>1</sup> Included in the totals for crude gum distilled.

The character of crude gum varies according to the age of the box or cut from which it is gathered, or, as it is termed, the age of the crop. The gum obtained the first season after the box is cut or the cup set (from what is termed a virgin crop) produces the largest quantities of turpentine and rosin and the better grades of rosin. This is due to the close proximity of the freshly cut resin ducts to the box or cup, there being less chance for the gum to drip over the edge of the box or to accumulate extraneous matter or evaporate in flowing to the box. With every new cut made on the face of the tree the point of exudation becomes farther removed from the box, and as the distance which the gum must traverse to reach the box or cup becomes greater, increasing loss is sustained by evaporation, and impurities and coloring matter are absorbed to a greater extent. Thus there is each year a deterioration in the quality of the resin produced. The losses sustained by evaporation and discoloration have been minimized, although not eliminated, by the cup system, it being possible to move the cup up each year above the old face and set it immediately below the new season's chipping. Scrape, like dip, varies in value, although not to so great a degree, with the age of the crop. The yield in quantity, however, is greater in the succeeding years than in the first year.

Scrape contains approximately one-half as much spirits of turpentine and about twice as much rosin as does dip; it constitutes the basis of about one-fourth of the total products of the industry. Other conditions besides the age of the crop affect the quantity and the producing quality of the crude gum. Extremely hot weather during the chipping season, for instance, increases the loss by evaporation, especially on old faces. Loss by evaporation is also sustained when either dip or scrape is withheld from the still longer than necessary.

**Extent of turpentine operations.**—The unit of measure in turpentine operations is the "crop," which consists of 10,500 boxes or cups. Table 18 shows, by states, the total number and the age of the crops worked, the system used in working them, and the number worked in back-boxed timber. This table presents data for 1909 only, as comparative figures are not obtainable.

Of the 20,158 crops worked in 1909, 6,795, or 33.7 per cent, were in back-boxed timber. The largest percentage of back-boxed crops is shown for Georgia and the smallest percentage for Louisiana, while in Texas all of the crops were in round timber.

**Table 18**

	United States.	Ala-bama.	Florida.	Georgia.	Louis-iana.	Missis-sippi.	North Carolina.	South Carolina.	Texas.
Number of establishments.....	1,585	175	593	592	23	64	79	56	3
Number of crops worked, total.....	20,158	1,945	9,923	6,178	633	1,053	62	271	93
By box system.....	17,775	1,636	8,809	5,721	355	871	60	271	52
By cup system.....	2,383	309	1,114	457	278	182	2	.....	41
Virgin (1st year), total.....	3,860	468	1,700	1,146	206	271	6	42	21
By box system.....	3,058	337	1,374	1,026	90	181	6	42	2
By cup system.....	802	131	326	120	116	90	.....	.....	19
Yearling (2d year), total.....	4,327	504	1,900	1,283	212	301	16	41	04
By box system.....	3,666	420	1,593	1,182	113	252	15	41	50
By cup system.....	661	84	313	101	99	49	1	.....	14
Third year, total.....	4,977	494	2,275	1,621	160	328	4	91	4
By box system.....	4,449	423	2,065	1,482	97	288	3	91	.....
By cup system.....	528	71	210	139	63	40	1	.....	4
Fourth year and older, total.....	6,994	479	4,042	2,128	55	153	36	97	4
By box system.....	6,602	456	3,777	2,031	55	150	36	97	.....
By cup system.....	392	23	265	97	.....	3	.....	.....	4
In round timber, total.....	13,363	1,667	8,435	1,451	617	995	19	76	93
By box system.....	11,791	1,407	7,708	1,361	339	831	17	76	52
By cup system.....	1,572	260	727	100	278	164	2	.....	41
In back-boxed timber, total.....	6,795	278	1,488	4,717	16	58	43	195	.....
By box system.....	5,984	229	1,101	4,399	16	40	43	195	.....
By cup system.....	811	49	387	357	.....	18	.....	.....	.....

**Comparison of box and cup systems.**—The cup system came into use in 1904 after its practicability had been demonstrated by the Forest Service of the United States Department of Agriculture. Its chief advantages over the box system are that it causes less damage to the vitality and stability of the tree and secures a greater yield and a better quality of crude gum. Owing, however, to its comparatively recent introduction, the cost of its installation, and the fact that the manufacturers of cups lack facilities to supply the rapidly developing demand, the use of the cup has not as yet become general. The cups for a "crop" cost approximately \$500 delivered at the plant, and the operation of the system costs a little more than that of the box system. Operators upon leased land, however, have been able to obtain decided concessions from the owners, conditional upon their using cups, and much timber has been utilized for turpentine operations which would have been withheld if it had been necessary to work it by boxes. The indications are that, in time, the use of the cup system will be almost universal. Table 19 shows, for each state, the number and percentage of crops worked by the box and the cup systems, respectively, in 1909.

Of the total number of crops reported, 11.8 per cent were worked by the cup system. The percentage of crops worked by this system was largest in Texas and Louisiana. New territory is being developed in these states, and it is natural to find a tendency to use improved methods. Only two crops worked by the cup system were reported for North Carolina and none for South Carolina.

**Timber land controlled by turpentine operators.**—The forests of the South have been rapidly depleted during the past 50 years through turpentine operations and saw milling. Pine forests were so abundant in the early days that no care was taken for their preservation, and trees were worked for turpentine in such a careless manner as to sap their vitality and leave them a prey to disease, fire, and storm. The Carolinas have been stripped almost bare of pine, the forests of Georgia have been greatly depleted, and deep inroads have been made in those of Florida, Alabama, and Mississippi. In Louisiana and Texas, however, the forests have not suffered the unwarranted damage wrought in the other states.

The value of timber land has greatly increased during the past 15 or 20 years. Land that formerly brought from 50 cents to \$3 per acre now sells at from \$5 to \$50 per acre, the average price for the entire turpentine section being from \$10 to \$15 per acre. Leases covering a period of from 3 to 5 years that could formerly be obtained at from \$75 to \$300 per crop now bring from \$500 to \$1,500, the average rate per crop being from \$750 to \$1,000.

Table 20 shows the acreage of land reported as held by active turpentine operators on December 31, 1909. As the census inquiry was confined to the collection of statistics from manufacturers, no data were obtained from companies or individuals who controlled timber

**Table 19**

STATE.	CROPS WORKED: 1909				
	Total.	By box system.		By cup system.	
		Number.	Per cent.	Number.	Per cent.
United States.....	20,158	17,775	88.2	2,383	11.8
Alabama.....	1,945	1,636	84.1	309	15.9
Florida.....	9,923	8,809	88.8	1,114	11.2
Georgia.....	6,178	5,721	92.6	457	7.4
Louisiana.....	633	355	56.1	278	43.9
Mississippi.....	1,053	871	82.7	182	17.3
North Carolina.....	62	60	96.8	2	3.2
South Carolina.....	271	271	100.0	.....	.....
Texas.....	93	52	55.9	41	44.1

land but who were not engaged in the manufacture of turpentine and rosin in 1909.

The table shows that turpentine operators controlled 8,056,915 acres of timber land. More than one-half of this acreage was in Florida, while North Carolina reported a smaller amount than any other state. It was estimated by the establishments reporting that this land would afford in the future 13,632 virgin crops—7,070 in round timber and 6,562 in back-boxed timber. In order to arrive at an estimate of the total number of crops in workable timber controlled by turpentine operators on January 1, 1910, it is necessary to add to the number of virgin crops as given

above the crops already in course of operation on that date. As shown in Table 18, 20,158 crops were worked in 1909, of which 6,994 were fourth-year or older boxes. Assuming that these old crops would not be worked again, there would remain 13,164 crops which would be available for working in 1910. Thus the total number of crops under the control of turpentine operators on January 1, 1910, may be placed at 26,796, though of course not all of the virgin crops reported as available would be worked in 1910. The distribution of the total estimated number of crops is as follows: Virgin crops, 13,632; yearling, 3,860; third-year, 4,327; and fourth-year, 4,977.

Table 20

		TIMBER LAND HOLDINGS ON DEC. 31, 1909.										
STATE.	Number of establishments.	Total.		Owned.					Leased.			
		Acreage.	Number of virgin crops.	Acreage.	Number of virgin crops available (estimated).			Acreage.	Number of virgin crops available (estimated).			
					Total.	Round timber.	Timber that will be back-boxed.		Total.	Round timber.	Timber that will be back-boxed.	
United States .....	1,585	8,056,915	13,632	3,249,577	5,755	3,270	2,485	4,807,338	7,877	3,800	4,077	
Alabama .....	175	584,034	841	185,186	245	162	83	399,448	590	443	153	
Florida .....	593	4,094,025	8,581	2,227,047	4,446	2,562	1,884	2,467,578	4,135	2,255	1,880	
Georgia .....	592	2,148,719	2,948	556,097	555	175	380	1,592,622	2,393	445	1,948	
Louisiana .....	23	189,326	572	108,215	224	222	2	81,111	348	347	1	
Mississippi .....	64	268,837	415	93,450	112	100	12	175,387	303	256	47	
North Carolina .....	79	31,800	52	15,800	27	5	22	16,000	25	11	14	
South Carolina .....	56	102,712	191	63,782	146	44	102	38,930	45	11	34	
Texas .....	3	36,262	32					36,262	32	32		

The naval-stores "factor."—The "factor" is the middle man between the producer of turpentine and rosin and the distributor, and at the same time the confidential adviser and banker of the producer. He carries no stock and does not sell to the consumer, his sales being made either to the distributor or to the dealer, who, in turn, sells to the consumer. As a rule, the factor advances the funds and supplies for carrying on the season's operations, and when the products are ready to be marketed they are shipped to him. At several important ports there are storage yards for turpentine and rosin where, by an arrangement between the factors and the owners of the yards, all shipments are received, inspected, graded, and stored subject to the factor's order. Sales are made as business exigencies warrant, but, as a rule, the products are quickly disposed of.

Inspection and grading.—While there are minor differences in the local laws, practically the same rules and standards govern the inspection and grading of turpentine and rosin in all of the states. The most extensive naval-stores yards are located in Savannah, Ga., and Jacksonville and Fernandina, Fla. When turpentine or rosin is received at these yards, it passes into the hands of inspectors, who are sworn and bonded officials either of the state or of the city, and who are required to comply with certain specified state, municipal, and trade regulations.

Every barrel of spirits of turpentine or rosin is carefully examined, the weight and grade of its contents are branded upon the barrel, and sworn certificates as to the contents are made and furnished to the factor. Laws as to misbranding and adulterating turpentine and rosin are stringent. Turpentine is graded according to color and termed "waterwhite," "standard," "off one shade," "off two shades," and "off three shades," the last-named grade not being merchantable. There is a reduction of a few cents per gallon in the price of the off shades, as compared with the other grades. It is the custom, however, to add a small quantity of colored to standard turpentine in barrels which are not full, the revenue to the producer for his colored turpentine being thus slightly increased. Rosin is graded according to its color, the lighter shades constituting the higher grades. The standard grades are as follows: WW (waterwhite), WG (window glass), N (extra pale), M (pale), K (low pale), I (extra No. 1), H (No. 1), G (No. 1), F (good No. 2), E (low No. 2), D (good strained), and A, B, C, (common strained). The yard expenses, such as storage, insurance, repairs to defective barrels, etc., are borne by the producer. As turpentine and rosin are sold to distributors and other buyers to be taken at the yard, the transaction does not necessitate the immediate handling of the shipment, the ownership simply passing from one party to another. Some of the naval-stores

yards are equipped with immense steel storage tanks in which turpentine may be stored for any length of time for a specified sum per gallon; the number of gallons stored is certified to and owners may withdraw a part or the whole at any time.

**Method of establishing prices.**—The method of establishing prices for turpentine and rosin is described in the following article prepared by Thomas Purse, superintendent of the Savannah Board of Trade, and printed in the *Naval Stores Review* (Savannah, Ga.) for May 17, 1911.

For the past 28 years the Savannah Board of Trade, successor to the old Naval Stores Exchange, has had the duty imposed upon it of setting the prices on naval stores for the world. Prices on spirits of turpentine and all grades of rosin (12 in number) are made twice each day by this association (11 a. m. and 4 p. m., respectively). While the average man realizes in a vague way the importance of Savannah as a naval-stores market, few outside of those directly interested in naval stores realize that the Savannah Board of Trade sets the prices for the world. Savannah is the largest "open" market in this country. The quotations at all other markets are based on Savannah. The same thing applies to the markets in foreign countries where naval stores are quoted. The location of Savannah is therefore peculiar, and its importance in the industry is inestimable. The manner in which these quotations are arrived at is of some interest, even to those not in the trade. The prices are determined by the committee on quotations, the members of which consist of two factors and two exporters. This committee is appointed by the board of directors each 60 days. It is necessary that a majority, or three out of the four members of the committee, vote together before a quotation can be posted. In the event of a tie one factor and one exporter are added to the committee, and this procedure continues until a decision on the quotation has been reached.

Each factor advises the superintendent of the board of trade daily of the number of casks of spirits of turpentine sold, and the prices, and the number of barrels of each grade of rosin sold, and prices obtained therefor. This information is then consolidated by the superintendent and posted on the boards of the exchange. The committee on quotations then make up their quotations for the day, basing same upon actual transactions reported.

Four tones are used to indicate the state of the market—"firm," when everything is sold or there is a demand sufficient to absorb the offerings; "steady," when only a portion of the receipts have been sold and some remain undisposed of in the factors' hands; and "quiet" or "dull" when there is little or no demand and all or the larger part of the receipts remain in first hands. When there are no

sales of turpentine or rosin for two days, the receipts remaining in the factors' hands awaiting a purchaser, it is customary to describe the market condition by the use of the words "nothing doing," with a statement as to the date of last sales and the prices then paid. This remains upon the quotation board until actual transactions are reported on which to base new quotations. Sales between buyers are not considered in making quotations, but only those between factors and buyers.

**Open and closed ports.**—Savannah, Ga., and Jacksonville, Fla., are known as open ports, the presence of buyers of turpentine and rosin at these ports creating competition and thus influencing prices. In Jacksonville receipts are disposed of by sealed bids received by the factors. The cities of Brunswick, Ga., Pensacola, Fla., Mobile, Ala., and Gulfport, Miss., are known as closed ports, as no competition exists at these ports. The daily receipts of the factors at these ports are bought under contract, the prices being based upon the average closing quotations of the Savannah market. That is, if more than one quotation prevails in Savannah, the producer receives a price midway between the highest and the lowest. For instance, if turpentine is being quoted at from 50 to 53 cents, the producer who ships turpentine to these ports receives on that particular day 51½ cents per gallon. While Fernandina is a closed port, there being only one buyer located there, its receipts are not taken by contract daily, as in the other closed ports mentioned, but by agreement. When a large buyer comes to the Jacksonville market and is successful in buying at his bid there, he takes the Fernandina receipts also on the same terms. In New Orleans, although some competition exists, most of the receipts are taken under daily contract. In Charleston and Wilmington the receipts are small and are disposed of according to private agreement between the buyers and the sellers.

Table 21 shows the range of prices of spirits of turpentine and of the five most important grades of rosin during the 11 years 1899-1909. These statistics were compiled from the records of the Savannah Board of Trade.

YEAR. <sup>1</sup>	Spirits of turpentine—price per gallon (cents).		ROSIN—PRICE OF SPECIFIED GRADE PER BARREL OF 280 POUNDS.									
	High.	Low.	WW		WG		K		F		D	
			High.	Low.	High.	Low.	High.	Low.	High.	Low.	High.	Low.
1899-1910.....	60½	35½	\$7.30	\$5.00	\$7.05	\$4.90	\$5.95	\$4.75	\$4.82	\$3.40	\$4.42	\$2.85
1905-1909.....	50½	35	6.55	5.70	6.50	5.60	5.75	4.20	3.70	2.60	3.50	2.32
1907-1908.....	80	40	6.85	5.40	6.50	5.30	5.80	4.45	4.90	2.77	4.57	2.67
1906-1907.....	74½	56½	7.25	4.50	6.75	4.40	5.50	4.10	4.50	3.70	4.35	3.60
1905-1906.....	79	53	6.20	4.00	6.10	3.85	5.20	3.50	4.75	2.75	4.10	2.60
1904-1905.....	57	46½	5.15	3.75	5.00	3.50	4.05	3.10	3.00	2.55	2.90	2.50
1903-1904.....	65	45	4.75	4.30	4.40	3.10	4.15	2.80	2.90	1.65	2.80	1.55
1902-1903.....	65	42	4.25	3.50	3.85	3.25	3.20	2.40	2.10	1.20	2.05	1.10
1901-1902.....	53	31	3.95	2.25	3.70	2.00	2.45	1.65	1.50	1.10	1.40	1.00
1900-1901.....	53½	34	3.35	2.25	3.05	2.00	2.25	1.60	1.60	1.20	1.60	1.05
1899-1900.....	54½	35	3.65	2.20	3.50	2.00	2.25	1.30	1.00	1.00	1.50	0.90

<sup>1</sup> The naval-stores year, from April 1 to March 31.

**Exports.**—Table 22 shows the quantity of turpentine and rosin exported in the fiscal years ending June 30, 1910 and 1905, respectively, in comparison with the production in the calendar years 1909 and 1904.

It will be noted that the exports of turpentine in each of the years for which statistics are given represent over 50 per cent of the production reported for the census year most nearly corresponding, and the

exports of rosin over 65 per cent. Both production and exports show a decrease for the five-year period.

**Table 22**

PRODUCT.	PRODUCTION.		EXPORTS.		Per cent exports formed of total production.
	Year.	Quantity.	Year.	Quantity.	
Spirits of turpentine (gallons)....	1909 1904	28,988,954 30,687,051	1910 1905	15,587,737 15,894,813	53.8 51.8
Rosin (barrels of 280 pounds)....	1909 1904	3,263,857 3,508,347	1910 1905	2,144,318 2,310,275	65.7 65.8

Table 23 shows the amount of turpentine and rosin exported to each of the six grand divisions of the world during 1910 and the percentage that the exports to each formed of the total.

**Table 23**

GRAND DIVISION.	TURPENTINE AND ROSIN EXPORTED: YEAR ENDING JUNE 30, 1910.			
	Turpentine.		Rosin.	
	Quantity (gallons).	Per cent of total.	Quantity (barrels of 280 pounds).	Per cent of total.
Total.....	15,587,737	100.0	2,144,318	100.0
Europe.....	12,958,892	83.1	1,659,415	77.4
North America.....	1,162,198	7.5	103,249	4.8
South America.....	895,747	5.7	314,174	14.7
Asia.....	58,482	0.4	37,081	1.7
Oceania.....	403,154	2.6	25,400	1.2
Africa.....	109,264	0.7	4,999	0.2

Of the total exports, 83.1 per cent of the turpentine and 77.4 per cent of the rosin went to Europe. Of the European countries the United Kingdom took the largest quantity of turpentine and Germany the largest quantity of rosin. Canada received the greater part of

the exports to North American ports. Of the South American countries Argentina took the largest quantity of turpentine and Brazil the largest quantity of rosin.

The exports of turpentine and rosin during the year ending June 30, 1910, are shown by customs districts in Table 24.

**Table 24**

CUSTOMS DISTRICT.	TURPENTINE AND ROSIN EXPORTED: YEAR ENDING JUNE 30, 1910.			
	Turpentine.		Rosin.	
	Quantity (gallons).	Per cent of total.	Quantity (barrels of 280 pounds).	Per cent of total.
Total.....	15,587,737	100.0	2,144,318	100.0
Savannah, Ga.....	5,101,003	33.3	638,131	29.8
Fernandina, Fla.....	4,195,123	26.9	414,360	19.3
New York, N. Y.....	1,664,601	10.7	317,019	14.8
Pensacola, Fla.....	1,641,029	10.5	208,990	9.7
Tampa, Fla.....	744,055	4.8	91,163	4.3
New Orleans, La.....	571,285	3.7	67,828	3.2
Brunswick, Ga.....	481,500	3.1	98,244	4.6
All other.....	1,066,141	7.0	307,683	14.3

Savannah, Ga., was the shipping port for 33.3 per cent of the turpentine and 29.8 per cent of the rosin exported during the fiscal year ending June 30, 1910. Fernandina, Fla., ranked second in exports of these products, with 26.9 per cent of the turpentine and 19.3 per cent of the rosin. Although New York is far removed from the producing section, 10.7 per cent of the turpentine and 14.8 per cent of the rosin exported were shipped from that port. The greater part of the turpentine and rosin from Jacksonville, Fla., which is exported goes by way of Fernandina, from which port are shipped also large quantities of Georgia products.

Table 25 shows the quantity and value of the exports of turpentine and rosin from 1850 to 1910.

**Table 25**

YEAR ENDING JUNE 30—	TURPENTINE AND ROSIN EXPORTED.				YEAR ENDING JUNE 30—	TURPENTINE AND ROSIN EXPORTED.					
	Total value.	Spirits of turpentine.		Rosin.		Total value.	Spirits of turpentine.		Rosin.		
		Quantity (gallons).	Value.	Quantity (barrels of 280 pounds).			Value.	Quantity (gallons).	Value.	Quantity (barrels of 280 pounds).	Value.
1850.....	\$1,372,454	644,616	\$229,741	398,111	\$1,142,713	1880.....	\$4,500,334	7,091,200	\$2,132,154	1,040,345	\$2,368,180
1851.....	1,209,252	303,828	145,410	387,220	1,063,842	1881.....	4,044,142	6,505,528	2,414,710	1,023,710	2,529,423
1852.....	1,347,020	368,658	137,856	440,104	1,209,173	1882.....	7,038,837	8,136,493	3,798,034	1,556,012	3,240,803
1853.....	1,753,980	634,371	347,492	454,715	1,406,488	1883.....	7,434,361	9,897,344	4,366,229	1,347,256	3,063,132
1854.....	3,122,020	1,609,523	1,055,720	601,280	2,066,906	1884.....	2,013,416	11,300,729	3,885,559	2,168,470	2,327,916
1855.....	2,898,580	2,339,138	1,137,152	731,060	1,761,428	1885.....	2,018,345	8,987,220	2,690,231	2,128,482	2,228,114
1856.....	2,061,114	1,844,500	839,048	524,709	1,222,066	1886.....	2,807,807	8,217,678	2,811,777	2,144,857	2,196,090
1857.....	2,285,918	1,522,177	741,346	641,517	1,544,572	1887.....	5,820,801	10,209,883	3,480,895	2,379,257	2,330,906
1858.....	2,553,492	2,457,235	1,039,282	574,573	1,404,310	1888.....	5,800,124	10,585,942	3,580,106	2,113,017	2,310,018
1859.....	3,554,416	2,682,230	1,306,035	798,083	2,248,821	1889.....	2,023,953	9,681,759	3,777,525	2,434,573	2,146,388
1860.....	3,734,527	4,072,023	1,916,289	770,652	1,818,238	1890.....	2,738,341	11,248,920	4,590,931	2,169,704	2,797,410
1861.....	2,253,044	2,941,855	1,192,787	536,207	1,060,257	1891.....	2,815,519	12,243,621	4,063,120	2,144,857	2,484,379
1862.....	348,091	43,607	54,691	65,401	293,400	1892.....	2,937,516	13,176,470	4,500,721	2,058,953	3,436,735
1863.....	381,768	58,565	143,777	17,025	237,991	1893.....	2,247,057	13,415,459	3,893,430	2,008,333	3,353,621
1864.....	143,639	32,548	87,988	2,418	55,551	1894.....	2,075,212	12,618,407	3,437,245	2,000,753	3,315,937
1865.....	265,105	51,863	106,967	11,278	158,138	1895.....	2,737,100	14,652,738	3,998,277	2,174,759	3,379,823
1866.....	1,817,144	949,325	313,086	250,452	1,504,058	1896.....	2,809,518	17,431,560	4,013,811	2,144,857	2,484,379
1867.....	2,965,564	1,513,225	980,639	334,104	1,984,805	1897.....	2,018,080	17,302,823	4,447,551	2,448,036	4,732,529
1868.....	3,696,091	3,068,629	1,627,577	445,801	2,028,514	1898.....	2,011,669	18,351,140	5,380,800	2,225,428	3,737,823
1869.....	3,465,487	3,184,955	1,444,908	585,989	2,020,519	1899.....	2,080,953	17,761,530	6,100,419	2,586,174	3,796,534
1870.....	3,133,927	3,246,697	1,357,302	583,316	1,776,625	1900.....	2,129,112	18,090,582	8,554,922	2,389,364	3,842,190
1871.....	2,610,159	2,453,554	1,009,508	511,959	1,660,251	1901.....	12,457,486	20,240,851	7,715,029	2,890,815	4,742,457
1872.....	5,778,211	4,495,441	2,521,357	692,728	3,256,854	1902.....	19,177,788	4,431,248	2,535,962	4,202,104	5,137,081
1873.....	6,299,382	5,114,653	2,667,386	845,162	3,631,996	1903.....	12,831,527	16,378,787	8,014,322	2,396,498	3,737,823
1874.....	5,805,364	6,784,173	2,758,933	929,342	3,046,431	1904.....	16,068,025	17,202,808	9,446,155	2,585,108	6,621,870
1875.....	4,698,063	5,599,624	1,924,544	937,527	2,774,419	1905.....	15,971,185	15,894,813	8,902,101	2,310,275	7,069,084
1876.....	3,860,691	5,178,934	1,672,068	824,256	2,185,623	1906.....	19,976,348	15,981,253	10,077,298	2,438,556	9,899,050
1877.....	4,659,017	6,796,927	2,274,639	900,056	2,324,378	1907.....	21,568,974	15,854,676	10,241,893	2,560,906	11,327,061
1878.....	5,662,838	7,633,508	3,333,569	1,042,183	2,329,319	1908.....	15,541,277	19,532,588	10,146,151	2,712,732	11,395,128
1879.....	4,204,814	7,575,556	2,045,673	1,112,816	2,159,141	1909.....	15,022,896	17,562,023	7,018,053	2,170,177	8,004,838
						1910.....	18,533,724	15,587,737	8,780,236	2,144,318	9,763,483

<sup>1</sup> The value of tar and pitch is included with that of rosin for the years 1850 to 1854, inclusive.  
<sup>2</sup> The quantity and value of pitch for the years 1884 to 1900, inclusive, are included with those of rosin.



MANUFACTURES.

TURPENTINE AND ROSIN—DETAILED STATISTICS, BY STATES: 1909.

Table 27 STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horsepower.
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.				Total.	10 and over.		Under 10.			
					Male.	Female.	Average number.	Number, 15th day of—		Male.		Female.	Male.	Female.			
								Maximum month.	Minimum month.								
United States....	1,585	44,524	2,537	1,140	1,296	4	30,511	Jy	40,634	Ja	37,112	41,272	40,593	60	612	7	4,128
Alabama.....	175	3,965	255	128	62	1	3,519	Je	3,860	Ja	2,831	3,693	3,655	.....	33	.....	384
Florida.....	593	20,637	1,051	531	960	2	18,143	Jy	18,456	Fe	17,556	18,750	18,412	22	300	7	1,916
Georgia.....	592	14,253	1,003	337	126	.....	12,787	My	13,016	Ja	12,288	13,120	12,923	.....	197	.....	1,407
Louisiana.....	23	1,800	19	45	47	1	1,688	Au <sup>1</sup>	1,821	Ja	1,407	1,837	1,830	.....	7	.....	108
Mississippi.....	64	2,811	71	79	88	.....	2,573	My	2,663	Fe	2,413	2,862	2,794	18	50	.....	288
North Carolina.....	79	249	103	5	2	.....	139	Je	162	Ja	102	168	167	.....	1	.....	19
South Carolina.....	56	524	63	15	3	.....	443	Se	544	Ja	232	586	556	20	10	.....	2
Texas.....	3	235	2	6	8	.....	219	De	256	Ja <sup>1</sup>	190	250	256	.....	.....	.....	10

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
United States.....	\$12,400,978	\$19,032,630	\$921,802	\$733,589	\$9,363,359	\$12,339	\$4,898,499	\$2,105	\$191,512	\$658,006	\$2,251,410	\$25,295,017	\$20,384,179
Alabama.....	1,398,587	1,818,862	90,793	34,597	905,855	568	485,224	.....	14,536	78,126	209,163	2,471,999	1,986,267
Florida.....	5,510,987	9,116,757	450,638	536,260	4,316,348	3,472	1,065,506	1,050	129,342	678,006	1,134,455	11,637,518	9,958,450
Georgia.....	2,989,971	5,134,671	229,033	63,603	2,930,808	700	1,258,943	.....	34,970	.....	616,608	6,038,957	5,679,314
Louisiana.....	804,345	749,810	54,999	33,001	420,005	1,607	157,042	.....	3,146	1,184	78,736	1,173,848	1,015,199
Mississippi.....	1,250,971	1,225,748	76,719	55,333	581,532	915	348,104	130	6,018	.....	156,907	1,474,629	1,125,520
North Carolina.....	158,716	534,127	2,350	1,380	28,242	4,018	478,918	25	707	.....	18,427	673,054	191,013
South Carolina.....	128,727	368,087	7,750	1,165	160,701	1,009	162,777	.....	2,202	.....	27,483	400,288	242,590
Texas.....	160,674	149,568	6,520	8,160	79,868	50	41,805	.....	525	.....	6,640	217,826	175,971

<sup>1</sup> Same number reported for one or more other months.

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BOOTS AND SHOES, INCLUDING CUT  
STOCK AND FINDINGS

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# BOOT AND SHOE INDUSTRY.

## GENERAL STATISTICS.

Summary for the three branches of the industry: 1909.—Table 1 presents a summary of the more important statistics of the boot and shoe industry as a whole for 1909, and also for its three branches. The three classes of establishments distinguished are (1) establishments whose chief products are finished boots and shoes (including a few performing only special processes); (2) establishments whose chief products are boot and shoe cut stock, such as soles, heels, tips, inner soles, top lifts, etc.; and (3) establishments whose chief products are boot and shoe findings, such as shoe pegs, bows, clasps, stays, rands, counters, shoe trimmings, etc. Many of the establishments in class

1 which manufacture boots and shoes also make cut stock and findings, mostly for their own use, and the data for classes 2 and 3, therefore, do not bring out the full importance of these branches of the business. The establishments in classes 2 and 3, on the other hand, do not manufacture any complete boots or shoes. The value of the products of these two classes is largely duplicated in that for class 1, and therefore in the total value for the combined industry. Except where otherwise expressly stated, the tables in this report present statistics for the industry as a whole.

The industry does not include the manufacture of rubber boots and shoes.

Table 1

	Total for the Industry.	ESTABLISHMENTS MANUFACTURING PRINCIPALLY—		
		Boots and shoes.	Boot and shoe cut stock.	Boot and shoe findings.
Number of establishments.....	1,018	1,343	232	343
Persons engaged in the industry.....	215,923	200,847	7,535	7,541
Proprietors and firm members.....	1,538	1,218	255	365
Salaried employees.....	15,788	14,513	587	688
Wage earners (average number).....	198,297	185,110	6,683	6,488
Primary horsepower.....	96,302	85,896	4,769	5,637
Capital.....	\$222,324,248	\$197,000,344	\$15,735,034	\$9,495,870
Expenses.....	477,843,146	412,813,602	41,823,014	23,206,530
Services.....	117,092,116	109,640,165	3,799,752	3,646,199
Salaries.....	18,629,421	17,287,013	643,202	699,116
Wages.....	98,462,695	92,359,152	3,156,460	2,947,083
Materials.....	332,738,213	277,467,743	36,919,919	18,350,551
Miscellaneous.....	28,012,817	25,699,694	1,103,343	1,209,780
Value of products.....	1,512,797,642	442,630,726	44,661,497	25,505,419
Value added by manufacture (value of products less cost of materials).....	180,059,429	165,162,983	7,741,578	7,154,868

<sup>1</sup> In addition, products to the value of \$1,439,280 which pertained to the boot and shoe industry were produced by establishments primarily engaged in the manufacture of leather belting and hose; sporting and athletic goods; leather, tanned, curried, and finished; saddlery and harness; and other products.

Of the 1,918 establishments reporting in 1909, 1,343, or 70 per cent, were engaged in the manufacture of boots and shoes, these establishments making products to the value of \$442,630,726, or 86.3 per cent of the total value of products for the industry as a whole (\$512,797,642). Establishments engaged chiefly in the manufacture of cut stock formed about one-eighth of the total number, and the value of their products, \$44,661,497, represented 8.7 per cent of the total for the entire industry. Establishments engaged chiefly in the manufacture of boot and shoe findings formed somewhat more than one-sixth of the total number, and the value of their products, \$25,505,419, represented 5 per cent of the total.

The products reported for the industry include products other than boots and shoes to the value of \$1,276,414. These consist principally of leather; leather goods; blacking and cleansing and polishing preparations; and paste.

The cost of the materials used in the industry as a whole in 1909 was \$332,738,213, which is equal to 64.9 per cent of the total value of products, while the value

added by manufacture (that is, the value of products less the cost of materials) was \$180,059,429. The establishments in the industry as a whole gave employment on the average to 215,923 persons, of whom 198,297 were wage earners, and paid out \$117,092,116 in salaries and wages.

Comparison with earlier censuses for the industry as a whole.—Table 2 summarizes the statistics for the combined industry for each census from 1879 to 1909, inclusive.

Although the manufacture of boots and shoes was one of the earliest manufacturing industries in the country, statistics which are comparable with those for the census of 1909 can not be shown for censuses earlier than 1879, because prior to that census data for the factories were not distinguished from those for the numerous small shops engaged chiefly in custom and repair work. At the censuses of 1904 and 1909 such small shops were not canvassed; from 1879 to 1899 they were canvassed, but the data were tabulated separately and have been excluded from Table 2.

	BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.									
	Number or amount.					Per cent of increase. <sup>1</sup>				
	1909	1904	1899	1889	1879	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889
Number of establishments.....	1,918	1,895	2,253	2,881	2,347	-14.9	1.2	-15.9	-21.8	22.8
Persons engaged in the industry....	215,923	171,040	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>3</sup> )	25.6	25.6			
Proprietors and firm members.....	1,838	2,128	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>3</sup> )	-13.6	-13.6			
Salaries paid.....	15,788	0,518	8,348	35,461	89.1	65.9				
Wage earners (average number).....	198,297	160,294	151,231	142,116	115,972	31.1	23.7	14.0	( <sup>3</sup> )	( <sup>2</sup> )
Primary horsepower.....	96,302	63,068	55,480	35,461	11,574	73.6	50.5	6.0		
Capital.....	\$222,324,248	\$136,801,701	\$110,363,152	\$103,603,294	\$45,184,392	101.4	62.5	15.3	56.5	206.4
Expenses.....	\$477,843,146	\$328,474,578	\$272,958,371	\$216,685,768	( <sup>2</sup> )	75.1	62.5	24.0	6.4	129.5
Services.....	\$117,092,116	\$82,483,671	\$70,082,720	\$70,368,620	( <sup>2</sup> )	67.1	45.5	20.3	26.0	
Salaries.....	\$18,629,421	\$9,411,905	\$8,158,064	( <sup>2</sup> )	( <sup>2</sup> )	128.3	42.0	17.7	-0.4	
Wages.....	\$98,462,695	\$73,071,766	\$61,924,665	( <sup>2</sup> )	\$44,358,420	69.0	34.7	18.0		
Materials.....	\$332,738,213	\$225,288,177	\$191,455,527	\$136,398,585	\$110,018,612	73.8	47.7	17.7	40.4	24.0
Miscellaneous.....	\$28,012,817	\$20,702,730	\$11,420,115	\$9,918,563	( <sup>2</sup> )	145.3	35.3	81.3	15.1	
Value of products.....	\$512,797,642	\$357,688,160	\$290,047,087	\$245,358,534	\$176,517,776	76.8	43.4	23.3	18.2	39.0
Value added by manufacture (value of products less cost of materials).....	\$180,059,420	\$132,399,983	\$98,591,500	\$108,959,040	\$66,499,164	82.6	36.0	34.3	-9.5	63.0
Number of pairs of boots and shoes, all kinds.....	285,017,181	242,110,035	217,965,419	179,409,388	125,478,511	30.8	17.7	11.1	21.5	43.0

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.

<sup>2</sup> Percentage omitted because figures are not strictly comparable.

<sup>3</sup> Comparable figures not available.

The value of products of the industry in 1909 was nearly three times as great as in 1879. This increase is due in part to the advance which has taken place in the prices of materials, but is due also to increased quantity of output. The number of pairs of boots and shoes made more than doubled during the 30 years.

Very few industries have been more affected by the introduction of machinery than the manufacture of boots and shoes, and to this fact may be attributed the relatively small increase shown in the average number of wage earners during the 30-year period covered by the table. In 1909 the amount paid in wages formed 19.2 per cent of the value of products, as compared with 25.1 per cent in 1879. There was a decrease of 0.4 per cent in services between 1889 and 1899, and an increase of 6.4 per cent in the average number of wage earners. The application of machinery, in addition to reducing the number of wage earners required for a given product, no doubt caused

the displacement of many highly skilled wage earners by less skilled employees to whom lower wages were paid. The rapid increase in horsepower of engines shown in Table 2 contrasts conspicuously with the data for wage earners.

Between 1899 and 1909 the number of wage earners in the industry as a whole increased 31.1 per cent, the amount paid in wages 59 per cent, the cost of materials 73.8 per cent, the value of products 76.8 per cent, and the number of pairs of boots and shoes made 30.8 per cent. The difference between the last two percentages is doubtless due in part to advance in prices, but it may be attributable in part to a relatively greater increase in the production of high-grade products than in that of products of lower grades.

Comparison with earlier censuses for the three branches of the industry.—Table 3 presents somewhat more briefly statistics for each of the three branches of the industry from 1879 to 1909.

	1909	1904	1899	1889	1879
ESTABLISHMENTS MANUFACTURING PRINCIPALLY BOOTS AND SHOES.					
Number of establishments.....	1,343	1,316	1,599	2,082	1,959
Wage earners (average number).....	185,110	149,024	141,830	133,090	111,152
Wages.....	\$92,359,152	\$69,059,080	\$58,440,883	\$60,067,145	\$43,001,438
Cost of materials.....	\$277,407,743	\$197,363,495	\$168,632,654	\$118,785,831	\$102,442,442
Value of products.....	\$442,630,726	\$320,107,458	\$258,969,580	\$220,049,358	\$166,050,354
Value added by manufacture.....	\$165,162,983	\$122,743,963	\$90,330,926	\$101,863,627	\$63,607,912
ESTABLISHMENTS MANUFACTURING PRINCIPALLY BOOT AND SHOE CUT STOCK.					
Number of establishments.....	232	290	342	344	172
Wage earners (average number).....	6,693	5,936	6,155	4,692	2,885
Wages.....	\$3,156,400	\$2,304,209	\$2,230,691	\$1,891,031	\$735,482
Cost of materials.....	\$30,919,919	\$21,586,872	\$17,800,282	\$13,744,055	\$5,939,249
Value of products.....	\$44,601,497	\$27,675,815	\$23,242,892	\$17,903,840	\$7,531,635
Value added by manufacture.....	\$7,741,578	\$6,088,943	\$5,442,610	\$4,169,191	\$1,592,386
ESTABLISHMENTS MANUFACTURING PRINCIPALLY BOOT AND SHOE FINDINGS.					
Number of establishments.....	343	289	312	455	216
Wage earners (average number).....	6,488	4,434	3,246	3,434	1,935
Wages.....	\$2,947,083	\$1,647,877	\$1,252,491	\$1,205,397	\$621,500
Cost of materials.....	\$18,350,551	\$6,337,810	\$5,022,591	\$3,868,099	\$1,636,921
Value of products.....	\$25,505,419	\$9,904,887	\$7,834,615	\$6,805,330	\$2,935,787
Value added by manufacture.....	\$7,154,868	\$3,567,077	\$2,812,024	\$2,937,231	\$1,288,866

In 1909 the value of products for establishments making principally cut stock and for those making findings formed 8.7 per cent and 5 per cent, respec-

tively, of the total for the industry as a whole, as compared with 4.3 per cent and 1.7 per cent, respectively, in 1879.

Table 4 gives the important data for each of the three branches of the industry for 1899 and 1909, with the absolute and percentages of increase.

In the manufacture of complete boots and shoes, the largest of the three branches of the industry, there was a decided increase between 1899 and 1909 in all items except in the number of establishments, for which a decrease is shown. The value of products increased 70.9 per cent during the decade. The es-

tablishments engaged chiefly in the manufacture of cut stock decreased in number; but for the other items—except number of wage earners, which increased only 8.7 per cent—there were large percentages of gain, that for value of products being 92.1 per cent. Much the highest percentages of increase are shown for establishments engaged primarily in the manufacture of boot and shoe findings, the value of products for this branch showing a gain of 225.5 per cent.

Table 4

ESTABLISHMENTS MANUFACTURING PRINCIPALLY—

	Boots and shoes.		Boot and shoe cut stock.				Boot and shoe findings.					
	1909	1899	Increase. <sup>1</sup>		1909	1899	Increase. <sup>1</sup>		1909	1899	Increase.	
			Amount.	Per cent.			Amount.	Per cent.			Amount.	Per cent.
Number of establishments.....	1,343	1,509	-256	-16.0	232	342	-110	-32.2	343	312	31	9.9
Persons engaged in the industry.....	200,847	(?)	.....	.....	7,535	(?)	.....	.....	7,541	(?)	.....	.....
Proprietors and firm members.....	1,218	(?)	.....	.....	255	(?)	.....	.....	365	(?)	.....	.....
Salaried employees.....	14,513	7,779	6,734	86.6	587	342	245	71.6	688	227	461	203.1
Wage earners (average number).....	185,116	141,830	43,286	30.5	6,693	6,155	538	8.7	6,488	3,246	3,242	99.9
Primary horsepower.....	85,806	49,444	36,462	73.7	4,709	3,202	1,507	45.9	5,637	2,843	2,794	98.3
Capital.....	\$197,090,344	\$99,810,233	\$97,271,111	97.4	\$15,735,034	\$7,093,080	\$8,731,954	124.7	\$9,498,870	\$3,540,839	\$5,958,031	168.3
Expenses.....	412,813,002	245,412,888	167,400,714	68.2	41,823,014	20,824,410	20,998,604	100.8	23,206,530	6,721,073	16,485,457	245.3
Services.....	109,646,165	66,110,832	43,535,333	65.9	3,799,732	2,533,530	1,266,172	50.0	3,646,199	1,438,317	2,207,882	153.5
Salaries.....	17,287,013	7,669,949	9,617,064	125.4	643,292	302,859	340,403	112.4	699,116	189,820	513,290	270.2
Wages.....	92,359,152	58,440,883	33,918,269	58.0	3,156,460	2,230,691	925,769	41.5	2,947,053	1,252,491	1,694,562	135.3
Materials.....	277,467,743	168,632,654	108,835,089	64.5	36,919,919	17,800,282	19,119,637	107.4	18,350,651	5,022,591	13,327,060	205.3
Miscellaneous.....	25,699,694	10,669,402	15,030,292	140.9	1,103,343	490,548	612,795	124.9	1,209,780	260,165	949,615	355.0
Value of products.....	442,630,726	258,969,580	183,661,146	70.9	44,661,497	23,242,592	21,418,905	92.2	25,505,410	7,834,015	17,670,804	225.5
Value added by manufacture (value of products less cost of materials).....	165,162,983	90,336,926	74,826,057	82.8	7,741,578	5,442,610	2,298,968	42.2	7,154,863	2,812,024	4,342,844	154.4

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Comparable figures not available.

Custom and factory work.—At the censuses of 1899, 1889, and 1879 separate statistics were presented for the factory manufacture of boots and shoes and for the shops doing chiefly custom and repair work. Table 5 shows the relative importance of these two branches of the industry in 1899 and 1879. Statistics for establishments engaged chiefly in the manufacture of cut stock and of findings are not included in this table.

the proprietors perform the entire work. In 1899 the custom shops represented considerably more than nine-tenths of the total number of establishments for both classes combined, but contributed less than one-tenth of the value of products.

Specialization in the boot and shoe industry.—Aside from the specialization in the industry designated "boots and shoes, including cut stock and findings," which is indicated by the distinction of the three main branches shown in previous tables, there is in certain cases still further specialization within that branch of the industry designated as the manufacture of boots and shoes proper. Most of the establishments assigned to this branch of the industry make complete boots and shoes from stock either cut by themselves or purchased, but there are a number of factories assigned to the group which perform only special operations, usually on materials furnished by others. Thus some do only stitching, some make buttonholes, and others do crimping, while still others perform other processes. The amount paid for these several processes becomes a part of the total value of products of the boot and shoe industry proper, and to this extent there is a duplication of values. These highly specialized establishments in the boot and shoe industry, however, are of comparatively small importance, as will be seen from Table 6, in which each establishment has been classified according to its product or business of chief value.

Table 5

BOOT AND SHOE INDUSTRY PROPER.

CLASS OF ESTABLISHMENTS.	Number of establishments.		Average number of wage earners.		Value of products.	
	1899	1879	1899	1879	1899	1879
Total.....	25,160	17,972	152,620	133,919	\$287,579,253	\$196,920,481
Factories.....	1,599	1,959	141,830	111,152	258,969,580	166,050,354
Custom and repair shops	23,561	16,013	10,790	22,767	28,609,673	30,870,127
Per cent of total...	100.0	100.0	100.0	100.0	100.0	100.0
Factories.....	6.4	10.9	92.9	83.0	90.1	84.3
Custom and repair shops	93.6	89.1	7.1	17.0	9.9	15.7

This table shows an increase during the 20-year period in the number of custom shops and a decrease in the average number of wage earners and value of products. The large decrease shown in the average number of wage earners may be due to the fact that proprietors and firm members were first separately called for in 1899, and that many of them were probably reported as wage earners in 1879, since in a large number of the shops of this character

**Table 6**

CLASS OF ESTABLISHMENTS.

	BOOT AND SHOE INDUSTRY PROPER: 1909					
	Estab-lish-ments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
<b>Total</b> .....	1,343	185,116	\$92,359,152	\$277,467,743	\$442,630,726	\$165,162,983
Factories making complete boots and shoes.....	1,228	182,642	91,284,239	275,298,510	438,443,370	103,144,860
Factories doing work not elsewhere specified on materials furnished.....	23	382	231,211	391,519	778,922	387,493
Factories doing stitching.....	30	860	363,392	59,988	530,164	470,176
Factories making buttonholes.....	4	34	15,943	4,921	30,456	25,535
Factories doing crimping.....	5	10	6,495	716	17,384	16,698
Factories making overgaiters, moccasins, leggings, etc.....	53	1,182	457,872	1,712,089	2,830,430	1,118,341

Exports of boots and shoes.—Table 7 shows the value of the exports of leather boots, shoes, and slippers for the fiscal years ending June 30, 1870, 1880, 1890, 1900, and for each succeeding year to 1910, inclusive. (The figures are taken from the Statistical Abstract of the United States.) Exports for the fiscal year 1910, for example, are fairly comparable with the production for the census year 1909.

**Table 7**

YEAR ENDING JUNE 30—

Year	Value.	Year	Value.
1910.....	\$12,408,575	1903.....	\$6,665,017
1909.....	10,305,814	1902.....	6,182,098
1908.....	11,469,559	1901.....	5,526,290
1907.....	10,666,949	1900.....	4,276,656
1906.....	9,142,748	1890.....	662,974
1905.....	8,057,697	1880.....	441,069
1904.....	7,238,940	1870.....	419,612

SUMMARY BY STATES.

Table 8 summarizes the more important statistics for "boots and shoes, including cut stock and findings," by states, the states being arranged according to the value of products reported for 1909. The states are given their actual ranking in this table, consideration being given to the rank of those states for which figures can not be shown. In considering the rank in value of products, it should be borne in mind that there may be more duplication of value in some states than in others.

Although statistics are shown in Table 8 for 26 states separately, more than nine-tenths of the total value of products was reported by the 9 states first named, each of which had products valued at more than \$10,000,000 in 1909.

**Table 8**

BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.

STATE.	Number of estab-lish-ments: 1909	Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Wage earners (average number).			Value of products.			Value added by manufacture.		
											1890	1901	1904	1890	1904	1909	1890	1904	1909
<b>United States</b> .....	1,918	198,297	100.0	.....	\$512,797,642	100.0	.....	\$180,059,429	100.0	.....	31.1	23.7	6.0	76.8	43.4	23.3	82.6	36.0	34.3
Massachusetts.....	860	83,063	41.9	1	236,342,915	46.1	1	83,352,963	46.3	1	27.3	18.4	7.5	67.3	36.1	23.0	76.6	32.2	33.7
Missouri.....	59	17,398	8.8	3	48,751,235	9.5	2	14,211,534	7.9	3	191.3	.....	.....	325.5	.....	.....	326.4	.....	.....
New York.....	296	21,627	10.9	2	48,185,914	9.4	3	19,211,403	10.7	2	20.9	24.2	4.6	71.4	28.4	33.4	77.7	27.0	39.9
New Hampshire.....	68	14,211	7.2	5	39,439,544	7.7	4	11,224,404	6.2	5	14.5	32.3	-13.5	66.0	72.7	-3.9	59.2	58.4	0.5
Ohio.....	72	16,026	8.1	4	31,550,957	6.2	5	12,678,950	7.0	4	25.5	14.2	9.9	72.9	22.0	41.0	82.8	18.0	64.9
Pennsylvania.....	140	10,822	5.5	6	20,218,784	3.0	6	8,155,002	4.5	6	17.0	20.4	-2.8	46.2	35.8	7.0	58.4	35.4	16.1
Illinois.....	53	5,792	2.9	8	16,754,704	3.3	7	5,885,862	3.3	7	20.9	36.3	-11.3	50.0	67.7	-4.8	76.3	64.5	7.2
Maine.....	55	6,626	3.3	7	15,508,771	3.0	8	5,568,200	3.1	8	.....	11.4	.....	23.0	.....	.....	33.4	.....	.....
Wisconsin.....	68	5,431	2.7	9	13,602,234	2.7	9	4,849,398	2.7	9	84.6	55.4	18.8	162.1	98.7	31.9	178.7	99.8	39.5
New Jersey.....	53	4,232	2.1	10	8,041,023	1.6	10	3,314,498	1.8	10	-8.6	-0.6	-2.3	7.0	6.0	0.9	8.3	-2.2	10.7
Minnesota.....	18	2,684	1.3	12	7,567,582	1.5	11	2,632,965	1.5	11	31.6	55.4	-15.4	109.3	81.5	15.3	112.7	71.2	24.2
Virginia.....	10	2,711	1.4	11	5,808,503	1.1	12	1,788,999	1.0	13	135.1	.....	.....	300.1	.....	.....	512.7	.....	.....
Michigan.....	23	2,465	1.2	13	5,255,960	1.0	13	1,908,656	1.1	12	110.8	42.5	54.3	174.5	48.9	84.4	154.2	26.0	101.7
Kentucky.....	13	426	0.2	19	3,247,825	0.6	14	803,488	0.4	15	.....	.....	.....	.....	.....	.....	.....	.....	.....
California.....	18	695	0.4	15	1,924,278	0.4	15	804,454	0.4	14	-1.8	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut.....	10	520	0.3	17	1,657,578	0.3	16	569,331	0.3	17	16	-27.7	4.2	-30.6	9.3	25.7	-13.1	7.5	14.2
Iowa.....	10	716	0.4	14	1,632,911	0.3	17	578,798	0.3	16	20.5	.....	.....	107.8	.....	.....	105.7	.....	.....
Maryland.....	14	594	0.3	10	1,431,017	0.3	18	518,845	0.3	18	-35.4	-12.8	-25.9	13.5	37.6	-17.5	5.5	5.1	0.4
Tennessee.....	4	374	0.2	20	1,180,894	0.2	19	353,997	0.2	19	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indiana.....	8	436	0.2	18	977,934	0.2	20	313,501	0.2	20	-31.8	.....	-64.6	4.4	.....	-50.9	21.2	.....	-38.2
Washington.....	12	172	0.1	23	611,131	0.1	21	153,739	0.1	23	.....	.....	.....	268.1	.....	36.1	.....	.....	.....
Louisiana.....	13	278	0.1	21	516,789	0.1	22	213,774	0.1	21	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Carolina.....	7	178	0.1	22	408,079	0.1	23	160,498	0.1	22	.....	.....	.....	.....	119.4	.....	.....	.....	.....
Oregon.....	5	56	( <sup>2</sup> )	31	155,507	( <sup>2</sup> )	30	60,504	( <sup>2</sup> )	31	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rhode Island.....	6	65	( <sup>2</sup> )	30	142,080	( <sup>2</sup> )	31	85,111	( <sup>2</sup> )	30	.....	.....	.....	-57.6	.....	.....	-23.0	.....	.....
Texas.....	6	36	( <sup>2</sup> )	32	102,133	( <sup>2</sup> )	32	53,810	( <sup>2</sup> )	32	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states.....	17	695	0.4	.....	1,780,754	0.3	.....	606,170	0.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> Percentages are based on figures in Table 29. A minus sign (-) denotes decrease. Per cent not shown where base is less than 100 for wage earners, or is less than \$100,000 for value of products or value added by manufacture, or where comparative figures can not be given without disclosing individual operations.

<sup>2</sup> Less than one-tenth of 1 per cent.

Massachusetts, the leading state in the industry, reported 46.1 per cent of the total value of products, as compared with 9.5 per cent for Missouri, the state second in rank. Missouri has, however, made great progress in this industry, advancing from twelfth rank in value of products in 1879 to second in 1909. By

number of wage earners and value added by manufacture Missouri ranked third and New York second. North Carolina made a marked advance in rank in value of products, going from twenty-seventh place in 1904 to twenty-third in 1909. Most of the other states had the same or practically the same rank in 1909 that they held in 1904, and in general the states had in 1909 the same, or nearly the same, rank in number of wage earners and value added by manufacture as in value of products.

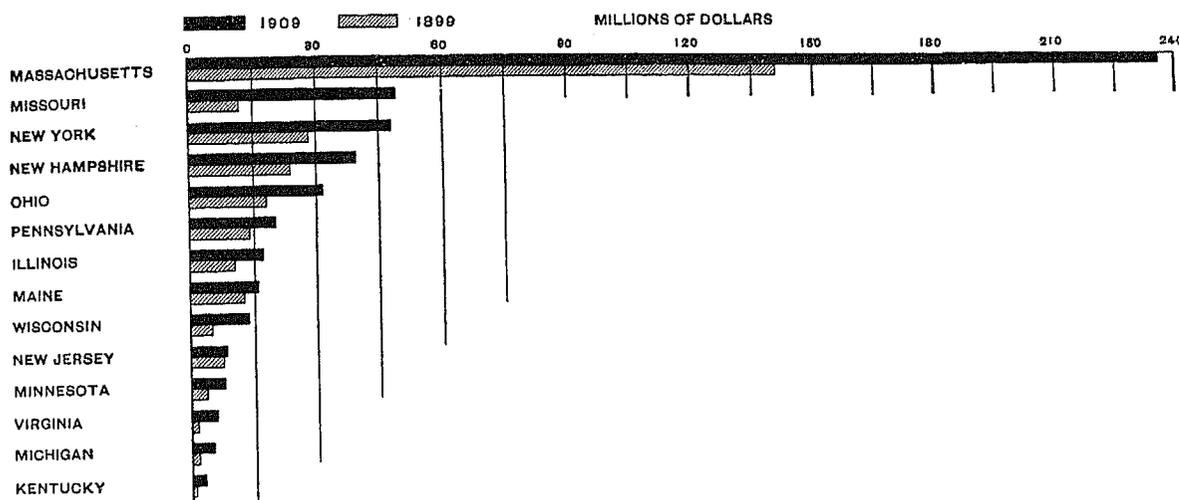
For the decade 1899-1909, as shown by Tables 8 and 29, several states show remarkable percentages of increase, some of the most important of which were as follows: In average number of wage earners, Oregon, 409.1 per cent; and North Carolina, 345 per cent. In

value of products, North Carolina, 458.9 per cent; Missouri, 325.5 per cent; Virginia, 300.1 per cent; Washington, 268.1 per cent; Oregon, 254.6 per cent; and Wisconsin, 162.1 per cent. In value added by manufacture, North Carolina, 730 per cent; Oregon, 306.7 per cent; and Wisconsin, 178.7 per cent. The industry in several of these states, however, is comparatively unimportant.

In Massachusetts the number of wage earners increased 27.3 per cent during the decade, the value of products 67.3 per cent, and the value added by manufacture 76.6 per cent.

The following diagram shows graphically the value of products reported for the most important states in the industry in 1909 and 1899.

BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



SUMMARY FOR LEADING CITIES.

Table 9 shows the value of products for the industry as a whole in each of the 17 cities which had a value of products in 1909 amounting to \$5,000,000 or over

for which comparative figures are available, and also their rank in value of products in 1909, 1904, 1899. The ranking relates only to the cities shown in the table.

CITY.	1909		1904		1899		Per cent of increase. <sup>1</sup>		
	Value of products.	Rank.	Value of products.	Rank.	Value of products.	Rank.	1899-1909	1904-1909	1899-1904
Lynn, Mass.....	\$46,659,709	1	\$35,430,532	1	\$24,981,636	1	89.8	31.7	41.8
Brockton, Mass.....	39,293,118	2	33,853,128	2	22,068,276	2	78.1	16.1	53.4
St. Louis, Mo.....	33,970,372	3	19,662,388	4	5,437,020	6	306.3	72.8	131.7
Haverhill, Mass.....	29,142,909	4	20,508,325	3	19,538,388	3	49.2	42.1	5.9
Boston, Mass.....	26,146,755	5	11,413,510	6	7,307,120	7	257.8	129.1	56.2
New York, N. Y.....	18,376,429	6	13,686,605	5	10,641,104	4	72.7	34.3	28.6
Manchester, N. H.....	17,646,652	7	6,567,903	10	4,052,204	12	335.5	168.7	62.1
Cincinnati, Ohio.....	14,938,672	8	11,152,013	7	8,626,004	5	73.9	34.5	29.3
Rochester, N. Y.....	13,450,155	9	9,154,944	8	7,297,408	8	84.3	46.9	25.5
Chicago, Ill.....	9,855,302	10	6,558,350	11	6,813,763	9	44.6	50.2	-3.7
Marlborough, Mass.....	9,565,093	11	6,633,505	9	3,867,368	14	147.4	44.2	71.5
Milwaukee, Wis.....	7,800,390	12	3,181,884	17	2,533,273	17	200.8	145.2	22.7
Philadelphia, Pa.....	6,517,371	13	5,385,634	13	6,394,686	10	1.9	21.0	-15.8
Salem, Mass.....	6,440,608	14	4,635,492	14	3,947,793	13	63.4	39.1	17.4
Auburn, Me.....	6,312,229	15	4,274,069	15	4,261,406	11	48.1	47.7	0.3
Columbus, Ohio.....	5,435,709	16	5,425,087	12	3,503,126	15	55.1	0.2	54.8
Portsmouth, Ohio.....	5,300,473	17	4,258,855	16	3,043,916	16	74.1	24.5	40.0

<sup>1</sup> A minus sign (-) denotes decrease.

These 17 cities reported 57.9 per cent of the total value of products for the industry in 1909, as compared with 50.8 per cent in 1899. The 11 cities in the eastern section of the country reported 73.9 per cent of the total value of products for the 17 cities in 1909, as compared with 77.6 per cent in 1899, the 6 western cities correspondingly increasing their proportion.

Except for Lynn and Brockton, none of the 17 cities held the same rank in 1909 as in 1899. During the decade 1899-1909 the most marked gains in rank were made by St. Louis, which rose from sixth place to third; Manchester, which rose from twelfth to seventh; Milwaukee, from seventeenth to twelfth; and Marlborough, from fourteenth to eleventh. Pronounced losses in rank during the decade are shown for Auburn, which fell from eleventh to fifteenth; Cincinnati, which fell from fifth to eighth; and Philadelphia, which fell from tenth to thirteenth. St. Louis shows the greatest absolute gain during the decade in value of products, \$25,483,352, or 300.3 per cent. Manchester, although making a much smaller absolute gain than St. Louis, shows a higher percentage of increase during the decade, 335.5 per cent.

#### PERSONS ENGAGED IN THE INDUSTRY.

**Summary: 1909.**—Table 10 shows, by classes, for 1909, the number of persons engaged in the industry as a whole and in each of the three branches, classified according to occupational status and sex, and in the case of wage earners, according to age. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction; but in an industry of such steady employment the estimates should be substantially correct.

The average number of persons engaged in the industry as a whole during 1909 was 215,923, of whom 198,297, or 91.8 per cent, were wage earners; 11,874, or 5.5 per cent, clerks, including other subordinate salaried employees; and 5,752; or 2.7 per cent, proprietors and officials. Of the total number of wage earners, 65 per cent were males and 35 per cent females. The 8,099 children under 16 years of age formed 4.1 per cent of the total number of wage earners. Of the total number of wage earners, 93.4 per cent were in the boot and shoe branch of the industry, 3.4 per cent in the cut-stock branch, and 3.3 per cent in establishments engaged chiefly in the manufacture of findings. Women over 16 years of age formed 33.7 per cent of the wage earners in the boot and shoe industry proper, 30.8 per cent in the establishments engaged primarily in the manufacture of findings, and 25.1 per cent in those manufacturing chiefly cut stock. There were no great differences among the three branches of the industry as to the relative numbers of women and children employed.

**Table 10**

BRANCH OF INDUSTRY AND CLASS OF PERSONS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
<b>BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.</b>			
All classes.....	215,923	141,205	74,718
Proprietors and officials.....	5,752	5,500	252
Proprietors and firm members.....	1,838	1,755	83
Salaried officers of corporations.....	1,027	1,006	21
Superintendents and managers.....	2,887	2,739	148
Clerks.....	11,874	6,867	5,007
Wage earners (average number).....	198,297	128,838	69,459
16 years of age and over.....	190,108	124,141	66,057
Under 16 years of age.....	8,099	4,697	3,402
<b>ROOTS AND SHOES.</b>			
All classes.....	200,847	130,398	70,449
Proprietors and officials.....	4,678	4,467	211
Proprietors and firm members.....	1,218	1,105	63
Salaried officers of corporations.....	890	875	15
Superintendents and managers.....	2,570	2,427	143
Clerks.....	11,053	6,428	4,625
Wage earners (average number).....	185,116	119,503	65,613
16 years of age and over.....	177,600	115,119	62,381
Under 16 years of age.....	7,616	4,384	3,232
<b>BOOT AND SHOE CUT STOCK.</b>			
All classes.....	7,538	5,696	1,842
Proprietors and officials.....	457	444	13
Proprietors and firm members.....	255	244	11
Salaried officers of corporations.....	55	53	2
Superintendents and managers.....	147	147	.....
Clerks.....	385	225	160
Wage earners (average number).....	6,093	4,627	1,466
16 years of age and over.....	6,411	4,732	1,679
Under 16 years of age.....	282	195	87
<b>BOOT AND SHOE FINDINGS.</b>			
All classes.....	7,541	5,211	2,330
Proprietors and officials.....	617	589	28
Proprietors and firm members.....	365	346	19
Salaried officers of corporations.....	82	78	4
Superintendents and managers.....	170	165	5
Clerks.....	430	214	222
Wage earners (average number).....	6,488	4,408	2,080
16 years of age and over.....	6,287	4,290	1,997
Under 16 years of age.....	201	118	83

**Sex and age distribution of wage earners, by states: 1909.**—The average number of wage earners for each state, in the industry as a whole, for the censuses of 1909, 1904, and 1899, is given in Table 29. The average number distributed by sex and age is not shown for the individual states, but Table 28 gives the number employed on December 15, or the nearest representative day, distributed on this basis.

The absolute number of women 16 years of age and over in the boot and shoe industry in Massachusetts in 1909 was 28,922; in New York, 7,847; in Ohio, 7,023; and in Missouri, 5,801. No other state reported as many as 5,000. The number of children under 16 in Massachusetts was 3,335; in Missouri, 1,392; in Pennsylvania, 806; and in Ohio, 589, no other state reporting as many as 500.

Table 11 shows, for each of the 17 leading states in the boot and shoe industry, by percentages, the distribution according to sex and age of the wage earners employed December 15, 1909, or the nearest representative day.

STATE.	16 years of age and over.		Under 16 years of age.		
	Male.	Female.	Total.	Male.	Female.
	United States.....	62.6	33.3	4.1	2.4
California.....	69.2	25.2	5.7	4.8	0.9
Connecticut.....	45.1	53.5	1.4	1.1	0.3
Illinois.....	61.2	33.0	5.8	3.0	2.8
Iowa.....	52.8	43.7	3.4	2.6	0.8
Maine.....	85.3	33.0	1.7	1.3	0.4
Maryland.....	58.9	31.7	9.3	6.3	3.0
Massachusetts.....	61.2	32.2	3.7	2.2	1.5
Michigan.....	58.5	35.1	6.4	3.9	2.2
Minnesota.....	63.8	35.7	0.5	0.2	0.3
Missouri.....	60.6	31.8	7.6	4.7	3.0
New Hampshire.....	66.3	31.3	2.4	1.4	1.3
New Jersey.....	60.8	36.3	2.9	1.6	0.9
New York.....	63.6	34.3	2.0	1.1	2.0
Ohio.....	55.5	41.0	3.4	1.5	4.0
Pennsylvania.....	58.5	34.4	7.1	4.0	3.1
Virginia.....	73.8	21.8	4.6	2.7	1.9
Wisconsin.....	57.7	33.7	8.6	5.0	3.6

In all of the states listed women (16 years of age and over) formed in 1909 a very considerable proportion of the total number of wage earners, the lowest proportion, 21.8 per cent, being reported from Virginia, and the highest, 53.5 per cent, from Connecticut. In Massachusetts, the most important state in the industry, 32.2 per cent of the wage earners were women, and in Missouri, the next state in importance, 31.8 per cent.

The proportion of children under 16 years of age among the total number of wage earners varied very materially from state to state. The lowest proportion for any state covered by the table was that in Minnesota, five-tenths of 1 per cent, and the highest that in Maryland, 9.3 per cent. In Massachusetts 3.7 per cent of the wage earners were under 16 years of age, and in Missouri 7.6 per cent.

Comparison with previous censuses, for the United States as a whole.—In order to compare the distribution of persons engaged in the industry according to occupational status in 1909 with that in 1904, it is necessary to use the classification employed at the earlier census (see Introduction). Such a comparison is made in Table 12 for the industry as a whole.

Although there was an increase of 23.7 per cent in the average number of wage earners in the industry as a whole between 1904 and 1909, they constituted a smaller proportion of the total number of persons engaged in the industry in 1909 than in 1904. There was an increase of 65.9 per cent in the number of salaried employees, but the number of proprietors and firm members decreased.

CLASS.	1909		1904		Per cent of increase: 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	215,923	100.0	171,940	100.0	25.6
Proprietors and firm members.....	1,838	0.9	2,128	1.2	-13.6
Salaried employees.....	15,788	7.3	9,518	5.5	65.9
Wage earners (average number).....	198,297	91.8	160,294	93.2	23.7

1 A minus sign (-) denotes decrease.

Table 13 shows the average number of wage earners in the industry as a whole, distributed according to age, and in the case of those 16 years of age and over according to sex, for 1909, 1904, and 1899. As already explained, the distribution for 1909 is estimated on the basis of the actual numbers reported for a single representative day (see Introduction).

CLASS.	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	198,297	100.0	160,294	100.0	151,231	100.0
16 years of age and over.....	190,198	95.9	154,815	96.6	146,491	96.9
Male.....	124,141	62.6	101,823	63.5	96,175	63.6
Female.....	66,057	33.3	52,997	33.1	50,316	33.3
Under 16 years of age.....	8,099	4.1	5,479	3.4	4,740	3.1

Wage earners employed, by months.—Table 14 gives, for the industry as a whole, the number of wage earners employed on the 15th (or the nearest representative day) of each month during the year 1909, for the 17 states in which at least 500 wage earners were employed on the average during the year.

In the United States the largest number of wage earners employed in this industry during any month of 1909 was 207,452, in December, and the smallest number 190,382, in May, the minimum number forming 91.8 per cent of the maximum number. The industry is not subject to great fluctuations from month to month. In 1904 March was the month of greatest employment, although the number for that month (163,598) was but little greater than the number for December (162,891). May was the month of least employment (154,961, or 94.7 per cent of the maximum) in 1904. The month of maximum employment in 1909 is shown to have been December in 9 of the 17 states listed, among which are 6 of the most important; in 2, California and New Hampshire, it was November, while in Connecticut the maximum number was reported for both November and March; and in 2, Illinois and Maine, it was February. The months of minimum employment in most states occurred between January and July.

Table 14

WAGE EARNERS EMPLOYED IN THE INDUSTRY—ALL BRANCHES COMBINED: 1909<sup>1</sup>

STATE.	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
<b>United States.....</b>	<b>198,297</b>	<b>199,019</b>	<b>202,095</b>	<b>199,778</b>	<b>192,507</b>	<b>190,382</b>	<b>192,119</b>	<b>195,929</b>	<b>200,184</b>	<b>199,572</b>	<b>199,558</b>	<b>200,977</b>	<b>207,452</b>
California.....	695	737	733	728	658	663	556	<i>542</i>	733	733	749	754	761
Connecticut.....	520	498	534	536	515	527	535	517	493	505	511	538	531
Illinois.....	5,792	5,757	5,981	5,910	5,768	5,647	<i>5,572</i>	5,742	5,805	5,715	5,811	5,863	5,942
Iowa.....	716	704	716	702	691	690	740	776	746	650	712	725	724
Maine.....	6,026	7,017	7,274	7,140	6,528	6,393	6,225	<i>6,190</i>	6,632	6,560	6,390	6,473	6,714
Maryland.....	504	578	586	612	613	583	555	594	606	613	604	594	594
Massachusetts.....	83,063	84,142	85,019	84,324	81,110	78,536	78,680	81,349	83,759	83,945	83,819	84,282	87,797
Michigan.....	2,455	2,414	2,477	2,407	2,407	<i>2,395</i>	2,396	2,409	2,428	2,453	2,493	2,546	2,547
Minnesota.....	2,664	2,701	2,788	2,727	2,477	<i>2,497</i>	2,496	2,606	2,728	2,687	2,706	2,764	2,854
Missouri.....	17,390	17,582	17,754	17,725	17,236	<i>16,820</i>	16,856	17,472	17,174	17,374	17,023	17,525	18,323
New Hampshire.....	14,211	13,752	13,850	13,864	13,810	<i>13,744</i>	14,245	14,169	14,545	14,262	14,837	15,200	14,533
New Jersey.....	4,232	4,214	4,263	4,256	4,120	4,202	4,263	4,171	4,286	4,193	4,178	4,272	4,308
New York.....	21,627	<i>20,655</i>	22,304	22,446	21,493	21,292	21,619	21,590	21,808	21,550	21,406	20,674	22,755
Ohio.....	16,026	16,839	16,055	14,782	<i>15,880</i>	15,236	16,084	16,508	16,586	16,446	16,298	16,565	17,033
Pennsylvania.....	10,822	10,885	10,852	10,685	<i>10,669</i>	10,694	10,701	10,762	10,885	10,857	10,885	11,030	11,033
Virginia.....	2,711	2,700	2,648	2,673	2,658	2,680	2,768	2,734	2,767	2,762	2,698	2,735	2,702
Wisconsin.....	5,431	5,571	5,574	5,569	5,245	5,237	5,217	5,173	5,407	5,434	5,508	5,528	5,594

<sup>1</sup> The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

**Prevailing hours of labor.**—In Table 15 are presented statistics for the wage earners in the industry as a whole, classified according to the prevailing hours of labor per week in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment is classified as a total, according to the hours prevailing in that establishment, even though a few employees worked a greater or a smaller number of hours.

Table 15

AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY—ALL BRANCHES COMBINED: 1909.

STATE.	Total.	In establishments with prevailing hours—						
		43 and under.	Between 43 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
<b>United States..</b>	<b>198,297</b>	<b>696</b>	<b>6,576</b>	<b>47,611</b>	<b>113,842</b>	<b>29,539</b>	<b>221</b>	<b>12</b>
California.....	696	641	40	480	35	21		
Connecticut.....	520	6	57	673	1,100			
Illinois.....	5,792	6	57	673	3,956	1,100		
Iowa.....	716	1	171	268	645	62		
Maine.....	6,026	1	67	4	4,775	1,411		
Maryland.....	594	1	67	4	120	402		
Massachusetts.....	83,063	212	4,258	33,007	44,503	1,023		
Michigan.....	2,455	6	11	1,674	572	192		
Minnesota.....	2,664		4	8	1,732	920		
Missouri.....	17,390	4		2,404	9,917	5,011		
New Hampshire.....	14,211		12	136	12,459	1,604		
New Jersey.....	4,232	14	12	71	3,080	455		
New York.....	21,627	77	1,110	4,851	10,057	5,441	85	6
Ohio.....	16,026	190	305	2,608	9,106	3,817		
Pennsylvania.....	10,822	21	462	514	8,568	1,140	117	
Virginia.....	2,711				503	2,208		
Wisconsin.....	5,431	3	28	430	1,458	3,512		

A majority (57.3 per cent) of the wage earners were employed in establishments in which the prevailing hours of employment were more than 54 but less than 60 per week, and 96.2 per cent were employed in establishments in which the prevailing hours of employment were either 54, between 54 and 60, or 60 per week. Only 233 worked in establishments where the prevailing hours of employment were more than 60 per week, and only 7,272 were employed where the prevailing hours were less than 54 per week. In every state

listed, except Maryland, Michigan, Virginia, and Wisconsin, the wage earners in establishments working between 54 and 60 hours per week greatly outnumbered those in any other group.

#### CHARACTER OF OWNERSHIP.

Table 16 presents data with respect to the character of ownership of establishments in the industry "boots and shoes, including cut stock and findings," for the United States as a whole.

Table 16

BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.

CHARACTER OF OWNERSHIP.	Number of establishments.		Value of products.	
	1909	1904	1909	1904
<b>Total.....</b>	<b>1,918</b>	<b>1,895</b>	<b>\$512,797,642</b>	<b>\$357,683,160</b>
Individual.....	740	1,776	44,254,403	40,017,899
Firm.....	1,438	558	102,826,471	108,576,008
Corporation.....	734	561	365,716,678	210,489,693
<b>Per cent of total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Individual.....	38.9	140.9	8.6	11.4
Firm.....	122.8	29.4	20.1	29.8
Corporation.....	38.3	29.6	71.3	58.8

<sup>1</sup> Includes one establishment under cooperative ownership, to avoid disclosure of individual operations.

The most important distinction shown is that between corporate and all other forms of ownership. In 1909, of the total number of establishments, 38.3 per cent were under corporate ownership, as compared with 29.6 per cent in 1904. While corporations in 1909 thus controlled less than two-fifths of the total number of establishments, the value of the products of these establishments represented 71.5 per cent of the total value of products in that year; the corresponding proportion in 1904 was 58.8 per cent. Between 1904 and 1909 there was an actual decrease in the number of establishments under individual ownership, but an increase in the value of products of such establishments, while for firm ownership there was an absolute decrease in both respects.

Table 17 gives statistics for 1909 for establishments classified according to form of ownership in each of the 17 leading states. In 1909, of the entire number of wage earners, 17,557, or 8.9 per cent, were employed in establishments under individual ownership; 38,595, or 19.5 per cent, in those under firm ownership; and 142,145, or 71.9 per cent, in those controlled by corporations.

STATE.	Number of establishments owned by—			Wage earners in establishments owned by—			Value of products of establishments owned by—			Value added by manufacture in establishments owned by—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	746	438	734	17,557	38,595	142,145	\$44,254,493	\$102,826,471	\$365,716,678	\$16,757,286	\$36,074,645	\$127,227,498
California.....	3	5	10	29	39	627	72,359	77,844	1,774,075	37,764	41,424	725,296
Connecticut.....	2	6	2	(X)	520	(X)	(X)	1,657,578	(X)	(X)	569,331	(X)
Illinois.....	17	9	27	510	399	4,883	1,516,025	815,241	14,423,438	595,983	301,945	4,067,934
Iowa.....	2	8	8	(X)	716	(X)	(X)	1,632,911	(X)	(X)	678,798	(X)
Maine.....	8	8	39	43	1,281	5,302	76,980	2,788,315	12,643,476	37,250	980,071	4,550,945
Maryland.....	9	1	4	363	(X)	231	624,402	(X)	806,615	264,010	(X)	254,835
Massachusetts.....	399	225	236	10,663	16,956	55,444	30,483,211	55,361,516	150,498,188	11,107,991	18,529,205	53,715,707
Michigan.....	5	2	16	82	(X)	2,423	77,203	(X)	5,178,763	36,345	(X)	1,873,310
Minnesota.....	4	14	110	110	2,554	(X)	320,168	(X)	7,238,414	131,643	(X)	2,501,342
Missouri.....	5	3	51	34	271	17,091	75,418	646,912	48,023,905	47,749	184,273	13,979,512
New Hampshire.....	21	17	30	1,247	3,500	9,464	2,110,765	8,821,701	28,507,078	789,491	3,048,829	7,380,084
New Jersey.....	21	11	21	352	940	2,940	846,281	1,706,865	5,488,477	262,084	760,971	2,301,443
New York.....	148	61	87	2,602	7,155	11,870	5,359,600	17,634,152	25,292,162	2,290,683	6,366,087	10,554,663
Ohio.....	8	13	51	307	1,852	13,867	514,920	3,360,551	27,075,486	218,034	1,512,723	10,948,193
Pennsylvania.....	44	47	40	807	3,208	6,807	1,277,840	6,167,616	12,773,428	547,870	2,487,015	5,119,217
Virginia.....	1	2	7	(X)	(X)	2,711	(X)	(X)	5,803,603	(X)	(X)	1,788,699
Wisconsin.....	16	4	48	191	117	5,123	365,121	264,201	12,972,822	139,064	109,846	4,600,488

NOTE.—In some states, in order to avoid disclosing the returns for individual establishments, the figures for one group have been consolidated with those for establishments under another form of ownership. In such cases an (X) is placed in the column from which the figures have been omitted and the figures for the group with which they have been combined are printed in italics. One establishment under cooperative ownership is included with those under firm ownership.

There was a considerable variation among the states in the relative importance of the establishments operated by individuals, firms, and corporations, respectively, but, as measured by value of products, corporate ownership predominated to a greater or less degree in all of the 17 states for which statistics are shown. In Massachusetts, the principal boot and shoe producing state, corporations in 1909 controlled 27.4 per cent of the establishments, gave employment to 66.7 per cent of the wage earners, and reported 63.7 per cent of the value of products. In Missouri, however, in which the industry is relatively much younger, corporations controlled 86.4 per cent of the establishments, employed 98.2 per cent of the number of wage earners and reported 98.5 per cent of the value of products. In New York corporations reported a smaller proportion (52.5 per cent) of the total value of products than in most other states, but the proportion for firm ownership was the largest shown, 36.4 per cent. For individual ownership the proportion in New York was 11.1 per cent—even lower than in Massachusetts.

ESTABLISHMENTS CLASSIFIED ACCORDING TO SIZE.

Classification according to value of products.—Table 18, relating to the entire industry in the United States, presents statistics for 1909 and 1904 for establishments grouped according to the value of their products.

Among the 1,918 establishments reported in 1909 there were 135, or 7 per cent, whose products were valued at \$1,000,000 and over, while in 1904, exclusive of 3 establishments, statistics for which are not shown in the table, there were 62 out of a total of

1,895. Although these establishments represented a comparatively small proportion of the total number of establishments, they reported a large proportion of the value of products—47.7 per cent in 1909 and 33.3 per cent in 1904. The large establishments thus gained materially in their proportion of the business, the other classes losing correspondingly. It should be noted, however, that this change may in part be the result merely of an advance in prices, by reason of which an establishment, without increasing the quantity of its output, might have passed from a lower class into a higher.

The small establishments—that is, those manufacturing products valued at less than \$20,000—constituted about one-third (32.2 per cent) of the total number of establishments in 1909, but reported only 1 per cent of the total value of products.

VALUE OF PRODUCTS PER ESTABLISHMENT.	Number of establishments.				Value of products.	
	1909		1904		1909	1904
	1909	1904	1909	1904	1909	1904
Total.....	1,918	1,895	\$512,797,642	\$357,688,160		
Less than \$5,000.....	218	124	621,288	578,522		
\$5,000 and less than \$20,000.....	399	437	4,506,665	4,694,030		
\$20,000 and less than \$100,000.....	494	534	24,133,865	25,898,215		
\$100,000 and less than \$1,000,000.....	672	596	238,988,182	203,481,505		
\$1,000,000 and over.....	135	62	244,547,642	119,079,802		
Per cent of total.....	100.0	100.0	100.0	100.0		
Less than \$5,000.....	11.4	11.8	0.1	0.2		
\$5,000 and less than \$20,000.....	20.8	23.1	0.9	1.3		
\$20,000 and less than \$100,000.....	25.8	28.2	4.7	7.2		
\$100,000 and less than \$1,000,000.....	35.0	31.5	46.6	56.9		
\$1,000,000 and over.....	7.0	3.3	47.7	33.3		

1 Excluding statistics for 39 establishments, to avoid disclosure of individual operations.  
2 Excluding statistics for 3 establishments, to avoid disclosure of individual operations.

The average value of products per establishment increased from \$188,754 in 1904 to \$267,361 in 1909, and, as computed from Table 2, the average value added by manufacture per establishment increased from \$69,868 to \$93,879. The average number of wage earners per establishment increased from 85 to 103.

Classification according to number of wage earners.— In some respects, and especially from the standpoint

of conditions under which persons engaged in the industry work, the best method of bringing out the feature of size is a classification according to the number of wage earners employed. Table 19 gives such a classification of the establishments in the industry as a whole in each of the 17 states for which more than 500 wage earners were reported at the census of 1909.

Table 19

STATE.	BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.																		
	Total.		Establishments employing in 1909—																
			No wage earners.		1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.
Es-tab-lish-ments	Wage earners (average number)	Es-tab-lish-ments	Es-tab-lish-ments	Wage earners.	Es-tab-lish-ments	Wage earners.	Es-tab-lish-ments	Wage earners.	Es-tab-lish-ments	Wage earners.	Es-tab-lish-ments	Wage earners.	Es-tab-lish-ments	Wage earners.	Es-tab-lish-ments	Wage earners.	Es-tab-lish-ments	Wage earners.	
United States.....	1,918	188,297	49	417	1,189	422	4,087	305	10,094	233	17,174	258	42,127	150	55,564	62	43,248	16	23,814
California.....	18	695	.....	6	23	5	61	1	41	3	205	3	305	.....	.....	.....	.....	.....	.....
Connecticut.....	10	520	2	1	5	2	20	2	50	1	65	2	381	.....	.....	.....	.....	.....	.....
Illinois.....	53	5,792	1	12	30	0	120	10	371	5	402	9	1,531	4	1,416	3	1,922	.....	.....
Iowa.....	10	716	.....	1	4	3	29	2	59	2	135	1	153	1	336	.....	.....	.....	.....
Maine.....	55	6,626	1	13	30	4	54	10	357	7	557	11	1,957	8	2,991	1	680	.....	.....
Maryland.....	14	594	1	4	9	1	12	3	66	3	231	2	256	.....	.....	.....	.....	.....	.....
Massachusetts.....	860	83,063	20	191	584	219	2,618	154	4,097	78	5,045	96	15,279	72	26,230	22	14,018	8	13,092
Michigan.....	23	2,455	.....	6	20	8	25	2	67	0	459	4	611	1	276	1	997	.....	.....
Minnesota.....	18	2,664	.....	3	10	2	15	2	78	5	402	2	239	3	1,295	1	625	.....	.....
Missouri.....	59	17,390	3	4	13	5	74	1	23	5	437	14	2,600	10	6,419	6	4,380	2	3,450
New Hampshire.....	08	14,211	.....	2	9	8	112	12	308	13	936	13	2,367	12	3,892	6	4,204	2	2,203
New Jersey.....	53	4,232	4	7	14	13	146	9	296	8	592	7	1,215	4	1,420	1	540	.....	.....
New York.....	296	21,627	10	94	260	72	865	39	1,313	29	2,194	30	4,890	11	3,790	10	7,156	1	1,159
Ohio.....	72	16,026	1	4	10	11	118	5	162	10	739	23	3,885	9	3,303	7	4,908	2	2,901
Pennsylvania.....	140	10,822	1	23	56	33	409	28	1,036	24	1,733	21	3,329	8	2,863	2	1,396	.....	.....
Virginia.....	10	2,711	.....	1	3	1	6	1	31	2	140	2	277	1	343	1	802	1	1,109
Wisconsin.....	08	5,431	.....	13	25	11	136	14	435	13	917	13	2,007	3	990	1	921	.....	.....

In 1909, of the total number of factories in the industry, 43.7 per cent employed from 1 to 20 wage earners, 41.5 per cent employed from 21 to 250, and 12.2 per cent more than 250. There were 49 establishments, or 2.6 per cent, that reported no wage earners. Most of the large factories were in Massachusetts, Missouri, New Hampshire, and New York.

Of the total number of wage earners, 61.9 per cent were reported by establishments employing more than 250 wage earners each, 21.2 per cent by establishments employing from 101 to 250 wage earners, 13.8 per cent by those employing from 21 to 100, and 3.1 per cent by those employing from 1 to 20.

#### EXPENSES.

As stated in the Introduction, the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of depreciation, and consequently can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported.

Table 2 shows the total reported expenses in the combined industry to have been \$477,843,146, divided as follows: Materials, \$332,738,213, or 69.6 per cent; wages, \$98,462,695, or 20.6 per cent; salaries, \$18,629,421, or 3.9 per cent; and miscellaneous expenses, made up of traveling expenses, advertising, ordinary repairs

of buildings and machinery, insurance, and other sundry expenses, \$28,012,817, or 5.9 per cent. The large proportion shown for cost of materials is due partly to duplication, the products of certain establishments in the industry being used as materials by other establishments.

Considerable differences exist among the three branches of the industry with respect to the distribution of expenses. For establishments engaged primarily in the manufacture of boots and shoes the proportions of the total expenses formed by the several classes were as follows: Materials, 67.2 per cent; wages, 22.4 per cent; salaries, 4.2 per cent; and miscellaneous, 6.2 per cent. For establishments engaged primarily in the manufacture of cut stock the proportions were: Materials, 88.3 per cent; wages, 7.5 per cent; salaries, 1.5 per cent; and miscellaneous, 2.6 per cent. For establishments engaged primarily in the manufacture of findings the corresponding proportions were 79.1 per cent, 12.7 per cent, 3 per cent, and 5.2 per cent, respectively.

Necessarily there are variations among the several states in the distribution of expenses. Table 20 shows the percentages formed by the several items of expense, in 13 of the principal states, for 1909; the absolute numbers are shown in Table 28. The figures relate to all three branches of the industry combined.

For Kentucky, wages represented only 5.3 per cent of the total expenses, while miscellaneous expenses

formed a high proportion (12.4 per cent). In this state the manufacture of boots and shoes is largely carried on in the penal institutions, and in such cases the amount paid for convict labor is reported as "contract work" under "miscellaneous expenses," and the employees are not shown in the census reports of manufactures as wage earners. Similar conditions, although to a lesser extent, prevail in Maryland. Variations appear in other states, due to differences in the relative importance of the three branches of the industry, in the amount of duplication in cost of materials, in the class of goods produced, in the kind of labor employed, and in other conditions.

Table 20

STATE.	PER CENT OF TOTAL EXPENSES FOR BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS: 1909			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
United States.....	3.9	20.6	69.6	5.9
Illinois.....	4.5	20.3	70.2	5.0
Kentucky.....	6.5	5.3	75.8	12.4
Maine.....	4.7	21.8	67.6	5.9
Maryland.....	4.7	17.6	66.9	10.8
Massachusetts.....	3.0	21.1	70.1	5.8
Minnesota.....	5.6	17.8	68.0	8.7
Missouri.....	3.1	17.5	74.2	5.1
New Hampshire.....	2.3	18.4	75.4	3.9
New Jersey.....	6.0	25.6	63.0	5.4
New York.....	5.0	23.8	64.5	6.7
Ohio.....	7.2	22.5	63.9	6.3
Pennsylvania.....	6.3	23.1	65.4	5.1
Wisconsin.....	5.1	17.9	70.0	6.9

ENGINES AND POWER.

Table 21 shows the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current) and their total horsepower, as reported at the censuses of 1909, 1904, and 1899. It also shows separately the number and horsepower of electric motors, including those operated by current generated in the establishments using them.

Table 21

POWER.	BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	3,074	833	925	96,302	63,968	55,489	100.0	100.0	100.0
Owued.....	786	833	925	67,119	49,358	42,728	69.7	77.2	77.0
Steam.....	604	649	752	60,772	44,387	38,621	64.1	69.4	69.6
Gas.....	147	135	105	3,532	2,676	1,346	3.7	4.2	2.4
Water wheels.....	32	44	68	2,798	2,242	2,663	2.9	3.5	4.8
Water motors.....	5	5	( <sup>1</sup> )	17	28	( <sup>1</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Other.....					25	98		( <sup>2</sup> )	0.2
Rented.....	2,288			29,183	14,610	12,761	30.3	22.8	23.0
Electric.....	2,288	( <sup>1</sup> )	( <sup>1</sup> )	17,381	5,959	3,823	18.0	9.3	6.9
Other.....				11,802	8,651	8,938	12.3	13.5	16.1
Electric motors.....	3,849	566	123	32,381	12,663	5,825	100.0	100.0	100.0
Run by current generated by establishment.....	1,561	566	123	15,000	6,704	1,702	46.3	52.9	30.8
Run by rented power.....	2,288	( <sup>1</sup> )	( <sup>1</sup> )	17,381	5,959	3,823	53.7	47.1	69.2

<sup>1</sup> Not reported. <sup>2</sup> Less than one-tenth of 1 per cent.

The total primary power reported for the industry increased from 55,489 horsepower in 1899 to 96,302 in 1909, an increase of 40,813 horsepower, or 73.6 per cent. There was a great increase in rented electric power, which formed 18 per cent of the total primary power in 1909, as compared with only 6.9 per cent in 1899. The amount of steam power increased 57.4 per cent from 1899 to 1909. The power of gas and other internal-combustion engines and of water wheels used is relatively small.

The number and horsepower of electric motors used for distributing power by means of current generated in the establishments shows a very great increase during the decade.

Table 22 shows for 1909 the amount of each of the several kinds of horsepower and of fuel used in the combined industry in the 17 leading states.

Table 22

STATE.	BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS: 1909															
	Number of establishments reporting.	Total horsepower.	Primary horsepower.						Electric horsepower.		Fuel used.					
			Owned by establishments reporting.				Rented.		Total, rented and generated by establishment.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Electric.	Other.			Anthracite (long tons).	Bituminous (short tons).				
United States.....	1,627	96,302	67,119	60,772	3,532	2,815	17,381	11,802	32,381	15,000	45,089	285,545	2,121	4,313	4,324	128,314
California.....	13	369	142	35	107		227		227		13	160			1,659	264
Connecticut.....	9	235	135	60	75		95	5	95		206	500			1	258
Illinois.....	46	2,770	2,203	2,102	101		412	155	810	298	94	18,054	14		608	1,307
Iowa.....	10	345	265	250	15		80		150	70	30	2,393	5		32	267
Maine.....	47	3,810	3,042	2,432	15	595	633	135	816	183	1,068	8,669	173	1,816	70	
Maryland.....	12	252	83	60	23		80	89	80		72	529			2	1,637
Massachusetts.....	792	35,051	20,787	20,429	223	115	6,528	7,766	9,028	2,500	4,134	96,144	1,895	364	622	5,399
Michigan.....	18	786	335	335			451		451	30	5	3,766	15	35		238
Minnesota.....	17	1,411	755	735	20		576	80	1,111	535	1,075	3,615		17		1,179
Missouri.....	58	11,113	9,886	9,821	65		1,152	75	6,228	5,076	184	50,555	2		44	8,989
New Hampshire.....	66	8,582	6,506	5,790	18	698	926	1,150	941	15	14	23,592		1,910	54	212
New Jersey.....	45	1,600	1,396	1,310	86		99	5	194	95	4,020	2,911	10		192	1,314
New York.....	199	10,456	7,623	5,922	494	1,207	2,108	725	2,936	823	22,552	13,103		52	135	23,092
Ohio.....	71	8,925	6,416	4,683	1,733		1,246	1,293	4,003	2,757	844	31,722			31	68,168
Pennsylvania.....	118	4,337	3,729	3,477	252		348	260	1,067	719	9,675	8,428		12	325	3,128
Virginia.....	9	1,410	1,260	1,200			120		1,047	927	13	6,211				563
Wisconsin.....	9	1,100	1,057	1,681	201	75	916	50	1,741	825	934	10,127	10	77	440	3,533
All other states.....	66	2,027	590	360	104	125	1,354	54	1,426	42	151	5,066		21	109	8,606

Of the total number of establishments engaged in the industry, 1,627, or 84.8 per cent, reported power. Many establishments which manufactured findings and cut stock reported no power, and the same was true of a number of small establishments which produced infants' shoes, handmade shoes, and pegged work. Moreover, some establishments have their boots and shoes made under contract in outside shops and themselves use no power. Naturally, the largest amount of horsepower was reported for Massachusetts, Missouri, and New York, the three states showing the largest value of products, the total for these states being 56,620 horsepower, or 58.8 per cent of the total for the United States. Steam power was the most important kind in most of the states for which separate figures are given,

the largest amount, 20,429 horsepower, being shown for Massachusetts. Rented electric power was second in importance in the industry as a whole and in most of the states shown in the table. In Ohio the horsepower of gas engines was large, as was that of water wheels in New York.

Fuel consumed.—Statistics on this subject are shown in Table 22, on page 13.

Bituminous coal was the principal fuel used, 285,545 tons being consumed in 1909. Massachusetts was the largest user of this fuel, consuming 96,144 tons, or 33.7 per cent. In New York, Pennsylvania, and New Jersey more anthracite than bituminous coal was used. Ohio used large quantities of gas, and California the largest quantity of oil.

#### SPECIAL STATISTICS AS TO PRODUCTS.

The special schedule used in collecting the statistics for the boot and shoe industry at each of the last three censuses required a detailed statement of the number of pairs of the different kinds of boots, shoes, and slippers manufactured, and in 1909 classified according to method of manufacture. Values were not called for in this connection in 1909.

Production, by kinds.—Table 23 shows the number of pairs of the different kinds of footwear made in the United States and in 13 of the leading states in 1909, 1904, and 1899, respectively. In comparing these statistics it should be noted that the special schedule for 1909 for the first time called specifically for the output of infants' shoes and slippers. The number of pairs of such shoes and slippers reported in that year was 15,000,721. This number is not shown as a separate item in Table 23, nor included with any of the classes specified, but it is included in the total output of 285,017,181 pairs of boots, shoes, and slippers. Similarly, the total for each state for 1909 includes the production of infants' shoes and slippers, but they are not included in the other columns. It is probable that at the censuses of 1904 and 1899 some infants' shoes and slippers were reported under the heading "misses' and children's boots and shoes," some under the heading "women's, misses', and children's slippers," and some under the heading "all other kinds," while for some the value only may have been reported. It is impossible to distribute the total number of infants' shoes and slippers reported in 1909 among the three classes just mentioned—and, indeed, they do not properly belong to any of them. For these reasons the statistics for misses' and children's shoes, for women's, misses', and children's slippers, and for "all other kinds," as shown in the table, are not closely comparable for the three censuses.

Of the total of 285,017,181 pairs of footwear reported in 1909, men's boots and shoes numbered 93,888,892 pairs, or 32.9 per cent; women's boots and shoes,

86,595,314 pairs, or 30.4 per cent; boys' and youths' boots and shoes, 23,838,626 pairs, or 8.4 per cent; misses' and children's boots and shoes, 43,320,365 pairs, or 15.2 per cent; slippers of all sorts, 17,507,834 pairs, or 6.1 per cent; infants' shoes and slippers, 15,000,721 pairs, or 5.3 per cent; and "all other kinds," which include outing and sporting boots and shoes, sandals, bath shoes, felt and carpet slippers, etc., numbered 4,865,429 pairs, or 1.7 per cent. Of course, the relative importance of the several kinds, as measured by value, would be quite different.

The total number of pairs of boots, shoes, and slippers of all classes combined made in 1899 was 217,965,419, as compared with 285,017,181 in 1909, the increase during the decade being 67,051,762 pairs, or 30.8 per cent. For men's boots and shoes the increase between 1899 and 1909 was 38.6 per cent, and for women's boots and shoes 33.3 per cent, but for boys' and youths' boots and shoes it was only 13.4 per cent. As already stated, the data for the other classes of products shown in the table are scarcely comparable. But for the exclusion of infants' shoes and slippers at the census of 1909, the classes of misses' and children's boots and shoes and women's, misses', and children's slippers would probably have shown a considerable increase as compared with 1899. The figures for "all other kinds" probably are the least comparable of all. For example, it seems likely that the large production reported under this heading for Pennsylvania in 1904 (3,009,090 pairs) which was many times greater than that reported in 1909, included large numbers of infants' shoes and slippers. The production of infants' shoes and slippers in Pennsylvania in 1909, as reported separately, was 4,563,505 pairs.

Massachusetts led at each census in the production of every class of boots, shoes, and slippers for which figures are shown, although its proportion of the total for most classes was lower in 1909 than in 1899.

Massachusetts reported 48.1 per cent of the men's boots and shoes shown for 1909, 37.9 per cent of the boys' and youths', 42.5 per cent of the women's, and 27.4 per cent of the misses' and children's; the corresponding proportions for 1899 were 59.1 per cent, 50.7 per cent, 37.7 per cent, and 34.7 per cent, respectively. In the manufacture of boys' and youths' boots and shoes this state shows an actual loss during the decade of 1,640,496 pairs, or 15.4 per cent, and in that of misses' and children's boots and shoes it shows a loss, according to the table, of 2,636,592 pairs, or 18.2 per cent—a figure which, however, for reasons already stated, may be misleading. The greatest absolute increase in the produc-

tion of boots and shoes of all classes combined from 1899 to 1909 is shown for Missouri, 16,866,712 pairs, or 216.5 per cent. Missouri also shows the largest absolute gain during the decade in boys' and youths' boots and shoes, 1,661,279 pairs, or 390 per cent. The greatest absolute increase in the manufacture of men's boots and shoes during the decade is shown for New Hampshire, 8,982,499 pairs, or 330.7 per cent. Massachusetts shows the largest absolute increase from 1899 to 1909 in the manufacture of women's shoes, 12,277,665 pairs, or 50.1 per cent; but Missouri, with a gain during this period of 5,522,054 pairs, shows a much greater relative increase, 176.9 per cent.

PRODUCTION OF BOOTS, SHOES, AND SLIPPERS, BY KINDS, FOR LEADING STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	Total number of pairs.	BOOTS AND SHOES (NUMBER OF PAIRS).					SLIPPERS (NUMBER OF PAIRS).			All other kinds (number of pairs).
				Total.	Men's.	Boys' and youths'.	Women's.	Misses' and children's.	Total.	Men's, boys' and youths'.	Women's, misses' and children's.	
United States..	1909	1,343	1,285,017,181	247,643,197	83,883,892	23,838,028	86,595,314	43,320,365	17,507,834	4,802,841	12,704,993	4,865,429
	1904	1,316	242,110,035	216,083,401	83,434,322	21,717,238	69,470,876	41,418,987	17,518,291	4,403,097	13,115,194	8,552,343
	1899	1,599	217,965,419	195,589,173	67,742,839	21,030,479	64,972,653	41,843,202	17,082,841	4,446,965	12,645,876	5,283,495
Massachusetts.....	1909	469	118,009,928	102,826,048	45,155,939	9,019,124	36,778,432	11,873,153	10,155,324	3,369,808	6,785,516	1,417,378
	1904	502	107,259,376	93,546,297	44,878,920	8,439,461	28,190,958	12,036,958	12,069,160	3,549,189	8,518,971	1,644,419
	1899	640	102,732,549	89,680,941	40,004,809	10,065,620	24,500,707	14,509,745	12,052,114	3,232,200	8,769,854	939,490
New York.....	1909	219	28,538,451	20,105,346	3,853,855	745,527	10,141,133	5,364,831	2,518,469	701,356	1,817,113	2,116,961
	1904	188	23,827,290	19,010,064	5,576,787	1,265,183	7,174,649	4,936,445	2,037,412	393,968	1,643,444	2,779,814
	1899	223	19,453,923	16,521,347	3,870,221	1,402,066	5,896,307	5,352,093	1,667,410	435,215	1,232,165	1,265,166
Missouri.....	1909	52	25,931,107	24,657,160	9,303,028	2,087,258	8,642,965	4,623,909	616,229	27,551	588,678	(?)
	1904	34	16,439,858	15,918,052	5,740,729	1,819,192	5,993,114	2,365,017	249,808	26,500	323,306	272,000
	1899	50	8,247,247	7,790,448	3,083,759	425,979	3,120,911	1,159,799	202,799	10,296	192,503	254,000
New Hampshire.....	1909	52	25,534,114	25,069,572	11,698,985	4,176,479	4,587,874	4,606,234	282,124	.....	282,124	.....
	1904	50	22,110,427	20,700,119	7,835,134	3,614,135	4,581,406	4,581,406	1,270,308	244,020	1,028,283	50,000
	1899	67	21,172,691	20,044,781	3,753,750	9,064,178	4,505,367	1,127,910	466,466	.....	661,444	.....
Ohio.....	1909	63	18,908,915	17,693,316	1,702,194	1,372,330	11,154,983	3,464,700	1,147,239	180,507	966,732	.....
	1904	62	18,263,416	18,063,299	1,561,202	1,590,568	9,797,093	5,014,430	192,053	25,379	166,674	8,064
	1899	81	13,849,679	13,507,978	527,241	974,257	8,204,972	3,801,508	275,991	36,300	239,691	65,710
Pennsylvania.....	1909	124	17,588,474	11,631,329	942,950	1,105,348	3,285,815	6,297,207	1,165,117	127,944	1,037,173	228,523
	1904	119	13,336,420	9,998,589	1,116,021	1,035,721	3,417,319	4,429,528	328,741	6,778	321,963	3,009,090
	1899	146	12,478,056	10,978,367	1,632,913	449,297	3,506,682	5,389,475	275,660	13,720	261,946	1,224,023
Maine.....	1909	47	9,275,102	9,066,454	4,786,134	665,270	2,886,923	728,127	(?)	(?)	(?)	(?)
	1904	50	9,261,587	9,152,833	5,709,462	1,048,268	2,244,921	150,182	29,934	9,710	20,224	78,820
	1899	48	10,748,890	10,114,090	6,134,268	1,421,682	2,208,873	349,267	471,876	6,144	465,732	162,924
Illinois.....	1909	46	8,295,805	6,893,731	4,018,016	1,270,520	1,034,470	570,725	274,697	112,900	161,797	125,100
	1904	44	6,143,462	5,736,197	3,463,185	691,165	887,707	694,140	261,265	43,099	218,160	146,000
	1899	54	6,061,982	5,660,476	2,975,957	410,839	1,552,473	721,207	213,126	45,420	167,706	179,366
Wisconsin.....	1909	59	7,296,629	6,777,363	4,056,496	652,109	1,442,341	627,417	204,872	39,018	165,854	169,075
	1904	53	4,408,468	3,951,542	2,064,125	548,867	737,567	600,983	269,642	41,288	228,654	186,984
	1899	40	3,532,227	3,230,682	1,428,720	330,007	1,226,134	245,821	202,597	17,732	184,865	98,948
New Jersey.....	1909	40	6,154,954	4,943,451	602,075	137,612	755,480	3,448,278	.....	(?)	538,285	(?)
	1904	51	6,274,064	5,816,608	543,657	87,104	672,309	4,513,635	428,036	33,276	394,760	29,420
	1899	84	6,877,084	5,859,157	599,325	150,977	845,575	4,257,280	221,287	37,740	183,547	796,640
Virginia.....	1909	8	4,255,236	4,169,835	815,476	361,846	2,370,961	621,552	.....	.....	.....	.....
	1904	6	2,710,938	2,616,438	89,450	216,116	2,013,468	297,404	94,500	.....	94,500	.....
	1899	5	1,806,444	1,792,061	40,928	2,930	1,450,989	297,214	19,400	.....	19,400	84,983
Minnesota.....	1909	18	3,195,530	3,184,450	2,025,723	115,529	760,301	276,897	.....	.....	.....	.....
	1904	17	2,639,560	2,373,222	1,162,677	387,408	419,591	403,546	42,000	.....	42,000	224,338
	1899	16	2,456,882	2,328,411	1,336,793	339,375	423,276	228,967	60,063	10,014	59,049	59,408
Michigan.....	1909	23	2,986,002	2,249,779	794,217	534,192	684,602	236,768	107,912	20,600	87,312	290,311
	1904	23	2,012,582	1,909,440	786,602	176,727	716,263	229,848	88,618	10,910	77,608	14,624
	1899	13	1,111,748	1,048,269	325,991	107,337	542,993	71,948	46,232	30,232	15,000	18,247
All other states.....	1909	123	9,046,936	8,374,763	4,134,795	1,595,482	2,063,928	580,558	1,035,851	223,167	274,399	518,081
	1904	117	7,422,087	7,156,701	2,806,371	797,321	2,446,473	797,321	1,106,536	18,980	108,736	108,770
	1899	132	7,346,021	7,023,165	3,065,428	576,363	2,428,463	952,911	248,370	55,426	192,944	74,486

<sup>1</sup> Includes 15,000,721 pairs of infants' shoes and slippers not included in any of the classes specified in the table. See text above as to comparability of the statistics.  
<sup>2</sup> Included under "all other states," to avoid disclosure of individual operations.

Massachusetts reported 58 per cent of the total number of pairs of slippers manufactured in 1909 and 70.5 per cent in 1899. The output, as shown in the table, fell off by 1,896,790 pairs, or 15.7 per cent, but

this may be due to the exclusion of infants' slippers from the statistics for 1909. In the case of men's, boys', and youths' slippers, for which the statistics are fairly comparable, Massachusetts reported 70.2 per cent of

the total number of pairs for the United States in 1909 and 73.8 per cent in 1899, the output of the state, however, increasing slightly during the decade.

Large relative increases from 1899 to 1909 are shown for some of the states of less importance in the industry, among which may be mentioned that of Virginia, in men's boots and shoes, from 40,928 to 815,476 pairs, and in boys' and youths' boots and shoes, from 2,930 to 361,846 pairs; that of Minnesota, in men's boots and shoes, from 1,336,793 to 2,025,723 pairs; and that of Wisconsin, in men's boots and shoes, from 1,428,720 to 4,055,496 pairs.

As already indicated, some of the extraordinary changes shown in the production of women's, misses', and children's slippers in certain states are probably misleading, being due to the failure to distribute properly some of the products reported for 1904 and 1899 and to the exclusion of infants' shoes and slippers from the figures for 1909.

Table 24 shows the total number of pairs of infants' shoes and slippers manufactured in 1909, figures for seven important states being also presented.

STATE.	Infants' shoes and slippers (pairs).
United States.....	15,000,721
Illinois.....	1,002,277
Massachusetts.....	3,610,576
Michigan.....	338,000
Missouri.....	657,368
New Hampshire.....	182,418
New York.....	3,797,676
Pennsylvania.....	4,563,505
All other states.....	848,902

Pennsylvania, New York, and Massachusetts, in the order named, were the most important states in the production of infants' shoes and slippers, and reported a combined output of 11,971,756 pairs, or 79.8 per cent of the total production in 1909.

Production, by methods of manufacture.—The production of boots, shoes, and slippers according to method of manufacture was first reported in 1909. The following table gives in detail, for the United States as a whole, the number of pairs of boots, shoes, and slippers produced by each method of manufacture used.

KIND.	NUMBER OF PAIRS: 1909					
	Total.	Machine or hand welt.	Turned.	McKay.	Wooden-pegged.	Wire-screw or metal-fastened.
Boots and shoes.....	247,643,197	87,391,763	26,317,990	107,063,044	5,220,161	21,643,639
Men's.....	93,888,892	53,212,450	989,240	20,438,585	3,021,652	15,326,665
Boys' and youths'.....	23,835,626	4,423,934	50,377	15,016,611	567,939	3,779,765
Women's.....	80,595,314	25,871,890	14,281,704	44,518,960	533,579	1,389,106
Misses' and children's.....	43,320,365	3,883,480	10,966,609	27,089,482	202,991	1,147,802
Slippers.....	17,507,834	1,318,095	7,611,748	8,396,871	28,918	161,289
Men's, boys' and youths'.....	4,802,841	648,007	1,733,742	2,280,652	16,851	117,559
Women's, misses', and children's.....	12,704,993	670,088	5,878,006	6,116,222	12,067	33,730
Infants' shoes and slippers.....	15,000,721	1,979,593	11,447,508	1,520,072	41,731	11,817
All other.....	4,865,429	1,420,249	1,189,742	1,286,281	321,082	639,075

The McKay method of manufacture led in 1909, with 41.5 per cent of the total production; the machine or hand welt method was second, with 32.3 per cent; and the turned product ranked third, with 16.3 per cent, followed by the wire-screw or metal-fastened with 7.9 per cent, and the wooden-pegged with 2 per cent.

The McKay method also predominated for three of

the four classes of boots and shoes and for the two classes of slippers for which separate figures are presented. Infants' shoes and slippers were chiefly turned, while for "all other kinds" the machine or hand welt method shows the largest number.

Table 26 shows the proportions of the different classes of boots, shoes, and slippers produced by the several methods of manufacture in 1909.

METHOD.	BOOTS AND SHOES.				SLIPPERS.		Infants' shoes and slippers.	All other.
	Men's.	Boys' and youths'.	Women's.	Misses' and children's.	Men's, boys', and youths'.	Women's, misses', and children's.		
Per cent of total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Machine or hand welt.....	56.7	18.6	29.9	0.0	13.5	5.3	13.2	29.4
Turned.....	1.1	0.2	16.5	25.4	36.1	46.3	76.3	24.5
McKay.....	21.8	63.0	51.4	62.5	47.6	48.1	10.1	26.4
Wooden-pegged.....	4.2	2.4	0.6	0.5	0.4	0.1	0.3	6.6
Wire screw or metal fastened.....	16.3	15.9	1.6	2.6	2.4	0.3	0.1	13.1

Table 27 shows the total number of pairs of boots | by each method of manufacture, in the 13 leading shoes, and slippers of all kinds combined, produced | states in 1909.

STATE.	NUMBER OF PAIRS OF BOOTS, SHOES, AND SLIPPERS MANUFACTURED: 1909					
	Total.	Machine or hand welt.	Turned.	McKay.	Wooden pegged.	Wire screw or metal fastened.
United States.....	285,017,181	92,119,600	46,566,988	118,266,871	5,617,892	22,445,830
Massachusetts.....	118,009,926	43,068,216	18,104,550	43,910,241	4,129,280	8,797,633
New York.....	28,538,451	8,841,244	9,817,985	7,682,491	(1)	(1)
Missouri.....	25,931,107	7,427,519	1,499,685	15,132,598	153,778	1,717,587
New Hampshire.....	25,534,114	6,342,752	1,042,833	15,947,625	(2)	2,201,504
Ohio.....	18,908,915	5,828,114	1,746,079	10,286,810	(2)	1,047,912
Pennsylvania.....	17,588,474	3,436,095	8,615,131	4,900,313	157,166	449,769
Maine.....	9,275,102	4,746,113	535,489	3,686,416	(2)	307,084
Illinois.....	8,295,805	3,820,728	(1)	3,458,585	(1)	430,489
Wisconsin.....	7,296,629	1,825,953	565,617	2,123,436	151,406	2,630,217
New Jersey.....	6,154,954	1,480,016	2,972,614	1,702,324	.....	(2)
Virginia.....	4,255,236	615,949	(1)	3,371,809	(1)	(1)
Minnesota.....	3,195,530	1,618,890	171,385	876,652	20,830	508,773
Michigan.....	2,986,002	1,121,617	625,961	510,074	(2)	728,350

<sup>1</sup> Figures can not be shown without disclosing individual operations.  
<sup>2</sup> Included in "wire screw or metal fastened," to avoid disclosure of individual operations.  
<sup>3</sup> Included in "McKay," to avoid disclosure of individual operations.

The machine or hand welt method was the method most largely used in Maine, Illinois, Minnesota, and Michigan; the McKay method was the most important in Massachusetts, Missouri, New Hampshire, Ohio, and Virginia; turned work ranked first in New York, Pennsylvania, and New Jersey; and in Wisconsin the wire-screw or metal-fastened product was the most important.

GENERAL STATISTICS, BY STATES.

The principal data secured by the census inquiry concerning the manufacture of boots and shoes, cut stock, and findings combined are presented in two general tables.

Table 28 gives detailed statistics for the industry, by states, for 1909, showing the number of establishments, number of persons engaged in the industry, primary horsepower, capital invested, expenses (so far as these were reported), value of products, and value added by manufacture.

Table 29 shows somewhat less detailed statistics for 1909, 1904, and 1899, by states.

Table 28	STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.							WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.	
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.		
						Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.		Female.
									Maximum month.	Minimum month.						
1	United States.....	1,918	215,923	1,838	3,914	6,867	5,007	198,297	De 207,452	My 180,382	211,507	132,411	70,457	5,010	3,629	96,302
2	California.....	18	840	76	18	37	14	695	No 754	Jy 542	791	547	199	38	7	269
3	Connecticut.....	10	582	15	20	17	10	520	Mh 536	Au 493	598	256	304	6	2	235
4	Illinois.....	53	6,392	38	113	311	138	5,792	Fe 5,981	Jo 5,572	5,917	3,623	1,953	177	164	2,770
5	Indiana.....	8	524	4	22	49	13	436	No 505	Mh 390	496	344	128	13	11	393
6	Iowa.....	10	770	2	20	28	6	710	Jy 770	So 656	725	383	317	19	6	345
7	Kentucky.....	13	570	11	41	81	11	426	Oc 466	Au 412	472	263	189	9	11	232
8	Louisiana.....	13	319	21	6	8	6	278	Oc 305	Ja 188	291	220	61	5	5	190
9	Maine.....	55	7,195	29	148	234	158	6,626	Fe 7,274	Jy 6,190	7,170	4,682	2,366	92	30	3,810
10	Maryland.....	14	670	11	25	32	8	594	Ap 613	Je 555	599	353	190	38	18	232
11	Massachusetts.....	800	90,048	911	1,459	2,120	2,495	83,063	De 87,797	My 78,536	89,751	57,494	28,922	1,959	1,376	35,951
12	Michigan.....	23	2,703	9	49	127	63	2,455	De 2,547	My 2,395	2,547	1,490	893	99	65	786
13	Minnesota.....	18	2,049	4	48	188	45	2,664	De 2,854	My 2,437	2,862	1,826	1,021	6	9	1,411
14	Missouri.....	59	18,665	14	220	776	259	17,396	De 18,223	My 16,820	18,241	11,048	5,801	853	539	11,113
15	New Hampshire.....	68	15,113	61	251	271	319	14,211	No 15,200	My 13,744	15,369	10,105	4,807	220	147	8,582
16	New Jersey.....	53	4,602	46	111	153	60	4,232	De 4,366	Ap 4,126	4,369	2,656	1,587	68	58	1,500
17	New York.....	206	23,815	293	502	769	634	21,627	De 22,755	Ja 20,655	22,857	14,548	7,847	255	207	10,459
18	North Carolina.....	7	211	6	6	17	4	178	No 209	Ap 137	209	146	38	20	5	242
19	Ohio.....	72	17,607	40	393	751	397	16,026	De 17,033	Ap 13,880	17,122	9,510	7,023	254	335	8,025
20	Oregon.....	5	67	2	3	4	2	56	Jy 59	Ja 53	59	54	4	1	.....	39
21	Pennsylvania.....	140	11,829	167	232	435	173	10,822	De 11,093	Ap 10,660	11,281	6,598	3,877	451	355	4,337
22	Rhode Island.....	6	81	6	2	6	2	65	De 79	Ja 53	70	47	32	.....	.....	166
23	Tennessee.....	4	427	7	9	35	2	374	Jy 385	Fe 358	383	252	86	34	11	174
24	Texas.....	6	52	10	3	2	1	36	No 40	Fe 34	40	35	2	3	.....	24
25	Virginia.....	10	2,973	6	68	126	62	2,711	Jo 2,768	Fe 2,048	2,694	1,984	586	72	52	1,410
26	Washington.....	12	205	11	7	9	6	172	No 199	Jo 150	207	160	47	.....	.....	151
27	Wisconsin.....	68	5,962	26	120	274	111	5,431	De 5,694	Jy 5,173	5,695	3,284	1,921	287	203	2,922
28	All other states <sup>2</sup> .....	17	752	12	18	19	8	695	.....	.....	713	413	256	31	13	476

<sup>1</sup> Same number reported for one or more other months.

# BOOT AND SHOE INDUSTRY.

713

FINDINGS—DETAILED STATISTICS, BY STATES: 1909.

Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).	
	Total.	Services.			Materials.		Miscellaneous.						
		Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.			
1	\$222,324,248	\$477,843,146	\$7,981,646	\$10,647,775	\$98,462,695	\$1,847,885	\$330,890,328	\$2,096,434	\$820,561	\$1,961,659	\$23,134,163	\$512,797,642	\$180,059,429
2	1,192,217	1,718,523	42,450	46,891	402,488	12,422	1,107,402	18,000	3,788	.....	85,082	1,924,278	804,454
3	740,169	1,466,375	26,740	29,427	225,024	5,418	1,082,829	5,632	2,066	12,116	76,393	1,657,578	569,331
4	7,569,620	15,485,947	298,955	400,916	3,142,912	106,865	10,761,977	81,340	23,920	4,170	664,892	16,754,704	5,885,882
5	738,226	974,658	29,075	52,540	158,997	12,040	652,207	2,178	4,068	45	63,412	977,934	313,591
6	790,293	1,509,946	26,366	27,419	318,158	9,419	1,049,694	3,515	1,404	.....	73,971	1,632,911	573,798
7	1,700,306	3,226,157	69,549	141,022	170,740	4,230	2,440,107	2,946	4,691	253,408	139,464	3,247,825	803,488
8	366,342	465,123	9,850	12,940	112,234	6,064	296,951	4,980	926	.....	21,178	516,789	213,774
9	7,284,376	14,708,825	257,262	435,580	3,210,048	68,363	9,872,142	11,748	18,925	4,737	828,020	15,508,771	5,568,266
10	677,706	1,362,474	32,368	32,116	239,242	8,003	904,079	12,835	3,381	48,613	81,742	1,431,017	518,845
11	90,242,915	218,269,055	2,956,365	3,692,281	45,990,138	652,487	152,337,405	989,920	365,254	1,225,419	10,059,726	236,342,915	83,352,963
12	2,885,564	4,951,650	79,551	160,858	935,935	27,236	3,320,075	27,249	16,439	10,402	367,905	5,255,966	1,908,655
13	5,729,038	7,260,058	120,233	286,077	1,290,216	40,687	4,893,910	66,905	23,541	47,858	490,631	7,567,582	2,632,955
14	15,837,749	46,532,538	507,220	928,287	8,163,815	155,519	34,384,182	102,235	87,341	183,200	2,020,679	48,751,235	14,211,534
15	12,700,431	37,408,502	449,402	400,295	6,897,133	119,815	28,005,325	56,936	26,206	12,900	1,350,490	39,429,544	11,224,404
16	4,107,664	7,502,291	213,784	234,432	1,923,198	23,548	4,698,577	18,652	10,763	27,947	346,340	8,041,623	3,314,498
17	26,047,823	44,889,191	1,011,762	1,241,084	10,668,548	259,305	23,718,208	365,482	48,643	72,075	2,500,186	48,185,914	19,211,403
18	413,492	340,125	5,942	11,177	46,455	1,641	230,940	372	2,356	.....	32,212	408,079	166,498
19	16,755,293	29,516,430	746,715	1,377,843	6,645,700	126,966	18,745,051	162,529	93,839	128	1,617,579	31,559,957	12,678,950
20	68,177	149,656	4,200	4,860	39,548	947	94,056	2,115	282	.....	3,698	155,507	60,504
21	11,060,633	18,432,282	619,589	541,891	4,266,300	77,151	11,986,631	79,581	14,419	5,955	840,765	20,218,784	8,155,002
22	121,274	103,621	4,080	3,996	27,632	1,947	55,022	4,330	902	.....	5,662	142,080	85,111
23	532,067	1,120,964	23,800	46,117	117,896	6,761	820,736	2,763	1,514	30,316	70,761	1,180,894	353,397
24	56,247	83,000	5,400	2,344	17,781	737	47,586	1,380	328	.....	7,504	102,133	53,810
25	3,999,999	5,610,340	141,577	110,624	804,921	20,615	3,998,889	14,836	27,295	565	491,018	5,803,503	1,788,999
26	976,635	596,071	14,700	6,580	89,457	5,197	452,195	5,917	2,063	.....	19,962	611,131	153,739
27	8,232,993	12,501,006	246,823	301,401	2,243,464	79,621	8,673,215	45,719	30,652	.....	790,111	13,602,234	4,849,398
28	891,860	1,660,278	37,888	21,827	313,675	12,795	1,161,789	6,439	5,275	21,740	78,860	1,780,754	606,170

<sup>2</sup> All other states embrace: Colorado, 1 establishment; Delaware, 1; Georgia, 3; Nebraska, 3; Oklahoma, 1; Utah, 2; Vermont, 4; West Virginia, 2.

## MANUFACTURES.

BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS--COMPARATIVE STATISTICS, BY STATES:  
1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Expressed in thousands.													
United States.....	1909	1,918	215,923	1,838	15,788	198,297	96,302	\$222,324	\$18,029	\$98,463	\$332,738	\$512,798	\$180,060
	1904	1,895	171,940	2,128	9,518	160,294	63,968	136,802	9,412	73,072	225,288	367,688	132,400
	1899	2,253			8,348	151,231	56,489	110,363	8,159	61,924	101,456	290,047	86,591
California.....	1909	18	840	76	69	695	369	1,192	89	402	1,120	1,924	804
	1904	24	817	59	50	708	246	1,157	51	389	1,000	1,734	734
	1899	134	1,151	88	63	1,000		1,262	56	460	1,103	1,892	759
Connecticut.....	1909	10	582	15	47	520	235	746	56	226	1,088	1,658	570
	1904	12	559	13	47	490	253	589	54	209	820	1,319	499
	1899	15	787	28	40	719	379	790	38	298	987	1,517	530
Illinois.....	1909	53	6,302	38	562	5,792	2,770	7,570	700	3,143	10,869	16,765	5,886
	1904	52	4,587	41	297	4,240	1,977	3,045	336	1,901	6,415	9,993	3,578
	1899	263			304	4,790		3,558	347	2,085	7,100	10,499	3,339
Indiana.....	1909	8	524	4	84	436	393	738	82	159	664	978	314
	1904	14	250	1	23	226	133	306	20	71	300	460	160
	1899	10			48	639		503	46	164	678	937	289
Iowa.....	1909	10	770	2	52	716	345	700	54	318	1,050	1,633	574
	1904	15	499	1	20	478	263	419	18	186	522	854	332
	1899	7	613	7	40	566	233	507	36	102	507	786	279
Kentucky.....	1909	13	570	11	133	426	232	1,700	211	171	2,444	3,248	894
	1904	9	720	8	53	659	268	750	47	200	1,360	1,930	670
	1899	11	303	19	63	221	122	261	37	57	470	657	137
Louisiana.....	1909	13	319	21	20	278	190	366	23	112	303	517	214
	1904	10	422	15	37	370	169	352	31	157	378	620	242
	1899	12	444	20	27	397	146	289	26	145	442	661	219
Maine.....	1909	55	7,195	29	540	6,626	3,810	7,284	693	3,210	9,041	15,509	5,568
	1904	58	6,363	42	371	5,950	3,010	4,643	382	2,673	8,435	12,008	4,173
	1899	53	6,870	46	362	6,408		5,189	353	2,670	8,445	12,431	3,986
Maryland.....	1909	14	670	11	65	594	252	678	64	230	612	1,431	519
	1904	20	756	20	55	681	182	445	44	247	546	1,040	494
	1899	29			51	920		651	54	709	749	1,261	432
Massachusetts.....	1909	860	90,048	911	6,074	83,063	35,051	90,243	6,649	45,990	152,990	236,343	83,353
	1904	893	75,156	1,110	3,898	70,148	24,536	59,925	3,737	36,175	110,610	173,680	63,070
	1899	1,056	69,580	1,423	2,922	65,235		45,546	2,815	30,302	94,049	141,239	47,190
Michigan.....	1909	23	2,703	9	239	2,455	786	2,886	246	936	3,347	5,256	1,999
	1904	23	1,918	17	178	1,723	649	1,702	190	681	2,016	3,531	1,515
	1899	13	1,213	19	77	1,117		1,136	70	386	1,104	1,915	761
Minnesota.....	1909	18	2,949	4	281	2,664	1,411	5,729	406	1,290	4,935	7,568	2,633
	1904	17	1,937	8	215	1,714	883	2,432	188	719	2,632	4,170	1,538
	1899	10	2,184	13	146	2,025	808	2,238	155	719	2,378	3,616	1,238
Missouri.....	1909	59	18,065	14	1,255	17,396	11,113	15,838	1,436	8,164	34,540	48,751	14,211
	1904	37	10,949	8	490	10,451	5,145	8,290	568	4,340	14,053	23,541	5,588
	1899	57			336	5,970		4,218	356	8,123	7,070	11,456	3,333
New Hampshire.....	1909	68	15,113	61	841	14,211	8,582	12,700	850	6,897	28,215	39,440	11,225
	1904	61	11,320	74	511	10,744	5,284	8,274	464	4,494	15,747	22,834	7,087
	1899	84	12,804	106	372	12,416		8,330	306	5,106	16,713	23,766	7,053
New Jersey.....	1909	53	4,602	40	324	4,232	1,500	4,108	448	1,923	4,727	8,042	3,315
	1904	65	4,838	61	253	4,524	1,598	3,318	292	1,865	4,197	7,588	3,391
	1899	105	5,080	108	350	4,631		3,359	386	1,806	4,457	7,519	3,063
New York.....	1909	296	23,815	293	1,895	21,627	10,456	26,048	2,254	10,660	28,975	48,186	19,211
	1904	259	18,776	292	1,066	17,418	6,571	15,571	1,032	7,873	22,400	37,521	15,121
	1899	320	18,167	370	1,136	16,655		12,959	1,047	6,431	17,309	28,117	10,803
North Carolina.....	1909	7	211	6	27	178	242	413	17	46	242	408	168
	1904	7	109	11	9	89	70	86	6	25	117	186	69
	1899	3	44	1	3	40	53	38	2	14	53	73	20
Ohio.....	1909	72	17,607	40	1,541	16,026	8,925	16,755	2,125	6,646	18,872	31,551	12,679
	1904	73	15,091	55	1,004	14,032	6,113	10,434	1,010	5,275	14,989	20,745	10,746
	1899	92	13,758	97	895	12,766		7,054	966	4,010	11,310	18,246	6,939
Oregon.....	1909	5	67	2	9	50	39	68	9	40	95	150	61
	1904	3	25			25	15	34		17	26	55	29
	1899	3			4	11		26		6	29	44	15
Pennsylvania.....	1909	140	11,829	167	840	10,822	4,337	11,661	1,161	4,266	12,064	20,219	8,155
	1904	133	9,685	195	509	8,990	3,221	7,394	485	3,263	8,907	14,834	5,977
	1899	169	10,162	241	674	9,247		7,051	588	3,148	8,682	13,890	5,148
Rhode Island.....	1909	6	81	6	10	65	106	121	8	28	57	142	55
	1904	5	117	4	4	109	88	155	5	45	61	175	114
	1899	8	92	6	22	64		203	18	33	217	335	118
Tennessee.....	1909	4	427	7	46	374	174	532	70	118	827	1,181	354
	1904	4	246	5	16	225	200	174	19	78	640	837	197
Texas.....	1909	6	52	10	6	36	24	56	8	18	43	102	54
	1904	5	50	7		43	15	56		22	39	91	52
Virginia.....	1909	10	2,973	6	256	2,711	1,410	3,999	252	805	4,020	5,809	1,789
	1904	8	1,801		63	1,738	515	975	81	369	1,915	2,627	712
	1899	5	1,203	5	45	1,153		641	51	206	1,160	1,452	292
Washington.....	1909	12	205	11	22	172	151	977	21	89	457	611	154
	1904	5	124	6	12	106	31	183	11	47	121	226	105
	1899	3			15	75		71	12	31	103	166	63
Wisconsin.....	1909	68	5,962	26	505	5,431	2,923	8,233	638	2,243	8,753	13,602	4,849
	1904	62	3,799	34	271	3,494	1,086	3,916	273	1,326	4,417	6,844	2,427
	1899	44			239	2,942		2,667	223	904	3,449	5,189	1,749
All other states.....	1909	17	752	12	45	695	476	893	59	315	1,174	1,778	604
	1904	43	1,017	41	75	901	847	1,271	68	346	1,725	2,635	830
	1899	41			114	1,164		1,259	89	382	1,699	2,473	774

<sup>1</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.

<sup>2</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.

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LEATHER, TANNED, CURRIED,  
AND FINISHED

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# THE LEATHER INDUSTRY.

## GENERAL STATISTICS.

**Nature of the industry.**—The industry designated by the Bureau of the Census "leather, tanned, curried, and finished," which for brevity may be called simply the leather industry, includes establishments engaged primarily in the manufacture of leather from various kinds of hides and skins. A great variety of different kinds of leather are produced, and for some kinds the processes are quite different from those for others. The processes may, for the most part, be classified into the two main groups of tanning, on the one hand, and currying and finishing on the other. The process of tanning is applied in producing all kinds of leather. Most kinds of leather are subjected to finishing processes to render them more pliable, to give them the desired kind of surface, or to color them. The hides of cattle are frequently split to make the leather thinner and more pliable and to increase the area obtained.

In many establishments leather is both tanned and finished, but in some cases the different processes are performed at different establishments. One establishment may buy rough tanned leather from another establishment and curry or finish it. To this extent there is a duplication in the cost of materials and in the value of products shown for the industry as a whole, as the cost of materials and the value of products for each establishment are included in the respective totals. In other cases one establishment may tan hides and skins, or may curry or finish leather, owned by another establishment in the leather industry, the work being performed under contract. Under these conditions the value of products reported by the establishment performing the work is only the compensation received therefor, and not the value of the leather as turned out, which is reported by the establishment for which the work is done. There is,

of course, some duplication in value of products under these conditions, but the full value of the products is not duplicated.

Finally, there are a good many establishments which tan or curry and finish leather under contract for concerns other than those engaged in the leather industry, particularly for dealers in leather. In such cases also the value of products reported for the establishment performing the work represents only the compensation for work performed, and consequently the total value of products shown for the leather industry does not include the entire value of leather so produced. Separate statistics are given in this report, however, with respect to the number and estimated value of hides and skins treated under contract for others than tanners, curriers, and finishers.

Some of the establishments assigned to industries other than "leather, tanned, curried, and finished," tan or curry and finish leather which they use for manufacture into more highly finished products. This is particularly the case with respect to establishments making belting, boot and shoe cut stock and findings, leather gloves and mittens, and saddlery and harness. The quantity and value of the leather produced in such establishments are not included with the data shown for the leather industry, but are shown separately in the present report.

**Comparison with earlier censuses.**—Table 1 summarizes the statistics of the leather industry of the entire country for each census from 1869 to 1909, inclusive.

The financial figures for 1869 are given in currency, which at that time was worth only about 80 cents, gold, to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

	NUMBER OR AMOUNT.						PER CENT OF INCREASE. <sup>1</sup>					
	1909	1904	1899	1889	1879	1869	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889	1869-1879
Number of establishments.....	919	1,049	1,806	1,787	5,628	7,569	-29.6	-12.4	-19.7	-26.9	( <sup>2</sup> )	( <sup>2</sup> )
Persons engaged in the industry..	67,100	61,602	56,024	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	19.8	8.9	10.0	.....	.....	.....
Proprietors and firm members.....	784	1,112	1,473	( <sup>3</sup> )	( <sup>2</sup> )	( <sup>3</sup> )	-46.8	-29.5	-24.5	.....	.....	.....
Salaried employees.....	4,114	3,251	2,442	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	68.5	26.5	33.1	.....	.....	.....
Wage earners (average number).....	62,202	57,239	52,109	42,392	40,282	35,243	19.4	8.7	9.8	22.9	( <sup>1</sup> )	( <sup>1</sup> )
Primary horsepower.....	148,140	117,450	88,860	60,031	( <sup>3</sup> )	39,583	66.7	26.1	32.2	48.0	.....	.....
Capital.....	\$332,726,952	\$242,584,254	\$173,977,421	\$98,088,698	\$73,383,911	\$61,124,812	91.2	37.2	39.4	77.4	33.7	20.1
Expenses.....	305,699,411	235,178,632	187,773,353	152,330,272	( <sup>3</sup> )	( <sup>3</sup> )	62.8	30.0	25.2	23.3	.....	.....
Services.....	88,846,481	81,501,058	25,749,933	23,985,879	( <sup>3</sup> )	( <sup>3</sup> )	50.9	23.3	22.3	7.4	45.3	13.8
Salaries.....	6,743,636	4,451,906	3,158,842	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	113.5	51.5	40.9	.....	.....	.....
Wages.....	32,102,845	27,049,152	22,591,091	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	42.1	18.7	19.7	.....	.....	.....
Materials.....	245,278,933	191,179,073	155,000,004	122,946,721	156,384,117	118,569,634	60.2	29.9	23.3	26.1	( <sup>2</sup> )	( <sup>2</sup> )
Miscellaneous.....	18,573,997	12,498,501	7,023,416	5,397,672	( <sup>3</sup> )	( <sup>3</sup> )	164.5	48.6	78.0	30.1	.....	.....
Value of products.....	327,874,187	252,620,986	204,038,127	172,136,092	200,264,944	157,237,597	60.7	29.8	23.8	13.5	( <sup>2</sup> )	( <sup>2</sup> )
Value added by manufacture (value of products less cost of materials).....	79,595,254	61,441,913	49,038,123	49,189,371	43,880,827	38,667,963	62.3	29.5	25.3	-0.3	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> A minus sign (-) denotes decrease. Where the percentages are omitted comparable figures can not be given.  
<sup>2</sup> Figures not comparable for reasons stated in the text.

<sup>3</sup> Comparable figures not available.  
<sup>4</sup> Figures not strictly comparable.

In 1909 there were 919 establishments reported as engaged primarily in the tanning, currying, or finishing of leather. They gave employment on the average to 67,100 persons, of whom 62,202 were wage earners. The amount paid in salaries and wages was \$38,846,481. The value of products for the year was \$327,874,187. The processes of tanning, currying, and finishing are comparatively simple, and the cost of materials represents the greater part of the value of products. The cost of materials in 1909 was \$248,278,933, which is equal to 75.7 per cent of the total value of products. The value added to materials by manufacture was thus \$79,595,254.

Statistics for this industry were first reported at the census of 1849, when there were 6,686 establishments, with 25,595 wage earners and with products for the year valued at \$43,457,898. At the census of 1859 there were reported 5,188 establishments, with 26,246 wage earners and with products valued at \$75,698,747.

The large number of establishments reported for these two early censuses, and also for 1869 and 1879, is in part due to the fact that at the censuses prior to 1889 establishments engaged both in tanning and in currying and finishing made separate reports for each branch of the industry, and thus were counted twice.

In 1879, 3,105 establishments were reported as engaged in the tanning of leather and 2,523 as engaged in currying leather, in dressing skins, and in the manufacture of patent and enameled leather. In 1869, of the 7,569 establishments, 4,237 were

reported as tanneries and 3,332 as engaged in the currying and finishing of leather. Because of this method of handling the statistics from 1849 to 1879 the combined value of products for the two branches of the industry includes much duplication, and the figures are not comparable with those for later censuses. The same is true of the data given for cost of materials.

Substantial increases in value of products were reported at each census from 1889 to 1909. The value of products for 1909 was nearly double the value for 1889, but a part of the increase was due to the advance in prices of materials and products between 1899 and 1909. From 1899 to 1909 the average number of wage earners increased 10,093, or 19.4 per cent, and the value of products \$123,836,060, or 60.7 per cent, while most classes of leather, as appears from later tables, showed greater increases in value than in quantity.

Summary, by states.—Table 2 summarizes the more important statistics for the industry by states, the states being arranged according to the value of products reported for 1909. Percentages of increase for the decade 1899-1909 and for the two five-year periods composing it are also presented. The states are given their actual ranking in this table, consideration being given to the rank of those states for which figures can not be shown. In considering the rank in value of products, it should be borne in mind that there may be more duplication in value in some states than in others.

Table 2

LEATHER, TANNED, CURRIED, AND FINISHED.

STATE.	Number of establishments: 1909	Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. <sup>1</sup>											
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Wage earners (average number).			Value of products.			Value added by manufacture.		
				1909	1904			1909	1904			1909	1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904			
		1909	1904	1909	1904	1909	1904	1909	1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904							
United States . . . . .	919	62,202	100.0	.....	.....	\$327,874,187	100.0	.....	.....	\$79,595,254	100.0	.....	.....	19.4	8.7	9.8	60.7	29.8	23.8	62.3	29.5	25.3
Pennsylvania . . . . .	163	14,008	22.5	1	1	77,626,321	23.8	1	1	18,813,107	23.6	1	1	4.0	-2.8	7.6	40.1	12.2	24.8	42.4	34.2	6.1
Wisconsin . . . . .	32	7,548	12.1	3	3	44,667,076	13.6	2	3	9,839,091	12.4	3	4	43.4	35.9	5.6	122.5	72.8	28.7	143.9	64.7	48.1
Massachusetts . . . . .	132	10,252	16.5	2	2	40,002,079	12.2	3	2	11,236,571	14.1	2	2	46.2	13.0	29.4	53.5	19.0	27.0	79.1	9.0	64.4
New Jersey . . . . .	80	5,560	8.9	5	5	28,430,955	8.7	4	5	8,232,485	10.3	4	3	33.1	12.3	18.5	106.8	32.3	56.4	95.4	32.3	47.7
New York . . . . .	109	5,688	9.1	4	4	27,642,383	8.4	5	4	6,701,650	8.4	5	5	-12.9	4.5	-16.6	19.1	27.7	-0.7	15.9	24.8	-7.2
Michigan . . . . .	24	2,201	3.7	8	8	15,331,104	4.7	6	8	3,210,133	4.0	7	9	60.5	31.1	22.4	154.8	64.1	55.3	143.4	55.1	56.9
Illinois . . . . .	29	3,001	4.8	7	7	14,911,782	4.5	7	6	2,781,173	3.5	8	6	32.6	8.3	22.4	90.0	38.0	37.1	34.7	7.6	25.2
West Virginia . . . . .	20	1,571	2.5	11	12	12,460,592	3.8	8	11	2,067,301	2.6	11	11	136.6	66.1	42.5	287.8	105.4	88.8	208.7	59.9	93.0
Delaware . . . . .	16	3,045	4.9	6	6	12,079,225	3.7	9	7	3,932,375	4.9	6	7	23.9	7.4	15.4	28.5	17.8	0.0	65.7	68.0	-1.4
Ohio . . . . .	36	1,884	3.0	9	9	10,127,836	3.4	10	10	2,408,232	3.0	9	10	30.1	17.0	16.3	95.4	55.5	25.7	71.0	17.4	45.7
California . . . . .	40	1,398	2.2	12	10	9,366,545	2.9	11	9	2,327,092	2.9	10	8	-3.0	-7.7	4.2	26.5	16.0	9.0	45.8	7.8	85.3
Virginia . . . . .	39	1,690	2.6	10	11	8,266,850	2.5	12	12	1,821,689	2.3	12	13	78.9	50.7	18.7	75.3	41.8	23.6	78.5	64.0	8.8
North Carolina . . . . .	30	832	1.3	13	15	5,415,495	1.7	13	15	1,259,344	1.6	13	15	127.3	55.8	45.9	260.5	103.4	77.2	237.5	101.8	67.3
Kentucky . . . . .	18	630	1.0	14	14	4,240,795	1.3	14	13	1,016,709	1.3	14	12	-22.2	-13.5	-10.1	12.9	7.3	5.2	16.2	-11.2	30.9
Maryland . . . . .	13	466	0.7	15	17	2,661,066	0.8	15	18	547,032	0.7	16	10	2.4	-12.2	16.7	51.7	39.2	9.0	59.5	27.8	24.8
Tennessee . . . . .	25	395	0.6	18	13	2,529,901	0.8	16	14	536,187	0.7	17	14	-50.8	-46.3	-8.3	-9.7	-29.4	27.9	-13.3	-26.9	18.6
Indiana . . . . .	10	398	0.6	17	20	2,311,299	0.7	17	21	598,739	0.8	15	21	-0.5	50.2	-33.8	45.3	119.9	-33.9	48.4	108.4	-28.8
Missouri . . . . .	9	220	0.4	21	22	2,034,979	0.6	18	20	436,114	0.5	19	20	18.9	1.4	17.3	149.1	80.4	38.1	67.7	10.7	51.5
Maine . . . . .	17	436	0.7	16	18	1,905,372	0.6	19	16	453,169	0.0	18	16	-25.7	-15.3	-12.3	22.3	23.8	2.0	-11.0	-13.9	3.3
Georgia . . . . .	10	306	0.5	19	16	1,374,070	0.4	21	17	322,627	0.4	21	17	-25.4	-42.6	30.0	15.7	-42.3	100.5	24.2	-34.7	90.4
Connecticut . . . . .	8	150	0.2	22	23	1,047,343	0.3	22	23	242,435	0.3	22	23	-16.2	-11.2	-5.6	17.5	40.0	-16.0	15.2	18.0	-2.4
All other states . . . . .	44	533	0.9	.....	.....	3,150,519	1.0	.....	.....	811,819	1.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> Percentages are based on figures in Table 29. A minus sign (-) denotes decrease.

Pennsylvania is by far the most important state in the manufacture of leather, ranking first at the censuses of 1909 and 1904 in average number of wage

earners, value of products, and value added by manufacture. In 1909 the value of products for the state represented 23.8 per cent of the total for the United

States. The number of wage earners employed in the industry in Pennsylvania increased 4.6 per cent during the decade ending with 1909, and the value of products 40.1 per cent. Wisconsin ranked second in 1909 in value of products and third in value added by manufacture, advancing from third place and fourth place, respectively, in 1904. Massachusetts ranked third in value of products in 1909, dropping from second place, which it held in 1904, but it ranked second at both censuses in number of wage earners and value added by manufacture. According to value of products, New Jersey ranked fourth in 1909, displacing New York, which held fourth place in 1904.

Of the 10 leading states in the leather industry (as determined by value of products), West Virginia showed the most rapid development during the period from 1899 to 1909, the number of wage earners increasing 136.6 per cent and the value of products 287.8 per cent. Wisconsin, Massachusetts, New Jersey, Michigan, and Ohio also showed high percentages of increase in all three items given in the table, while New York lost in average number of wage earners engaged in the industry. North Carolina, which, however, is not among the leading states in the industry, showed exceptionally large gains from 1899 to 1909, the number of wage earners increasing 127.3 per cent and the value of products 260.5 per cent.

In general, the states held the same, or practically the same, rank in respect to value of products in 1909 as in 1904, showing that there was no very conspicuous change in the geographic distribution of the industry during the five-year period.

Persons engaged in the industry.—Table 3 shows, for 1909, the number of persons engaged in the industry, classified according to occupational status and sex, and in the case of wage earners, according to age. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
All classes.....	67,100	64,439	2,661
Proprietors and officials.....	2,331	2,293	38
Proprietors and firm members.....	784	750	25
Salaried officers of corporations.....	629	618	11
Superintendents and managers.....	618	616	2
Clerks.....	2,567	2,002	475
Wage earners (average number).....	62,202	60,054	2,148
16 years of age and over.....	61,753	59,674	2,079
Under 16 years of age.....	449	380	69

An average of 67,100 persons were engaged in the industry during 1909, of whom 62,202, or 92.7 per cent, were wage earners, 2,331, or 3.5 per cent, proprietors and officials, and 2,567, or 3.8 per cent, clerks and other subordinate salaried employees. Of the total number of persons engaged in the industry, 64,439,

or 96 per cent, were males, and 2,661, or 4 per cent, females. The average number of children under 16 years of age employed as wage earners was 449.

The average number of wage earners for each state, as reported at the censuses of 1909, 1904, and 1899, is given in Table 28. This table does not show the distribution of the average number by sex and age for the individual states, but Table 29 gives such a distribution of the number employed on December 15, 1909, or the nearest representative day. Female wage earners were reported in 14 of the 25 states for which separate figures are shown. The largest number of such wage earners, 821, was reported for the state of Delaware, and the next largest number, 743, for Pennsylvania. Most of the children employed as wage earners were reported from Pennsylvania, New Jersey, Massachusetts, and Wisconsin; the proportion of children was higher in New Jersey than in any other state.

In order to compare the distribution of persons engaged in the industry according to occupational status in 1909 with that in 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 4.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.				Per cent of increase: 1904-1909 <sup>1</sup>
	1909		1904		
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	67,100	100.0	61,602	100.0	8.9
Proprietors and firm members.....	784	1.2	1,112	1.8	-23.5
Salaried employees.....	4,114	6.1	3,251	5.3	26.5
Wage earners (average number).....	62,202	92.7	57,239	92.9	8.7

<sup>1</sup> A minus sign (-) denotes decrease.

The decrease in the number of proprietors and firm members from 1,112 in 1904 to 784 in 1909 is accounted for by the marked decrease in establishments under individual and firm ownership, which numbered 657 in 1904 and 465 in 1909.

Table 5 shows the average number of wage earners engaged in the industry, distributed according to age periods, and in the case of those 16 years of age and over according to sex, for 1909, 1904, and 1899. The number of women employed has increased with each succeeding census, but the number of children, though much larger in 1904 than in 1899, was materially less in 1909 than 10 years before.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY.					
	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	62,202	100.0	57,239	100.0	52,109	100.0
16 years of age and over.....	61,753	99.3	56,331	98.4	51,575	99.0
Male.....	59,674	95.9	54,517	95.2	50,402	96.7
Female.....	2,079	3.3	1,814	3.2	1,173	2.3
Under 16 years of age.....	449	0.7	908	1.6	634	1.0

Wage earners employed, by months.—Table 6 gives the number of wage earners employed in the industry on the 15th (or nearest representative day) of each

month during the year 1909 for the 14 states in which an average of 500 or more wage earners were employed during the year.

Table 6

STATE.	Average number during the year.	WAGE EARNERS EMPLOYED IN THE LEATHER INDUSTRY: 1909 <sup>1</sup>											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
United States.....	62,202	62,063	62,373	61,726	60,095	60,075	60,559	61,039	61,168	62,049	63,383	65,174	66,694
California.....	1,398	1,370	1,389	1,400	1,376	1,352	1,359	1,368	1,422	1,457	1,440	1,392	1,433
Delaware.....	3,045	2,846	2,935	2,918	2,875	2,930	2,979	3,010	2,994	3,125	3,210	3,234	3,488
Illinois.....	3,001	3,030	3,024	3,005	3,024	2,907	2,889	2,990	2,953	2,951	3,007	3,071	3,208
Kentucky.....	630	678	651	602	598	610	614	604	631	630	614	652	667
Massachusetts.....	10,252	10,398	10,364	10,269	9,708	9,839	9,844	9,811	9,700	9,967	10,486	10,998	11,546
Michigan.....	2,201	2,300	2,245	2,228	2,190	2,230	2,235	2,313	2,348	2,368	2,332	2,298	2,392
New Jersey.....	5,500	5,403	5,614	5,516	5,364	5,394	5,323	5,303	5,400	5,612	5,721	5,955	5,980
New York.....	5,088	5,796	5,856	5,792	5,519	5,257	5,297	5,000	5,086	5,668	5,827	5,950	6,023
North Carolina.....	832	728	720	722	705	846	848	881	874	883	883	912	813
Ohio.....	1,884	1,806	1,831	1,804	1,827	1,704	1,789	1,784	1,780	1,895	2,004	2,109	2,175
Pennsylvania.....	14,008	13,723	13,735	13,793	13,698	13,537	13,894	13,797	13,610	14,103	14,302	14,874	14,880
Virginia.....	1,590	1,504	1,495	1,437	1,511	1,537	1,704	1,687	1,710	1,604	1,586	1,585	1,560
West Virginia.....	1,571	1,440	1,431	1,443	1,452	1,485	1,544	1,675	1,760	1,666	1,650	1,659	1,647
Wisconsin.....	7,548	8,034	8,127	7,763	7,343	7,395	7,590	7,434	7,272	7,109	7,310	7,445	7,762

<sup>1</sup> The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

In the United States as a whole, the largest number of wage earners reported for any month of 1909 was 66,694, in December, and the smallest number, 60,075, in May, the minimum number being equal to 90.1 per cent of the maximum. In 9 of the 14 states named the greatest activity in the industry occurred during December. The increase toward the latter part of the year was probably due, at least in part, to general improvement in industrial conditions. In 1904 the maximum number for the industry as a whole was reported for March, and the minimum number, which was equal to 97.2 per cent of the maximum, was reported for January.

The months of maximum and minimum employment for 1909 and the number of wage earners reported for these months are given for each state in Table 29.

Prevailing hours of labor.—In Table 7 the wage earners in the leather industry have been classified according to the hours of labor per week prevailing in the establishments in which they are employed. In making this classification the average number of wage earners employed during the year in each establishment is classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or less number of hours.

Nearly nine-tenths (89.5 per cent) of the wage earners employed in the industry in 1909 were in establishments where the prevailing number of hours of labor was more than 54 but not over 60 per week. Ten hours a day is the common working time, with a part holiday in some cases. Seven per cent of the wage earners were employed in establishments where the usual hours were 54 per week, and only 3.5 per cent in establishments where the hours were less than 54 per week. In the majority of the states for which separate figures are shown a larger number were employed in establishments where the prevailing hours of labor were 60 per week than were employed in the

establishments in any of the other groups. In Massachusetts, however, 80.9 per cent of the total number of wage earners reported for the state were employed in establishments operating more than 54 but less than 60 hours per week, and in New Jersey 82.3 per cent were in such establishments.

Table 7

STATE.	AVERAGE NUMBER OF WAGE EARNERS: 1909							
	Total.	In establishments with prevailing hours—						
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
United States.....	62,202	572	1,578	4,380	24,682	30,981	2	7
California.....	1,398	2	67	1,193	116	20		
Delaware.....	3,045		83	620	250	2,092		
Illinois.....	3,001		313	57	1,197	1,434		
Kentucky.....	630		163	190	54	214		
Massachusetts.....	10,252	155	108	120	8,202	1,577		
Michigan.....	2,201				619	1,772		
New Jersey.....	5,500	180	245	115	4,578	442		
New York.....	5,088	18	226	211	2,470	2,763		
North Carolina.....	832		1	1	8	820	2	
Ohio.....	1,884	95	1	815	367	606		
Pennsylvania.....	14,008	65	139	708	5,187	7,904		5
Virginia.....	1,590	1	40	1	31	1,506		2
West Virginia.....	1,571		1	68	128	1,374		
Wisconsin.....	7,548			13	717	6,818		

Character of ownership.—Table 8 presents statistics with respect to the character of ownership of establishments in the industry.

Table 8

CHARACTER OF OWNERSHIP.	LEATHER, TANNED, CURRIED, AND FINISHED.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	919	1,049	\$327,874,187	\$252,620,888
Individual.....	250	368	16,745,300	21,487,286
Firm.....	206	290	60,832,453	62,397,239
Corporation.....	454	391	250,296,374	168,736,361
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	28.2	35.1	5.1	8.5
Firm.....	22.4	27.6	18.6	24.7
Corporation.....	49.4	37.3	76.3	66.8

<sup>1</sup> Includes one establishment under "other" ownership in 1904.

The most important distinction is that between corporate and all other forms of ownership. In 1909, of the total number of establishments reported for the industry, 49.4 per cent were under corporate ownership, as compared with 37.4 per cent in 1904. While corporations thus controlled less than one-half of the total number of establishments in 1909, the value of the products of these establishments represented 76.3 per cent of the total value of products for all establishments engaged in the industry in that year. The corresponding proportion in 1904 was decidedly lower, 66.8 per cent.

Of the total number of wage earners reported in 1909, as shown by Table 9, 4,326, or 7 per cent, were employed in establishments under individual ownership; 11,482, or 18.5 per cent, in those under firm ownership; and 46,394, or 74.6 per cent, in those owned by corporations.

Table 9 gives statistics with respect to form of ownership for each state for which an average of more than 500 wage earners were reported at the census of 1909.

There was considerable variation among the different states as to the relative importance of the establishments operated under the three forms of ownership. Thus, in West Virginia, establishments controlled by corporations constituted 70 per cent of the total number of establishments, and gave employment to 95.4 per cent of the wage earners and reported 94.1 per cent of the value of products. In Delaware, on the other hand, while corporations controlled 56.2 per cent of the establishments, these establishments gave employment to only 30.7 per cent of the wage earners and contributed but 31.1 per cent of the total value of products of the industry in the state, a few large establishments operated by firms doing the major part of the business.

**Table 9**

STATE.	NUMBER OF ESTABLISHMENTS OWNED BY—			WAGE EARNERS IN ESTABLISHMENTS OWNED BY—			VALUE OF PRODUCTS OF ESTABLISHMENTS OWNED BY—			VALUE ADDED BY MANUFACTURE IN ESTABLISHMENTS OWNED BY—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	259	206	454	4,326	11,482	46,394	\$16,745,360	\$60,832,453	\$250,296,374	\$5,158,084	\$14,857,002	\$59,580,188
California.....	9	5	26	101	108	1,189	662,497	692,818	8,011,230	168,198	154,037	2,004,857
Delaware.....	3	4	9	217	1,892	936	980,432	7,337,670	3,761,123	290,656	2,456,423	1,185,296
Illinois.....	4	9	16	201	325	2,476	1,086,872	1,684,428	12,140,482	218,334	359,538	2,203,301
Kentucky.....	1	.....	17	(X)	.....	630	(X)	.....	4,240,795	(X)	.....	1,018,709
Massachusetts.....	42	30	60	1,039	1,546	7,667	2,413,413	4,571,004	33,017,662	1,131,280	1,651,555	8,453,736
Michigan.....	1	2	21	(X)	(X)	2,201	(X)	(X)	15,331,104	(X)	(X)	8,210,133
New Jersey.....	18	23	45	264	1,312	3,984	1,612,248	7,807,558	19,011,119	497,259	2,127,855	5,007,371
New York.....	41	35	33	1,133	1,728	2,827	3,783,188	9,202,647	14,656,548	1,185,789	1,892,423	3,120,433
North Carolina.....	18	11	10	34	145	653	102,093	1,667,374	3,046,028	24,923	358,007	875,514
Ohio.....	7	8	21	49	56	1,779	283,779	374,017	9,470,040	70,983	99,856	2,237,393
Pennsylvania.....	39	36	88	779	2,272	10,957	2,882,720	13,992,835	61,050,766	820,670	3,080,233	14,912,294
Virginia.....	17	7	15	19	140	1,431	1,431	28,649	1,158,446	14,534	316,013	1,431,142
West Virginia.....	3	3	14	(X)	72	1,490	(X)	739,060	11,711,532	(X)	109,008	1,961,383
Wisconsin.....	3	8	21	10	1,423	6,115	17,560	8,895,151	35,754,958	11,728	1,706,347	8,121,016

NOTE.—In some states, in order to avoid disclosing the returns for individual establishments, the figures for one group have been consolidated with those for establishments under other forms of ownership. In such cases an (X) is placed in the column from which the figures have been omitted and the figures for the group with which they have been combined are printed in italics.

Size of establishments.—Table 10 groups the establishments reported in 1909 and 1904 according to the value of their products.

**Table 10**

VALUE OF PRODUCTS PER ESTABLISHMENT.	LEATHER, TANNED, CURRIED, AND FINISHED.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	919	1,049	\$327,874,187	\$252,620,986
Less than \$5,000.....	121	171	276,306	367,436
\$5,000 and less than \$20,000.....	117	166	1,242,071	1,784,182
\$20,000 and less than \$100,000.....	193	244	9,875,058	12,911,730
\$100,000 and less than \$1,000,000.....	410	420	158,589,294	140,000,213
\$1,000,000 and over.....	78	48	167,911,468	91,557,225
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	13.2	16.3	0.1	0.1
\$5,000 and less than \$20,000.....	12.7	15.8	0.4	0.7
\$20,000 and less than \$100,000.....	21.0	23.3	3.0	5.1
\$100,000 and less than \$1,000,000.....	44.6	40.0	48.4	57.8
\$1,000,000 and over.....	8.5	4.6	48.2	36.2

Of the 919 establishments reported for 1909, only 78, or 8.5 per cent, manufactured products valued at \$1,000,000 or over, but such establishments reported 48.2 per cent of the total value of products. Such large establishments had a materially greater propor-

tion of the business in 1909 than in 1904, but this may be due, at least in part, to the effect of advance in prices, causing certain establishments to advance from the lower class into this class without any increase in the quantity of their output.

On the other hand, the small establishments manufacturing products valued at less than \$20,000 constituted 25.9 per cent of the total number of establishments in 1909, but the value of their products amounted to only one-half of 1 per cent of the total.

The average value of products per establishment increased from \$240,821 in 1904 to \$356,773 in 1909, and the average value added by manufacture from \$58,572 to \$86,611. These increases are due partly to the increase in the relative number of very large establishments and partly to the increase in prices during the five-year period.

Table 11 gives, for 1909, a classification of the establishments according to the number of wage earners and shows the average number of wage earners employed by establishments of each group for each of the 14 leading states.

Table 11

STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING IN 1909--																
			No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
	Es-tab-lish-ments.	Wage earners (average number).	Es-tab-lish-ments.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.
United States...	919	62,202	30	213	480	166	2,184	200	6,809	150	10,956	116	17,869	26	9,021	14	9,617	4	5,288
California.....	40	1,398	.....	10	27	11	103	10	328	6	424	3	456	.....	.....	.....	.....	.....	.....
Delaware.....	16	3,045	.....	.....	.....	2	39	3	110	3	256	6	903	.....	.....	1	598	1	1,140
Illinois.....	29	3,001	.....	3	5	7	93	4	137	5	307	7	1,126	2	620	1	653	.....	.....
Kentucky.....	18	630	.....	2	3	7	97	5	163	3	243	1	124	.....	.....	.....	.....	.....	.....
Massachusetts.....	132	10,252	.....	20	60	28	350	40	1,356	23	1,652	15	2,385	.....	.....	5	3,128	1	1,321
Michigan.....	24	2,291	1	.....	.....	3	53	7	288	4	330	8	1,311	1	300	.....	.....	.....	.....
New Jersey.....	86	5,560	1	8	24	24	335	27	916	6	415	15	2,375	5	1,495	.....	.....	.....	.....
New York.....	109	5,688	4	21	51	23	306	28	810	18	1,338	12	1,953	3	1,230	.....	.....	.....	.....
North Carolina.....	39	832	3	25	38	3	41	1	42	5	381	2	330	.....	.....	.....	.....	.....	.....
Ohio.....	36	1,884	1	11	26	5	53	12	366	3	210	3	452	.....	.....	1	768	.....	.....
Pennsylvania.....	163	14,008	7	25	57	22	281	24	849	50	3,505	22	3,119	10	3,574	3	2,563	.....	.....
Virginia.....	39	1,590	4	16	23	.....	.....	8	309	4	272	7	986	.....	.....	.....	.....	.....	.....
West Virginia.....	20	1,571	1	4	4	.....	.....	5	214	4	288	5	759	1	300	.....	.....	.....	.....
Wisconsin.....	32	7,548	.....	5	16	4	50	5	157	5	303	4	724	4	1,466	3	1,907	2	2,806

Of the 919 establishments reported in the country as a whole, 3.3 per cent employed no wage earners, 23.2 per cent employed from 1 to 5, 18.1 per cent from 6 to 20, and 21.8 per cent from 21 to 50. The most numerous single group consists of the 213 establishments employing from 1 to 5 wage earners. There were 18 establishments that employed over 500 wage earners each, and of these 4 employed over 1,000 each.

Of the total number of wage earners, 4.3 per cent were reported by establishments employing from 1 to 20, 28.6 per cent by establishments employing from 21 to 100, 43.2 per cent by establishments employing from 101 to 500, and 23.9 per cent by establishments employing over 500.

**Expenses.**—As stated in the Introduction, the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of depreciation, and consequently can not be used for determining profits. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expense which were reported. Table 12 shows, in percentages, for the 12 states in which the reported expenses for 1909 amounted to more than \$5,000,000, the distribution of these expenses among the classes indicated.

STATE.	PER CENT OF TOTAL EXPENSES REPORTED: 1909			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
United States.....	2.2	10.5	81.2	6.1
California.....	2.4	11.2	80.2	6.1
Delaware.....	8.3	18.0	77.3	6.4
Illinois.....	1.9	10.7	82.3	5.1
Massachusetts.....	2.5	14.0	76.8	6.1
Michigan.....	1.6	8.0	86.0	4.4
New Jersey.....	3.0	13.6	79.3	4.1
New York.....	2.7	11.3	81.1	4.9
Ohio.....	2.1	11.5	82.1	4.2
Pennsylvania.....	1.8	9.2	80.3	8.6
Virginia.....	2.3	7.8	85.2	4.7
West Virginia.....	1.7	6.5	86.6	5.3
Wisconsin.....	1.7	9.5	83.0	5.9

Table 1 shows the total reported expenses in 1909 for the industry in the United States as a whole to have been \$305,699,411, divided as follows: Materials, \$248,278,933, or 81.2 per cent; wages, \$32,102,845, or 10.5 per cent; salaries, \$6,743,636, or 2.2 per cent; and miscellaneous expenses, \$18,573,997, or 6.1 per cent. The comparatively slight variations among the several states in the proportions of the different classes of expenses are due largely to differences in the extent to which custom tanning or finishing is done, since the cost of the hides and skins tanned or finished for establishments not assigned to the leather industry does not enter into the cost of materials reported. Among the 12 principal states shown in Table 12 there was a variation in the proportion of the total expenses represented by cost of materials from 76.8 per cent in Massachusetts to 86.6 per cent in West Virginia.

**Engines and power.**—The amount of power used in the industry was first reported at the census of 1869. Table 1 shows that the total horsepower increased from 39,583 in 1869 to 148,140 in 1909.

Table 13 shows the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current), and their total horsepower, as reported at the censuses of 1909, 1904, and 1899. It also shows separately the total number and horsepower of electric motors, including those operated by current generated in the establishments themselves.

The total primary power used in the industry increased from 88,860 horsepower in 1899 to 148,140 in 1909, or 66.7 per cent. The greater part of the increase was in the power of steam engines and of gas and other internal combustion engines. In 1909, as in 1904 and 1899, steam power formed the major part of the primary power employed in the industry, but its relative importance has decreased since 1899. In that year it formed 94.8 per cent of the total primary power; in 1909, 88.6 per cent.

**Table 13**

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	2,065	1,807	1,641	148,140	117,450	88,860	100.0	100.0	100.0
Owned.....	1,590	1,665	1,641	140,238	114,591	87,329	94.7	97.6	98.3
Steam.....	1,440	1,524	1,507	131,311	107,510	84,229	88.6	91.5	94.8
Gas.....	104	77	25	7,231	5,080	866	4.9	4.3	1.0
Water wheels.....	45	62	109	1,546	1,935	2,231	1.0	1.6	2.5
Water motors.....	1	2	(1)	10	20	(1)	(2)	(2)	(2)
Other.....				140	40	40	0.1	(2)	(2)
Rented.....	475	142	(1)	7,902	2,859	1,531	5.3	2.4	1.7
Electric.....	475	142	(1)	6,487	2,014	863	4.4	1.7	1.0
Other.....				1,415	845	668	1.0	0.7	0.7
Electric motors	2,340	731	206	35,910	14,539	3,920	100.0	100.0	100.0
Run by current generated by establishment.....	1,865	589	200	29,432	12,525	3,057	81.9	86.1	78.0
Run by rented power.....	475	142	(1)	6,487	2,014	863	18.1	13.9	22.0

<sup>1</sup> Not reported.      <sup>2</sup> Less than one-tenth of 1 per cent.

There has been a marked increase in the horsepower of gas and other internal combustion engines and of electric motors operated by purchased current. The horsepower of electric motors operated by current

generated in the manufacturing establishments reporting increased from 3,057 in 1899 to 29,432 in 1909.

Table 14 shows, for 1909, the amount of each of the several kinds of power and of the different kinds of fuel used in the industry in the 14 states for which statistics have been presented in previous tables.

The largest amounts of power were reported for Pennsylvania, Massachusetts, Wisconsin, New York, and New Jersey, the five leading states in the industry, as measured by the number of wage earners employed, the total for these states amounting to 97,291 horsepower, or 65.7 per cent of the total for the United States. Steam power was the most important form of power in every state for which separate statistics are presented. The largest amount of steam power, 32,079 horsepower, is shown for Pennsylvania, which state also reported the largest amount of power generated by gas and other internal combustion engines, 5,134 horsepower, or 71 per cent of the total for such power for the United States. Rented electric power was reported for all the states shown in the table except Virginia and West Virginia. but the largest amount, 1,286 horsepower, is shown for New York.

**Table 14**

STATE.	Number of establishments reporting.		PRIMARY HORSEPOWER.							ELECTRIC HORSEPOWER.		FUEL USED.					
			Owned by establishments reporting.					Rented.		Total rented and generated by establishments.	Generated in the establishments reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.	Electric.	Other.			Anthracite (long tons).	Bituminous (short tons).				
United States...	829	148,140	140,238	131,311	7,231	1,556	140	6,487	1,415	35,910	29,432	98,724	1,028,215	806	20,143	46,129	598,532
California.....	40	3,534	2,802	2,705	97			732		1,032	1,200	232	2,297		717	45,322	66
Delaware.....	16	4,417	4,315	4,315				102		424	322		26,661				
Illinois.....	28	6,769	6,322	6,322				367	80	915	548	2,702	50,105				
Kentucky.....	17	2,669	2,651	2,566	85			18		148	130		22,177				94,598
Massachusetts.....	122	19,231	17,776	17,601	75	100		844	611	4,365	3,521	17,226	114,138	236	201	304	472
Michigan.....	24	6,719	5,877	5,873	4			842		2,085	1,243	1,500	66,554		52	1	
New Jersey.....	79	9,243	8,306	8,184	22	100		847	90	2,203	1,356	14,569	77,345	192	5	125	698
New York.....	101	14,265	12,709	10,985	1,204	415	15	1,256	270	2,817	1,581	25,327	78,802	30	59	248	19,430
North Carolina.....	21	2,672	2,334	2,108	4	99	125	337	1	771	434		14,472		1,110	27	
Ohio.....	34	4,244	4,100	4,100				134	10	2,086	1,952		45,516	133		11	34
Pennsylvania.....	153	37,440	37,259	32,079	5,134	46		91	90	5,406	5,315	26,089	279,191	187	6,733	2	393,031
Virginia.....	27	4,223	4,123	4,093	14	106			100	443	443	4,723	15,069		30	1	
West Virginia.....	19	5,305	5,305	4,914	391					664	664		41,357		2,156	3	89,010
Wisconsin.....	32	17,112	17,066	17,016	50			46		9,478	9,432	2,745	136,489	10	605		845
All other states.....	116	10,297	9,293	8,542	61	690		841	163	2,182	1,341	3,611	52,042	18	8,325	61	48

Fuel consumed in the industry.—Closely related to the subject of the kind of power employed is that of the fuel consumed in generating this power or otherwise used. The amount expended for fuel and rent of power in the leather industry in 1909 was \$3,292,831. This item is shown by states in Table 29. The amount of each kind of fuel consumed is shown in Table 14. Bituminous coal was the principal kind of fuel used, 1,028,215 tons being consumed in the in-

dustry as a whole during 1909. Of anthracite coal, 98,724 tons were used, Pennsylvania, with 26,089 tons, and New York, with 25,327 tons, being the largest consumers. Spent tanbark is utilized for fuel in many tanneries, and by some the amount so used was reported. The larger proportion of the establishments, however, kept no account of it and were unable to make any estimate, so that the data reported have not been tabulated.

## SPECIAL STATISTICS OF MATERIALS AND PRODUCTS AND CUSTOM WORK.

The special schedule used in collecting the statistics for the leather industry required a detailed report of the quantity and cost of the different kinds of purchased materials used during the year, the number and estimated value of the hides or skins treated under contract for other establishments, and the quantity and value of the different products manufactured for sale. This special schedule was used not only for establishments assigned to the leather industry itself, but also for establishments assigned to other industries which incidentally tanned, curried, or finished leather.

**Total number of hides and skins used by establishments in the leather industry and in other industries.**—Table 15 shows, for the United States as a whole, the total number of hides and skins used in the manufacture of leather in 1909 and 1904, distinguishing those treated by establishments in the industry from those treated by establishments assigned to other industries, and distinguishing purchased hides and skins from those furnished by others. The figures given for hides and skins treated under contract represent only those treated for concerns not assigned to the leather industry, as hides and skins so treated for other establishments in the industry are reported by those establishments among their materials.

MATERIAL AND CENSUS YEAR.	HIDES AND SKINS TREATED.				
	Aggregate.	By establishments assigned to the industry "leather, tanned, curried, and finished."			By establishments assigned to other industries.
		Total.	Purchased.	Treated under contract for concerns not in the industry.	
<b>Hides and skins:</b>					
1909.....	146,328,586	145,881,151	116,040,986	29,840,165	447,435
1904.....	131,011,956	130,960,218	108,206,677	22,763,541	51,738
<b>Hides:</b>					
1909.....	20,516,332	20,263,093	18,360,415	1,903,278	252,639
1904.....	18,555,497	18,543,044	17,581,613	961,431	12,453
<b>Skins:</b>					
1909.....	125,812,254	125,617,458	97,680,571	27,936,887	194,796
1904.....	112,456,450	112,417,174	90,625,064	21,792,110	39,285

The total number of hides and skins used by all establishments in 1909 was reported as 146,328,586, as compared with 131,011,956 in 1904, the increase during the 5-year period amounting to 11.7 per cent. Of the total number of hides and skins treated in 1909, 116,040,986, or 79.3 per cent, were owned by establishments in the leather industry itself; 29,840,165, or 20.4 per cent, were treated by such establishments under contract for other concerns not in the leather industry; and 447,435, or three-tenths of 1 per cent, were treated by establishments assigned to other industries, most of which used the leather produced in the manufacture of more highly finished products. Of the total number of hides and skins treated in 1909, cattle hides represented a little less than one-seventh and the skins of other animals—chiefly goats, sheep, and

calves—about six-sevenths. The apparently extraordinary increase shown between 1904 and 1909 in the number of hides and skins used by establishments outside the leather industry is probably due largely to the more complete segregation of this branch of the business of such establishments at the later census.

**Sources of hides and skins used.**—A considerable proportion of the cattle hides used for the manufacture of leather in the United States, and a very large proportion of the skins of other animals so used, are imported. By an amendment to the Thirteenth Census act the Census Bureau was required to collect, for 1909, statistics as to the total number of hides and skins taken off from domestic animals in the United States.

For this purpose the Census Bureau canvassed not only wholesale slaughtering and meat-packing establishments but also all retail slaughterhouses—which would not have been included under the general scope of the manufactures census—and in the agricultural schedule called for the number of animals slaughtered on farms and ranges. The slaughterhouses were required to report not only the number of animals of each kind slaughtered, but also the number of hides or skins taken off. In some cases the number taken off exceeds the number of animals slaughtered, because hides or skins are taken from animals dying a natural death, while, on the other hand, in some cases the hides are not taken off from animals slaughtered. The agricultural schedule did not call for the number of hides or skins taken off on farms and ranges from animals dying a natural death, and doubtless a comparatively small number should be added to the statistics herewith presented to cover these.

The results of this inquiry are presented in the following table, which also shows for comparison the total number of hides and skins treated and the ratio which the number reported as taken off in the United States bore to the number treated.

KIND OF ANIMAL.	NUMBER OF HIDES AND SKINS TAKEN OFF IN UNITED STATES: 1909			Number of hides and skins treated: 1909	Ratio of number taken off in United States to number treated (per cent).
	Total.	By slaughterhouses, rendering establishments, etc.	On farms and ranges.		
<b>All kinds.....</b>	33,665,169	30,476,414	3,188,755	146,328,586	23.1
Cattle.....	13,764,686	12,356,046	1,408,640	20,516,332	67.1
Calves.....	5,196,043	4,064,443	1,131,600		
Sheep and lambs....	14,274,413	13,744,887	529,526		
Goats and kids.....	287,497	168,508	118,989	125,812,254	15.8
Horses and colts....	114,834	114,834			
All other animals...	27,696	27,696			

<sup>1</sup> The total number taken off, from which this ratio is computed, was 19,908,402.

The number of cattle hides reported as taken off in the United States in 1909, 13,764,686, was equal to 67.1 per cent of the number used for tanning, which was 20,516,332. The difference between the two figures is approximately 6,750,000. Most of this difference is attributable to the use of imported hides.

There was a marked increase in the importations of 1909 as compared with previous years, particularly in the latter part of the year, but because of the interval of time elapsing between importation and treating in the tanneries it is doubtful whether the number of imported hides treated during 1909 equaled the number imported during the year. For the calendar year 1909 the total imports of cattle hides aggregated 279,114,262 pounds. Returns from the slaughtering establishments in the United States indicate an average weight per hide in 1909 of about 53 pounds. If the imported hides were of the same average weight the number of pounds imported in 1909 would be equivalent to about 5,266,000 hides. The excess of the number of hides treated over the number reported as taken off plus the number imported may be attributable to various possible causes, such as incompleteness in the returns of hides taken off, reduction of stocks on hand, error due to the assumption that the imported hides have the same weight as the domestic, or minor errors in the returns of imports or of number treated.

The number of skins other than cattle hides reported as taken off in the United States in 1909 was 19,900,483, or less than one-seventh as many as were treated. It is impossible to calculate the number of skins imported, as statistics are given only for weight, and there is no means of determining the average weight with any approach to accuracy. The number imported is, however, very great. During the calendar year 1909 there were imported 115,547,176 pounds of goatskins, 63,587,930 pounds of sheepskins, and 114,793,137 pounds of skins of other animals (not including fur skins),<sup>1</sup> the great bulk of the last-named item consisting of calfskins and horsehides.

Purchased materials used in the leather industry proper.—Table 17 shows in detail the quantity and cost of the various classes of purchased materials used in the leather industry in 1909, 1904, and 1899, together with the percentages of increase between 1899 and 1909. The number of hides and skins given does not include those treated under contract for establishments not in the leather industry, and none of the statistics include data for establishments assigned to industries other than "leather, tanned, curried, and finished" which do their own tanning or finishing. There is a comparatively small amount of duplication in the total cost of materials for the industry, due to the fact that some rough leather tanned by establishments in the industry is purchased for further treatment by other establishments in the industry.

The cost of all materials reported increased 60.2 per cent between 1899 and 1909. The number of purchased hides used increased 15.9 per cent, but the cost increased 53.5 per cent. The difference between these two percentages is due chiefly to the increase in prices,

but it may be due in part to differences in the quality or character of the hides treated. The number of skins of all kinds other than cattle hides increased 16.5 per cent between 1899 and 1909, and the cost increased 65.3 per cent. Each separate class of skins shows a decidedly greater percentage of increase in cost than in number—a fact which again is attributable chiefly, though not necessarily exclusively, to increase in prices. Approximately one-half the cost of all materials at each census covered by the table was represented by that of cattle hides, the average value of which is much greater than that of the skins of other animals used in the industry.

Table 17

MATERIAL.	MATERIALS USED IN THE LEATHER INDUSTRY.			Per cent of increase: 1899-1909
	1909	1904	1899	
<b>Total cost.....</b>	<b>\$248,278,933</b>	<b>\$191,179,073</b>	<b>\$155,000,004</b>	<b>60.2</b>
Cattle hides:				
Number.....	18,360,415	17,581,613	15,838,862	15.9
Cost.....	\$119,410,767	\$89,126,593	\$77,784,760	53.5
Skins:				
Number.....	97,680,571	90,625,064	83,870,481	16.5
Cost.....	\$75,647,790	\$56,341,332	\$45,761,209	65.3
Calf and kip—				
Number.....	19,732,638	12,481,221	8,944,454	120.6
Cost.....	\$31,790,572	\$15,725,616	\$10,792,485	194.6
Goats—				
Dozens.....	4,006,472	3,972,134	4,003,908	0.1
Cost.....	\$27,833,214	\$26,766,612	\$24,950,223	11.6
Sheep—				
Dozens.....	2,173,505	2,291,030	2,042,304	6.4
Cost.....	\$12,231,618	\$10,547,883	\$8,457,995	44.6
All other—				
Number.....	3,788,209	2,955,881	2,371,488	59.7
Cost.....	\$3,792,366	\$3,311,821	\$1,560,506	143.0
Rough leather purchased...	\$9,556,257	\$10,852,655	\$6,663,395	43.4
Whole sides—				
Number.....	1,468,213	2,414,102	1,086,592	35.1
Cost.....	\$4,907,781	\$3,136,661	\$3,534,067	40.6
Grains—				
Sides.....	525,786	342,332	165,938	216.9
Cost.....	\$1,201,842	\$390,260	\$467,125	157.3
Splits.....	\$1,442,505	\$1,108,243	\$1,320,589	9.2
All other.....	\$1,944,129	\$627,491	\$1,341,584	44.9
Tanning materials.....	\$30,028,758	\$25,029,094	\$17,017,447	81.7
All other materials.....	\$12,735,361	\$9,828,499	\$7,773,193	63.8

Value of products of all establishments, including those not assigned to the leather industry.—It is impossible to determine from the census returns the total value of leather produced in the United States, because adequate data are not available with respect to the value of the leather made by establishments in the leather industry under contract for other establishments not assigned to the industry. It is true that establishments doing work under contract for others were required to give estimated values for the hides and skins treated, but to add up these figures would involve duplication, owing to the fact that in some cases one establishment tanned hides or skins under contract and another establishment curried and finished the same hides or skins under contract.

Table 18 shows, for 1909 and 1904, the total value of products reported by establishments in the leather industry, together with the value of leather made by establishments in other industries. The value of products for the leather industry itself represents that of products made for sale plus the receipts for custom work done for others, but does not include the value of the products of custom work done for concerns not in the leather industry.

<sup>1</sup> See Monthly Summary of Commerce and Finance, December, 1909, page 976.

	VALUE OF PRODUCTS.	
	1909	1904
Total.....	\$334,105,561	\$252,775,918
Products of the industry "Leather, tanned, curried, and finished".....	327,874,187	252,020,986
Products manufactured for sale.....	315,109,409	244,431,026
Receipts for custom work.....	12,764,778	8,189,960
Value of leather made by establishments in other industries.....	6,231,374	154,932

The increase in the value of leather made by establishments in other industries between 1904 and 1909, as shown in this table, doubtless results in large part, as already indicated, from the more complete segregation of this branch of the business of such establishments in 1909.

Products of the leather industry proper.—Table 19 shows in detail, for 1909, 1904, and 1899, the quantity and value of products of the establishments assigned to the industry "leather, tanned, curried, and finished." This table does not include the quantity or value of products of establishments assigned to other industries or the quantity or value of products treated by establishments in the industry under contract for others, but the receipts for contract work are shown. It is possible that in some cases the items for the several censuses may not be altogether comparable.

The total value of products reported by establishments in the leather industry for 1909 was \$327,874,187, of which the value of leather (\$306,476,720) represented 93.5 per cent; that of miscellaneous products (\$8,632,689), 2.6 per cent; and the receipts for contract work on materials furnished by others (\$12,764,778), 3.9 per cent. The total value of products involves some little duplication, owing to the purchase of rough leather tanned by establishments in the industry for further treatment by other establishments in the industry, and to the fact that concerns doing contract work for others in the industry report the receipts for such work, while the value of the finished product is reported by the owner.

Between 1899 and 1909 the value of products increased 60.7 per cent, or by substantially the same percentage as the cost of materials.

The quantities of the several classes of products in most cases show a materially lower percentage of increase than the values, a fact which is largely, but not of necessity exclusively, due to the increase in the prices of the finished products, which in turn is largely attributable to the increase in prices of materials already referred to. The quantity of sole leather of all kinds combined increased 15.1 per cent and its value 59.2 per cent; the production of hemlock sole leather decreased, while that of the other classes increased materially. It is doubtful, however, if the data for chrome leather are entirely comparable. The output of grain upper leather and of finished splits decreased somewhat during the decade, but according to the returns that of patent and enameled shoe leather

was more than eleven times as great in 1909 as in 1899. There was a very great increase in the production of tanned and finished calfskins and kipskins, but the production of tanned and finished goatskins increased but little and that of sheepskins decreased.

PRODUCT.	PRODUCTS OF THE LEATHER INDUSTRY.		
	1909	1904	1899
Total value.....	\$327,874,187	\$252,020,986	\$204,038,127
Leather.....	\$306,476,720	\$236,705,803	\$194,202,063
Sole—			
Sides.....	17,805,252	17,937,038	15,472,072
Value.....	\$83,331,713	\$60,205,000	\$55,481,025
Hemlock—			
Sides.....	7,063,728	9,920,064	9,810,966
Value.....	\$32,237,151	\$32,076,015	\$29,305,561
Oak—			
Sides.....	3,805,861	3,607,903	2,562,814
Value.....	\$20,033,793	\$19,157,805	\$13,359,336
Union—			
Sides.....	5,750,227	4,400,011	3,096,162
Value.....	\$23,375,815	\$17,371,750	\$12,807,262
Chrome—			
Sides.....	270,436	(1)	2,100
Value.....	\$1,034,954	(1)	\$3,966
Upper, other than calf or kip skins.....	\$30,951,400	\$24,815,835	\$25,311,338
Grain, satin, pobbie, etc. (side leather)—			
Sides.....	7,046,709	6,850,409	8,141,063
Value.....	\$24,198,993	\$15,487,252	\$17,478,802
Finished splits—			
Number.....	8,134,229	6,205,050	8,790,382
Value.....	\$7,410,740	\$5,993,231	\$6,740,562
Patent and enameled shoe—			
Sides.....	2,705,291	1,356,777	238,943
Value.....	\$8,341,727	\$3,335,352	\$1,092,534
Horseshides and coltskins—			
Number.....	1,342,038	1,520,395	223,378
Value.....	\$4,953,145	\$4,590,065	\$843,118
Calf and kip skins, tanned and finished—			
Number.....	10,012,004	12,014,223	8,264,272
Value.....	\$42,412,250	\$22,508,335	\$14,010,150
Grain finished—			
Number.....	17,516,010	10,211,885	7,112,859
Value.....	\$30,982,447	\$18,906,551	\$12,127,429
Flesh finished—			
Number.....	1,495,154	1,802,338	1,151,413
Value.....	\$2,429,809	\$3,511,784	\$2,491,711
Goatskins, tanned and finished—			
Number.....	47,907,211	45,091,492	47,043,362
Value.....	\$40,882,040	\$37,887,349	\$35,072,951
Black—			
Number.....	40,351,192	40,010,614	38,176,816
Value.....	\$33,940,575	\$32,822,282	\$29,050,889
Colored—			
Number.....	7,556,019	5,071,878	8,867,116
Value.....	\$6,933,065	\$5,065,067	\$6,022,063
Sheepskins, tanned and finished—			
Number.....	19,605,155	20,597,508	20,290,955
Value.....	\$12,236,687	\$11,168,829	\$8,353,755
Belting—			
Sides.....	1,042,070	859,564	1,472,016
Value.....	\$6,995,133	\$4,754,450	\$7,092,778
Harness—			
Sides.....	3,046,235	4,369,561	3,444,618
Value.....	\$24,802,734	\$20,274,189	\$16,712,059
Carriage, automobile, and furniture—			
Hides.....	1,398,842	827,104	619,741
Value.....	\$14,266,742	\$7,780,804	\$5,748,387
Trunk, bag, and pocketbook.....	\$6,198,544	\$4,020,750	\$2,611,326
Bookbinders'.....	\$2,450,155	\$2,283,701	\$1,688,413
Glove.....	\$4,013,543	\$3,344,614	\$3,084,837
Sold in rough.....	\$6,335,599	\$10,180,949	\$6,864,345
All other.....	\$11,746,369	\$13,044,268	\$10,117,454
All other products.....	\$8,632,689	\$7,665,223	\$5,514,595
Work on materials for others.....	\$12,764,778	\$8,189,960	\$4,321,669

<sup>1</sup> Not reported separately.

<sup>2</sup> Includes wool to the value of \$2,476,193, reported as a subsidiary product of the industry. In addition, wool valued at \$11,597 was reported by establishments tanning leather for their own use in the manufacture of leather gloves and mittens and other leather goods.

Of the total value of leather reported for 1909, \$306,476,720, that of sole leather represented 28.8 per cent; that of upper leather other than calf and kip skins, 13 per cent; that of calfskins and kipskins, 13.8 per cent; that of goatskins, 13.3 per cent; that of sheepskins, 4 per cent; and that of all other kinds of leather, 27 per cent.

Contract work on materials furnished by others.—The following table shows the number of hides and skins of the different classes treated under contract for others in 1909, distinguishing the work done for establishments in the leather industry from that done for establishments in other industries. It also shows the estimated value of the products in each case.

CLASS OF WORK.	WORK DONE UNDER CONTRACT.		
	Total.	For establishments in the leather industry.	For establishments in other industries.
Hides tanned:			
Number—			
1909.....	2,203,068	981,383	1,221,685
1904.....	1,287,914	860,918	426,996
Estimated value of the product, 1909.	\$19,365,901	\$6,815,249	\$12,550,652
Skins tanned:			
Number—			
1909.....	12,323,117	2,435,281	9,887,836
1904.....	15,926,245	2,646,632	13,279,613
Estimated value of the product, 1909.	\$8,909,512	\$1,505,908	\$7,403,604
Sides and splits curried and finished:			
Number—			
1909.....	2,577,335	2,577,335	
1904.....	721,751	721,751	
Estimated value of the product, 1909.	\$7,187,108	\$7,187,108	
Skins curried and finished:			
Number—			
1909.....	22,939,052	4,890,001	18,049,051
1904.....	15,881,124	3,672,590	12,208,534
Estimated value of the product, 1909.	\$18,197,438	\$4,159,730	\$14,037,708

The estimated value of the leather made from the hides and skins treated for other establishments in the leather industry has no particular significance, as the value of the finished products has already been included in the total value of products for the leather industry, being reported in each case by the establishment for which the work was done. On the other hand, the estimated value of the leather made from the hides and skins treated for establishments in other industries has not been included in the total value of products given elsewhere, because, as already stated, it is improper to add together the values given for the several items, since the same hides or skins may be reported twice, once as tanned and again as curried and finished.

Leather produced by establishments assigned to other industries.—The following table shows, for 1909, the quantities and values of the several classes of leather produced by establishments not assigned to the industry "leather, tanned, curried, and finished."

PRODUCT.	LEATHER PRODUCTS OF ESTABLISHMENTS ASSIGNED TO OTHER INDUSTRIES: 1909	
	Quantity.	Value.
Total.....		\$6,095,106
Sole leather.....sides.....	52,456	149,434
Hemlock.....sides.....	6,472	46,541
Oak.....sides.....	44,734	95,093
Chrome.....sides.....	1,250	7,800
Upper leather, other than colt, kip, or calf.....		506,962
Grain, satin, pebble, etc.....sides.....	106,588	462,621
Finished splits.....number.....	58,110	44,341
Calf and kip skins, tanned and finished (grain finished).....	2,806	9,592
Goatskins, tanned and finished.....	116,193	113,045
Sheepskins, tanned and finished.....	11,441	7,339
Belting leather.....sides.....	593,606	3,651,945
Harness leather.....sides.....	22,468	127,550
Glove leather.....		63,414
All other leather, including offal leather.....		1,465,825

Most of the leather produced by these establishments was used by them in further manufacture, but some was doubtless sold as leather.

Imports and exports of leather.—Table 22 shows, for the fiscal years 1909, 1904, and 1899, respectively, the value of the exports and imports of the different classes of leather as distinguished by the Bureau of Foreign and Domestic Commerce. It will be noted that the total value of exports in each year was greatly in excess of that of imports, and that the total value of exports showed a very considerable increase during the period covered, which, however, was partly attributable to increase in prices.

CLASS.	YEAR ENDING JUNE 30—		
	1910	1905	1900
EXPORTS.			
Total value.....	\$37,414,175	\$28,058,342	\$21,797,157
Sole leather.....	8,307,880	9,444,873	6,433,303
Kid (glazed).....	10,926,255	1,570,204	1,909,914
Patent or enameled leather.....	367,601	166,320	101,708
Splits, buff, grain, and all other upper leather.....	15,629,336	15,057,701	11,913,256
All other leather.....	2,192,103	1,813,154	1,438,976
IMPORTS.			
Total value.....	7,607,923	5,612,642	6,519,172
Skins for morocco.....	1,938,584	2,446,481	3,134,657
Calfskins, tanned, or tanned and dressed.	269,582		
Patent, japanned, varnished, or enameled leather.....		605,960	132,674
Upper leather, dressed and finished.....	236,764		
Chamois and other leather, bookbinders' calfskins, kangaroo, sheep, and goat skins, including lamb and kid skins, dressed or finished.....	1,356,133	2,560,201	3,251,841
All other leather.....	2,778,943		

Quantity and cost of materials and quantity and value of products, by states.—The remaining tables of this section present statistics of the quantity and cost of materials, quantity and value of products, and contract work done, for individual states. Statistics are shown only for the states which have some importance with respect to the given class of materials or products, and in some cases it has been necessary to omit data for states of considerable importance in order to avoid the disclosure of individual operations.

Table 23 shows the number of hides and skins used by establishments in the leather industry proper in 1909, 1904, and 1899, and the cost in 1909. It does not include data for establishments assigned to other industries, nor materials treated under contract.

Table 24 shows the cost of materials other than hides and skins used by establishments in the leather industry in 1909.

Table 25 shows the quantity of each of the principal classes of leather manufactured by establishments in the leather industry in 1909, 1904, and 1899, respectively, together with the value in 1909.

Table 26 presents statistics as to stock tanned or curried and finished by establishments in the leather industry under contract for other establishments in the same industry.

Table 27 presents similar statistics as to stock tanned or curried and finished by establishments in the leather industry under contract for other establishments not in the leather industry.

LEATHER, TANNED, CURRIED, AND FINISHED—HIDES AND SKINS USED BY ESTABLISHMENTS IN THE INDUSTRY, NOT INCLUDING THOSE TREATED UNDER CONTRACT FOR OTHERS NOT IN THE INDUSTRY, BY STATES.

**Table 23**

MATERIAL AND STATE.	NUMBER.			COST: 1909	MATERIAL AND STATE.	NUMBER.			COST: 1909
	1909	1904	1899			1909	1904	1899	
<b>Total</b> .....				<b>\$195,058,557</b>					
<b>Cattle hides</b> .....	<b>18,360,415</b>	<b>17,581,613</b>	<b>15,838,862</b>	<b>119,410,767</b>	<b>Calf and kip skins—Contd.</b>	<i>Dozens.</i>	<i>Dozens.</i>	<i>Dozens.</i>	
California.....	611,421	634,417	695,186	4,300,834	Wisconsin.....	6,086,673	3,633,271	2,819,911	\$12,379,606
Georgia.....	151,993	284,503	143,757	787,911	All other states.....	642,754	588,692	302,768	1,274,261
Illinois.....	663,928	707,441	748,978	3,859,429	<b>Goatskins</b> .....	<b>4,006,472</b>	<b>3,072,134</b>	<b>4,003,908</b>	<b>27,833,214</b>
Indiana.....	180,485	119,754	174,910	1,342,004	Delaware.....	929,760	917,825	780,314	6,609,690
Kentucky.....	285,938	325,826	377,676	2,488,219	Massachusetts.....	524,900	624,427	810,427	3,935,024
Maine.....	177,464	270,491	404,958	764,051	New Jersey.....	531,142	284,320	414,974	3,607,128
Maryland.....	184,648	163,734	138,495	1,445,893	New York.....	26,177	87,285	145,967	145,280
Massachusetts.....	1,251,036	1,126,634	1,029,535	6,603,898	Pennsylvania.....	1,928,476	2,018,378	1,821,183	12,909,128
Michigan.....	1,430,885	1,126,456	751,935	8,022,645	All other states.....	70,921	39,899	31,053	628,765
Missouri.....	100,318	95,875	66,865	884,203	<b>Sheepskins</b> .....	<b>2,173,505</b>	<b>2,281,030</b>	<b>2,042,304</b>	<b>12,231,618</b>
New Jersey.....	771,193	562,709	395,317	8,254,676	California.....	110,726	125,839	115,132	926,139
New York.....	1,639,467	1,509,750	2,000,132	10,473,609	Delaware.....	77,126	38,617	14,600	389,301
North Carolina.....	364,766	280,197	160,484	3,202,437	Illinois.....	130,219	172,102	105,277	922,466
Ohio.....	514,226	403,655	415,762	5,179,537	Maine.....	41,282	169,400	134,789	195,089
Pennsylvania.....	5,449,826	5,447,947	4,848,750	30,118,025	Massachusetts.....	727,557	702,428	627,454	3,277,748
Tennessee.....	195,164	355,798	319,802	1,549,013	New Jersey.....	220,420	142,923	81,398	1,324,517
Virginia.....	626,712	588,397	430,608	5,002,619	New York.....	504,946	593,702	555,484	3,214,723
West Virginia.....	1,038,368	711,378	358,643	7,313,004	Pennsylvania.....	203,752	200,184	162,478	1,160,139
Wisconsin.....	2,471,848	2,457,195	2,106,980	16,373,708	All other states.....	121,477	145,775	245,700	823,505
All other states.....	250,724	340,456	380,044	1,444,972	<b>All other skins</b> .....	<b>3,788,209</b>	<b>2,985,881</b>	<b>2,371,488</b>	<b>3,762,388</b>
<b>Calf and kip skins</b> .....	<b>19,732,638</b>	<b>18,481,221</b>	<b>8,944,454</b>	<b>31,790,572</b>	California.....	82,047	112,720	166,319	77,921
California.....	113,449	107,834	122,167	302,613	Illinois.....	379,182	130,367	39,700	455,177
Illinois.....	3,008,616	2,291,546	1,478,882	5,532,850	Massachusetts.....	223,752	56,890	47,946	120,705
Massachusetts.....	5,439,226	4,009,400	2,229,559	7,910,409	New Jersey.....	1,028,454	693,138	717,597	1,288,721
Michigan.....	918,066	312,951	350	881,805	New York.....	888,120	655,034	1,050,392	841,351
New Jersey.....	373,206	109,436	553,900	544,758	Pennsylvania.....	80,401	1,234,680	108,544	208,635
New York.....	2,107,684	1,135,591	1,048,722	2,751,764	Wisconsin.....	234,226	10,769	150,882	611,789
Pennsylvania.....	142,464	202,500	388,205	212,316	All other states.....	892,027	74,283	66,098	220,637

LEATHER, TANNED, CURRIED, AND FINISHED—COST OF MATERIALS OTHER THAN HIDES AND SKINS, BY STATES: 1909.

**Table 24**

STATE.	Rough leather purchased.	TANNING MATERIALS.		All other materials.	STATE.	Rough leather purchased.	TANNING MATERIALS.		All other materials.
		Chemicals.	All other.				Chemicals.	All other.	
<b>United States</b> .....	<b>\$9,556,257</b>	<b>\$5,538,261</b>	<b>\$25,399,497</b>	<b>\$12,735,361</b>	New Jersey.....	\$1,859,624	\$702,221	\$1,326,460	\$1,260,359
California.....	44,020	83,966	837,100	459,359	New York.....	361,413	331,410	2,117,211	705,893
Delaware.....		437,947	2,750	407,437	North Carolina.....	(2)	17,107	609,026	98,410
Georgia.....		9,904	159,163	78,993	Ohio.....	112,630	14,109	962,714	293,409
Illinois.....	41,693	242,685	786,443	308,905	Oregon.....		1,380	38,972	12,776
Indiana.....	(2)	2,524	107,094	136,745	Pennsylvania.....	2,092,720	1,712,235	7,721,269	2,378,610
Kentucky.....		61,647	562,242	93,580	Tennessee.....	(2)	6,866	340,235	63,093
Maine.....		36,120	226,329	224,714	Virginia.....	(2)	31,144	999,874	260,518
Maryland.....	60,432	20,956	288,271	131,061	West Virginia.....	(2)	144,899	1,764,268	645,018
Massachusetts.....	2,018,080	787,962	1,924,540	2,178,142	Wisconsin.....	(2)	530,185	2,520,218	1,640,945
Michigan.....	(2)	220,295	1,406,765	855,078	All other states.....	2,365,636	59,759	192,742	268,113
Missouri.....	(2)	16,940	340,800	212,093					

<sup>1</sup> In addition, purchased rough leather costing \$2,773,584, chemicals costing \$38,228, and other tanning materials costing \$360,768 were reported by establishments engaged primarily in the manufacture of leather goods.  
<sup>2</sup> Included in "all other states," to avoid disclosure of individual operations.

LEATHER, TANNED, CURRIED, AND FINISHED—PRODUCTS OF ESTABLISHMENTS IN THE INDUSTRY, NOT INCLUDING CONTRACT WORK FOR OTHERS NOT IN THE INDUSTRY, BY STATES.

**Table 25**

PRODUCT AND STATE.	QUANTITY.			VALUE: 1909	PRODUCT AND STATE.	QUANTITY.			VALUE: 1909
	1909	1904	1899			1909	1904	1899	
<b>SOLE LEATHER.</b>					<b>SOLE LEATHER—continued.</b>				
<b>All kinds</b> .....	<i>Sides.</i>	<i>Sides.</i>	<i>Sides.</i>	<b>\$88,331,713</b>	<b>Hemlock—Continued.</b>	<i>Sides.</i>	<i>Sides.</i>	<i>Sides.</i>	
California.....	17,895,252	17,937,938	15,472,072	3,100,226	Wisconsin.....	558,474	1,038,181	1,028,889	\$2,885,899
Kentucky.....	472,236	575,393	556,063	2,712,069	All other states.....	506,796	1,377,797	1,810,513	2,360,700
Michigan.....	404,382	393,898	442,975	7,326,279	<b>Oak</b> .....	<b>3,805,861</b>	<b>3,607,963</b>	<b>2,662,814</b>	<b>26,083,793</b>
New Jersey.....	1,603,512	1,353,293	914,954	1,015,495	California.....	429,716	575,393	556,063	2,940,734
New York.....	120,600			5,953,249	Kentucky.....	404,382	393,898	442,975	2,712,069
North Carolina.....	1,138,461	1,195,086	1,446,242	2,079,110	Tennessee.....	195,547	229,568	205,942	1,224,690
Pennsylvania.....	371,666	74,883	31,889	39,904,180	Virginia.....	673,757	663,907	333,366	4,873,935
Tennessee.....	9,207,352	9,476,130	8,183,522	1,224,690	West Virginia.....	153,495	424,824	195,874	1,167,270
Virginia.....	195,547	229,568	205,942	4,873,935	All other states.....	1,948,964	828,594	828,594	18,170,095
West Virginia.....	673,757	563,907	409,166	10,270,164	<b>Union</b> .....	<b>5,756,227</b>	<b>4,400,011</b>	<b>3,096,162</b>	<b>28,375,815</b>
Wisconsin.....	1,933,037	1,262,538	363,954	6,234,805	New York.....	512,365	465,207	401,879	2,309,420
All other states.....	839,371	1,091,531	1,639,988	4,414,972	Pennsylvania.....	3,075,822	3,472,046	2,866,322	17,973,900
	845,331	1,720,892	1,286,877	4,807,347	West Virginia.....	1,066,300	349,348	187,745	5,557,999
<b>Hemlock</b> .....	<b>7,963,728</b>	<b>9,929,964</b>	<b>9,810,996</b>	<b>32,237,151</b>	All other states.....	501,700	113,410	100,210	2,634,466
Michigan.....	1,372,908	1,353,293	889,954	6,234,805	<b>Chrome</b> .....	<b>279,436</b>	<b>(2)</b>	<b>2,100</b>	<b>1,634,864</b>
Pennsylvania.....	4,752,308	5,072,327	5,481,306	17,194,852	California.....	42,520	(2)		169,492
West Virginia.....	713,182	488,366	335	3,560,895	All other states.....	236,916	(2)	2,100	1,475,462

<sup>1</sup> Exclusive of oak sole leather, to avoid disclosure of individual operations.

<sup>2</sup> Not reported separately.

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LEATHER, TANNED, CURRIED, AND FINISHED—PRODUCTS OF ESTABLISHMENTS IN THE INDUSTRY, NOT INCLUDING CONTRACT WORK FOR OTHERS NOT IN THE INDUSTRY, BY STATES—Continued.

Table 25—Continued.		QUANTITY.			VALUE:	PRODUCT AND STATE.		QUANTITY.			VALUE:	
PRODUCT AND STATE.		1900	1904	1899	1900			1900	1904	1899	1900	
<b>UPPER LEATHER, OTHER THAN COLT, KIP, OR CALF SKINS.</b>					<b>GOATSKINS, TANNED AND FINISHED.</b>							
<b>All kinds.....</b>					<b>\$39,951,460</b>	<b>All kinds.....</b>		<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<b>\$40,882,640</b>	
Illinois.....					3,472,587	California.....	47,907,211	45,681,492	47,043,932	6,400	24,294	
Massachusetts.....					11,145,235	Delaware.....	10,360	3,000	10,232,463	6,878,955	4,852,505	
Michigan.....					3,087,868	Massachusetts.....	11,005,292	10,928,313	9,363,769	6,340,036	5,025,936	
New Jersey.....					2,272,399	New Jersey.....	5,837,401	6,878,955	8,956,118	5,655,831	4,071,876	
New York.....					5,825,075	New York.....	6,340,036	3,481,123	4,969,191	22,909,407	21,602,961	
Pennsylvania.....					1,821,432	Pennsylvania.....	5,655,831	1,801,155	1,801,518	326,283	457,539	
Wisconsin.....					10,777,605	All other states.....	23,822,008	22,909,407	21,602,961	326,283	343,975	
All other states.....					1,549,259						33,949,575	
<b>Grain, satin, pebble, etc. (side leather).....</b>					<b>24,198,993</b>	<b>Black.....</b>		<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<b>\$3,949,575</b>	
California.....	<i>Sides.</i>	<i>Sides.</i>	<i>Sides.</i>		24,198,993	Delaware.....	40,351,192	40,019,614	38,176,816	7,695,249	6,942,060	
Illinois.....	7,946,789	6,850,469	8,141,093		24,198,993	Massachusetts.....	7,695,249	9,396,211	7,803,193	3,810,619	3,176,182	
Massachusetts.....	24,268	22,780	60,603		24,198,993	New Jersey.....	3,810,619	4,972,847	5,001,784	5,800,833	4,573,522	
Michigan.....	932,482	364,950	932,186		24,198,993	New York.....	5,800,833	3,466,523	3,416,489	298,008	193,050	
New Jersey.....	1,509,748	1,881,547	1,859,287		24,198,993	Pennsylvania.....	22,415,255	20,923,993	19,828,129	327,823	373,499	
New York.....	1,509,259	1,622,303	2,130,820		24,198,993	All other states.....	327,823	386,885	328,703			
Pennsylvania.....	2,741,257	1,923,636	1,308,648		24,198,993						8,867,116	
Wisconsin.....	1,220,755	1,035,253	1,849,549		24,198,993	<b>Colored.....</b>		<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<b>6,933,065</b>	
All other states.....					24,198,993	Delaware.....	7,556,019	5,671,878	8,867,116	3,507,043	3,290,409	
<b>Finished splits.....</b>					<b>7,410,740</b>	Massachusetts.....	3,507,043	1,532,102	1,560,576	2,026,482	1,906,108	1,676,323
California.....	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>		7,410,740	New Jersey.....	2,026,482	1,906,108	3,454,334	539,203	1,552,702	
Illinois.....	8,134,229	6,205,050	8,790,392		7,410,740	New York.....	539,203	14,600	1,552,702	237,823	452,384	
Massachusetts.....	42,600	83,832	7,520		7,410,740	Pennsylvania.....	237,823	160,000	3,000	1,406,753	214,826	
Michigan.....	613,045	160,800	974,902		7,410,740	All other states.....	1,406,753	73,654	21,672	1,985,414	1,283,813	
New Jersey.....	2,742,777	2,357,182	3,581,012		7,410,740					8,715	15,316	
New York.....	4,735,807	3,603,236	4,226,853		7,410,740							
Pennsylvania.....					7,410,740	<b>SHEEPSKINS, TANNED AND FINISHED.</b>						
All other states.....					7,410,740	<b>Total.....</b>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<b>\$12,236,687</b>		
<b>Patent and enameled shoe leather.....</b>					<b>8,341,727</b>	California.....	19,665,155	20,597,598	20,290,985	1,135,250	237,476	
Massachusetts.....	<i>Sides.</i>	<i>Sides.</i>	<i>Sides.</i>		8,341,727	Illinois.....	601,802	1,012,816	1,135,250	1,263,323	716,605	
Pennsylvania.....	2,705,291	1,356,777	236,943		8,341,727	Maine.....	1,142,669	1,696,713	1,940,870	495,384	293,616	
All other states.....	1,490,165	506,450	18,660		8,341,727	Maryland.....	495,384	2,032,800	1,940,870	166,204	77,730	
<b>Horsemidles and coltskins.....</b>					<b>4,003,000</b>	Massachusetts.....	166,204	112,750	339,890	8,162,771	6,892,980	8,590,563
California.....	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>		4,003,000	New Jersey.....	8,162,771	6,892,980	8,590,563	1,901,020	1,228,500	454,988
Illinois.....	1,087,174	458,327	215,793		4,003,000	New York.....	1,901,020	1,228,500	454,988	3,469,260	4,768,772	2,997,036
Massachusetts.....	1,490,165	506,450	18,660		4,003,000	Pennsylvania.....	3,469,260	4,768,772	2,997,036	1,772,091	1,090,822	
Pennsylvania.....	127,952	392,000	2,500		4,003,000	All other states.....	1,772,091	1,090,180	1,090,822	1,953,954	1,762,087	2,487,243
All other states.....	1,087,174	458,327	215,793		4,003,000						1,452,488	
<b>Calves and coltskins.....</b>					<b>3,870,519</b>	<b>BELTING, HARNESS, AND CARRIAGE AND AUTOMOBILE LEATHER.</b>						
<b>Total.....</b>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>		<b>3,870,519</b>	<b>Belting leather.....</b>	<i>Sides.</i>	<i>Sides.</i>	<i>Sides.</i>	<b>\$6,995,133</b>		
California.....	1,342,938	1,529,395	223,378		3,870,519	Massachusetts.....	1,042,070	859,564	1,472,016	370,505		
Illinois.....	9,427	3,600	34,757		3,870,519	Virginia.....	58,719	230,870	226,443	2,065,331		
New York.....	101,875	134,893	100,000		3,870,519	All other states.....	352,712	103,570	263,107	4,550,197		
Pennsylvania.....	91,887	60,019	16		3,870,519							
All other states.....	626,556	1,234,119	6,268		3,870,519	<b>Harness leather.....</b>	<i>Sides.</i>	<i>Sides.</i>	<i>Sides.</i>	<b>24,802,734</b>		
	513,193	106,764	117,094		3,870,519	California.....	3,946,235	4,368,561	3,444,616	2,571,122		
<b>Calf and kip skins, tanned and finished.....</b>					<b>\$42,412,256</b>	Massachusetts.....	383,264	330,041	379,323	1,542,223	980,970	
<b>All kinds (except patent and enameled).....</b>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>		<b>\$42,412,256</b>	Indiana.....	238,385	231,192	193,777	1,210,132	128,818	
California.....	19,012,064	12,014,223	8,264,272		\$42,412,256	Kentucky.....	160,750	187,632	206,748	1,210,132	1,222,229	
Illinois.....	127,862	106,571	122,152		\$42,412,256	Maryland.....	18,180	11,765	16,634	153,870	124,219	
Massachusetts.....	2,454,294	2,293,950	1,455,154		\$42,412,256	Michigan.....	214,879	195,095	212,380	237,195	184,182	
Michigan.....	5,418,677	3,793,447	2,248,254		\$42,412,256	Missouri.....	153,870	124,219	72,386	263,981	309,434	
New Jersey.....	846,707	312,591	150		\$42,412,256	New York.....	237,195	184,182	146,341	257,044	519,178	
New York.....	371,666	26,607	10,750		\$42,412,256	Pennsylvania.....	263,981	309,434	336,015	58,012	49,111	
Pennsylvania.....	2,012,971	1,121,632	964,855		\$42,412,256	Tennessee.....	257,044	519,178	450,352	61,814	35,235	
Wisconsin.....	145,139	243,956	387,320		\$42,412,256	Virginia.....	58,012	49,111	53,105	1,331,925	1,504,944	
All other states.....	7,016,824	3,542,849	2,792,755		\$42,412,256	All other states.....	61,814	35,235	26,350	466,933	678,933	
	617,934	572,620	282,972		\$42,412,256						389,233	
<b>Flesh finished.....</b>					<b>2,429,809</b>	<b>Carriage and automobile leather.....</b>		<i>Hides.</i>	<i>Hides.</i>	<i>Hides.</i>	<b>9,353,086</b>	
Massachusetts.....	1,495,154	1,802,338	1,151,413		2,429,809	New Jersey.....	900,131	629,836	518,605	5,095,315		
All other states.....	902,548	88,377	6,335		2,429,809	Ohio.....	583,001	342,897	382,562	2,652,443		
	592,606	1,713,961	1,145,078		2,429,809	All other states.....	200,229	167,702	85,661	1,005,310		
<b>Grain finished.....</b>					<b>39,982,447</b>							
California.....	17,516,910	10,211,885	7,112,859		39,982,447							
Massachusetts.....	122,269	37,883	392,873		39,982,447							
Michigan.....	4,516,129	3,705,070	2,241,919		39,982,447							
New Jersey.....	2,012,971	1,121,632										

LEATHER, TANNED, CURRIED, AND FINISHED—PRODUCTS OF ESTABLISHMENTS IN THE INDUSTRY, NOT INCLUDING CONTRACT WORK FOR OTHERS NOT IN THE INDUSTRY, BY STATES—Continued.

Table 25—Continued.	VALUE.			PRODUCT AND STATE.	VALUE.		
	1909	1904	1899		1909	1904	1899
MISCELLANEOUS CLASSES OF LEATHER.				MISCELLANEOUS CLASSES OF LEATHER—continued.			
<b>Trunk, bag, and pocketbook leather.</b>	<b>\$6,198,544</b>	<b>\$4,920,750</b>	<b>\$2,611,326</b>	<b>Rough leather sold—Continued.</b>			
Massachusetts.....	645,204	372,896	310,040	New Jersey.....	\$1,234,005	\$873,093	\$453,053
Michigan.....	470,802	788,535	107,703	New York.....	599,047	836,408	1,130,248
New Jersey.....	1,467,097	1,669,360	906,733	Pennsylvania.....	1,182,142	2,298,589	1,318,801
New York.....	370,878	109,834	370,586	Wisconsin.....	226,050	687,114	377,726
All other states.....	3,232,343	1,930,125	900,508	All other states.....	2,440,005	4,953,794	2,981,678
<b>Bookbinders' leather.</b>	<b>2,450,155</b>	<b>2,283,761</b>	<b>1,688,413</b>	<b>All other leather, including offal</b>			
New Jersey.....	1,502,657	1,235,594	975,089	leather.....	11,746,369	13,044,298	10,117,454
All other states.....	947,498	1,048,167	713,324	California.....	614,568	680,318	631,690
<b>Glove leather.</b>	<b>4,913,543</b>	<b>3,344,614</b>	<b>3,084,837</b>	Illinois.....	1,033,833	573,641	769,264
California.....	733,587	530,480	525,607	Indiana.....	507,018	8,000	253,056
New York.....	2,074,701	1,218,868	1,800,388	Kentucky.....	208,425	212,551	139,905
Wisconsin.....	1,358,018	870,321	342,672	Massachusetts.....	740,425	1,705,070	957,817
All other states.....	740,637	724,945	566,270	Michigan.....	729,970	76,842	222,199
<b>Furniture leather.</b>	<b>4,913,074</b>	<b>2,327,647</b>	<b>918,990</b>	Missouri.....	176,195	37,374	165,370
New Jersey.....	3,141,425	1,684,893	509,442	New Jersey.....	2,044,001	4,398,345	2,088,865
New York.....	468,512	132,612	42,654	New York.....	1,430,785	576,690	1,006,011
Ohio.....	1,082,384	431,937	228,600	North Carolina.....	225,645	183,321	156,328
All other states.....	221,353	78,205	78,303	Ohio.....	200,740	282,584	376,906
<b>Rough leather sold.</b>	<b>6,335,599</b>	<b>10,180,949</b>	<b>6,864,345</b>	Oregon.....	113,171	168,518	89,742
California.....	210,051	352,799	309,405	Pennsylvania.....	1,978,230	1,936,054	1,177,830
Massachusetts.....	442,439	179,153	293,434	Virginia.....	402,244	585,054	399,846
				Wisconsin.....	290,420	458,832	819,067
				All other states.....	921,684	1,105,874	907,571

LEATHER, TANNED, CURRIED, AND FINISHED—STOCK TANNED OR CURRIED AND FINISHED BY ESTABLISHMENTS IN THE INDUSTRY UNDER CONTRACT FOR OTHER ESTABLISHMENTS IN THE INDUSTRY, BY STATES.

Table 26	NUMBER.		ESTIMATED VALUE OF PRODUCT: 1909	KIND AND STATE.	NUMBER.		ESTIMATED VALUE OF PRODUCT: 1909
	1909	1904			1909	1904	
<b>Hides tanned.</b>	<b>981,383</b>	<b>860,918</b>	<b>\$6,615,249</b>	<b>Sides and splits curried or finished.</b>	<b>2,577,335</b>	<b>721,751</b>	<b>\$7,187,108</b>
Massachusetts.....	49,153	111,550	270,472	Massachusetts.....	2,244,321	287,417	5,054,779
New Jersey.....	545,027	324,161	2,805,480	New Jersey.....	53,700	436,504	270,275
North Carolina.....	52,326	5,827	732,504	New York.....	110,466	.....	110,882
Pennsylvania.....	245,490	179,837	1,925,850	Pennsylvania.....	139,326	.....	74,247
All other states.....	80,387	240,543	1,075,383	All other states.....	29,292	17,770	106,945
<b>Skins tanned.</b>	<b>2,435,281</b>	<b>2,646,632</b>	<b>1,505,908</b>	<b>Skins curried or finished.</b>	<b>4,890,001</b>	<b>3,072,590</b>	<b>4,159,730</b>
California.....	50,428	.....	118,856	Maine.....	489,000	.....	202,627
Illinois.....	35,455	.....	75,048	Massachusetts.....	2,563,610	1,191,589	1,836,018
Maine.....	1,182,137	1,352,784	375,176	New Jersey.....	300,100	84,491	156,075
Massachusetts.....	440,342	509,550	267,025	New York.....	486,246	502,005	439,658
New York.....	249,820	194,200	160,473	Pennsylvania.....	1,049,060	1,894,155	1,624,960
Pennsylvania.....	375,624	16,185	323,071	All other states.....	185	350	462
Wisconsin.....	53,456	24,000	137,437				
All other states.....	33,010	549,904	30,622				

LEATHER, TANNED, CURRIED, AND FINISHED—STOCK TANNED OR CURRIED AND FINISHED BY ESTABLISHMENTS IN THE INDUSTRY UNDER CONTRACT FOR OTHER ESTABLISHMENTS NOT IN THE INDUSTRY, BY STATES.

Table 27	NUMBER.		ESTIMATED VALUE OF PRODUCT: 1909	KIND AND STATE.	NUMBER.		ESTIMATED VALUE OF PRODUCT: 1909
	1909	1904			1909	1904	
<b>Hides tanned.</b>	<b>1,221,685</b>	<b>426,066</b>	<b>\$12,550,652</b>	<b>Sides curried or finished.</b>	<b>1,363,187</b>	<b>1,070,669</b>	<b>\$5,314,073</b>
Maryland.....	21,348	32,200	352,036	Maine.....	10,586	.....	112,356
Massachusetts.....	90,591	218,377	647,084	Maryland.....	50,747	.....	268,930
Michigan.....	54,340	9,730	616,170	Massachusetts.....	1,115,217	1,070,387	4,312,216
New York.....	18,271	25,052	169,189	New Jersey.....	115,600	.....	435,100
North Carolina.....	67,871	139	818,674	Pennsylvania.....	17,010	12	76,545
Pennsylvania.....	468,541	20,400	3,128,520	All other states.....	48,027	270	108,028
Tennessee.....	110,581	155	1,808,246				
Virginia.....	54,245	5,116	884,154	<b>Splits curried or finished.</b>	<b>938,137</b>	<b>341,763</b>	<b>1,156,635</b>
West Virginia.....	278,185	37	3,395,536	Massachusetts.....	740,889	338,988	936,778
Wisconsin.....	65,058	1,410	710,784	New York.....	172,800	3,765	201,600
All other states.....	2,654	103,823	22,250	All other states.....	24,448	1,000	18,427
<b>Skins tanned.</b>	<b>9,887,836</b>	<b>13,279,613</b>	<b>7,403,604</b>	<b>Skins curried or finished.</b>	<b>18,049,051</b>	<b>12,208,534</b>	<b>14,037,708</b>
Maine.....	1,611,689	1,212,500	558,343	Delaware.....	977,786	35,951	709,329
Massachusetts.....	1,315,017	3,469,516	701,784	Maine.....	101,893	.....	16,978
New York.....	1,827,425	4,130,992	1,637,551	Massachusetts.....	9,818,397	6,290,135	6,666,431
Pennsylvania.....	4,990,670	4,460,002	4,285,490	New Jersey.....	331,608	251,481	250,101
All other states.....	143,034	10,543	160,436	New York.....	5,001,599	4,346,862	5,272,094
				Pennsylvania.....	1,058,868	574,957	722,748
				All other states.....	768,927	709,148	394,196

THE LEATHER INDUSTRY.

GENERAL STATISTICS, BY STATES.

Table 28 shows, for 1909, 1904, and 1899, the number of establishments, persons engaged in the industry, of expense, value of products, and value added by manufacture, by states. Table 29 gives similar statistics in somewhat greater detail for 1909.

LEATHER, TANNED, CURRIED, AND FINISHED—COMPARATIVE SUMMARY, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manu- facturers (value of products less cost of materials).
			Total.	Pro- pri- etors and firm mem- bers.	Salaried em- ployees.	Wage earners (average number).							
Expressed in thousands.													
United States.....	1909	919	67,100	784	4,114	62,262	148,140	\$332,727	\$6,744	\$32,103	\$248,279	\$327,874	\$79,595
	1904	1,049	61,602	1,112	3,251	57,233	117,450	242,584	4,452	27,049	181,179	252,621	61,442
	1899	1,306	56,024	1,473	2,442	52,103	89,860	173,977	3,159	22,591	155,000	204,058	49,038
California.....	1909	40	1,547	20	129	1,398	3,534	8,535	215	988	7,039	9,367	2,328
	1904	49	1,670	39	116	1,515	3,291	6,308	184	945	5,911	8,072	2,160
	1899	45	1,677	48	75	1,454	2,152	4,820	106	871	5,809	7,406	1,597
Connecticut.....	1909	8	176	5	21	150	356	777	35	95	805	1,047	242
	1904	9	197	7	21	169	371	894	28	82	543	748	205
	1899	7	201	10	12	179	215	639	14	90	681	891	210
Delaware.....	1909	16	3,241	12	184	3,045	4,417	8,249	351	1,367	8,147	12,079	3,932
	1904	20	3,046	18	192	2,836	5,377	6,646	251	1,176	7,911	10,251	2,340
	1899	20	2,645	30	150	2,457	3,040	5,179	166	1,045	7,028	9,401	2,373
Georgia.....	1909	10	327	4	17	306	1,228	1,267	28	99	1,051	1,374	323
	1904	29	595	38	24	533	1,161	2,406	29	154	1,887	2,382	495
	1899	36	474	38	20	410	673	1,434	20	92	928	1,188	260
Illinois.....	1909	29	3,194	26	167	3,001	6,769	15,975	277	1,582	12,131	14,012	2,781
	1904	28	2,837	20	97	2,770	5,260	11,649	135	1,326	8,174	10,758	2,584
	1899	27	2,973	24	86	2,203	3,305	4,751	177	1,145	5,784	7,848	2,064
Indiana.....	1909	10	440	5	37	398	1,028	2,213	55	205	1,713	2,311	598
	1904	13	301	18	18	265	624	1,248	20	134	764	1,051	287
	1899	23	454	27	27	400	628	1,321	27	162	1,187	1,590	403
Kentucky.....	1909	18	724	1	93	630	2,669	5,419	118	308	3,224	4,241	1,017
	1904	20	802	12	62	728	1,766	4,429	90	327	2,807	3,952	1,145
	1899	23	880	17	53	810	1,886	4,681	61	322	2,882	3,787	876
Maine.....	1909	17	466	10	20	436	1,467	1,729	25	208	1,452	1,905	453
	1904	27	572	28	29	515	1,787	1,465	31	237	1,974	2,500	526
	1899	31	653	30	36	587	1,709	1,376	27	229	1,943	2,452	509
Maryland.....	1909	13	523	15	42	466	1,321	2,208	80	211	2,114	2,661	547
	1904	17	583	28	24	531	982	2,019	37	218	1,483	1,911	428
	1899	22	501	28	18	455	1,008	1,089	17	156	1,411	1,754	343
Massachusetts.....	1909	132	11,066	112	642	10,252	19,231	41,197	952	5,444	28,766	40,062	11,236
	1904	132	9,752	152	526	9,074	15,303	27,070	686	4,556	23,041	33,353	10,312
	1899	119	7,825	160	355	7,010	11,543	18,318	406	3,350	19,794	26,068	6,274
Michigan.....	1909	24	2,440	5	144	2,291	6,719	12,012	232	1,133	12,121	15,331	3,210
	1904	25	1,852	13	92	1,747	4,391	6,861	147	866	7,271	9,340	2,069
	1899	27	1,513	19	72	1,427	3,334	5,214	96	559	4,697	6,016	1,319
Missouri.....	1909	9	246	3	23	220	519	1,478	42	146	1,599	2,035	430
	1904	9	242	4	21	217	546	1,345	37	131	734	1,128	394
	1899	9	209	4	20	185	388	922	35	99	557	817	260
New Jersey.....	1909	86	6,040	71	409	5,560	9,243	18,847	772	3,473	20,198	28,431	3,233
	1904	73	5,358	63	342	4,953	7,496	12,492	501	2,793	15,272	21,495	6,224
	1899	77	4,520	72	276	4,178	4,531	9,906	413	2,057	9,633	18,747	4,213
New York.....	1909	109	6,278	132	458	5,688	14,265	25,755	689	2,912	20,941	27,642	6,701
	1904	118	5,843	158	241	5,444	13,231	24,038	340	2,455	16,275	21,643	5,368
	1899	147	6,922	199	193	6,530	13,162	19,063	265	2,775	17,424	23,206	5,782
North Carolina.....	1909	39	938	49	57	832	2,672	6,753	107	290	4,156	5,415	1,259
	1904	34	616	45	37	534	1,521	2,569	61	149	2,678	2,662	624
	1899	75	488	94	28	366	989	1,300	29	105	1,129	1,502	373
Ohio.....	1909	36	2,023	24	120	1,854	4,244	13,759	197	1,083	7,720	10,128	2,408
	1904	40	1,738	34	94	1,610	2,770	6,915	142	839	4,462	6,513	2,051
	1899	58	1,534	76	74	1,384	2,322	5,823	81	617	3,774	5,182	1,408
Oregon.....	1909	8	58	7	2	49	224	218	2	34	181	244	63
	1904	11	109	15	94	314	314	272	.....	67	367	455	118
	1899	16	77	23	1	53	206	173	1	28	190	250	60
Pennsylvania.....	1909	163	14,970	151	811	14,008	37,440	80,989	1,344	6,801	59,113	77,926	19,813
	1904	205	15,383	216	754	14,413	31,075	72,972	927	6,418	55,412	69,428	14,016
	1899	254	14,162	260	506	13,396	23,760	57,320	644	5,458	42,404	55,615	13,211
Tennessee.....	1909	25	463	26	42	395	1,684	3,564	50	139	1,904	2,530	536
	1904	29	804	28	40	730	1,731	4,013	64	252	2,851	3,584	733
	1899	44	887	53	29	803	804	3,444	35	240	2,184	2,802	618
Texas.....	1909	3	13	4	1	8	40	22	5	43	55	12	
	1904	5	20	5	2	22	35	23	1	8	35	26	
	1899	11	43	12	2	29	12	25	1	9	52	77	
Virginia.....	1909	39	1,730	37	103	1,590	4,223	11,090	171	589	6,445	8,267	1,822
	1904	44	1,169	43	71	1,055	2,508	4,655	95	358	4,719	5,830	1,111
	1899	65	1,018	70	59	880	2,164	4,032	85	314	3,696	4,717	1,021
Washington.....	1909	4	29	3	8	18	120	136	6	14	86	117	31
	1904	3	13	5	.....	8	70	38	.....	6	41	58	17
	1899	3	9	6	.....	3	13	18	.....	2	26	33	7
West Virginia.....	1909	20	1,688	13	104	1,571	5,395	18,164	201	775	10,383	12,451	2,068
	1904	33	1,043	49	48	940	2,973	8,751	89	434	4,769	6,062	1,293
	1899	46	739	38	37	664	1,713	5,050	63	224	2,541	3,211	670
Wisconsin.....	1909	32	7,977	23	406	7,548	17,112	49,412	697	3,088	34,829	44,608	9,839
	1904	33	5,905	27	322	5,556	9,816	30,409	458	2,687	19,871	25,845	5,974
	1899	42	5,535	43	230	5,202	6,076	18,284	815	2,242	10,040	20,074	4,034
All other states.....	1909	29	558	26	74	458	2,810	2,408	97	214	2,028	2,735	707
	1904	43	1,093	47	78	968	3,052	3,057	99	401	2,566	3,509	943
	1899	79	1,076	90	71	915	1,997	2,795	75	370	3,306	4,434	1,128

MANUFACTURES.

LEATHER, TANNED, CURRIED, AND FINISHED.

Table 20	STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.										WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.				Primary horse-power.	
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.				Total.	16 and over.		Under 16.			
						Male.	Female.	Average number.	Number, 15th day of—		Male.		Female.	Male.	Female.			
									Maximum month.	Minimum month.								
1	United States .....	919	67,100	784	1,547	2,092	475	62,302	De	66,694	My	60,075	66,717	64,005	2,230	408	74	148,140.
2	California .....	40	1,547	20	70	42	17	1,308	Se	1,457	My	1,352	1,441	1,437			4	3,534
3	Connecticut .....	8	176	5	14	4	3	150	De	167	Ap	126	167	148		19		356
4	Delaware .....	16	3,241	12	52	105	27	3,045	De	3,458	Ja	2,846	3,460	2,626	816	13	5	4,417
5	Georgia .....	10	327	4	12	4	1	306	Ja	359	De	297	277	277				1,228
6	Illinois .....	29	3,194	26	53	99	15	3,001	De	3,208	Je	2,839	3,208	3,203		5		6,769
7	Indiana .....	10	440	5	17	14	6	398	Au	430	Mh	373	383	382		1		1,028
8	Iowa .....	3	20	4	3		2	11	No <sup>1</sup>	14	Au <sup>1</sup>	8	16	13		3		43
9	Kentucky .....	18	724	1	46	41	6	630	Ja	676	Ap	598	669	668			1	2,669
10	Maine .....	17	466	10	15	4	1	436	De	520	Jy	308	521	521				1,467
11	Maryland .....	13	523	15	16	23	3	466	Je	515	Ja	415	485	480		5		1,321
12	Massachusetts .....	132	11,006	112	240	309	87	10,252	De	11,546	Ap	9,708	11,309	11,105	147	49	8	19,231
13	Michigan .....	24	2,440	5	60	63	21	2,201	De	2,392	Ap	2,190	2,392	2,394		8	20	6,719
14	Missouri .....	9	246	3	11	8	4	220	Au <sup>1</sup>	240	Ja <sup>1</sup>	200	221	220			1	619
15	New Jersey .....	86	6,040	71	163	203	43	5,560	De	5,990	Jy	5,303	6,000	5,836		61	103	9,248
16	New York .....	109	6,278	132	131	247	80	5,688	De	6,023	My	5,237	6,085	5,923		140	22	14,285
17	North Carolina .....	39	938	49	23	27	7	832	De	913	Mh	722	918	914			4	2,672
18	Ohio .....	36	2,028	24	63	42	15	1,884	De	2,175	Je	1,739	2,106	2,185		11		4,244
19	Oregon .....	8	58	7	1	1		49	Je	53	Ja <sup>1</sup>	46	49	49				224
20	Pennsylvania .....	163	14,970	161	343	388	80	14,008	De	14,890	My	13,587	14,973	14,079	682	151	61	37,440
21	Tennessee .....	25	463	20	19	19	4	395	Mh	429	Se	309	388	388				1,634
22	Texas .....	3	13	4	1			8	My <sup>1</sup>	9	Mh	7	9	9				40
23	Virginia .....	39	1,730	37	46	54	3	1,590	Au	1,710	Mh	1,487	1,501	1,524		30	7	4,223
24	Washington .....	4	29	3	4	4		18	Se	20	Au <sup>1</sup>	17	18	18				120
25	West Virginia .....	20	1,088	13	30	72	2	1,571	Au	1,760	Fe	1,431	1,653	1,658				5,305
26	Wisconsin .....	32	7,977	23	80	202	34	7,548	Fe	8,127	Se	7,106	7,722	7,388		301	33	17,112
27	All other states <sup>2</sup> .....	26	538	22	28	27	14	447					691	590		1		2,267

<sup>1</sup> Same number reported for one or more other months.

<sup>2</sup> All other states embrace: Alabama, 1 establishment; Arkansas, 1; Colorado, 1; Louisiana, 1; Minnesota, 5; New Hampshire, 4; North Dakota, 2; Oklahoma, 2; Rhode Island, 3; South Carolina, 1; South Dakota, 1; Utah, 2; Vermont, 2.

# THE LEATHER INDUSTRY.

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DETAILED STATISTICS, BY STATES: 1909.

	Capital.	EXPENSES.									Value of products.	Value added by manufacture (value of products less cost of materials).	
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.			Other.
1	\$332,726,952	\$305,699,411	\$4,229,615	\$2,514,021	\$32,102,845	\$3,292,831	\$244,986,102	\$500,047	\$1,079,398	\$473,869	\$16,520,689	\$327,874,187	\$79,595,254
2	8,535,102	8,780,949	160,059	55,006	987,550	74,336	6,965,117	2,260	20,367	1,651	514,573	9,366,545	2,227,002
3	776,708	975,971	29,534	5,271	94,538	10,494	794,414	3,700	2,936		35,084	1,047,343	242,435
4	8,249,477	10,538,470	203,708	146,866	1,387,350	73,430	8,073,420	6,200	14,247		659,240	12,079,225	3,932,375
5	1,266,963	1,243,306	20,638	7,535	98,704	20,492	1,030,951		3,079		61,907	1,374,070	322,627
6	15,974,832	14,736,180	159,964	110,908	1,532,030	151,707	11,978,902	26,278	35,181	7,310	677,900	14,911,782	2,781,173
7	2,212,874	2,097,171	35,835	18,867	204,546	21,342	1,691,218	14,338	6,211		104,814	2,311,299	568,739
8	10,829	19,325	2,160	988	6,966	525	4,361	40	71		4,214	28,277	23,891
9	5,969,593	3,944,125	74,934	43,183	307,593	40,784	3,183,302	810	23,294		270,225	4,240,795	1,016,709
10	1,728,823	1,791,076	20,782	3,800	207,869	33,556	1,418,647	17	5,141	311	100,953	1,905,372	453,169
11	2,208,388	2,486,828	59,760	20,069	210,649	15,518	2,098,516	2,996	4,648		74,672	2,661,066	547,032
12	41,196,568	37,445,910	624,805	327,018	5,443,944	607,523	23,157,985	116,996	166,112	241,533	1,759,994	40,002,079	11,236,571
13	12,012,403	14,102,199	146,018	86,130	1,133,181	194,423	11,926,548	3,160	71,405		541,334	15,331,104	3,210,133
14	1,478,051	1,838,546	36,050	6,437	145,548	11,848	1,587,017	1,170	6,210		44,266	2,034,979	436,114
15	18,847,079	25,477,049	516,522	255,849	3,473,174	293,894	19,904,576	54,090	64,098	27,228	887,618	28,430,955	8,232,485
16	25,755,338	25,815,974	379,701	309,022	2,911,973	318,745	20,621,988	85,282	43,114	124,240	1,021,909	27,042,383	6,701,650
17	6,753,436	4,746,258	72,220	34,385	289,502	44,428	4,111,723	60	24,185		169,755	5,415,495	1,259,344
18	13,758,911	9,398,390	141,655	55,585	1,083,121	89,269	7,630,335	7,009	43,512	855	347,049	10,127,836	2,408,232
19	218,480	224,895	1,400	720	33,617	3,446	177,594		927		7,191	244,248	63,208
20	80,988,961	73,594,120	927,927	415,640	6,801,370	726,432	68,386,692	157,324	193,283	25,030	5,960,422	77,926,321	18,813,197
21	3,564,005	2,263,750	24,900	24,604	138,588	14,201	1,979,513	600	9,108		72,140	2,529,901	536,187
22	22,410	48,790	600		4,784	595	42,354		87		370	55,277	12,328
23	11,089,660	7,562,403	111,787	59,583	588,591	43,504	6,401,657	8,550	31,669		317,062	8,266,850	1,821,689
24	136,097	109,531	4,602	1,860	13,937	2,139	83,812		669		2,512	116,610	30,659
25	18,164,283	11,989,675	120,180	80,788	774,922	84,708	10,298,493		37,004	44,640	548,940	12,450,592	2,067,391
26	49,412,042	41,986,140	302,100	395,124	3,987,767	386,034	34,442,551	8,227	262,381		2,201,965	44,667,676	9,839,091
27	2,395,639	2,482,371	51,774	42,693	211,031	29,458	1,994,416	940	10,429	1,071	140,559	2,706,107	682,233

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LEATHER GLOVES AND MITTENS

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(735)

# THE LEATHER GLOVE AND MITTEN INDUSTRY

## GENERAL STATISTICS.

**Comparison with earlier censuses.**—The classification "gloves and mittens, leather" includes establishments making all kinds of leather gloves, mittens, and gauntlets, lined and unlined, whether for men, for women, or for children, and whether for dress purposes or for work. From 1869 to 1899, inclusive, the classification was "gloves and mittens," and included establishments making gloves and mittens of materials other than leather, except knit gloves and mittens and rubber gloves and mittens. Fur gloves and mittens were excluded by definite instructions in 1904 and 1909. The extent to which the manufacture of fur gloves was included at prior censuses, while uncertain,

was undoubtedly small, as they are usually made by establishments making also fur goods of other classes. It is not believed that the data for the censuses prior to 1904 were sufficiently affected by the inclusion of establishments which have since been excluded to impair seriously their comparability with the figures for the later censuses.

Table 1 summarizes the statistics of the industry for each census from 1869 to 1909, inclusive.

The financial figures for 1869 are given in currency, which at that time was worth only about 80 cents, gold, to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

	NUMBER OR AMOUNT.						PER CENT OF INCREASE. <sup>1</sup>					
	1909	1904	1899	1889	1879	1869	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889	1869-1879
Number of establishments.....	377	339	394	324	300	221	-4.3	11.2	-14.0	21.6	8.0	35.7
Persons engaged in the industry...	12,950	11,712	15,531	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	-16.6	10.6	-24.6			
Proprietors and firm members.....	458	427	527	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	-13.1	7.3	-19.0			
Salaried employees.....	1,138	640	659	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	72.7	77.8	-2.9			
Wage earners (average number).....	11,354	10,645	14,345	8,187	7,697	4,058	( <sup>2</sup> )	6.7	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Primary horsepower.....	2,889	2,725	2,165	958	( <sup>2</sup> )	89	33.4	6.0	25.0	126.0		
Capital.....	\$16,908,671	\$10,705,599	\$9,089,809	\$5,977,820	\$3,379,648	\$2,340,550	86.0	57.9	17.8	52.1	76.9	44.4
Expenses.....	\$21,244,895	\$15,933,408	\$14,780,665	\$8,557,059	( <sup>2</sup> )	( <sup>2</sup> )	43.7	33.3	7.8	72.7		
Services.....	\$6,019,872	\$4,424,826	\$4,729,838	\$3,109,008	\$1,655,695	\$980,549	27.3	36.0	-6.4	52.1	87.8	68.9
Salaries.....	\$1,256,042	\$584,573	\$547,320	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	129.5	114.9	6.8	24.8		
Wages.....	\$4,763,830	\$3,840,253	\$4,182,518	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	24.0	( <sup>2</sup> )			
Materials.....	\$13,208,001	\$10,000,889	\$9,483,130	\$5,021,144	\$4,351,469	\$1,884,146	39.3	32.1	5.5	88.9	15.4	130.9
Miscellaneous.....	\$2,017,022	\$1,507,693	\$567,697	\$426,937	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	33.8	( <sup>2</sup> )	33.0		
Value of products.....	\$23,630,598	\$17,740,385	\$16,926,156	\$10,103,821	\$7,379,605	\$3,998,521	39.6	33.2	4.8	67.5	36.9	84.5
Value added by manufacture (value of products less cost of materials).....	\$10,422,597	\$7,739,496	\$7,443,026	\$5,082,677	\$3,028,136	\$2,114,375	40.0	34.7	4.0	46.4	67.8	43.2
Gloves, mittens, and gauntlets manufactured, dozen pairs.....	3,368,655	3,370,146	2,895,661	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	16.3	( <sup>2</sup> )	16.4			

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted comparable figures are not available.

<sup>2</sup> Comparable figures not available.

<sup>3</sup> Figures for 1899 not comparable with those for 1904 and 1909 (see explanation in text).

<sup>4</sup> Figures not strictly comparable.

<sup>5</sup> Less than one-tenth of 1 per cent.

Substantial increases in value of products occurred during each decade covered by the table. The value of products reported for 1909 was nearly six times the value for 1869, but a part of the increase is due to the advance in prices during the 40 years. From 1899 to 1909 the value of products increased \$6,704,442, or 39.6 per cent. According to the returns there was during the decade a decided decrease in the number of wage earners, accompanied by an increase in the amount paid for contract work from \$93,795 in 1899 to \$92,216 in 1909. The figures reported, however, are misleading, owing to a change in the method of reporting the piecework done for the glove factories at the individual homes, a practice very widely prevalent in New York. In 1899 these pieceworkers were reported as wage earners and their earnings included with wages. By reason of the impossibility of ascertaining accurately the number of persons engaged in glove making at their homes or the time given to such work, the Census

Bureau determined in 1904 and 1909 not to include them among wage earners but to report the amount paid for their services as paid for contract work.

In 1909 there were 377 establishments reported, which gave employment to 12,950 persons and paid out \$6,019,872 in salaries and wages. Of the persons employed, 11,354 were wage earners. These establishments turned out products to the value of \$23,630,598, to produce which materials costing \$13,208,001 were utilized. The value added to materials by manufacture was \$10,422,597. The total value of products for the industry includes that of products other than gloves and mittens to the amount of \$1,104,737. These products consist principally of fur goods, hosiery and knit goods, boots and shoes, and leather goods.

**Summary, by states.**—Table 2 summarizes the more important statistics by states, the states being arranged according to the value of products reported for 1909. The states shown in this table are given

their actual ranking among all states, the rank of certain states for which data can not be presented being higher than that of some named in the table. Percentages of increase from 1899 to 1904 and from

1899 to 1909 are not shown for the average number of wage earners, since, as already explained, the figures for 1899 are not comparable with those for the later censuses.

**Table 2**

STATE.	Number of establishments: 1909	WAGE EARNERS.				VALUE OF PRODUCTS.				VALUE ADDED BY MANUFACTURE.				PER CENT OF INCREASE. <sup>1</sup>						
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Wage earners (average number): 1904-1909	Value of products.			Value added by manufacture.		
				1909	1904			1909	1904			1909	1904		1909	1904	1899-1909	1904-1909	1899-1904	1899-1909
United States...	377	11,354	100.0	.....	.....	\$23,630,598	100.0	.....	.....	\$10,422,597	100.0	.....	.....	6.6	39.6	33.2	4.8	40.0	34.7	4.0
New York.....	225	6,287	55.4	1	1	14,336,365	60.7	1	1	6,313,351	60.6	1	1	12.0	32.3	44.1	-8.3	39.7	48.5	-6.1
Wisconsin.....	23	1,642	14.5	2	2	2,798,537	11.8	2	2	1,161,897	11.1	2	2	17.6	452.1	26.7	336.7	518.1	33.6	362.8
Illinois.....	29	1,309	11.5	3	3	2,522,963	10.7	3	3	1,044,551	10.0	3	3	15.4	1.6	49.2	-31.9	49.2	24.6	-32.9
California.....	23	570	5.0	4	4	1,230,852	5.2	4	4	672,922	6.5	4	4	10.5	33.7	35.1	-1.1	30.0	48.9	-6.6
Iowa.....	10	234	2.1	5	7	693,062	2.9	5	5	310,747	3.1	5	5	-11.0	144.0	-0.7	145.8	101.3	-5.9	113.8
Michigan.....	9	182	1.6	7	11	386,064	1.6	6	10	147,893	1.4	6	10	71.7	.....	101.6	.....	.....	.....	.....
Indiana.....	3	153	1.3	9	5	225,287	1.0	8	6	73,732	0.7	11	6	-52.3	-31.2	-56.2	57.2	-40.2	-57.3	40.2
Ohio.....	6	94	0.8	12	12	138,056	0.6	10	13	49,496	0.5	13	14	.....	-45.1	17.8	-60.6	-55.8	.....	-53.1
New Jersey.....	6	162	1.4	8	8	135,732	0.6	11	9	76,524	0.7	10	9	-23.2	7.9	-39.3	77.8	.....	-20.4	.....
Massachusetts.....	8	109	1.0	10	10	134,937	0.6	12	8	91,852	0.9	9	7	-33.9	-53.3	49.1	-8.3	-44.2	-20.2	-21.2
Washington.....	6	59	0.5	14	14	119,633	0.5	13	14	60,923	0.6	12	13	.....	.....	11.1	.....	.....	.....	.....
Minnesota.....	6	37	0.3	17	13	60,992	0.3	16	15	26,378	0.3	16	15	.....	.....	.....	.....	.....	.....	.....
Pennsylvania.....	3	42	0.4	15	15	54,041	0.2	17	17	21,131	0.2	18	18	.....	.....	.....	.....	.....	.....	.....
Oregon.....	5	19	0.2	18	18	44,841	0.2	18	18	24,359	0.2	17	17	.....	.....	.....	.....	.....	.....	.....
All other states.....	15	465	4.0	.....	.....	748,636	3.2	.....	.....	337,841	3.2	.....	.....	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> Percentages are based on figures in Table 18. A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners, or less than \$100,000 for value of products or value added by manufacture.

New York is by far the most important state in the manufacture of leather gloves and mittens, ranking first in average number of wage earners, value of products, and value added by manufacture both in 1909 and in 1904. During the decade ending with 1909 the value of products for this state increased 32.3 per cent, representing in 1909, 60.7 per cent of the total for the United States. Wisconsin, Illinois, and California ranked second, third, and fourth, respectively, both in 1909 and 1904, in average number of wage earners, value of products, and value added by manufacture. Of the four leading states in value of products, Wisconsin showed the greatest

development during the period from 1899 to 1909, the value of products increasing 452.1 per cent. Although not among the leading states in the industry, Michigan shows a remarkable increase from 1899 to 1909 in value of products, 601.8 per cent.

**Production in Fulton County, N. Y.**—The manufacture of leather gloves and mittens as a factory industry was first carried on in the United States in Fulton County, N. Y., and this locality has ever since been the center of the industry in this country. Table 3 shows comparative statistics for Fulton County for 1909 and 1899, and also for the two principal cities of the county.

**Table 3**

	FULTON COUNTY, N. Y.				GLOVERSVILLE.				JOHNSTOWN.			
	1909		1899		1909		1899		1909		1899	
	Number or amount.	Per cent of total for United States.	Number or amount.	Per cent of total for United States.	Number or amount.	Per cent of total for United States.	Number or amount.	Per cent of total for United States.	Number or amount.	Per cent of total for United States.	Number or amount.	Per cent of total for United States.
Number of establishments.....	156	41.4	166	42.1	87	23.1	101	25.6	54	14.3	40	12.4
Persons engaged in the industry.....	6,201	47.9	(1)	.....	4,220	.....	(1)	.....	1,598	.....	(1)	.....
Proprietors and firm members.....	226	40.3	(1)	.....	117	25.5	(1)	.....	85	18.6	.....	.....
Salaries employees.....	537	47.2	250	37.9	401	35.2	171	25.0	1,394	10.5	73	10.9
Wage earners (average number) <sup>1</sup> .....	5,438	47.9	7,931	55.3	3,702	32.6	5,183	36.1	1,394	12.3	2,316	16.1
Capital.....	832	28.8	(1)	.....	556	19.2	(1)	.....	162	5.6	(1)	.....
Expenses.....	\$9,698,040	57.4	\$5,517,850	60.7	\$6,439,354	38.1	\$3,060,383	40.3	\$2,721,670	16.1	\$1,689,604	13.6
Services.....	\$11,031,609	54.8	\$8,552,741	57.9	\$8,004,873	37.7	\$5,020,768	40.1	\$2,892,989	13.6	\$2,210,025	15.0
Salaries.....	\$3,059,136	50.7	\$2,025,682	55.5	\$2,188,196	36.3	\$1,872,580	39.6	\$703,495	11.7	\$644,260	13.5
Wages <sup>2</sup> .....	\$509,698	44.6	\$244,522	44.3	\$459,405	36.6	\$177,551	32.4	\$88,151	7.0	\$84,114	11.7
Materials.....	\$2,459,528	52.3	\$2,351,160	56.9	\$1,728,791	36.3	\$1,095,035	40.5	\$615,344	12.9	\$580,146	14.9
Miscellaneous <sup>2</sup> .....	\$7,310,030	55.3	\$5,689,613	60.0	\$4,950,854	37.5	\$3,900,897	41.1	\$1,880,470	14.2	\$1,506,193	15.9
Value of products.....	\$1,271,443	63.0	\$237,446	41.8	\$865,823	42.9	\$153,275	27.0	\$309,024	15.3	\$60,172	10.6
Value added by manufacture (value of products less cost of materials).....	\$12,933,788	54.7	\$9,548,003	56.4	\$8,869,706	37.5	\$6,487,227	38.3	\$3,258,302	13.8	\$2,576,048	15.2
Gloves, mittens, and gauntlets made (dozen pairs).....	1,028,297	48.3	1,484,579	51.3	988,431	29.3	925,440	32.0	411,772	12.2	398,657	13.8

<sup>1</sup> Comparable figures not available.

<sup>2</sup> Figures for 1899 not closely comparable with those for 1909; see text following Table 1.

In 1909, 41.4 per cent of the total number of establishments in the industry in the United States and 54.7 per cent of the total value of products were reported from Fulton County, N. Y. The corresponding proportions for 1899 were 42.1 per cent and 56.4 per cent, respectively.

The industry is much more important in Gloversville than in Johnstown, and the increase in value of products during the decade in Gloversville, 36.7 per cent, was greater than that in Johnstown, 26.5 per cent. The decrease shown in the average number of wage earners in Fulton County and in each of the two cities, and the great increase in miscellaneous expenses, is, as already explained, due to the difference in the method of reporting piecework done in the homes of the workers.

Persons engaged in the industry.—Table 4 shows, for 1909, the number of persons engaged in the industry, classified according to occupational status and sex, and in the case of wage earners, according to age. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction. Moreover, as already stated, the data do not cover pieceworkers working in their own homes.

CLASS	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
All classes.....	12,950	6,219	6,731
Proprietors and officials.....	760	714	46
Proprietors and firm members.....	458	436	22
Salaried officers of corporations.....	85	81	4
Superintendents and managers.....	217	197	20
Clerks.....	836	532	304
Wage earners (average number).....	11,354	4,973	6,381
16 years of age and over.....	11,085	4,846	6,239
Under 16 years of age.....	269	127	142

The average number of persons engaged in the leather glove and mitten industry during 1909 was 12,950, of whom 11,354, or 87.7 per cent, were wage earners; 760, or 5.9 per cent, proprietors and officials; and 836, or 6.5 per cent, clerks, which class includes other subordinate salaried employees. Of the total number of persons engaged in the industry, 6,219, or 48 per cent, were males, and 6,731, or 52 per cent, were females. The average number of children under 16 years of age employed as wage earners was 269.

The average number of wage earners for each state, as reported at the censuses of 1909, 1904, and 1899, is given in Table 18. The average number distributed by sex and age is not shown for the individual states, but Table 19 distributes on this basis the number employed on December 15, 1909, or the nearest representative day. Female wage earners were reported from each of the states for which separate

figures are shown. Of the total number of wage earners reported for New York, 3,381, or 49.8 per cent, were females; Wisconsin reported 1,155 females, who formed 66 per cent of the total for that state; and Illinois, 872 females, who formed 64.8 per cent of the state's total.

In order to compare the distribution of persons engaged in the industry according to occupational status in 1909 with that in 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 5. The greatest percentage of increase was in salaried employees.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.				Per cent of increase: 1904-1909
	1909		1904		
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	12,950	100.0	11,712	100.0	10.6
Proprietors and firm members.....	458	3.5	427	3.6	7.2
Salaried employees.....	1,133	8.8	640	5.5	77.8
Wage earners (average number).....	11,354	87.7	10,645	90.9	6.7

Table 6 shows the average number of wage earners engaged in the industry, distributed according to age, and in the case of those 16 years of age and over, according to sex, for 1909 and 1904. Data for 1899 are not given because not comparable with those for the later censuses. The number of women reported for 1904 and for 1909 was practically the same, but the number of men and of children was larger in 1909.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY.			
	1909		1904	
	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	11,354	100.0	10,645	100.0
16 years of age and over.....	11,085	97.6	10,419	97.9
Male.....	4,846	42.7	4,174	39.2
Female.....	6,239	54.9	6,245	58.7
Under 16 years of age.....	269	2.4	226	2.1

Wage earners employed, by months.—Table 7 gives the number of wage earners employed in the industry on the 15th (or nearest representative day) of each month during the year 1909 for the four states in which an average of 500 or more wage earners were employed during the year.

The largest number of wage earners reported for any month was 12,007, for December, and the smallest number, 10,659, for January, the minimum number amounting to 88.8 per cent of the maximum. The industry does not appear to be subject to any great changes from season to season. In 1904 the maximum number, 11,626, was reported for September and the minimum number, 9,433 (amounting to 81.1 per cent of the maximum), for January.

Table 7

STATE.	WAGE EARNERS EMPLOYED IN THE INDUSTRY: 1909 <sup>1</sup>												
	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
United States.....	11,354	10,659	10,985	11,145	11,139	11,188	11,333	11,299	11,372	11,500	11,583	11,961	12,007
California.....	570	501	550	562	562	572	551	542	550	578	598	618	644
Illinois.....	1,309	1,293	1,295	1,283	1,272	1,290	1,295	1,311	1,304	1,323	1,343	1,355	1,345
New York.....	6,287	5,822	5,989	6,045	6,045	6,109	6,163	6,228	6,320	6,513	6,619	6,809	6,786
Wisconsin.....	1,642	1,456	1,523	1,617	1,657	1,642	1,752	1,753	1,744	1,697	1,531	1,640	1,678

<sup>1</sup> The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

The months of maximum and minimum employment for 1909, and the number of wage earners reported for these months, are given for a greater number of states in Table 19.

**Prevailing hours of labor.**—In Table 8 the wage earners in the four leading states have been classified according to the number of hours of labor per week prevailing in the establishments in which they are employed. In making this classification the average number of wage earners employed during the year in each establishment is classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or a smaller number of hours.

Table 8

STATE.	AVERAGE NUMBER OF WAGE EARNERS: 1909					
	Total.	In establishments with prevailing hours—				
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.
United States.....	11,354	555	1,017	917	7,743	1,122
California.....	570	183	340	42	—	—
Illinois.....	1,309	134	69	356	679	41
New York.....	6,287	115	241	103	5,400	248
Wisconsin.....	1,642	53	64	188	875	462

Of the total number of wage earners, 68.2 per cent were in establishments operating more than 54 but less than 60 hours per week, this being the most common time of employment in the three leading states. There were no establishments in which the prevailing hours were more than 60 per week. In California, 340 wage earners, or 59.6 per cent of the total number reported for the state, were in establishments where the prevailing hours were more than 48 but less than 54 hours per week.

**Character of ownership.**—Table 9 presents data with respect to the character of ownership of the establishments in the industry.

The most important distinction shown is that between corporate and all other forms of ownership. In 1909, of the total number of establishments reported for the industry, 19.4 per cent were under corporate ownership, as compared with 16.2 per cent in 1904. While corporations thus controlled less than one-fifth of the total number of establishments, the value of the products of these establishments represented 42.8 per cent of the total for the industry in 1909 and 33.4 per cent in 1904. The corporate form of ownership

thus gained materially in importance between 1904 and 1909. Establishments under firm ownership, on the other hand, which constituted the most important class, as measured by value of products, in 1904, when they reported 45.1 per cent of the total, lost ground relatively during the five-year period, and by 1909 had dropped to second place.

Table 9

CHARACTER OF OWNERSHIP.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	377	339	\$23,630,598	\$17,740,385
Individual.....	190	179	4,222,329	3,805,899
Firm.....	114	105	9,301,612	8,066,267
Corporation.....	73	55	10,106,657	5,930,219
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	50.4	52.8	17.9	21.4
Firm.....	30.2	31.0	39.4	45.1
Corporation.....	19.4	16.2	42.8	33.4

Although not shown in the table, there is considerable variation among the states in the proportion of the total value of products contributed by establishments under the several forms of ownership. In New York corporations controlled 10.2 per cent of all establishments in the industry, these establishments giving employment to 21.2 per cent of the wage earners, and contributing 24.4 per cent of the total value of products. In Wisconsin, the second state in the industry, corporations controlled 60.9 per cent of the total number of establishments, these establishments giving employment to 83.6 per cent of the wage earners and reporting 90.1 per cent of the value of products.

**Size of establishments.**—Table 10 presents statistics for 1909 and 1904 for establishments grouped according to the value of their products. Owing to the advance in prices, some establishments may have risen from one class in 1904 to a higher class in 1909 without any actual increase in the amount of output.

Of the 377 establishments reported for 1909, only 3 manufactured products valued at \$1,000,000 or over; these establishments, however, reported 13.1 per cent of the total value of products for the industry. In 1904 there were no establishments of this class. The greater part of the manufacturing was done in establishments having products valued at \$100,000 but less than \$1,000,000, such establishments reporting 56 per cent of the total value of products in 1909 and 60.9 per cent in 1904. On the other hand, the smaller establishments—that is, those manufacturing products valued at less than \$20,000—constituted 51.5 per cent of the

total number of establishments in 1909, but the value of their products amounted to only 6.5 per cent of the total.

VALUE OF PRODUCTS PER ESTABLISHMENT.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	377	339	\$23,630,598	\$17,740,385
Less than \$5,000.....	77	75	201,786	203,794
\$5,000 and less than \$20,000.....	117	92	1,339,783	1,063,202
\$20,000 and less than \$100,000.....	123	124	5,751,826	5,677,772
\$100,000 and less than \$1,000,000.....	57	48	13,235,257	10,795,617
\$1,000,000 and over.....	3	.....	3,101,946	.....
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	20.4	22.1	0.9	1.1
\$5,000 and less than \$20,000.....	31.0	27.1	5.7	6.0
\$20,000 and less than \$100,000.....	32.6	36.6	24.3	32.0
\$100,000 and less than \$1,000,000.....	15.1	14.2	56.0	60.9
\$1,000,000 and over.....	0.8	.....	13.1	.....

The average value of products per establishment increased from \$52,332 in 1904 to \$62,681 in 1909. This

increase was at least partly attributable to an advance in prices. The average number of wage earners per establishment decreased from 31.4 in 1904 to 30.1 in 1909.

Table 11 gives a classification of the establishments in the industry according to the average number of wage earners employed for the four states for which more than 500 wage earners were reported at the census of 1909.

Of the 377 establishments reported, 7.2 per cent employed no wage earners; 32.1 per cent employed from 1 to 5; 28.9 per cent from 6 to 20; 25.2 per cent from 21 to 100; and 6.6 per cent over 100. Of the total number of wage earners, 14.7 per cent were reported by establishments employing from 1 to 20; 40.8 per cent by establishments employing from 21 to 100; and 44.5 per cent by establishments employing over 100.

STATE.	ESTABLISHMENTS EMPLOYING IN 1909—															
	TOTAL.		No wage earners.		1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.	
	Estab-lish-ments.	Wage earners (average number).	Estab-lish-ments.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	
United States.....	377	11,354	27	121	325	109	1,343	56	1,843	39	2,795	18	2,572	7	2,476	
California.....	23	570	.....	4	11	14	168	3	120	1	76	1	195	.....	459	
Illinois.....	29	1,309	.....	6	18	5	70	12	402	5	360	.....	.....	1	1,370	
New York.....	225	6,287	17	78	208	69	841	23	726	23	1,656	11	1,480	4	1,370	
Wisconsin.....	23	1,642	.....	5	17	5	56	3	97	4	263	4	562	2	647	

Expenses.—As stated in the Introduction, the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of interest or depreciation, and consequently can not be used for determining profits. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total expenses to have been \$21,244,895, divided as follows: Materials, \$13,208,001, or 62.2 per cent; wages, \$4,763,830, or 22.4 per cent; salaries, \$1,256,042, or 5.9 per cent; and miscellaneous expenses, \$2,017,022, or 9.5 per cent. The variations in the proportions represented by the respective classes in the several states, as shown by Table 19, are due largely to differences in the grades of gloves and mittens manufactured; to the fact that, although gloves and mittens were the chief products of all establishments in the industry, fur garments, etc., were also manufactured in some of the establishments; and to the practice in some states of doing much of the work on the gloves and mittens manufactured outside the factories, the payments for such work being included with the payments for "contract work" under miscellaneous expenses, and not under wages.

Engines and power.—Table 1 shows that the total horsepower used in the industry increased from 89 in 1869 to 2,889 in 1909. Table 12 shows the number of engines, or other motors, according to their charac-

ter, employed in generating power (including electric motors operated by purchased current), and their total horsepower, as reported at the censuses of 1909, 1904, and 1899. It also shows separately the number and horsepower of all electric motors, including those operated by current generated in the establishments.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	378	266	91	2,889	2,725	2,165	100.0	100.0	100.0
Owned.....	68	94	01	2,016	2,209	1,799	69.8	81.1	83.1
Steam.....	31	43	44	1,625	1,676	1,312	56.2	61.5	60.6
Gas.....	25	41	42	141	283	275	4.9	10.4	12.7
Water wheels.....	4	4	5	219	242	211	7.6	8.9	9.7
Water motors.....	8	6	( <sup>1</sup> )	31	8	( <sup>1</sup> )	1.1	0.3	.....
Other.....	.....	.....	.....	.....	.....	1	.....	.....	( <sup>2</sup> )
Rented.....	310	172	( <sup>1</sup> )	873	516	366	30.2	18.9	16.9
Electric.....	310	172	( <sup>1</sup> )	850	436	235	29.4	16.0	10.9
Other.....	.....	.....	.....	23	80	131	0.8	2.9	6.0
Electric motors.....	330	176	4	1,000	472	255	100.0	100.0	100.0
Run by current generated by establishment.....	20	4	4	150	36	23	15.0	7.6	8.9
Run by rented power.....	310	172	( <sup>1</sup> )	850	436	235	85.0	92.4	91.1

<sup>1</sup> Not reported.

<sup>2</sup> Less than one-tenth of 1 per cent.

The total primary power used in the industry increased from 2,165 horsepower in 1899 to 2,889 horsepower in 1909, or 33.4 per cent. The increase was

almost entirely in steam power and in rented electric power. Steam power forms the major part of the primary power employed in the industry, but its relative importance has decreased since 1899. The rented

electric power reported increased from 235 horsepower in 1899 to 850 horsepower in 1909.

Table 18 shows the total primary horsepower used in each state in 1909, 1904, and 1899.

### SPECIAL STATISTICS AS TO PRODUCTS.

Table 13 shows the quantity and value of the different classes of leather gloves, mittens, and gauntlets manufactured by establishments in this industry, as reported for 1909, 1904, and 1899.

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<sup>1</sup> \$23, 630, 598	<sup>1</sup> \$17, 740, 385	<sup>1</sup> \$10, 926, 156
Gloves, mittens, and gauntlets:			
Dozen pairs.....	3, 368, 655	3, 370, 146	<sup>2</sup> 2, 895, 661
Value.....	\$22, 525, 861	\$17, 122, 772	<sup>2</sup> \$16, 039, 108
Men's—			
Dozen pairs.....	2, 585, 977	2, 915, 415	2, 267, 327
Value.....	\$17, 060, 797	\$14, 515, 770	\$12, 418, 258
Lined—			
Dozen pairs.....	921, 259	1, 317, 083	952, 820
Value.....	\$5, 222, 174	\$8, 333, 081	\$4, 959, 902
Unlined—			
Dozen pairs.....	1, 664, 718	1, 598, 332	1, 314, 507
Value.....	\$11, 838, 623	\$8, 182, 689	\$7, 459, 356
Women's and children's—			
Dozen pairs.....	782, 678	454, 731	604, 330
Value.....	\$5, 465, 064	\$2, 607, 002	\$3, 470, 258
Lined—			
Dozen pairs.....	305, 477	241, 361	267, 149
Value.....	\$1, 718, 193	\$1, 030, 843	\$1, 247, 910
Unlined—			
Dozen pairs.....	417, 201	213, 370	337, 181
Value.....	\$3, 746, 865	\$1, 576, 159	\$2, 222, 342
All other products.....	\$1, 104, 737	\$617, 613	\$886, 988

<sup>1</sup> In addition, in 1909, gloves, mittens, gauntlets, and related products to the value of \$264,961, in 1904, gloves, mittens, and gauntlets to the value of \$166,164, and in 1899, gloves, mittens, and gauntlets to the value of \$217,157, were reported by establishments in other industries.

<sup>2</sup> Includes 24,004 dozen pairs of gauntlets, valued at \$150,652, not distributed by classes.

For the decade 1899–1909 there was an increase of 472,994 dozen pairs, or 16.3 per cent, in the total output of leather gloves, mittens, and gauntlets, while the value increased \$6,486,693, or 40.4 per cent. The number of pairs made, however, was less in 1909 than in 1904, although the value increased 31.6 per cent during the five-year period.

In 1909 the value of men's gloves, mittens, and gauntlets represented 75.7 per cent of the total, and that of women's and children's 24.3 per cent, the corresponding proportions for 1899, based on the total output for which the class was reported, being 78.2 per cent and 21.8 per cent, respectively.

During the decade the production of men's gloves, mittens, and gauntlets as reported increased 318,650 dozen pairs, or 14.1 per cent, and their value \$4,642,539, or 37.4 per cent. Between 1899 and 1909 there was a decrease of 31,561 dozen pairs, or 3.3 per cent, in the output of men's lined gloves, mittens, etc., but an increase of \$262,272, or 5.3 per cent, in their value. Men's unlined gloves, mittens, etc., were the principal class reported at each census; for the decade 1899–1909 the quantity reported increased 26.6 per cent and the value 58.7 per cent.

While, as just indicated, the output of men's gloves, mittens, and gauntlets shows a substantial increase for the decade as a whole, the figures for 1909 represent a decrease of 11.3 per cent in 1909, as compared with 1904, although there was a substantial increase in value for the five-year period amounting to 17.5

per cent. This decrease was due entirely to a falling off in the production of the lined kinds, which shows a decrease of 30.1 per cent in the number of pairs produced and of 17.5 per cent in value in 1909, as compared with 1904, the unlined kinds showing increases of 4.2 per cent in the number of pairs produced and of 44.7 per cent in value for the five-year period.

From 1899 to 1909 the reported production of women's and children's gloves, mittens, etc., increased 178,348 dozen pairs, or 29.5 per cent, while their value increased \$1,994,806, or 57.5 per cent. The production of the lined kinds increased faster relatively than that of the unlined.

Table 14 shows the number of pairs of each specific class of gloves, mittens, and gauntlets manufactured in the United States in 1909, together with the value of those of each major class.

KIND.	NUMBER OF DOZEN PAIRS.				Value.
	Total.	Lamb or sheep skin.	Kid.	All other.	
<b>Value of all products</b> .....					\$23, 630, 598
<b>Gloves, mittens, and gauntlets.</b>					
<b>All classes</b> .....	3, 368, 655	1, 842, 456	87, 858	1, 438, 341	22, 525, 861
Dress gloves, mittens, and gauntlets:					
Total.....	1, 418, 750	1, 114, 346	84, 301	220, 103	12, 534, 746
Men's, lined.....	302, 013	203, 187	7, 565	91, 261	2, 174, 679
Men's, unlined.....	637, 073	509, 509	37, 058	90, 446	5, 969, 644
Women's and children's, lined.....	152, 974	127, 172	4, 642	21, 160	1, 014, 863
Women's and children's, unlined.....	326, 690	274, 418	35, 036	17, 236	3, 375, 660
Working gloves, mittens, and gauntlets:					
Total.....	1, 949, 905	728, 110	3, 557	1, 218, 238	9, 991, 115
Men's, lined.....	619, 246	264, 476	.....	354, 770	3, 047, 495
Men's, unlined.....	1, 027, 645	264, 417	3, 557	759, 671	5, 888, 979
Boys', lined.....	212, 503	155, 404	.....	57, 699	708, 335
Boys', unlined.....	90, 511	43, 813	.....	46, 698	371, 306
All other products.....					1, 104, 737

Of the total number of pairs of gloves, mittens, and gauntlets reported in 1909, 1,842,456 dozen pairs, or 54.7 per cent, were of lamb or sheep skin; 87,858 dozen pairs, or 2.6 per cent, of kid; and 1,438,341 dozen pairs, or 42.7 per cent, of other material. The number of dress gloves, mittens, and gauntlets was 1,418,750 dozen pairs, or 42.1 per cent of the total, while working gloves, mittens, and gauntlets numbered 1,949,905 dozen pairs, or 57.9 per cent. The great bulk of the dress gloves, mittens, and gauntlets were made of lamb or sheep skin, but more than three-fifths of the working gloves, mittens, and gauntlets were made of leather other than lamb or sheep skin or kid. The average value per pair of the dress gloves, mittens, and gauntlets was considerably greater than that of those intended for working use.

THE LEATHER GLOVE AND MITTEN INDUSTRY.

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Table 15 shows, by states, the number of pairs and value of the leather gloves, mittens, etc., manufactured in 1909, the numbers being given for each of the more specific classes of these products distinguished by the special census schedule, and the values for the general classes.

QUANTITY AND VALUE OF PRODUCTS, BY STATES: 1909.

Table 15	KIND.	United States.	California.	Illinois.	New York.	Wisconsin.	All other states.
	Products, total value.....	\$23,630,598	\$1,230,852	\$2,522,963	\$14,326,365	\$2,798,537	\$2,741,861
	Gloves, mittens, and gauntlets:						
	Dozen pairs.....	3,368,655	130,371	503,363	1,850,438	425,442	459,041
	Lamb or sheep skin.....	1,842,456	30,134	121,851	1,408,620	168,213	113,638
	Kid.....	87,858	1,262	7,225	67,399	9,104	2,768
	All other.....	1,438,341	98,875	374,287	374,419	248,125	342,635
	Value.....	\$22,525,861	\$1,220,220	\$2,441,798	\$14,122,640	\$2,345,771	\$2,389,432
	Dress gloves, mittens, and gauntlets:						
	Dozen pairs.....	1,418,750	10,720	30,143	1,287,618	35,850	54,419
	Lamb or sheep skin.....	1,114,346	7,096	9,434	1,046,654	6,370	44,792
	Kid.....	84,301	1,362	(1)	66,464	(1)	2,694
	All other.....	220,103	2,262	(1)	174,600	(1)	6,933
	Value.....	\$12,534,749	\$115,246	\$219,978	\$11,418,955	\$267,151	\$513,410
	Men's, lined—						
	Dozen pairs.....	302,013	473	6,866	232,069	8,982	3,623
	Lamb or sheep skin.....	203,187	271	(1)	198,349	(1)	2,477
	Kid.....	7,565	(1)	(1)	4,609	(1)	446
	All other.....	91,261	5,136	5,136	79,111	6,212	700
	Value.....	\$2,174,679	\$9,320	\$52,225	\$1,981,224	\$72,131	\$62,779
	Men's, unlined—						
	Dozen pairs.....	637,073	5,290	12,873	575,097	20,750	23,063
	Lamb or sheep skin.....	509,569	3,060	(1)	455,841	(1)	15,543
	Kid.....	37,058	545	(1)	31,197	(1)	1,516
	All other.....	90,446	1,685	(1)	58,059	(1)	6,004
	Value.....	\$5,969,644	\$50,636	(1)	\$5,405,600	(1)	\$272,899
	Women's and children's, lined—						
	Dozen pairs.....	152,974		328	142,511	(1)	8,639
	Lamb or sheep skin.....	127,172		(1)	118,639		8,255
	Kid.....	4,642		(1)	2,956	(1)	380
	All other.....	21,160			20,916	(1)	4
	Value.....	\$1,014,863		(1)	\$939,064	(1)	\$63,413
	Women's and children's, unlined—						
	Dozen pairs.....	326,690	4,957	10,078	287,941	(1)	19,094
	Lamb or sheep skin.....	274,418	3,765	6,811	243,825	(1)	18,517
	Kid.....	35,036	(1)	3,265	27,702	(1)	352
	All other.....	17,236	475		16,414	(1)	225
	Value.....	\$3,375,590	\$58,290	\$94,256	\$3,092,977	\$25,712	\$114,325
	Working gloves, mittens, and gauntlets:						
	Dozen pairs.....	1,949,905	119,651	473,220	562,820	389,592	404,622
	Lamb or sheep skin.....	728,110	23,038	112,417	361,956	161,843	68,846
	Kid.....	3,557		(1)	935	(1)	74
	All other.....	1,218,238	96,613	(1)	199,919	(1)	335,702
	Value.....	\$9,991,115	\$1,110,974	\$2,221,820	\$2,703,685	\$2,078,620	\$1,876,016
	Men's, lined—						
	Dozen pairs.....	619,246	3,924	168,539	182,748	178,828	84,907
	Lamb or sheep skin.....	264,476	825	55,740	121,592	63,971	22,348
	Kid.....	354,770	3,099	113,099	61,156	114,857	62,559
	All other.....	\$3,047,495	\$35,639	\$738,837	\$887,327	\$920,615	\$465,077
	Men's, unlined—						
	Dozen pairs.....	1,027,645	112,089	272,185	239,646	115,231	238,494
	Lamb or sheep skin.....	264,417	21,620	49,914	129,735	(1)	42,047
	Kid.....	3,557		(1)	935	(1)	74
	All other.....	759,671	90,469	(1)	108,976	(1)	246,373
	Value.....	\$5,868,979	\$1,041,634	\$1,371,562	\$1,294,168	\$872,958	\$1,288,657
	Boys', lined—						
	Dozen pairs.....	212,503		7,801	101,350	85,429	17,923
	Lamb or sheep skin.....	155,404		739	80,310	70,726	3,629
	Kid.....	57,099		7,062	21,040	14,703	14,294
	All other.....	\$703,335		\$20,852	\$378,753	\$233,812	\$68,918
	Boys', unlined—						
	Dozen pairs.....	90,511	3,638	24,395	39,076	10,104	13,298
	Lamb or sheep skin.....	43,813	593	6,024	30,329	(1)	822
	Kid.....	46,698	3,045	18,371	8,747	(1)	12,476
	All other.....	\$371,366	\$33,701	\$34,569	\$148,437	\$51,235	\$53,304
	Value.....	\$1,104,737	\$4,632	\$51,165	\$213,725	\$452,766	\$352,449
	All other products.....						

1 Included in totals, but amount not shown, in order to avoid disclosure of individual operations.

**Products, by states.**—Table 16 shows, by states, the output and value of gloves, mittens, and gauntlets made in 1909 and 1904, classified as for dress use or for working use.

Table 16 KIND AND STATE.	PRODUCTS.		
	1909		1904
	Value.	Doz. pairs.	Doz. pairs.
<b>Gloves, mittens, and gauntlets, total.</b>	<b>\$22,625,861</b>	<b>3,368,655</b>	<b>3,370,146</b>
California.....	1,223,220	130,371	114,108
Illinois.....	2,441,793	503,363	381,242
Iowa.....	493,973	98,737	104,278
New York.....	14,122,640	1,850,438	1,881,194
Wisconsin.....	2,845,771	425,442	443,842
All other states.....	1,893,459	360,304	445,482
<b>Dress gloves, mittens, and gauntlets, total.</b>	<b>12,534,746</b>	<b>1,418,750</b>	<b>977,594</b>
California.....	115,246	10,720	12,685
Illinois.....	219,978	30,143	19,885
Iowa.....	65,000	7,300	27,515
New York.....	11,418,955	1,287,618	816,706
Wisconsin.....	267,151	35,850	61,500
All other states.....	448,416	47,119	30,303
<b>Working gloves, mittens, and gauntlets, total.</b>	<b>9,991,115</b>	<b>1,949,905</b>	<b>2,392,552</b>
California.....	1,110,974	119,651	101,423
Illinois.....	2,221,820	473,220	361,357
Iowa.....	428,973	91,437	76,703
New York.....	2,703,685	562,820	1,004,488
Wisconsin.....	2,078,620	389,502	382,342
All other states.....	1,447,043	313,185	406,179

New York is by far the most important state in the manufacture of leather gloves, mittens, and gauntlets, and in 1909 reported 1,850,438 dozen pairs, valued at \$14,122,640, or 54.9 per cent and 62.7 per cent, respectively, of the corresponding totals for the United States.

California and Illinois are the only states showing an increase in the total output of gloves, mittens, etc., manufactured during the five-year period 1904-1909, the increases being 14.3 per cent and 32 per cent, respectively. New York reported 54.9 per cent of the

total output of gloves, mittens, etc., made in the United States in 1909, as compared with 55.8 per cent in 1904. There was a decrease in production in New York for the five years of 30,756 dozen pairs, or 1.6 per cent.

In the total output of dress gloves and mittens manufactured there was an increase of 441,156 dozen pairs, or 45 per cent, from 1904 to 1909. In 1909 over nine-tenths (90.8 per cent) of the total number of pairs of dress gloves and mittens for the United States were reported from New York, the proportion for 1904 being 83.5 per cent.

In the total number of pairs of working gloves, mittens, and gauntlets made, there was a decrease between 1904 and 1909 of 18.5 per cent. The three leading states in 1909, in the order of their importance, were New York, Illinois, and Wisconsin; these three states combined reported 73.1 per cent of the total output for all states in 1909 and 75.6 per cent in 1904. There was a decrease during the five-year period of 501,668 dozen pairs, or 47.1 per cent, in the output of working gloves, mittens, etc., manufactured in New York.

**Imports.**—Table 17 shows the value of the annual imports of leather gloves and mittens from 1900 to 1909, inclusive, as shown by the reports of the Bureau of Foreign and Domestic Commerce.

Table 17 YEAR ENDING JUNE 30—	Value.	YEAR ENDING JUNE 30—	Value.
1909.....	\$7,465,310	1904.....	\$5,095,337
1908.....	7,826,719	1903.....	5,029,273
1907.....	10,633,068	1902.....	5,366,381
1906.....	6,812,719	1901.....	5,534,259
1905.....	4,727,489	1900.....	6,107,765

#### DETAILED STATISTICS, BY STATES.

The principal facts derived from the census inquiry concerning the leather glove and mitten industry are presented, by states, in two general tables.

Table 18 shows, for 1909, 1904, and 1899, the number of establishments, number of persons engaged in

the industry, primary horsepower, capital invested, items of expense, value of products, and value added by manufacture for the United States and by states.

Table 19 gives more detailed statistics for the industry for 1909.

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GLOVES AND MITTENS, LEATHER—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
United States.....	1909	377	12,950	458	1,138	11,354	2,889	\$16,909	\$1,256	\$4,764	\$13,208	\$23,631	\$10,423
	1904	339	11,712	427	840	10,645	2,725	10,706	585	3,840	10,001	17,740	7,739
	1899	1,394	15,531	527	859	14,345	2,165	9,090	547	4,183	9,483	16,926	7,443
California.....	1909	23	717	21	126	570	58	1,039	129	267	558	1,231	673
	1904	22	588	21	51	516	43	604	47	223	459	911	452
	1899	23	717	30	65	622	40	433	53	225	437	921	484
Illinois.....	1909	29	1,463	33	121	1,309	657	1,093	169	519	1,478	2,523	1,045
	1904	24	1,229	30	65	1,134	560	555	63	425	852	1,691	839
	1899	25	1,910	23	108	1,779	159	791	94	660	1,234	2,484	1,250
Indiana.....	1909	3	163	3	7	153	44	200	5	48	152	225	73
	1904	5	347	5	21	321	96	178	23	67	343	514	171
	1899	5	321	6	27	288	85	179	13	62	205	327	122
Iowa.....	1909	10	305	11	60	234	236	661	71	94	373	693	320
	1904	8	320	10	47	263	295	479	41	101	358	698	340
	1899	9	234	17	43	174	275	277	31	57	125	284	159
Massachusetts.....	1909	8	129	5	15	109	21	107	13	52	43	135	62
	1904	5	177	5	7	165	51	267	6	71	135	265	130
	1899	9	218	10	7	201	62	111	4	86	124	289	105
Michigan.....	1909	9	209	9	18	182	107	138	27	59	238	386	148
	1904	8	121	6	9	106	107	85	8	35	113	192	79
	1899	5	46	5	3	38	3	29	1	12	28	55	27
Minnesota.....	1909	6	53	8	8	37	5	55	7	13	35	61	26
	1904	7	86	12	9	65	12	69	6	22	52	98	46
	1899	8	36	11	2	23	1	13	1	4	12	24	12
New Jersey.....	1909	6	172	8	2	162	26	61	2	57	59	136	77
	1904	5	239	10	18	211	13	111	10	78	115	224	109
	1899	4	136	5	13	131	6	41	10	47	63	126	63
New York.....	1909	225	7,195	312	596	6,287	1,003	10,537	623	2,841	8,023	14,336	6,313
	1904	194	6,185	276	296	5,613	770	6,348	263	2,131	5,696	9,946	4,250
	1899	1,244	10,562	345	328	9,889	925	6,219	295	2,716	6,317	10,836	4,519
Ohio.....	1909	6	106	6	6	94	37	68	8	32	89	139	50
	1904	8	109	7	9	93	38	94	5	29	65	118	53
	1899	10	196	15	3	178	55	168	3	55	140	253	113
Oregon.....	1909	5	26	5	2	19	6	31	2	9	20	45	25
	1904	4	22	5	1	16	10	24	1	6	19	40	21
Pennsylvania.....	1909	3	50	3	5	42	7	29	3	12	33	54	21
	1904	4	52	4	2	45	15	66	2	11	33	49	16
	1899	4	52	6	3	43	10	29	2	10	21	42	21
Washington.....	1909	6	74	9	6	59	10	84	6	21	59	120	61
	1904	7	62	8	1	53	15	36	1	23	55	108	53
	1899	3	20	2	3	15	15	8	1	6	10	25	15
Wisconsin.....	1909	23	1,782	11	129	1,642	301	2,054	145	573	1,637	2,799	1,162
	1904	21	1,480	12	72	1,386	226	1,207	82	437	1,339	2,209	870
	1899	19	366	23	24	319	88	220	18	78	319	507	188
All other states.....	1909	15	506	14	37	455	371	752	46	167	411	748	337
	1904	17	695	16	31	648	474	583	28	161	367	677	310
	1899	26	717	29	48	645	456	572	31	165	448	753	305

<sup>1</sup> Includes a few small establishments making gloves and mittens from materials other than leather.  
<sup>2</sup> Figures can not be shown without disclosing individual operations.

MANUFACTURES.

GLOVES AND MITTENS, LEATHER—DETAILED STATISTICS, BY STATES: 1909.

**Table 19**

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horsepower.
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.		Under 16.				
					Male.	Female.		Number, 15th day of—			Male.	Female.	Male.	Female.			
								Maximum month.	Minimum month.								
United States.....	377	12,950	458	302	532	304	11,354	De 12,007	Ja 10,050	12,188	5,202	6,697	136	153	2,889		
California.....	23	717	21	20	64	33	570	De 644	Ja 501	652	256	386	6	4	83		
Illinois.....	29	1,463	33	33	64	24	1,309	No 1,355	Ap 1,272	1,345	450	838	17	34	657		
Indiana.....	3	163	3	3	3	1	153	Ja 175	Oc 128	146	51	95	.....	.....	44		
Iowa.....	10	305	11	23	26	11	234	Jy <sup>1</sup> 260	Ja 192	220	103	116	1	.....	236		
Massachusetts.....	8	129	5	4	6	5	109	Ja 127	Jy <sup>1</sup> 80	120	35	84	.....	1	21		
Michigan.....	9	209	9	5	7	6	182	Mh 236	Au <sup>1</sup> 134	248	87	149	2	10	107		
Minnesota.....	6	53	8	4	4	.....	37	Mh 48	Jy 30	39	10	29	.....	.....	5		
New Jersey.....	6	172	8	1	.....	.....	162	Ap 169	Se 158	163	37	126	.....	.....	26		
New York.....	225	7,195	312	137	272	187	6,287	No 6,800	Ja 5,822	6,788	3,343	3,334	64	47	1,003		
Ohio.....	6	106	6	4	.....	2	94	De 97	Fe 90	96	24	72	.....	.....	37		
Oregon.....	5	26	5	1	.....	1	19	Ap <sup>1</sup> 21	Ja <sup>1</sup> 19	20	7	13	.....	.....	6		
Pennsylvania.....	3	50	3	.....	4	1	42	Ja <sup>1</sup> 47	No 37	44	15	29	.....	.....	7		
Washington.....	3	74	9	4	.....	.....	50	De 72	My 54	72	30	42	.....	.....	10		
Wisconsin.....	23	1,782	11	40	62	27	1,642	Jy 1,753	Ja 1,455	1,749	548	1,100	46	55	301		
All other states <sup>2</sup> .....	15	506	14	14	17	6	455	.....	.....	486	200	284	.....	2	371		

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
United States.....	\$16,908,671	\$21,244,895	\$535,862	\$720,180	\$4,763,530	\$103,048	\$13,104,953	\$129,091	\$38,326	\$992,216	\$957,389	\$23,630,598	\$10,422,597
California.....	1,039,420	1,031,751	68,270	60,871	267,240	3,166	554,704	7,113	2,838	900	66,589	1,230,852	672,922
Illinois.....	1,093,490	2,331,900	79,176	90,287	518,862	19,114	1,450,298	22,997	7,952	15,000	119,214	2,522,903	1,044,551
Indiana.....	199,697	220,724	2,629	2,171	47,788	1,317	150,238	600	750	.....	15,231	225,287	73,732
Iowa.....	661,163	627,378	34,506	36,045	93,593	4,935	368,380	5,360	1,814	.....	82,775	693,062	318,747
Massachusetts.....	107,153	116,057	5,580	7,009	52,484	1,252	41,833	2,580	463	250	4,516	134,937	91,852
Michigan.....	137,043	357,730	19,956	6,045	58,542	1,945	236,226	204	2,040	30	32,043	386,044	147,893
Minnesota.....	55,029	57,196	3,920	2,800	12,870	608	34,006	1,892	504	.....	686	60,992	26,378
New Jersey.....	61,472	121,590	1,200	330	56,561	438	58,770	2,280	188	.....	1,823	135,732	76,374
New York.....	10,536,684	12,806,261	216,839	405,881	2,840,865	50,265	7,972,749	58,691	11,138	973,856	335,977	14,336,365	6,313,361
Ohio.....	67,620	134,052	6,900	760	31,594	704	88,456	2,328	389	.....	2,921	138,656	49,496
Oregon.....	31,160	38,802	1,853	000	9,157	317	20,165	1,372	87	.....	5,251	44,841	24,359
Pennsylvania.....	28,964	48,904	.....	2,539	11,744	210	32,700	330	58	.....	1,325	54,041	21,131
Washington.....	84,468	99,231	3,480	2,500	21,313	531	58,179	2,090	351	.....	10,787	119,633	60,923
Wisconsin.....	2,053,895	2,538,120	74,859	70,608	572,526	15,392	1,621,248	15,734	7,000	2,171	158,582	2,798,537	1,161,897
All other states <sup>2</sup> .....	750,504	655,199	16,694	31,047	168,721	2,854	407,941	5,520	2,754	.....	19,698	748,636	337,841

<sup>1</sup> Same number reported for one or more other months.

<sup>2</sup> All other states embrace: Colorado, 1 establishment; Connecticut, 2; Kentucky, 1; Maryland, 1; Missouri, 2; Nebraska, 1; New Hampshire, 3; Utah, 1; Virginia, 2.

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# PAPER AND WOOD PULP

# THE PAPER AND WOOD PULP INDUSTRY.

## GENERAL STATISTICS.

### SUMMARY FOR THE UNITED STATES.

Summary for the industry: 1909.—Table 1 presents a summary of the statistics for the paper and wood pulp industry as a whole for 1909. It distinguishes three classes of mills: (1) Mills making paper exclusively; (2) mills making wood pulp exclusively; and (3) mills which manufacture both pulp and paper. The pulp manufactured by the mills which produce both pulp and paper is largely made into paper in the establishments where produced. Since a large part of the business is done by mills which combine the two branches, the statistics for these three classes of mills separately have no great significance, and hence in all the tables except Table 1 only figures for the three classes of mills combined are presented. It is obvious, however, that the combined value of products and the combined cost of materials involve much duplication, amounting to approximately \$30,000,000, this being about the value reported for wood pulp manufactured for sale or for use in establishments other than the ones where it was produced.

The statistics here given do not cover the cutting or transportation of timber or pulp wood, which is often done by concerns engaged in the industry, except that the expenses connected with the production of these materials by such establishments are included with the cost of materials.

Table 1	Total.	MILLS MAKING—		
		Paper only.	Pulp only.	Both paper and pulp.
Number of establishments.	777	538	81	158
Persons engaged in the industry.	81,473	40,807	6,554	34,112
Proprietors and firm members.	250	215	26	9
Salaried employees.	5,245	2,943	390	1,912
Wage earners (average number).	75,978	37,640	6,138	32,191
Primary horsepower.	1,304,265	(1)	(1)	(1)
Capital.	\$409,348,505	\$148,021,260	\$38,336,179	\$222,991,066
Expenses.	237,310,150	115,941,621	19,205,710	102,762,819
Services.	50,314,643	24,532,636	4,027,939	21,754,068
Salaries.	9,510,141	5,255,161	652,135	3,602,845
Wages.	40,804,502	19,277,475	3,375,804	18,151,223
Materials.	165,442,341	79,692,160	13,657,150	72,093,031
Miscellaneous.	21,559,160	11,116,825	1,520,621	8,915,720
Value of products.	267,656,994	129,381,198	21,567,432	116,708,334
Value added by manufacture (value of products less cost of materials)...	102,214,623	49,680,038	7,910,282	44,615,303

<sup>1</sup> Not reported separately.

Of the 777 establishments canvassed in 1909, more than two-thirds (538, or 69.2 per cent) were engaged in the manufacture of paper exclusively;

these establishments contributed products valued at \$129,381,198, or 48.3 per cent of the total value of products reported for the industry as a whole. The 81 establishments manufacturing pulp exclusively formed slightly more than one-tenth of the total number, and the value of their products represented about one-twelfth of the total value of products. The 158 establishments making both pulp and paper formed 20.3 per cent of the total number in the industry as a whole and reported 43.6 per cent of the total value of products. This group includes a number of combination pulp mills and paper mills operated as separate units but under the same ownership. In some of these cases the mills manufacturing pulp sold a certain part of their product, and in others the pulp was all used in the paper mill owned by the same company. In all, there were 82 mills of this character, of which 37 manufactured paper alone and 45 made pulp alone. The companies owning these mills made combined reports covering both branches of the industry, and the 82 mills were counted as 34 establishments.

The establishments in the industry as a whole in 1909 gave employment to an average of 81,473 persons, of whom 75,978 were wage earners, and paid \$50,314,643 in salaries and wages.

The cost of materials used in the industry as a whole in 1909 was \$165,442,341, or more than three-fifths (61.8 per cent) of the total value of products, which was \$267,656,964, and the value added by manufacture (that is, the value of products less cost of materials) was \$102,214,623. Both the value of products and the cost of materials, as already stated, involve considerable duplication, due to the sale of pulp to paper mills. The value of products of the industry in 1909 covers products other than paper and wood pulp to the value of \$3,810,768. These products consist principally of fancy and paper boxes, dyestuffs and extracts, roofing materials, and miscellaneous paper goods.

Comparison with earlier censuses.—Table 2 summarizes the statistics of the paper and wood pulp industry as a whole for each census from 1869 to 1909, inclusive. The financial figures for 1869 are given in currency, which at that time was worth only about 80 cents, gold, to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

	NUMBER OR AMOUNT.						PER CENT OF INCREASE. <sup>1</sup>					
	1900	1904	1899	1889	1879	1869	1899-1900	1904-1900	1899-1904	1889-1899	1879-1889	1869-1879
	Number of establishments.....	777	761	703	649	742	677	1.8	2.1	-0.3	17.6	-12.5
Persons engaged in the industry.....	81,473	70,051	53,012	(2)	(2)	(2)	53.7	16.3	32.1			
Proprietors and firm members.....	250	309	431	(2)	(2)	(2)	-42.0	-19.1	-28.3			
Salaried employees.....	5,245	3,778	2,935	(2)	(2)	(2)	78.7	38.8	28.7			
Wage earners (average number).....	75,978	65,064	49,646	31,050	25,631	18,021	53.0	15.2	32.0			
Primary horsepower.....	1,304,265	1,093,708	762,118	297,724	(2)	54,287	71.1	19.3	43.5	(2)	(2)	
Capital.....	\$400,348,505	\$277,444,471	\$167,507,713	\$89,829,548	\$48,139,052	\$34,550,014	144.4	47.5	65.6	88.5	80.6	39.3
Expenses.....	237,310,150	165,807,763	105,961,079	65,974,646	(2)	(2)	124.0	43.1	56.5	60.6	66.9	24.4
Services.....	50,314,643	38,116,244	25,247,337	14,975,485	8,970,133	7,208,691	99.3	32.0	61.0	68.0		
Salaries.....	9,510,141	6,097,032	4,500,911	(2)	(2)	(2)	111.3	56.0	35.5			
Wages.....	40,804,502	32,019,212	20,746,426	(2)	(2)	(2)	96.7	27.4	54.3			
Materials.....	165,442,341	111,251,478	70,530,236	44,228,480	34,802,132	30,058,563	134.6	48.7	57.7	59.5	26.9	16.0
Miscellaneous.....	21,553,166	16,440,041	10,184,106	6,770,681	(2)	(2)	111.6	31.1	61.4	50.4		
Value of products.....	267,656,964	188,715,189	127,326,102	78,937,184	57,366,860	48,840,285	110.2	41.8	48.2	61.3	37.6	17.4
Value added by manufacture (value of products less cost of materials).....	102,214,623	77,463,711	50,795,026	34,708,704	22,504,728	18,790,722	80.0	32.0	36.4	63.6	54.2	19.8

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.  
<sup>2</sup> Comparable figures not available.  
<sup>3</sup> Figures not strictly comparable.

Paper was manufactured in this country near Philadelphia as early as 1690. The growth of the industry, however, was slow until within the last 40 years, during which time the introduction of improved machinery and the use of wood fiber as a material have brought about a remarkable growth in the industry. In the decade 1899-1909 the value of products increased \$140,330,802, or 110.2 per cent, this percentage being higher than that for any other decade since 1869. Some part of this increase, however, was due to advance in prices, particularly during the first half of the decade.

The number of proprietors and firm members was less in 1909 than in either 1904 or 1899. The de-

crease shown is explained by changes in character of ownership as shown in Table 9. Salaried employees were included to some extent with wage earners at the earlier censuses, and comparative figures for this class, therefore, are not shown for censuses prior to that of 1899.

During the decade 1899-1909 the average number of wage earners increased 53 per cent.

Summary, by states.—Table 3 summarizes the more important statistics of the industry as a whole, by states, the states being arranged according to the value of products reported for 1909. Some states for which data can not be shown separately ranked higher than some named in the table.

STATE.	Number of establishments: 1909	WAGE EARNERS.			VALUE OF PRODUCTS.				VALUE ADDED BY MANUFACTURE.				PER CENT OF INCREASE. <sup>1</sup>										
		Average number: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.	Wage earners (average number).			Value of products.			Value added by manufacture.					
							1909	1904				1899-1900	1904-1900	1899-1904	1899-1900	1904-1900	1899-1904	1899-1900	1904-1900	1899-1904			
		United States...	777	75,978	100.0	\$267,656,964	100.0			\$102,214,623	100.0			53.0	15.2	32.9	110.2	41.8	48.2	80.0	32.0	36.4	
New York.....	178	12,073	15.9	2	1	48,850,610	18.3	1	1	17,092,327	16.7	2	1	30.3	-2.8	34.0	82.9	20.4	41.3	40.6	14.4	23.0	
Massachusetts.....	88	12,848	16.9	1	2	40,090,713	15.0	2	2	17,747,100	17.4	1	2	41.8	9.8	20.2	81.1	25.3	44.6	73.6	26.2	37.6	
Maine.....	45	8,647	11.4	3	3	33,950,230	12.7	3	3	13,440,017	13.2	3	3	78.3	14.2	56.1	150.7	47.9	73.6	120.3	48.0	48.8	
Wisconsin.....	57	7,467	9.8	4	4	25,962,099	9.7	4	4	9,269,534	9.1	4	4	76.1	17.8	49.5	138.3	45.5	63.8	121.6	20.6	71.0	
Pennsylvania.....	62	6,656	8.8	5	5	19,872,717	7.4	5	5	8,474,400	8.3	5	5	37.5	12.7	22.0	62.0	29.0	26.6	43.8	22.8	17.1	
Ohio.....	47	4,673	6.2	6	6	15,965,260	6.3	6	6	6,066,975	5.9	6	6	46.8	20.3	22.0	159.2	54.8	67.5	118.6	26.2	73.3	
New Hampshire.....	34	3,413	4.5	8	8	13,904,251	5.2	7	7	4,740,832	4.6	8	7	42.7	35.3	5.5	93.2	56.7	23.3	44.0	31.6	8.4	
Michigan.....	32	4,327	5.7	7	7	13,922,124	5.2	8	8	4,897,529	4.8	7	8	114.8	41.8	51.5	230.1	89.6	74.0	224.3	77.4	84.8	
New Jersey.....	37	2,223	2.9	9	10	7,554,428	2.8	9	9	2,785,677	2.7	9	10	86.8	36.5	36.9	136.4	49.8	57.8	88.2	37.8	36.6	
Connecticut.....	51	1,720	2.3	10	9	5,527,334	2.1	10	10	2,223,918	2.2	10	9	20.7	-1.7	22.8	55.0	0.7	41.3	40.5	-3.3	45.4	
Indiana.....	27	1,501	2.0	11	11	5,202,330	1.9	11	11	1,705,185	1.7	12	11	-17.3	-7.3	-10.8	24.7	32.8	-6.1	0.4	21.8	-17.6	
Illinois.....	19	1,397	1.8	12	15	4,983,075	1.9	12	15	1,883,635	1.8	11	14	124.2	45.7	53.9	248.0	104.0	70.6	197.2	83.4	62.0	
Maryland.....	13	1,249	1.6	13	13	4,804,401	1.8	13	13	1,615,979	1.6	13	16	33.3	23.9	7.6	89.0	48.5	27.3	88.1	91.7	-1.9	
Vermont.....	25	1,030	1.4	15	12	3,901,634	1.5	14	12	1,440,279	1.4	16	12	-15.3	-19.5	5.3	15.3	1.9	13.2	-14.9	12.1	-24.1	
Virginia.....	9	912	1.2	17	14	3,653,745	1.4	15	14	1,508,373	1.5	14	13	202.0	8.2	228.8	330.2	20.5	256.9	243.7	21.2	183.6	
West Virginia.....	9	1,162	1.5	14	18	2,652,637	1.0	17	18	905,618	0.9	18	18	313.5	113.2	94.0	402.3	104.3	145.8	281.5	80.1	111.8	
Minnesota.....	9	607	0.8	19	19	2,385,026	0.9	19	19	947,250	0.9	19	19		53.3			108.1			101.9		
Delaware.....	6	546	0.7	21	17	2,291,728	0.8	20	16	704,555	0.7	21	17	21.1	-0.2	21.3	43.3	20.3	10.1	23.3		11.0	11.0
California.....	4	312	0.4	22	21	969,172	0.4	22	21	528,777	0.5	22	21		20.5			51.4			44.5		
Iowa.....	4	295	0.3	23	22	437,388	0.2	24	23	156,574	0.2	24	24	13.9	34.9	-15.6	79.1	72.7	3.7	13.9	27.9	-10.9	
Kansas.....	3	97	0.1	25	24	217,982	0.1	25	24	97,576	0.1	26	23					7.9			21.0		
All other states.....	18	2,913	3.8			9,360,680	3.5			3,907,457	3.8												

<sup>1</sup> Percentages are based on figures in Table 25. A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners or less than \$100,000 for value of products or value added by manufacture, or where comparative figures can not be given without disclosing individual operations.

There are 31 states represented in the industry, although 79.8 per cent of the total value of products was reported by the first 8 states shown in Table 3. New York was in 1909 the most important state as measured by value of products, but ranked second in average number of wage earners and in value added by manufacture. Massachusetts, which ranked second among the states in value of products, was first in average number of wage earners and in value added by manufacture. Maine ranked third in each respect. Of the 8 states which reported products valued at \$10,000,000 or over, Michigan shows the most rapid development in the industry during the period from 1899 to 1909, the number of wage earners in this state increasing 205.6 per cent and the value of products 230.1 per cent. Still higher percentages of increase are shown for West Virginia and Virginia, in which states, however, the industry was of less importance, even in 1909.

In general the states held the same or nearly the same rank with respect to value of products in 1909 as in 1904, and most of the states had the same, or practically the same, rank in value added by manufacture in 1909 as in value of products.

#### PERSONS ENGAGED IN THE INDUSTRY.

**Summary: 1909.**—Table 4 shows for 1909 the number of persons engaged in the industry, classified according to occupational status and sex, and in the case of wage earners, according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
All classes.....	81,473	70,916	10,557
Proprietors and officials.....	2,298	2,269	29
Proprietors and firm members.....	250	232	18
Salaried officers of corporations.....	773	706	7
Superintendents and managers.....	1,275	1,271	4
Clerks.....	3,197	2,393	804
Wage earners (average number).....	75,978	66,254	9,724
16 years of age and over.....	75,721	66,151	9,570
Under 16 years of age.....	257	103	154

The average number of persons engaged in the operation of paper and wood pulp mills during 1909 was 81,473, of whom 75,978, or 93.3 per cent, were wage earners, 2,298, or 2.8 per cent, proprietors and officials, and 3,197, or 3.9 per cent, were clerks, this class including other subordinate salaried employees. Of the total number of persons engaged in the industry, 70,916, or

87 per cent, were males and 10,557, or 13 per cent, females. The average number of wage earners under 16 years of age was only 257.

The average number of wage earners in each state for 1909, 1904, and 1899 is given in Table 25. The average number distributed by sex and age is not shown for the individual states, but Table 26 gives such a distribution of the number employed on December 15, or the nearest representative day. Female wage earners were reported as employed in 26 states, the largest number, 4,618, being reported for Massachusetts, and the next largest number, 961, for Wisconsin. The number of wage earners under 16 years of age employed in Massachusetts was 132, or practically half of the total for all states.

In order to compare the distribution of the persons engaged in the industry in 1909 according to occupational status with that in 1904 it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 5.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.				Per cent of increase: 1904-1909
	1909		1904		
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	81,473	100.0	70,951	100.0	16.3
Proprietors and firm members.....	250	0.3	309	0.4	-19.1
Salaried employees.....	5,245	6.4	3,778	5.4	38.8
Wage earners (average number).....	75,978	93.3	65,964	94.2	15.2

! A minus sign (-) denotes decrease.

Table 6 shows the average number of wage earners in the industry as a whole distributed according to age, and in the case of those 16 years of age or over, according to sex, for 1909, 1904, and 1899. The number of children employed was so small that the increase from 1899 to 1909 has little significance.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY.					
	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	75,978	100.0	65,964	100.0	49,646	100.0
16 years of age and over.....	75,721	99.7	65,709	99.6	49,477	99.7
Male.....	66,151	87.1	56,827	86.1	41,547	83.7
Female.....	9,570	12.6	8,882	13.5	7,930	16.0
Under 16 years of age.....	257	0.3	255	0.4	169	0.3

**Wage earners employed, by months.**—Table 7 gives the number of wage earners employed in the industry on the 15th (or the nearest representative day) of each month during the year 1909 for 20 of the leading states in which an average of 500 or more wage earners were employed during the year.

MANUFACTURES.

Table 7

WAGE EARNERS EMPLOYED IN THE INDUSTRY: 1909<sup>1</sup>

STATE.	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
<b>United States</b> .....	<b>75,978</b>	<b>74,986</b>	<b>75,780</b>	<b>76,291</b>	<b>75,983</b>	<b>77,013</b>	<b>76,829</b>	<b>75,009</b>	<b>74,517</b>	<b>75,147</b>	<b>76,028</b>	<b>76,717</b>	<b>77,430</b>
Connecticut.....	1,720	<i>1,658</i>	1,604	1,072	1,075	1,725	1,605	1,709	1,733	1,718	1,755	1,820	1,881
Delaware.....	546	566	553	587	548	554	530	535	536	536	536	536	536
Illinois.....	1,397	<i>1,188</i>	1,247	1,291	1,308	1,414	1,393	1,372	1,390	1,488	1,516	1,541	1,534
Indiana.....	1,501	1,493	1,600	1,565	1,540	<i>1,408</i>	1,455	1,410	1,409	1,403	1,517	1,552	1,681
Maine.....	8,647	8,820	8,748	8,813	8,606	8,081	8,802	8,580	8,397	<i>8,834</i>	8,552	8,582	8,841
Maryland.....	1,240	<i>1,168</i>	1,209	1,270	1,255	1,276	1,217	1,231	1,235	1,270	1,243	1,280	1,272
Massachusetts.....	12,848	12,014	12,735	12,759	12,673	12,825	12,843	<i>12,611</i>	12,791	12,907	13,080	13,100	15,224
Michigan.....	4,327	4,170	4,213	<i>4,168</i>	4,238	4,374	4,480	4,303	4,444	4,460	4,305	4,358	4,261
Minnesota.....	607	<i>541</i>	588	612	629	634	638	614	546	616	619	625	618
New Hampshire.....	3,413	3,368	3,374	3,413	3,460	3,487	3,471	3,338	<i>3,255</i>	3,370	3,618	3,366	3,431
New Jersey.....	2,223	<i>2,100</i>	2,118	2,104	2,140	2,217	2,227	2,244	2,265	2,277	2,208	2,344	2,342
New York.....	12,073	12,208	12,750	12,780	12,387	12,788	12,451	11,855	<i>11,433</i>	11,450	11,618	11,506	11,558
North Carolina.....	825	876	937	829	800	809	804	813	<i>759</i>	832	840	793	809
Ohio.....	4,673	4,687	4,660	4,651	4,657	<i>4,528</i>	4,625	4,596	4,605	4,711	4,706	4,770	4,811
Oregon.....	988	930	937	937	1,139	<i>1,175</i>	1,035	885	836	<i>834</i>	877	1,122	1,144
Pennsylvania.....	6,656	6,577	<i>6,481</i>	6,554	6,549	6,716	6,096	6,580	6,577	6,685	6,697	6,616	6,838
Vermont.....	1,030	1,118	1,117	1,133	1,022	1,077	1,092	940	885	903	963	1,049	1,086
Virginia.....	912	893	900	915	<i>895</i>	<i>865</i>	872	900	997	921	920	968	927
West Virginia.....	1,162	1,057	1,055	1,147	<i>1,050</i>	1,113	1,123	1,213	<b>1,311</b>	1,250	1,178	1,240	1,202
Wisconsin.....	7,467	<i>7,161</i>	7,186	7,286	7,541	7,544	7,651	7,598	7,571	7,445	7,359	7,545	7,718

<sup>1</sup>The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

There was comparatively little variation in the number of wage earners from month to month. The largest number employed during any month of 1909 was 77,430, in December, and the smallest number, 74,517, in August, the minimum number being equal to 96.2 per cent of the maximum. In 1904 the maximum number, 67,724, was shown for October, and the minimum number, 63,284, for February, the latter number being equal to 93.4 per cent of the former.

In New York the greatest number of wage earners were employed in May, but in four of the eight leading states (Massachusetts, Maine, Wisconsin, and Ohio) the month of maximum employment was December. The months of maximum and minimum employment for 1909, and the number of wage earners reported for both months, are given for a larger number of states in Table 26.

**Prevailing hours of labor.**—In Table 8 the wage earners in the industry as a whole have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

Nearly three-fourths (71.4 per cent) of the wage earners employed in the industry as a whole in 1909 were in mills where the prevailing hours were 60 or more per week.

Of the seven groups shown in the table, the largest was that made up of the wage earners in establishments where the prevailing hours were 60 per week, such wage earners constituting 30.2 per cent of the total number, and the second largest group was made

up of those working 72 hours or over per week, which group formed 21.7 per cent of the total. The group working 60 hours per week was the most important in 7 of the 20 states for which figures are given. In Connecticut, Delaware, Maryland, Minnesota, and Oregon the most common working time was more than 60 but less than 72 hours per week, while in Illinois, Indiana, New Jersey, New York, and North Carolina it was 72 hours and over.

Table 8

AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY: 1909

STATE.	Total.	In establishments with prevailing hours—						
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
<b>United States</b> .....	<b>75,978</b>	<b>5,595</b>	<b>6,063</b>	<b>3,448</b>	<b>6,592</b>	<b>22,941</b>	<b>14,882</b>	<b>16,457</b>
Connecticut.....	1,720	.....	.....	.....	.....	567	270	.....
Delaware.....	546	.....	.....	.....	.....	286	260	.....
Illinois.....	1,397	.....	.....	.....	180	440	138	624
Indiana.....	1,501	.....	.....	.....	.....	203	141	1,097
Maine.....	8,647	1,011	2,775	1,092	236	841	667	1,125
Maryland.....	1,240	.....	.....	.....	83	1,103	63	.....
Massachusetts.....	12,848	944	380	848	3,697	4,023	2,425	525
Michigan.....	4,327	.....	.....	.....	225	2,534	1,084	484
Minnesota.....	607	.....	.....	.....	.....	77	448	82
New Hampshire.....	3,413	1,262	508	.....	446	651	244	287
New Jersey.....	2,223	12	.....	.....	394	194	726	897
New York.....	12,073	1,295	1,079	279	502	2,656	2,563	2,799
North Carolina.....	825	.....	.....	.....	.....	.....	.....	.....
Ohio.....	4,673	.....	.....	.....	468	1,408	1,233	1,474
Oregon.....	988	.....	.....	.....	.....	347	641	.....
Pennsylvania.....	6,656	122	100	168	3,643	91	51	2,532
Vermont.....	1,030	268	415	.....	35	655	.....	58
Virginia.....	912	.....	.....	63	655	.....	.....	194
West Virginia.....	1,162	.....	.....	57	680	320	96	.....
Wisconsin.....	7,467	661	.....	.....	.....	3,105	1,442	2,169

**Character of ownership.**—Table 9 presents statistics with respect to the character of ownership of the paper and wood pulp mills in the United States.

In 1909, of the total number of mills, 81.5 per cent were under corporate ownership, as compared with 77.1 per cent in 1904. In 1909 the value of products

of these establishments represented 92.8 per cent of the total and in 1904, 89.9 per cent.

CHARACTER OF OWNERSHIP.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	777	761	\$267,656,964	\$188,715,189
Individual.....	71	86	5,990,893	5,519,842
Firm.....	70	88	11,657,927	13,529,652
Corporation.....	633	587	248,435,331	169,065,695
Other.....	3		1,572,813	
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	9.1	11.3	2.2	2.9
Firm.....	9.0	11.6	4.4	7.2
Corporation.....	81.5	77.1	92.8	89.9
Other.....	0.4		0.6	

Table 10 gives statistics for establishments classified according to form of ownership for the 18 states employing an average of more than 500 wage earners in 1909 for which figures can be shown without disclosing individual operations. The three establishments under "other" forms of ownership have in this table been included with those under corporate ownership.

In 1909, 1,912 wage earners, or 2.5 per cent of the total, were employed in establishments under individual ownership; 3,524, or 4.6 per cent, in those under firm ownership; and 70,542, or 92.8 per cent, in those owned by corporations (including those under "other" ownership).

STATE.	NUMBER OF ESTABLISHMENTS OWNED BY—			WAGE EARNERS IN ESTABLISHMENTS OWNED BY—			VALUE OF PRODUCTS OF ESTABLISHMENTS OWNED BY—			VALUE ADDED BY MANUFACTURE IN ESTABLISHMENTS OWNED BY—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	71	70	638	1,912	3,524	70,542	\$5,990,893	\$11,657,927	\$250,008,144	\$3,443,407	\$5,058,707	\$93,712,509
Connecticut.....	9	6	36	183	161	1,371	405,647	491,366	4,630,321	172,179	238,539	1,813,200
Delaware.....		2	4		(X)	546		(X)	2,291,728		(X)	704,555
Illinois.....		1	18		(X)	1,397		(X)	4,983,075		(X)	1,883,635
Indiana.....	1	2	24	(X)	58	1,443	(X)	157,267	5,047,063	(X)	61,101	1,644,084
Maine.....	2	5	38	(X)	1,408	7,239	(X)	4,839,434	29,110,796	(X)	2,060,219	11,385,735
Maryland.....	3	3	7	8	52	1,189	16,347	62,028	4,816,026	6,967	12,364	1,596,648
Massachusetts.....	4	8	76	(X)	1,496	11,332	(X)	5,239,889	34,836,824	(X)	3,397,099	14,350,091
Michigan.....	3	1	28	48	(X)	4,279	107,721	(X)	13,814,403	47,891	(X)	4,849,638
Minnesota.....			9			607			2,385,020			947,250
New Hampshire.....	1	5	28	(X)	92	3,321	(X)	408,620	13,585,031	(X)	173,089	4,567,796
New Jersey.....	3	3	31	56	84	2,083	157,862	266,798	7,129,768	63,931	88,821	2,632,025
New York.....	21	16	141	273	280	11,820	397,261	976,251	46,927,008	371,027	376,378	16,344,922
Ohio.....	1	1	45	(X)	(X)	4,673	(X)	(X)	16,965,260	(X)	(X)	6,069,076
Pennsylvania.....	19	5	38	373	363	5,920	895,018	1,166,965	17,810,794	416,917	438,211	7,599,278
Vermont.....	1	8	16	(X)	152	878	(X)	559,144	3,342,400	(X)	190,085	1,256,194
Virginia.....	1		8	(X)		912	(X)		5,656,745	(X)		1,508,373
West Virginia.....		1	8		(X)	1,162		(X)	2,662,037		(X)	968,618
Wisconsin.....	1		56	(X)		7,467	(X)		25,962,099	(X)		9,869,534

NOTE.—In some states, in order to avoid disclosing the returns for individual establishments, the figures for one group have been consolidated with those for establishments under some other form of ownership. In such cases, an (X) is placed in the column from which the figures have been omitted and the figures for the group with which they have been combined are printed in italics. The figures for corporations include those for the few comparatively unimportant establishments operated by cooperative associations or under other miscellaneous forms of ownership.

ESTABLISHMENTS CLASSIFIED ACCORDING TO SIZE.

Classification by value of products.—Table 11 presents statistics for 1909 and 1904 for establishments grouped according to the value of their products.

VALUE OF PRODUCTS PER ESTABLISHMENT.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	777	761	\$267,656,964	\$188,715,189
Less than \$5,000.....	20	23	64,416	74,086
\$5,000 and less than \$20,000.....	57	59	719,516	749,259
\$20,000 and less than \$100,000.....	203	254	11,354,011	14,204,394
\$100,000 and less than \$1,000,000.....	447	395	161,938,623	126,385,745
\$1,000,000 and over.....	50	30	93,590,398	47,301,705
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	2.6	3.0	(1)	(1)
\$5,000 and less than \$20,000.....	7.3	7.8	0.3	0.4
\$20,000 and less than \$100,000.....	25.1	33.4	4.2	7.5
\$100,000 and less than \$1,000,000.....	57.5	51.9	60.5	67.0
\$1,000,000 and over.....	6.4	3.9	35.0	25.1

<sup>1</sup> Less than one-tenth of 1 per cent.

In 1909, 6.4 per cent of the establishments manufactured products valued at \$1,000,000 or over, as against

3.9 per cent in 1904. While such establishments represented a comparatively small proportion of the total number at both censuses, they reported 35 per cent of the total value of products in 1909 and 25.1 per cent in 1904. Establishments manufacturing products valued at \$100,000 but less than \$1,000,000 were the most important class, forming 57.5 per cent of the total number and reporting 60.5 per cent of the total value of products in 1909, although the latter percentage is somewhat smaller than the corresponding percentage for 1904.

The average value of products per establishment increased from \$247,983 in 1904 to \$344,475 in 1909, and the average value added by manufacture, as computed from the figures in Table 2, from \$101,792 to \$131,550. The average number of wage earners per establishment shows an increase from 86.7 in 1904 to 97.8 in 1909.

Classification by number of wage earners.—Table 12 classifies the establishments in the 21 leading states according to the number of wage earners employed.

**Table 12**

ESTABLISHMENTS EMPLOYING IN 1909—

STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING IN 1909—																
	Es-tab-lish-ments.	Wage earners (aver-age number).	No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
			Es-tab-lish-ments.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.
United States.....	777	75,978	.....	38	112	187	2,119	196	6,567	156	11,282	166	27,473	49	16,457	16	10,906	1	1,062
Connecticut.....	51	1,720	.....	6	23	19	254	19	701	4	324	3	418	.....	.....	.....	.....	.....	.....
Delaware.....	6	546	.....	.....	.....	2	20	.....	.....	1	88	3	429	.....	.....	.....	.....	.....	.....
Illinois.....	19	1,397	.....	1	5	4	56	6	229	4	302	3	529	1	276	.....	.....	.....	.....
Indiana.....	27	1,501	.....	.....	.....	3	54	10	298	11	790	3	359	.....	.....	.....	.....	.....	.....
Maine.....	45	8,647	.....	1	2	5	56	11	332	7	570	10	1,794	6	2,058	4	2,717	1	1,062
Maryland.....	13	1,249	.....	3	8	3	34	4	134	.....	.....	2	340	.....	.....	1	733	.....	.....
Massachusetts.....	88	12,848	.....	2	9	12	153	12	390	11	867	37	6,379	12	3,662	2	1,383	.....	.....
Michigan.....	32	4,327	.....	.....	.....	5	58	7	240	4	264	14	2,654	1	347	1	764	.....	.....
Minnesota.....	9	607	.....	.....	.....	2	20	2	54	3	205	2	319	.....	.....	.....	.....	.....	.....
New Hampshire.....	34	3,413	.....	.....	.....	13	177	9	290	2	117	5	674	4	1,498	1	687	.....	.....
New Jersey.....	37	2,223	.....	1	5	7	92	11	382	11	690	6	748	1	306	.....	.....	.....	.....
New York.....	178	12,073	.....	11	28	44	587	52	1,709	38	2,808	24	3,884	8	2,550	1	601	.....	.....
North Carolina.....	3	825	.....	.....	.....	1	7	.....	.....	.....	.....	1	122	.....	.....	.....	.....	.....	.....
Ohio.....	47	4,673	.....	.....	.....	5	88	15	496	14	955	11	1,695	1	430	1	1,000	.....	.....
Oregon.....	5	988	.....	.....	.....	1	18	.....	.....	1	96	2	347	.....	.....	1	527	.....	.....
Pennsylvania.....	62	6,656	.....	9	25	15	201	10	359	8	580	13	2,374	5	1,802	2	1,315	.....	.....
Vermont.....	25	1,030	.....	1	5	9	122	9	294	5	292	.....	.....	1	317	.....	.....	.....	.....
Virginia.....	0	912	.....	1	2	1	12	.....	.....	4	275	2	242	1	381	.....	.....	.....	.....
Washington.....	2	556	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	175	1	381	.....	.....	.....	.....
West Virginia.....	9	1,162	.....	.....	.....	.....	.....	4	139	2	111	2	329	.....	.....	1	583	.....	.....
Wisconsin.....	57	7,467	.....	.....	.....	3	39	9	316	18	1,298	20	3,380	7	2,434	.....	.....	.....	.....

Of the 777 establishments reported in 1909, 4.6 per cent employed from 1 to 5 wage earners each, 20.2 per cent from 6 to 20, 25.2 per cent from 21 to 50, 20.1 per cent from 51 to 100, and 21.4 per cent from 101 to 250. There were only 66 establishments that employed more than 250 wage earners. Of these, 17 employed over 500. More than a third of the wage earners, however, worked in mills employing over 250 each.

**Expenses.**—As stated in the Introduction, the census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total expenses in 1909 to have been \$237,310,150, distributed as follows: Cost of materials, \$165,442,341, or 69.7 per cent; wages, \$40,804,502, or 17.2 per cent; salaries, \$9,510,141, or 4 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$21,553,166, or 9.1 per cent. These proportions, as may be seen by comparing the items in Table 26, vary somewhat in the several states.

#### ENGINES, POWER, AND FUEL.

**Engines and power.**—The amount of power used in the paper and wood pulp industry was first reported at the census of 1869. Table 2 shows that the total amount of power used increased from 54,287 horsepower in 1869 to 1,304,265 in 1909. Table 13 shows

statistics of power as reported at the censuses of 1909, 1904, and 1899.

**Table 13**

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
<b>Primary power, total.....</b>	<b>6,990</b>	<b>5,701</b>	<b>5,238</b>	<b>1,304,265</b>	<b>1,093,708</b>	<b>762,118</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Owned.....	6,229	5,661	5,238	1,204,185	1,090,757	761,858	96.9	99.7	100.0
Steam.....	2,705	2,487	2,016	460,089	370,852	255,854	36.0	33.9	33.6
Gas.....	46	24	13	6,675	1,916	1,062	0.6	0.2	0.1
Water wheels.....	3,470	3,149	3,209	785,961	717,979	504,762	60.3	65.6	66.2
Water motors.....	8	1	( <sup>1</sup> )	2,185	10	( <sup>1</sup> )	0.2	( <sup>2</sup> )	.....
Other.....	.....	.....	.....	275	.....	180	( <sup>2</sup> )	.....	( <sup>2</sup> )
Rented.....	761	40	( <sup>1</sup> )	40,080	2,951	260	3.1	0.3	( <sup>2</sup> )
Electric.....	761	40	( <sup>1</sup> )	38,610	2,748	85	3.0	0.3	( <sup>2</sup> )
Other.....	.....	.....	.....	1,470	203	175	0.1	( <sup>2</sup> )	( <sup>2</sup> )
<b>Electric motors.</b>	<b>2,993</b>	<b>574</b>	<b>91</b>	<b>130,120</b>	<b>31,604</b>	<b>2,814</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Run by current generated by establishment.....	2,202	534	91	91,510	28,856	2,720	70.3	91.3	97.0
Run by rented power.....	761	40	( <sup>1</sup> )	38,610	2,748	85	29.7	8.7	3.0

<sup>1</sup> Not reported.

<sup>2</sup> Less than one-tenth of 1 per cent.

The total primary power used in the paper and wood pulp mills increased from 762,118 horsepower in 1899 to 1,304,265 horsepower in 1909, or 71.1 per cent. Water wheels still supply the greater part of the power used in the manufacture of paper and wood pulp, although such power represented a smaller proportion of the total primary power in 1909 than in 1904. Some part of this decrease is due to the great increase in rented electric power, much of which represents water power transformed into electrical energy. There was also an increase in the relative importance of both steam engines and gas and other internal-combustion

engines. The number and horsepower of electric motors used for distributing power by means of current generated in the establishment show a great increase.

Table 14 shows, for 1909, the amount of the several kinds of power and of the different kinds of fuel used in 20 of the leading states.

STATE.	PRIMARY HORSEPOWER.								ELECTRIC HORSEPOWER.		FUEL USED.						
	Number of establishments reporting.	Total horsepower.	Owned by establishments reporting.					Rented.		Total, rented and generated by establishment.	Generated in the establishment reporting.	Coal.					
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.	Electric.	Other.			Anthracite (long tons).	Bituminous (short tons).	Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
United States	777	1,304,265	1,264,185	469,039	6,675	788,146	275	38,610	1,470	130,120	91,510	558,677	5,460,314	500	226,001	584,536	6,485,293
Connecticut	51	19,509	19,454	11,449	8,005	.....	55	.....	.....	255	200	23,184	92,807	.....	64	97	540
Delaware	6	4,318	4,318	3,677	641	.....	.....	.....	.....	.....	.....	.....	60,334	.....	.....	.....	.....
Illinois	19	15,169	15,165	11,185	14	3,966	.....	4	.....	1,925	1,921	.....	223,676	.....	.....	.....	700
Indiana	27	18,382	17,085	14,930	1,050	1,105	.....	1,297	.....	2,695	1,308	.....	285,274	.....	.....	2,535	18,482
Maine	45	223,787	215,985	48,271	30	167,684	.....	7,572	230	22,395	14,823	15,202	590,101	.....	41,099	.....	.....
Maryland	13	11,407	11,162	10,251	.....	911	.....	10	235	6,413	6,403	.....	132,467	.....	.....	.....	354,808
Massachusetts	88	115,792	113,133	59,727	285	53,121	.....	2,004	655	6,241	4,237	69,131	465,347	.....	4,769	19	.....
Michigan	32	48,700	47,530	31,900	.....	15,630	.....	1,170	.....	4,232	3,062	.....	385,344	.....	11,298	.....	47
Minnesota	9	23,440	22,940	2,310	.....	20,630	.....	500	.....	1,258	758	.....	35,360	.....	.....	.....	.....
New Hampshire	34	79,912	74,747	19,603	.....	55,144	.....	5,165	.....	13,963	8,798	8,133	180,189	.....	73,847	42	.....
New Jersey	37	22,996	22,816	19,338	500	2,978	.....	180	.....	1,036	856	167,046	79,431	.....	.....	52	.....
New York	178	337,548	323,962	66,196	65	257,701	.....	13,566	.....	28,149	14,563	173,387	872,378	.....	2,775	170	.....
North Carolina	3	9,650	9,650	6,800	.....	2,850	.....	.....	.....	8,000	8,000	.....	125,600	.....	.....	.....	.....
Ohio	47	51,402	50,398	43,815	2,600	3,780	275	1,004	.....	9,776	8,772	.....	492,130	.....	.....	.....	4,581,706
Oregon	5	39,651	39,651	5,857	5	33,789	.....	.....	.....	1,270	1,270	.....	.....	.....	.....	228,562	.....
Pennsylvania	62	66,910	64,493	58,155	25	6,313	.....	2,417	.....	10,982	8,565	98,456	733,072	.....	15,855	2,188	58,259
Vermont	25	38,191	38,161	3,376	.....	34,785	.....	30	.....	232	202	4,136	51,642	.....	4,711	.....	.....
Virginia	9	9,770	9,770	4,510	.....	5,260	.....	.....	.....	50	50	.....	111,287	.....	200	.....	.....
West Virginia	9	11,025	10,760	5,910	650	4,200	.....	265	.....	695	430	.....	49,442	.....	.....	.....	1,392,857
Wisconsin	57	136,903	135,683	30,214	1,429	104,040	.....	870	350	5,603	4,733	.....	432,234	.....	37,678	4,756	.....
All other states	21	19,803	17,322	11,615	22	5,685	.....	2,481	.....	4,950	2,469	.....	56,193	500	24,825	346,109	77,894

In 1909 New York, Maine, Wisconsin, and Massachusetts together reported 814,030 horsepower, or 62.4 per cent of the aggregate for the industry. Steam power was the most important form of power in 12 of the states shown separately, and water power in 8. New York reported a larger amount of steam, water, and electric power than any other state, while Ohio reported the largest amount of power developed by gas and other internal combustion engines.

Fuel consumed.—Owing to the extensive use of water power in the paper and wood pulp industry, less fuel is consumed in generating power than would otherwise be required. Bituminous coal was the principal class of fuel used in 1909. The largest amount was reported by New York, which state also used the largest amount of anthracite coal. Of the total amount of gas used, 70.6 per cent was reported for Ohio.

SPECIAL DATA RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

MATERIALS.

Summary for the United States.—Table 15 shows statistics of the materials used in the industry for 1909, 1904, and 1899.

The total cost of materials reported by establishments engaged in the manufacture of paper and wood pulp in 1909 was \$165,442,341, as compared with \$111,251,478 in 1904, and \$70,530,236 in 1899, an increase during the decade of 134.6 per cent. These totals involve much duplication due to the use of the products of one establishment, especially pulp, as material for another. Substantial gains were made during the decade 1899–1909 in the quantities of the various materials used, with the exception of "other chemical fiber" and straw. The relative gains in quantity, however, were not as great as those in cost.

Of the total cost of materials used in 1909, that of pulp wood represented 20.4 per cent; that of wood pulp purchased, 26.5 per cent; that of rags, including cotton and flax waste and sweepings, 6.5 per cent; that of old or waste paper, 8.3 per cent; and that of manila stock, straw, and all other materials, including fuel, mill supplies, etc., 38.3 per cent. The corresponding proportions in 1899 were as follows: Pulp wood, 13.9 per cent; wood pulp purchased, 26 per cent; rags, etc., 9.4 per cent; old or waste paper, 6.9 per cent; manila stock, straw, and all other materials, 43.8 per cent. The large amount included under "all other materials" represents the cost of chemicals, clay, sizing, fuel, rent of power, mill supplies, etc. The cost of fuel and rent of power, in 1909, as shown by Table 27, was \$18,320,266, this item representing 11.1 per cent of the total cost of materials.

	1909	1904	1899
<b>Total cost.....</b>	<b>\$165,442,341</b>	<b>\$111,251,478</b>	<b>\$70,530,236</b>
Pulp wood.....	\$33,772,475	\$20,800,871	\$9,837,516
Wood pulp, purchased:			644,006
Tons.....	1,241,914	877,702	
Cost.....	\$43,801,357	\$27,033,104	\$18,369,464
Ground—			261,962
Tons.....	452,849	317,286	
Cost.....	\$9,487,508	\$5,754,259	\$4,361,211
Soda fiber—			94,042
Tons.....	154,626	120,978	
Cost.....	\$0,802,864	\$5,047,105	\$3,430,800
Sulphite fiber—			273,104
Tons.....	626,029	433,160	
Cost.....	\$27,184,726	\$16,507,122	\$10,112,189
Other chemical fiber—			14,808
Tons.....	8,410	6,278	
Cost.....	\$326,259	\$204,678	\$465,255
Rags, including cotton and flax waste and sweepings:			234,514
Tons.....	357,470	204,552	
Cost.....	\$10,721,559	\$8,864,607	\$6,595,427
Old or waste paper:			356,193
Tons.....	983,882	588,543	
Cost.....	\$13,601,120	\$7,430,335	\$4,809,409
Manila stock, including jute bagging, rope, waste, threads, etc.:			99,301
Tons.....	117,080	107,020	
Cost.....	\$3,500,033	\$2,502,332	\$2,437,256
Straw:			367,305
Tons.....	303,137	304,585	
Cost.....	\$1,460,282	\$1,502,886	\$1,395,659
All other materials.....	\$58,375,515	\$42,517,283	\$27,025,505

**Pulp wood used.**—Unlike the schedules used in 1904 and 1899, the schedule used in collecting data at the census of 1909 did not provide for reporting the kind or quantity of pulp wood used in the manufacture of pulp. Such data for 1909 were collected, however, by the Census Bureau in collaboration with the Forest Service of the Department of Agriculture, and the figures secured are shown in Table 16 in comparison with the census figures for 1904 and 1899.

KIND.	WOOD CONSUMED IN THE MANUFACTURE OF WOOD PULP (CORDS).			Per cent of increase. <sup>2</sup>	
	1909 <sup>1</sup>	1904	1899	1904-	1899-
				1909	1904
<b>Total.....</b>	<b>4,001,697</b>	<b>3,050,717</b>	<b>1,986,310</b>	<b>31.2</b>	<b>53.6</b>
Spruce, domestic.....	1,653,249	1,732,531	1,160,118	-4.6	49.3
Spruce, imported.....	768,332	538,305	349,084	42.7	54.2
Poplar, domestic.....	302,876	213,058	236,820	42.2	-10.0
Poplar, imported.....	25,622	35,313	20,133	-27.4	75.4
Hemlock, domestic.....	559,667	( <sup>3</sup> )	( <sup>3</sup> )		
All other wood.....	691,871	531,610	220,155	30.2	141.4

<sup>1</sup> The figures represent the wood used by all mills manufacturing wood pulp, which includes a few where it was not the primary product.

<sup>2</sup> A minus sign (-) denotes decrease.

<sup>3</sup> Included with "all other wood."

Up to 1899 native spruce and poplar were used almost exclusively for pulp wood. Since that time, however, the advancing price of the native stock has led to the increased importation of these woods from Canada and to the use of other and cheaper native woods.

Table 17 shows the cost of the pulp wood used in the manufacture of wood pulp during 1909, 1904, and 1899 in each of the five leading states in the industry.

New York reported the largest absolute increase of any of the states in expenditures for pulp wood from 1899 to 1909, with Maine second, while Maine shows the highest relative increase, with Wisconsin second.

STATE.	COST OF WOOD USED IN THE MANUFACTURE OF WOOD PULP.		
	1909	1904	1899
<b>United States.....</b>	<b>\$33,772,475</b>	<b>\$20,800,871</b>	<b>\$9,837,516</b>
New York.....	9,667,765	6,530,006	3,208,522
Maine.....	7,984,333	4,838,375	1,713,091
Wisconsin.....	4,325,839	2,502,892	1,190,061
New Hampshire.....	3,222,871	2,011,363	1,157,900
Pennsylvania.....	2,111,025	1,222,491	711,460
All other states.....	6,460,637	3,695,744	1,908,442

**Wood pulp used.**—Table 18 shows the quantity of the different kinds of wood pulp used, both domestic and imported, during the years 1909, 1904, and 1899.

KIND.	WOOD PULP USED (TONS).		
	Total.	Produced by establishments using.	Purchased.
<b>Total:</b>			
1909.....	2,826,591	1,584,677	1,241,914
1904.....	2,018,764	1,141,062	877,702
1899.....	1,172,880	528,874	644,006
Ground:			
1909, total.....	1,321,368	888,519	452,849
Domestic.....	1,201,832	868,519	333,313
Imported.....	119,536		119,536
1904, total.....	1,012,862	695,576	317,286
1899, total.....	568,284	306,322	261,962
Soda fiber:			
1909, total.....	297,408	142,782	154,626
Domestic.....	287,945	142,782	145,163
Imported.....	9,463		9,463
1904, total.....	187,382	60,404	120,978
1899, total.....	172,142	78,100	94,042
Sulphite fiber:			
1909, total.....	1,199,405	573,376	626,029
Domestic.....	1,027,012	573,376	453,636
Imported.....	172,393		172,393
1904, total.....	812,242	379,082	433,160
1899, total.....	417,646	144,452	273,194
Other chemical fiber, domestic:			
1909.....	8,410		8,410
1904.....	6,278		6,278
1899.....	14,808		14,808

The total quantity of wood pulp used in the paper mills in 1909 was 2,826,591 tons, as compared with 1,172,880 tons in 1899, an increase during the 10-year period of 1,653,711 tons, or 141 per cent. Of the total quantity of wood pulp used, 56.1 per cent was produced in 1909 by the establishments in which it was used, as compared with 45.1 per cent in 1899. During the decade 1899-1909 the quantity of ground wood pulp used increased 753,084 tons, or 132.5 per cent; that of soda fiber increased 125,266 tons, or 72.8 per cent; and that of sulphite fiber, 781,759 tons, or 187.2 per cent. There was, however, a decrease of 6,398 tons, or 43.2 per cent, in the quantity of other chemical fiber. Of the entire quantity of wood pulp used in 1909, sulphite fiber constituted 42.4 per cent, as compared with 35.6 per cent in 1899, this being the only one of the four classes of fiber for which a larger proportion is shown for 1909. The proportion of the total quantity of wood pulp used which was represented by ground wood decreased from 48.5 per cent in 1899 to 46.7 per cent in 1909; the proportion represented by soda fiber from 14.7 per cent to 10.5 per cent; and that represented by other chemical fiber from 1.3 per cent to three-tenths of 1 per cent.

Materials, by states.—Table 19 shows, by states, the quantity and cost of the principal materials used in the paper and wood pulp mills in 1909, with the quantities alone for 1904 and 1899.

MATERIAL AND STATE.	MATERIALS.			
	1909		1904	1899
	Cost.	Quantity (tons).	Quantity (tons).	Quantity (tons).
Wood pulp, purchased, total.....	\$43,861,357	1,241,914	877,702	644,006
Ground, total.....	9,487,508	452,849	317,286	261,902
New York.....	3,202,648	150,844	111,082	93,749
Maine.....	1,831,737	98,553	60,132	48,740
Wisconsin.....	1,457,025	64,959	43,814	36,089
All other states.....	2,996,098	138,493	102,258	83,384
Soda fiber, total.....	6,862,804	154,626	120,978	94,042
Massachusetts.....	1,731,456	38,434	39,991	25,493
Ohio.....	1,303,292	27,326	9,631	4,563
New York.....	715,803	17,452	7,058	20,447
Maine.....	649,600	14,821	12,813	8,718
Michigan.....	629,847	14,950	10,769	7,547
All other states.....	1,832,746	41,643	40,716	27,274
Sulphite fiber, total.....	27,184,726	626,029	433,160	273,194
New York.....	6,157,218	162,847	145,974	66,769
Massachusetts.....	4,654,074	91,103	63,313	39,912
Wisconsin.....	3,716,104	84,884	57,996	32,252
Ohio.....	2,202,178	47,107	27,344	12,647
Maine.....	2,118,781	52,805	34,020	36,541
New Hampshire.....	1,452,253	39,599	7,437	12,123
All other states.....	6,794,118	147,624	97,076	75,950
Other chemical fiber, total.....	326,259	8,410	6,278	14,803
Rags, including cotton and flax waste and sweepings, total.....	10,721,559	357,470	294,552	234,514
Massachusetts.....	4,859,930	93,558	99,468	86,715
Pennsylvania.....	1,226,978	64,654	56,207	34,969
Illinois.....	638,004	43,262	3,023	974
All other states.....	3,996,551	155,996	135,854	111,856
Old or waste paper, total.....	13,691,120	983,882	588,543	356,193
New York.....	2,000,335	155,436	101,472	51,691
Michigan.....	2,193,302	114,497	60,417	32,836
New Jersey.....	1,294,513	114,437	47,613	37,244
Massachusetts.....	1,801,709	106,216	60,424	42,886
Pennsylvania.....	1,208,765	106,150	65,726	40,697
All other states.....	5,132,498	387,146	262,891	144,859
Manila stock, including jute bagging, rope waste, thread, etc., total.....	3,500,033	117,080	107,029	99,801
Ohio.....	856,420	25,949	12,268	14,994
New Jersey.....	554,016	21,162	24,101	13,947
Massachusetts.....	660,065	17,515	14,339	10,955
All other states.....	1,489,532	52,454	56,281	50,405
Straw, total.....	1,460,282	303,137	304,585	367,305
Indiana.....	681,604	140,580	119,981	119,414
Ohio.....	335,951	70,322	71,936	93,127
Illinois.....	252,372	57,254	61,936	75,350
All other states.....	190,355	34,981	50,732	79,414

The total quantity of wood pulp purchased in 1909 was 1,241,914 tons, as compared with 877,702 tons in 1904 and 644,006 tons in 1899, an increase of 597,908 tons, or 92.8 per cent, during the decade. The total quantity of the different kinds of wood pulp used, including that purchased and that produced in the establishment where used, is given in Table 18.

PRODUCTS.

Summary for the United States.—Table 20 shows the quantity and value of the several kinds of paper products manufactured in 1909, 1904, and 1899 by establishments in the industry, the quantity and value of wood pulp manufactured for sale or for use in other establishments, and the total production of wood pulp, which includes that made for use in the same establishment.

The total value of all products for establishments engaged primarily in the manufacture of paper and wood pulp was \$267,656,964 in 1909, as compared with \$188,715,189 in 1904 and \$127,326,162 in 1899, an increase of 110.2 per cent during the decade.

PRODUCT.	1909	1904	1899
Total value.....	\$267,656,964	\$188,715,189	\$127,326,162
News paper:			
Total—			
Tons.....	1,175,554	912,822	569,212
Value.....	\$40,855,560	\$35,906,400	\$20,091,874
In rolls—			
Tons.....	1,091,017	840,802	454,572
Value.....	\$42,807,064	\$32,763,308	\$15,754,992
In sheets—			
Tons.....	84,537	72,020	114,640
Value.....	\$4,048,496	\$3,143,152	\$4,336,882
Book paper:			
Plain—			
Tons.....	575,616	434,500	282,093
Value.....	\$42,840,674	\$31,156,728	\$19,460,804
Coated—			
Tons.....	95,213	(2)	(2)
Value.....	\$9,413,961	(2)	(2)
Plate, lithograph, map, woodcut, etc.—			
Tons.....	6,498	19,837	22,366
Value.....	\$555,352	\$1,458,343	\$2,018,958
Cover—			
Tons.....	17,578	22,150	18,749
Value.....	\$1,982,853	\$2,023,986	\$1,665,376
Cardboard, bristol board, card middles, tickets, etc.—			
Tons.....	51,449	39,060	28,494
Value.....	\$3,352,151	\$2,764,444	\$1,719,813
Fine paper:			
Writing—			
Tons.....	169,125	131,934	90,204
Value.....	\$24,966,120	\$19,321,045	\$12,222,870
All other—			
Tons.....	29,088	14,898	22,503
Value.....	\$4,110,536	\$2,928,125	\$3,673,104
Wrapping paper:			
Manila (rope, jute, tag, etc.)—			
Tons.....	73,731	86,826	89,410
Value.....	\$6,989,436	\$6,136,080	\$5,929,764
Heavy (mill wrappers, etc.)—			
Tons.....	108,561	99,992	82,875
Value.....	\$4,380,794	\$4,035,588	\$4,143,240
Straw—			
Tons.....	32,968	54,232	91,794
Value.....	\$870,419	\$1,389,348	\$2,027,518
Bogus or wood manila, all grades—			
Tons.....	367,932	228,371	203,826
Value.....	\$19,777,707	\$10,099,772	\$9,148,677
All other—			
Tons.....	179,855	177,870	67,338
Value.....	\$10,202,035	\$8,774,804	\$3,293,174
Boards:			
Wood pulp—			
Tons.....	71,036	60,863	44,187
Value.....	\$2,639,496	\$2,347,250	\$1,406,130
Straw—			
Tons.....	171,789	167,278	157,534
Value.....	\$3,750,851	\$4,367,560	\$3,187,342
News—			
Tons.....	74,606	38,500	32,110
Value.....	\$2,215,469	\$1,174,216	\$930,531
All other—			
Tons.....	514,203	253,950	131,777
Value.....	\$17,539,768	\$9,076,531	\$4,829,316
Other paper products:			
Tissues—			
Tons.....	77,745	43,925	28,406
Value.....	\$8,553,654	\$5,056,438	\$3,480,652
Blotting paper—			
Tons.....	9,577	8,702	4,351
Value.....	\$1,186,180	\$1,046,790	\$580,750
Building (roofing, asbestos, and sheathing) paper—			
Tons.....	225,824	145,024	99,915
Value.....	\$9,251,368	\$4,845,628	\$3,025,907
Hanging papers—			
Tons.....	92,158	62,606	54,330
Value.....	\$4,431,514	\$3,013,464	\$2,265,346
Miscellaneous—			
Tons.....	96,577	106,296	49,101
Value.....	\$6,869,169	\$6,729,820	\$2,795,841
Wood pulp made for sale or for use in establishments other than where produced, total:			
Tons.....	910,846	780,706	650,651
Value.....	\$30,177,366	\$23,144,574	\$18,407,701
Ground—			
Tons.....	310,747	273,400	280,052
Value.....	\$5,649,400	\$4,323,405	\$4,433,699
Soda fiber—			
Tons.....	155,844	130,366	99,014
Value.....	\$6,572,152	\$5,159,615	\$3,612,602
Sulphite fiber—			
Tons.....	444,255	376,940	271,585
Value.....	\$17,956,748	\$13,661,464	\$10,451,400
All other products.....	\$4,738,549	\$1,924,195	\$919,415
Wood pulp.			
Quantity produced (including that used in mills where manufactured), total tons.....	2,495,523	1,921,763	1,179,525
Ground, tons.....	1,179,266	968,976	593,374
Soda fiber, tons.....	298,626	196,770	177,114
Sulphite fiber, tons.....	1,017,631	756,022	416,037

1 In addition, in 1909, paper and wood pulp to the value of \$2,567,267 were made by establishments engaged primarily in the manufacture of paper bags; fancy and paper boxes; explosives; miscellaneous paper goods; pulp goods; roofing materials; sand and emery paper and cloth; and steam packing. These products, which consisted chiefly of building, roofing, and sheathing paper, paper boards, and wood pulp, represented 61,931 tons of paper and 3,432 tons of pulp.

2 Not reported separately.

These totals involve considerable duplication due to the sale of pulp to other establishments in the industry, but the duplication was of about equal relative amount at each census.

Of the 4,216,708 tons of paper of all kinds manufactured during the year 1909, 1,175,554 tons, or 27.9 per cent, was news paper. Book paper (including coated, plate, and cover) formed 16.5 per cent; cardboard, 1.2 per cent; fine paper, 4.7 per cent; wrapping paper, 18.1 per cent; boards, 19.7 per cent; tissue paper, 1.8 per cent; blotting paper, two-tenths of 1 per cent; building (roofing, asbestos, and sheathing) paper, 5.4 per cent; hanging papers, 2.2 per cent; and miscellaneous paper products, 2.3 per cent. The corresponding proportions of the 2,167,593 tons of all kinds of paper produced in 1899 were as follows: News paper, 26.3 per cent; book paper, 14.9 per cent; cardboard, 1.3 per cent; fine paper, 5.2 per cent; wrapping paper, 24.7 per cent; boards, 16.9 per cent; tissues, 1.3 per cent; blotting paper, two-tenths of 1 per cent; building paper, 4.5 per cent; hanging papers, 2.5 per cent; and miscellaneous paper products, 2.3 per cent.

The total amount of wood pulp made for sale or for use in establishments other than where produced for 1909 was 910,846 tons, as compared with 780,706 tons in 1904 and 650,651 tons in 1899, an increase of 260,195 tons, or 40 per cent, during the decade. Of the total quantity of wood pulp produced in 1909, ground wood formed 34.1 per cent; soda fiber, 17.1 per cent; and sulphite fiber, 48.8 per cent, as compared with 43 per cent, 15.2 per cent, and 41.7 per cent, respectively, in 1899. Both soda and sulphite fiber show large increases for the decade 1899-1909, but ground wood pulp shows only a small increase.

The quantity of wood pulp produced in all mills in the industry in 1909 was 2,495,523 tons, as compared with 1,921,768 tons in 1904 and 1,179,525 tons in 1899, thus showing an increase during the decade of 1,315,998 tons, or 111.6 per cent. Of the total quantity of wood pulp produced in 1909, including that made for sale or for use in establishments other than that in which it was produced and that used in the establishments where produced, ground wood formed 47.3 per cent; soda fiber, 12 per cent; and sulphite fiber, 40.8 per cent, as compared with 49.7 per cent, 15 per cent, and 35.3 per cent, respectively, in 1899. The output of sulphite fiber increased 144.6 per cent during the decade, that of ground wood pulp 101.1 per cent, and that of soda fiber 68.6 per cent. A larger proportion of the wood pulp produced in 1909 was used in the establishments where produced than was the case in 1899. This is shown by the fact that

the proportion of each of the three kinds of fiber manufactured for sale or for use in establishments other than where produced was smaller in 1909 than at the census 10 years earlier.

Table 21 shows the actual amount of increase and the percentage of increase for both the quantity and value of the principal products of the paper mills during the decade from 1899 to 1909.

Table 21

PRODUCT.	INCREASE: <sup>1</sup> 1899-1909			
	Amount.		Per cent.	
	Quantity (tons).	Value.	Quantity.	Value.
News paper, total.....	606,342	\$26,763,686	106.5	133.3
In rolls.....	636,445	27,062,072	140.0	171.7
In sheets.....	-30,103	-288,386	-26.3	-6.7
Book paper, plain.....	293,523	23,370,870	104.1	120.1
Cardboard, Bristol board, card middles, tickets, etc.....	22,955	1,632,338	80.6	94.9
Fine paper:				
Writing.....	78,921	12,743,232	87.5	104.3
All other.....	6,585	437,432	29.3	11.9
Wrapping paper:				
Bogus or wood manila, all grades.....	164,108	10,629,030	80.5	116.2
Heavy (mill wrappers, etc.).....	25,686	237,554	31.0	6.7
Manila (rope, jute, tag, etc.).....	-15,688	1,050,672	-17.5	17.9
Boards:				
Wood pulp.....	26,849	1,233,366	60.8	87.7
Straw.....	14,255	503,509	9.0	17.7
News.....	42,487	1,284,638	132.3	138.1
Tissues.....	49,339	5,067,002	173.7	145.3
Blotting paper.....	5,226	605,430	120.1	104.2
Building (roofing, asbestos, and sheathing) paper.....	128,000	6,225,401	133.0	205.7
Hanging papers.....	37,828	2,166,160	69.6	65.6

<sup>1</sup> A minus sign (-) denotes decrease.

Actual increases are shown in the quantities of all of the different varieties of paper for which separate totals are given in Table 21, with the exception of news paper in sheets and manila wrapping paper. Both news paper in sheets and manila wrapping paper, however, show an increased value per ton in 1909 over that shown for 1899. Of the several products the largest actual increase, amounting to 636,445 tons, is shown for the production of news paper in rolls. The quantity and value of the news paper in sheets show an actual decrease. Next to news paper in rolls the largest amount of increase in value is shown for book paper. All but four of the classes of paper listed in the table show a larger relative increase in value than in quantity, the exceptions being "all other" fine paper, heavy wrapping paper, tissues, and blotting paper.

Products, by states.—Table 22 shows, by states, the quantities and values of the different kinds of products of paper and wood pulp mills in 1909, and the quantities produced in 1904 and 1899. This table also shows, by states, the total quantity of the different kinds of wood pulp produced, including that used in the mills where manufactured, in 1909, 1904, and 1899.

PAPER AND WOOD PULP—PRODUCTS, BY STATES: 1909, 1904, AND 1899.

Table 22

PRODUCT AND STATE.	PRODUCTS.				PRODUCT AND STATE.	PRODUCTS.			
	1909		1904	1899		1909		1904	1899
	Value.	Quantity (tons).	Quantity (tons).	Quantity (tons).		Value.	Quantity (tons).	Quantity (tons).	Quantity (tons).
News paper, total.....	\$46,855,560	1,175,554	912,822	569,212	Boards—Continued.				
In rolls, total.....	42,807,064	1,091,017	840,802	454,572	Straw—Continued.				
New York.....	18,842,676	365,155	330,423	162,153	Michigan.....	\$68,348	2,583	2,776	4,110
Maine.....	11,355,479	311,608	213,476	112,995	New York.....	26,462	746	7,111	7,806
Wisconsin.....	5,896,478	142,641	93,149	53,850	All other states.....	489,473	19,184	41,916	14,906
Minnesota.....	1,646,753	39,116	18,230	(1)	News, total.....	2,215,469	74,606	38,560	32,119
Vermont.....	688,363	16,455	34,304	22,685	New Jersey.....	971,972	33,411	15,870	15,931
All other states.....	9,377,315	226,042	151,220	97,859	New York.....	144,844	5,477	7,230	3,775
In sheets, total.....	4,048,496	84,537	72,020	114,040	All other states.....	1,098,653	35,718	15,460	12,413
Wisconsin.....	1,305,228	26,510	28,600	31,225	All other, total.....	17,539,768	514,208	253,950	131,777
New York.....	819,569	19,653	17,123	42,804	New York.....	3,985,633	111,487	64,742	16,680
All other states.....	1,923,699	38,374	26,297	40,611	Connecticut.....	1,839,145	46,957	36,087	21,953
Book paper:					Ohio.....	1,814,196	54,116	24,843	13,134
Plain, total.....	42,846,674	575,616	434,500	282,093	Massachusetts.....	1,672,910	45,380	12,117	13,592
Massachusetts.....	7,103,256	88,744	93,439	39,551	Michigan.....	1,652,327	48,355	12,106	3,950
Maine.....	5,931,547	82,169	66,797	30,041	Illinois.....	1,478,251	51,200	27,416	16,428
Pennsylvania.....	5,570,757	73,763	57,779	52,366	Indiana.....	1,335,538	40,556	20,137	13,455
Michigan.....	5,231,704	72,677	48,742	44,433	New Jersey.....	1,139,852	37,302	14,822	5,234
New York.....	4,303,427	66,139	29,092	27,611	Pennsylvania.....	1,024,411	41,314	23,693	18,936
Ohio.....	3,902,300	48,589	17,825	13,861	All other states.....	1,597,505	37,541	17,787	8,410
Wisconsin.....	3,795,920	57,493	49,989	25,206	Other paper products:				
New Hampshire.....	1,046,167	13,400	12,039	9,137	Tissues, total.....	8,553,654	77,745	43,925	28,406
All other states.....	5,952,596	72,642	58,798	39,887	New York.....	2,786,101	30,049	18,101	8,415
Coated, total.....	9,413,901	95,213	(2)	(2)	New Jersey.....	1,296,540	8,939	6,162	4,480
Massachusetts.....	2,354,911	26,135	(2)	(2)	Wisconsin.....	988,516	10,835	5,989	2,960
All other states.....	7,059,050	69,078			New Hampshire.....	755,015	8,737	2,508	3,073
Plate, lithograph, map, woodcut, etc., total.....	555,352	6,498	19,837	22,366	Connecticut.....	438,067	2,041	2,169	1,740
Cover, total.....	1,982,853	17,578	22,150	18,749	Vermont.....	331,013	3,500	3,045	1,918
Massachusetts.....	489,275	3,898	2,448	4,035	All other states.....	1,958,372	13,044	5,951	4,920
Connecticut.....	327,881	2,438	2,895	3,620	Blotting paper, total.....	1,186,180	9,577	8,702	4,351
All other states.....	1,165,697	11,242	10,807	11,094	Virginia.....	640,550	5,079	3,344	1,807
Cardboard, Bristol board, card middles, tickets, etc., total.....	3,352,151	51,449	39,060	23,494	All other states.....	545,630	4,498	5,358	2,644
Massachusetts.....	2,135,206	26,604	26,504	13,564	Building (roofing, asbestos, and sheathing) paper, total.....	9,251,368	225,824	145,024	96,915
New York.....	514,709	10,438	10,948	4,882	Pennsylvania.....	1,937,000	60,165	67,797	45,923
All other states.....	702,236	14,317	4,608	10,548	Illinois.....	1,918,123	48,082	7,954	7,153
Fine paper:					Massachusetts.....	1,870,079	14,602	7,153	14,372
Writing, total.....	24,960,102	169,125	131,934	90,204	New York.....	825,681	21,743	10,963	8,044
Massachusetts.....	15,580,692	85,293	76,503	54,701	New Jersey.....	737,884	21,878	20,802	7,133
Wisconsin.....	3,271,402	27,379	17,333	10,332	Ohio.....	598,680	18,974	15,400	7,275
Pennsylvania.....	2,339,130	26,426	19,857	16,824	All other states.....	1,363,921	40,377	14,955	14,168
Ohio.....	2,100,911	16,379	6,652	3,315	Hanging papers, total.....	4,431,514	92,158	62,606	54,330
Connecticut.....	507,694	2,711	3,430	2,001	New York.....	2,865,839	62,179	42,722	39,693
All other states.....	1,166,273	10,962	8,259	2,941	Pennsylvania.....	566,095	9,769	7,814	4,416
All other, total.....	4,110,536	29,088	14,898	22,503	Wisconsin.....	411,240	8,868	1,754	120
Massachusetts.....	1,857,876	4,327	4,272	13,264	All other states.....	587,740	11,342	10,810	10,201
Pennsylvania.....	1,168,937	12,825	2,238	3,120	Miscellaneous, total.....	6,869,169	96,577	106,296	49,101
All other states.....	1,083,723	11,936	8,388	6,119	Massachusetts.....	1,623,031	19,322	15,186	5,852
Wrapping paper:					New York.....	793,169	30,320	8,858	9,556
Manila (rope, jute, tag, etc.), total.....	6,989,436	73,731	86,826	88,419	Ohio.....	784,035	5,788	28,127	4,530
Massachusetts.....	1,543,083	11,025	7,517	6,697	Vermont.....	607,440	10,974	9,696	1,366
New Jersey.....	1,381,123	13,663	7,279	7,377	Pennsylvania.....	302,523	2,390	2,508	6,393
Ohio.....	1,264,635	12,393	10,056	18,579	Michigan.....	229,718	3,484	2,870	2,871
New York.....	1,045,375	20,888	22,760	22,760	Connecticut.....	206,079	1,702	1,135	402
Pennsylvania.....	670,071	5,702	5,964	6,930	All other states.....	2,323,174	22,597	37,910	18,091
Connecticut.....	428,292	4,035	4,035	2,790	Wood pulp, made for sale or for use in establishments other than where produced, total.....	30,177,366	910,840	780,706	650,651
All other states.....	650,857	9,600	29,694	24,280	Ground, total.....	5,649,406	310,747	273,400	220,052
Heavy (mill wrappers, etc.), total.....	4,380,794	108,561	96,992	82,785	New York.....	1,859,391	100,383	128,605	128,607
Pennsylvania.....	1,777,450	36,619	31,043	5,921	Maine.....	1,826,734	107,116	64,480	78,054
New York.....	695,468	18,951	12,741	38,556	Wisconsin.....	816,470	37,964	35,645	28,396
Maine.....	482,872	11,463	11,768	953	Vermont.....	542,348	30,543	23,529	29,389
New Jersey.....	298,231	6,767	2,000	3	All other states.....	608,523	34,741	21,051	20,706
Ohio.....	147,869	5,725	6,314	5,646	Soda fiber, total.....	6,572,152	155,844	130,366	99,014
Massachusetts.....	89,649	1,350	3,074	10,254	Maine.....	1,748,294	41,106	45,376	32,956
All other states.....	889,255	27,686	30,052	21,542	New York.....	1,375,169	33,236	17,379	15,034
Straw, total.....	870,419	32,988	54,232	91,794	Pennsylvania.....	689,610	16,589	17,465	11,668
Ohio.....	217,050	8,632	9,078	10,619	All other states.....	2,765,079	64,913	50,146	39,356
New York.....	116,922	3,374	4,369	14,650	Sulphite fiber, total.....	17,955,748	444,255	376,940	271,585
All other states.....	536,447	20,932	40,785	66,525	New York.....	5,686,136	146,256	89,368	76,658
Bogus or wood manila, all grades, total.....	19,777,707	367,932	228,371	203,826	New Hampshire.....	3,731,579	93,269	91,895	80,718
Maine.....	7,596,427	132,233	66,631	31,849	Wisconsin.....	2,895,047	73,719	53,632	35,261
New York.....	4,206,208	79,952	75,262	74,724	Maine.....	1,799,476	46,073	58,261	27,143
Wisconsin.....	2,588,031	51,041	16,838	17,981	All other states.....	3,943,510	84,938	83,784	51,805
New Hampshire.....	2,429,835	45,627	26,647	13,963	Wood pulp produced (including that used in mills where manufactured), total.....	2,495,523	1,921,768	1,179,525	856,374
Vermont.....	700,578	12,635	8,517	13,700	Ground, total.....	1,179,266	968,976	586,374	245,293
Pennsylvania.....	278,993	6,167	1,571	11,457	New York.....	405,376	379,029	230,340	129,878
All other states.....	1,977,635	39,677	32,905	40,152	Maine.....	324,264	166,822	124,746	77,305
All other, total.....	10,202,095	179,855	177,870	67,338	Wisconsin.....	166,822	124,746	48,153	48,153
Wisconsin.....	2,346,068	41,471	53,896	3,586	Vermont.....	48,390	51,830	183,022	85,745
Michigan.....	2,254,318	38,224	18,326	6,695	All other states.....	234,414	183,022	106,770	177,114
New York.....	1,680,271	30,474	43,926	9,997	Soda fiber, total.....	298,626	80,776	53,682	61,662
Pennsylvania.....	1,228,064	15,507	18,514	7,400	Pennsylvania.....	80,776	53,257	44,162	24,346
Ohio.....	668,678	13,218	12,489	658	Maine.....	78,940	39,441	26,066	62,944
Indiana.....	521,121	9,109	1,510	25,046	New York.....	39,441	62,805	62,805	46,944
All other states.....	1,523,515	31,852	29,219	20,100	All other states.....	89,469	756,022	416,037	124,996
Boards:					Sulphite fiber, total.....	1,017,631	294,717	200,019	173,324
Wood pulp, total.....	2,630,496	71,036	60,863	44,187	New York.....	217,501	173,324	57,579	57,579
New York.....	948,796	11,011	11,011	70,081	Maine.....	164,391	113,047	87,852	87,852
All other states.....	1,680,700	47,279	49,852	40,331	Wisconsin.....	132,687	115,195	87,852	87,852
Straw, total.....	3,750,851	171,789	167,278	157,534	New Hampshire.....	132,687	115,195	87,852	87,852
Indiana.....	1,692,128	82,056	59,114	70,081	All other states.....	277,335	154,437	154,437	85,817
Ohio.....	853,100	37,710	33,953	40,331					
Illinois.....	621,340	29,510	22,408	20,100					

1 Included in "all other states."

2 Not reported separately.

Equipment.—Table 23 shows the number and capacity of the different paper machines and the different types of pulp equipment reported for the industry in 1909, 1904, and 1899.

EQUIPMENT.	1909	1904	1899
Paper machines:			
Total number.....	1,480	1,369	1,232
Capacity, yearly, tons.....	5,293,397	3,857,903	2,782,219
Fourdrinier—			
Number.....	804	752	(1) 663
Capacity per 24 hours, tons.....	10,508	8,569	(1)
Cylinder—			
Number.....	676	617	569
Capacity per 24 hours, tons.....	6,316	4,740	(1)
Pulp equipment:			
Grinders, number.....	1,435	1,362	1,168
Digesters, total number.....	542	517	426
Sulphite fiber, number.....	348	309	(2)
Soda fiber, number.....	194	208	(2)
Capacity, yearly, tons of pulp.....	3,405,621	2,644,753	1,536,431
Ground, tons.....	1,899,685	1,515,088	(2)
Sulphite, tons.....	1,250,983	885,092	(2)
Soda, tons.....	344,953	244,573	(2)

<sup>1</sup> Not reported.

<sup>2</sup> Not reported separately.

Paper machines.—The number of Fourdrinier machines increased 21.3 per cent, and the number of cylinder machines 18.8 per cent, during the decade, while their combined yearly capacity increased 2,511,178 tons, or 90.3 per cent. The total capacity of the

Fourdrinier machines per 24 hours in 1909 was 10,508 tons, or an average of 13.1 tons per machine, as compared with 8,569 tons, or 11.4 tons per machine, in 1904. The total capacity of the cylinder machines in 1909 was 6,316 tons, or an average of 9.3 tons per machine, as compared with 4,740 tons, or 7.7 tons per machine, in 1904. The capacity of the machines was not reported in 1899.

Pulp-mill equipment.—The total capacity of the pulp mills increased 121.7 per cent during the decade 1899 to 1909 and 28.8 per cent during the five-year period 1904–1909. The capacity of the apparatus for manufacturing the three classes of pulp was not reported for 1899, but during the period 1904–1909 the capacity increased as follows: Grinders, 19.4 per cent; sulphite digesters, 41.3 per cent; and soda digesters, 41 per cent.

Imports and exports.—Table 24 shows the imports of paper, paper stock, and wood pulp, and the exports of paper and wood pulp, in the different years from 1899 to 1909 as reported by the Bureau of Foreign and Domestic Commerce of the Department of Commerce.

YEAR ENDING JUNE 30—	IMPORTS.				EXPORTS.			YEAR ENDING JUNE 30—	IMPORTS.				EXPORTS.		
	Paper (value).	Paper stock (value).	Wood pulp.		Paper (value).	Wood pulp.			Paper (value).	Paper stock (value).	Wood pulp.		Paper (value).	Wood pulp.	
			Quantity (long tons).	Value.		Quantity (long tons).	Value.				Quantity (long tons).	Value.		Quantity (long tons).	Value.
1909.....	\$11,632,571	\$3,638,034	274,217	\$8,629,263	\$7,663,139	9,210	\$448,960	1903.....	\$4,733,036	\$3,015,084	116,881	\$3,387,770	\$7,180,014	10,029	\$445,228
1908.....	12,223,058	3,675,926	237,514	7,313,326	8,064,706	10,645	519,625	1902.....	4,223,125	2,770,255	67,416	2,069,092	7,312,030	17,120	740,103
1907.....	10,727,835	5,580,528	213,110	6,348,857	9,856,733	11,196	498,552	1901.....	4,002,989	2,183,686	46,757	1,586,402	7,438,901	27,468	1,051,867
1906.....	6,998,761	4,374,464	157,224	4,584,942	9,536,065	13,162	587,878	1900.....	3,785,645	3,261,778	82,441	2,405,630	6,215,833	12,748	458,463
1905.....	5,623,638	3,796,595	167,504	4,500,955	8,238,088	10,582	473,589	1899.....	3,191,589	2,014,914	33,319	671,506	5,477,884	24,070	696,319
1904.....	5,319,086	2,900,713	144,796	3,602,668	7,543,728	13,496	593,474								

#### DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning the paper and wood pulp industry are presented, by states, in Tables 25 and 26.

Table 25 shows, for 1909, 1904, and 1899, the number of establishments, number of persons engaged in the

industry, primary horsepower, capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture.

Table 26 gives more detailed statistics for the industry for 1909 only.

# THE PAPER AND WOOD PULP INDUSTRY.

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## PAPER AND WOOD PULP—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

Table 25	STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
				Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
	United States.....	1909 1904 1899	777 761 763	81,473 70,051 53,012	250 309 431	5,245 3,778 2,935	75,978 65,064 49,646	1,304,285 1,093,708 762,118	\$409,349 277,444 167,508	\$9,510 6,097 4,561	\$40,805 32,019 20,746	\$185,442 111,251 70,530	\$267,657 188,715 127,326	\$102,215 77,404 56,786
	California.....	1909 1904 1899	4 3 1	340 273 .....	2 2 .....	26 12 .....	312 250 .....	7,103 3,808 .....	2,068 1,176 .....	36 20 .....	207 181 .....	440 274 .....	969 640 .....	529 366 .....
	Connecticut.....	1909 1904 1899	51 50 49	1,920 1,933 1,576	24 29 36	176 154 115	1,720 1,750 1,425	19,509 18,021 14,621	7,195 5,893 3,968	351 236 152	924 843 633	3,303 2,738 1,982	5,527 5,039 3,555	2,224 2,301 1,583
	Delaware.....	1909 1904 1899	6 6 6	599 575 476	4 6 6	49 22 19	546 547 451	4,318 5,115 4,010	3,314 3,176 2,143	61 70 62	310 252 194	1,587 1,270 1,028	2,292 1,905 1,600	705 635 572
	Illinois.....	1909 1904 1899	19 19 15	1,542 1,036 664	3 4 6	142 73 35	1,397 959 623	15,169 12,818 9,561	8,400 3,993 1,555	200 120 37	727 462 250	3,099 1,416 798	4,983 2,443 1,432	1,884 1,027 634
	Indiana.....	1909 1904 1899	27 36 39	1,627 1,737 1,962	7 5 12	119 112 134	1,501 1,620 1,816	18,382 19,775 23,797	7,132 0,511 5,379	173 132 186	754 664 724	3,497 2,517 2,471	5,202 3,917 4,170	1,705 1,400 1,690
	Iowa.....	1909 1904 1899	4 4 4	225 165 193	..... ..... 2	20 13 11	205 152 180	1,435 1,005 1,210	673 368 182	25 12 12	81 66 64	281 131 107	437 253 244	156 122 137
	Kansas.....	1909 1904 1899	3 3 1	109 105 .....	1 6 .....	11 8 .....	97 91 .....	920 1,078 .....	330 132 .....	14 8 .....	46 40 .....	120 78 .....	218 202 .....	98 124 .....
	Maine.....	1909 1904 1899	45 37 35	9,146 7,935 5,121	17 11 12	482 350 258	8,647 7,574 4,851	223,787 152,204 92,330	65,133 41,274 17,473	1,019 605 445	5,267 4,052 2,163	20,504 13,868 7,119	33,950 22,951 13,223	13,446 9,033 6,104
	Maryland.....	1909 1904 1899	13 16 21	1,349 1,074 983	15 19 11	85 47 35	1,249 1,008 937	11,407 7,343 8,503	8,399 6,350 2,721	140 76 59	639 397 326	3,278 2,453 1,731	4,894 3,296 2,590	1,616 843 859
	Massachusetts.....	1909 1904 1899	88 87 93	13,742 12,365 9,606	24 33 35	870 627 510	12,848 11,765 9,061	115,792 104,954 82,200	42,524 41,074 26,693	1,690 1,185 861	6,542 5,588 3,938	22,350 17,947 11,919	40,097 32,012 22,141	17,747 14,065 10,222
	Michigan.....	1909 1904 1899	32 30 27	4,581 3,221 2,130	5 8 9	249 163 107	4,327 3,157 2,014	48,700 31,357 22,856	15,754 8,398 4,506	423 218 143	2,142 1,306 701	9,025 4,581 2,708	13,922 7,341 4,218	4,897 2,700 1,510
	Minnesota.....	1909 1904 1899	9 4 1	640 418 .....	..... ..... .....	33 22 .....	607 396 .....	23,440 7,153 .....	3,235 1,491 .....	64 31 .....	361 234 .....	1,438 677 .....	2,385 1,146 .....	947 409 .....
	New Hampshire.....	1909 1904 1899	34 25 29	3,668 2,674 2,524	13 5 20	242 147 113	3,413 2,522 2,391	70,912 49,784 48,590	27,534 14,041 8,163	485 209 173	2,106 1,315 1,037	9,253 5,328 3,953	13,994 8,930 7,245	4,741 3,002 3,292
	New Jersey.....	1909 1904 1899	37 38 34	2,445 1,773 1,308	11 15 25	211 129 93	2,223 1,029 1,190	22,908 17,336 12,978	10,742 7,129 3,671	456 233 163	1,181 787 559	4,769 3,022 1,715	2,754 5,043 3,195	7,754 2,021 1,480
	New York.....	1909 1904 1899	178 177 179	13,018 13,262 10,001	59 85 129	886 759 604	12,073 12,413 9,268	337,548 300,730 227,707	90,012 56,462 37,349	1,471 1,132 859	6,744 6,402 4,100	31,767 22,806 14,563	48,860 37,751 26,716	17,093 14,945 12,153
	Ohio.....	1909 1904 1899	47 53 51	4,972 4,108 3,309	3 3 10	296 222 166	4,673 3,883 3,184	51,402 36,288 28,517	20,970 14,433 7,873	596 327 278	2,419 1,683 1,118	10,898 6,154 3,769	16,965 10,962 6,544	6,067 4,808 2,775
	Pennsylvania.....	1909 1904 1899	62 65 73	7,196 6,283 5,195	32 53 74	508 324 281	6,656 5,906 4,840	66,910 54,837 41,849	27,747 21,469 16,424	820 518 355	3,303 2,839 1,989	11,398 8,510 6,374	19,873 15,411 12,268	8,475 6,901 5,894
	Vermont.....	1909 1904 1899	25 28 27	1,133 1,309 1,320	22 20 16	81 99 88	1,030 1,280 1,215	38,191 42,952 34,520	8,432 5,629 4,854	141 123 129	594 617 571	2,455 2,540 1,685	3,902 3,331 3,385	1,447 1,291 1,700
	Virginia.....	1909 1904 1899	9 9 7	981 1,058 336	..... ..... .....	68 65 34	912 993 302	9,770 7,800 6,345	5,298 5,517 2,282	153 134 58	412 363 103	2,148 1,789 411	3,657 3,034 850	1,509 1,245 439
	West Virginia.....	1909 1904 1899	9 7 6	1,221 585 305	2 3 2	57 37 22	1,162 545 281	11,025 4,575 4,785	3,603 2,215 926	97 47 26	478 230 98	1,683 760 274	2,652 1,298 628	969 538 254
	Wisconsin.....	1909 1904 1899	57 52 47	7,878 6,827 4,442	1 2 3	410 287 199	7,467 6,338 4,240	136,903 105,940 76,876	33,738 24,409 16,580	731 435 308	3,801 2,988 1,649	16,693 10,692 6,713	25,962 17,844 10,896	9,269 7,152 4,183
	All other states.....	1909 1904 1899	18 12 21	3,141 1,445 1,471	4 2 14	224 106 81	2,913 1,337 1,376	69,586 18,745 20,807	16,246 6,310 4,766	364 226 165	1,677 703 535	5,450 1,700 1,210	9,362 3,466 2,516	3,906 1,766 1,306

<sup>1</sup> Figures can not be shown without disclosing individual operations.

PAPER AND WOOD PULP—DETAILED STATISTICS, BY STATES: 1909.

**Table 26**

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.				Primary horse-power.
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.				Total.	16 and over.		Under 16.		
					Male.	Female.	Average number.	Number, 15th day of—		Male.		Female.	Male.	Female.		
								Maximum month.	Minimum month.							
<b>United States...</b>	<b>777</b>	<b>81,473</b>	<b>250</b>	<b>2,048</b>	<b>2,393</b>	<b>804</b>	<b>75,978</b>	<b>De 77,430</b>	<b>Au 74,517</b>	<b>78,672</b>	<b>68,497</b>	<b>9,909</b>	<b>107</b>	<b>159</b>	<b>1,304,265</b>	
California.....	4	340	2	10	11	5	312	De 330	Oc 285	330	324	6			7,193	
Connecticut.....	51	1,920	24	95	51	30	1,720	De 1,861	Ja 1,638	1,868	1,573	282	7		19,509	
Delaware.....	6	590	4	14	27	8	546	Mh 567	Ja 530	559	479	80		6	4,318	
Illinois.....	19	1,542	3	50	69	23	1,397	No 1,541	Ja 1,183	1,575	1,552	19	4		15,169	
Indiana.....	27	1,627	7	56	44	19	1,501	De 1,601	My 1,402	1,608	1,577	85	4	2	18,382	
Iowa.....	4	225		12	4	4	205	Mh 243	Jy 134	183	169	14			1,435	
Kansas.....	3	109	1	6	3	2	97	Fo 133	Au 42	106	87	19			920	
Maine.....	45	9,146	17	165	252	65	8,647	De 8,841	Se 8,334	8,892	8,399	477	16		223,787	
Maryland.....	13	1,349	15	31	46	8	1,240	No 1,290	Ja 1,158	1,247	1,091	154	2		11,407	
Massachusetts.....	88	13,742	24	268	401	201	12,848	De 13,234	Jy 12,611	13,313	8,673	4,508	22	110	115,792	
Michigan.....	32	4,581	5	95	120	34	4,327	Je 4,480	Mh 4,168	4,305	3,618	777			48,700	
Minnesota.....	9	640		20	11	2	607	Je 638	Au 541	618	608	10			23,440	
New Hampshire.....	34	3,668	13	88	139	15	3,413	Oc 3,618	Au 3,255	3,423	3,292	131			79,912	
New Jersey.....	37	2,445	11	81	89	41	2,223	No 2,344	Ja 2,100	2,348	3,248	168	14	13	22,996	
New York.....	178	13,018	59	425	352	109	12,073	My 12,788	Au 11,433	12,531	12,100	431			337,548	
Ohio.....	47	4,972	3	126	108	62	4,673	De 4,811	My 4,528	4,796	4,055	737	3	1	51,402	
Pennsylvania.....	62	7,196	32	167	250	91	6,656	No 6,916	Fe 6,481	6,842	6,064	744	17	17	66,910	
Vermont.....	25	1,133	22	44	24	13	1,030	Mh 1,133	Au 885	1,113	1,035	78			38,191	
Virginia.....	9	981	1	34	28	6	912	Au 997	My 865	935	838	94	3		9,770	
West Virginia.....	9	1,221	2	29	24	4	1,162	Au 1,311	Ap 1,050	1,202	1,155	47			11,025	
Wisconsin.....	57	7,878	1	100	210	40	7,467	De 7,716	Ja 7,161	7,629	6,655	958	13	3	136,903	
All other states <sup>1</sup> .....	18	3,141	4	72	130	22	2,913			3,099	3,005	90	2	2	59,586	

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
<b>United States...</b>	<b>\$409,348,505</b>	<b>\$237,310,150</b>	<b>\$6,268,319</b>	<b>\$3,241,822</b>	<b>\$40,804,502</b>	<b>\$18,320,266</b>	<b>\$147,122,075</b>	<b>\$635,461</b>	<b>\$2,002,079</b>	<b>\$527,915</b>	<b>\$18,387,711</b>	<b>\$267,656,904</b>	<b>\$102,214,623</b>
California.....	2,068,048	757,198	25,840	10,410	206,622	90,432	340,963	2,505	6,554	9,314	64,872	960,172	528,777
Connecticut.....	7,194,953	5,085,020	268,580	82,111	923,600	407,218	2,896,198	2,412	31,003	3,314	464,575	5,527,334	2,223,918
Delaware.....	3,313,559	2,027,287	27,186	34,021	309,591	155,160	1,432,013		6,462		62,854	2,291,728	701,555
Illinois.....	8,400,333	4,567,670	118,514	81,299	727,420	320,352	2,779,088	8,080	17,723	3,927	511,267	4,983,635	1,883,635
Indiana.....	7,131,771	4,872,964	118,046	55,161	753,755	408,737	3,088,408	13,153	22,615	24,925	388,104	5,202,330	1,705,185
Iowa.....	673,226	425,661	21,670	2,969	81,234	48,175	232,639		1,798	1,600	35,567	437,388	156,574
Kansas.....	320,513	219,375	10,098	3,712	46,430	13,097	107,309		2,430		36,299	217,982	97,576
Maine.....	65,133,247	29,289,896	650,926	368,018	5,266,656	2,628,561	17,875,652	525,124	282,020	84,873	1,008,066	33,950,230	13,446,017
Maryland.....	8,398,665	4,253,865	63,250	77,076	639,057	230,571	3,041,851		9,974		186,066	4,894,401	1,615,979
Massachusetts.....	42,523,682	34,670,185	1,093,532	595,738	6,541,636	2,331,897	20,017,716	12,105	305,610	280,594	3,400,267	40,096,713	17,747,100
Michigan.....	15,754,419	12,417,132	284,870	137,803	2,141,844	958,147	8,066,448		20,807	40,253	607,911	13,922,124	4,807,529
Minnesota.....	3,234,935	2,028,591	48,983	15,360	360,986	162,937	1,274,839		113,847		144,679	2,385,026	947,250
New Hampshire.....	27,533,569	12,857,734	293,719	191,762	2,105,769	1,019,534	8,233,835	4,467	113,368	921	894,369	13,994,251	4,740,882
New Jersey.....	10,741,820	7,024,916	315,768	140,006	1,181,485	597,233	4,171,518	15,900	35,585		507,421	7,554,428	2,785,677
New York.....	90,911,790	43,775,408	997,937	473,213	6,743,800	3,028,118	28,739,165	38,690	352,600	21,216	3,380,603	48,859,610	17,092,327
Ohio.....	20,969,694	15,515,130	404,240	192,088	2,419,215	1,049,097	9,849,188	4,800	86,867	10,768	1,498,867	16,905,260	6,066,975
Pennsylvania.....	27,746,888	17,494,422	538,035	282,227	3,303,034	1,544,116	9,854,195	2,485	59,591	130	1,910,609	19,872,717	8,474,406
Vermont.....	8,431,703	3,462,582	111,090	29,922	593,762	243,335	2,212,020	2,300	36,324		233,839	3,901,034	1,446,279
Virginia.....	5,267,553	2,969,729	112,430	40,751	412,122	194,063	1,954,309		13,272		242,782	3,656,745	1,508,373
West Virginia.....	3,603,392	2,471,610	61,217	36,046	478,113	204,818	1,478,601		23,392		173,423	2,652,037	968,513
Wisconsin.....	33,737,744	22,746,558	484,297	246,771	3,891,469	1,616,021	15,076,544	2,060	269,600	10,000	23,164	25,962,099	9,269,534
All other states <sup>2</sup> .....	10,248,001	8,377,217	218,064	144,358	1,670,906	1,053,647	4,369,576	1,300	70,577	4,230	808,569	9,360,680	3,907,457

<sup>1</sup> Same number reported for one or more other months.  
<sup>2</sup> All other states embrace: District of Columbia, 1 establishment; Georgia, 1; Louisiana, 1; Missouri, 1; North Carolina, 3; Oregon, 5; Rhode Island, 1; South Carolina, 1; Texas, 2; Washington, 2.

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# PRINTING AND PUBLISHING

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(763)

# THE PRINTING AND PUBLISHING INDUSTRY.

## GENERAL STATISTICS.

### SUMMARY FOR THE UNITED STATES.

Summary for the industry: 1909.—According to the census classification the printing and publishing industry is made up of six branches, comprising establishments classified as follows: (1) Establishments whose chief business is book and job printing, book printing and publishing, or book publishing only; (2) establishments whose sole business is music printing, or whose chief business is music printing and publishing, or music publishing only; (3) establishments which are engaged in the printing and publishing, or in the publishing only, of newspapers and periodicals; (4) establishments whose chief business is bookbinding and blank-book making; (5) establishments whose chief business is engraving on steel plates and copper plates and printing from such plates; and (6) establishments whose chief business is lithographing.

The first group is composed of establishments whose chief business is either one or both of the following: (a) the publication of books, whether or not the publishing establishment does its own printing; and (b)

“job” or “contract” printing, of any or every character, including the printing of books and of music; establishments engaged exclusively in the printing of music, however, are included in the second group.

The essential characteristic of establishments in the third branch is the publication of newspapers or periodicals, the question of whether or not a given establishment of this class does its own printing being immaterial. It should be noted that this branch includes every establishment which publishes a newspaper or periodical, regardless of the relative importance of the other departments or branches, if any, of its business.

Because of the overlapping of the different branches of the industry as distinguished in this report, comparisons between them would be in some respects misleading. Hence, certain of the tables do not contain separate figures for the different branches, but only totals for all establishments in all the branches combined.

Table 1 presents a summary of the statistics for the printing and publishing industry as a whole and for each of the six branches for 1909.

Table 1	Total for the industry.	ESTABLISHMENTS ENGAGED PRIMARILY IN—					
		Printing and publishing, book and job.	Printing and publishing, music.	Printing and publishing, newspapers and periodicals.	Bookbinding and blank-book making.	Engraving, steel and copper plate, including plate printing.	Lithographing.
Number of establishments . . . . .	31,445	10,708	178	18,871	1,054	816	318
Persons engaged in the industry . . . . .	388,466	141,937	1,800	196,620	23,698	6,479	17,932
Proprietors and firm members . . . . .	30,424	10,778	162	17,890	1,066	830	198
Salaries employees . . . . .	99,608	22,472	900	70,058	2,694	823	2,661
Wage earners (average number) . . . . .	258,434	108,687	738	108,672	19,938	5,326	15,073
Primary horsepower . . . . .	297,763	97,546	365	173,889	10,099	2,732	13,132
Capital . . . . .	\$588,345,708	\$202,662,435	\$3,591,381	\$314,740,917	\$22,935,362	\$7,242,200	\$37,173,413
Expenses . . . . .	619,168,045	212,598,947	4,498,709	336,376,822	27,530,441	7,878,853	30,274,693
Services . . . . .	283,086,431	91,561,755	1,323,653	143,700,525	12,855,049	4,559,906	14,104,833
Salaries . . . . .	103,458,251	25,040,439	884,725	89,298,932	3,179,379	1,152,077	3,902,669
Wages . . . . .	164,628,180	66,521,316	438,928	74,401,593	9,676,270	3,387,859	10,202,164
Materials . . . . .	201,774,590	77,650,547	986,202	97,359,605	11,629,906	2,217,599	11,930,731
Miscellaneous . . . . .	149,297,024	43,386,645	2,188,854	95,316,742	3,044,856	1,130,818	4,239,079
Value of products . . . . .	737,876,087	250,925,934	5,575,903	406,090,122	31,742,416	9,432,479	34,109,233
Value added by manufacture (value of products less cost of materials) . . . . .	536,101,497	173,275,387	4,589,701	308,730,517	20,112,510	7,214,880	22,178,602

The total value of products for the industry as a whole, which in 1909 was \$737,876,087, involves considerable duplication, due to the fact that establishments in one branch of the industry frequently do work for establishments in another branch. Moreover, there is duplication within certain of the individual branches of the industry, the book-publishing and job-printing branch being a conspicuous example. Many book publishers do no printing, but hire their work done by job-printing establishments, which are in-

cluded in the same branch of the industry, while other concerns perform the presswork themselves but hire composition done. Again, in the newspaper and periodical branch of the industry, certain concerns which print their own publications also print newspapers or periodicals published by others.

In most industries where there is duplication in the value of products reported there is also extensive duplication in the cost of materials, but the latter form of duplication is relatively unimportant in the print-

ing and publishing industry, as the payments made by establishments grouped therein to other establishments similarly classified are not for materials chiefly, but for contract work. In most industries the subtraction of the cost of materials from the total value of products leaves an amount designated as "value added by manufacture" which is exclusive of all, or practically all, duplication. In the case of the printing and publishing industry, however, this "value added by manufacture" involves very considerable duplication due to contract work done by one establishment for another. The total amount reported as paid for this contract work in 1909 was \$36,384,359. Practically all of this was paid to other establishments in the industry. If this amount be deducted from the total value of products, \$737,876,087, there remains, in round numbers, \$700,000,000, which, with a further slight deduction for duplication due to the sale of products by one establishment to another, would represent approximately the net value of products of the industry.

Similarly, the subtraction of the expenditure for contract work from the item of "value added by manufacture" (\$536,101,497) leaves, in round numbers, \$500,000,000 as the true value added by manufacture, exclusive of duplication.

In the printing and publishing industry the cost of materials constitutes a comparatively small proportion of the total value of products. The combined cost of the materials—a large part of which represents the cost of paper and of fuel and power—used by all six branches of the industry in 1909 was \$201,774,590, which is equal to 27.3 per cent of the gross value of products, although it constituted a somewhat larger proportion of the value of products obtained by deducting expenditures for contract work.

The establishments in the industry as a whole gave employment to an average of 388,466 persons, of whom 258,434 were wage earners, and paid out \$268,086,431 in salaries and wages.

Of the 31,445 establishments canvassed in 1909 approximately three-fifths were engaged in the pub-

lishing of newspapers and periodicals. These establishments employed 108,672 wage earners, or 42 per cent of the total for the industry, and reported products to the value of \$406,090,122, or 55 per cent of the total value of products reported for the industry as a whole. A large proportion of the "value of products" of this branch of the industry represents payments received for advertising.

Establishments engaged chiefly in book publishing or in job printing, or both, formed 34.1 per cent of the total number of establishments, reported 34 per cent of the total value of products, and employed 42.1 per cent of the total number of wage earners. The 178 establishments engaged solely or chiefly in music publishing contributed only three-fourths of 1 per cent of the total value of all products. The other branches of the industry reported the following proportions of the total value of products: Bookbinding and blank-book making, 4.3 per cent; steel and copper-plate engraving and plate printing, 1.3 per cent; and lithographing, 4.6 per cent. The significance of these percentages is, of course, dependent on the extent of the duplication, not only in the total value of products of the industry, but also within the different branches of it.

**Related industries.**—There are several industries so closely related to that of printing and publishing that it is impracticable to draw any distinct line of demarcation between them and the industry under discussion. A large amount of work similar to that reported by some of them is done in printing and publishing establishments. Among the more important of these industries are wood engraving, photo-engraving, the manufacture of miscellaneous printing materials, stereotyping and electrotyping, and type founding. Statistics of these industries for 1909 are summarized in Table 2. Two industries necessarily included in the group of "paper and printing" in Volume VIII ("engraving and diesinking" and "wall paper") have no relation to job printing or publishing and are omitted here.

Table 2

	Total for related industries.	ESTABLISHMENTS ENGAGED PRIMARILY IN—				
		Wood engraving.	Photo-engraving.	Manufacturing printing materials.	Stereotyping and electrotyping.	Type founding.
Number of establishments.....						
Persons engaged in the industry.....	691	82	313	93	174	29
Proprietors and firm members.....	14,015	480	7,277	787	3,061	1,810
Salaried employees.....	533	89	233	61	133	17
Wage earners (average number).....	2,945	73	1,701	191	678	302
Primary horsepower.....	10,537	318	5,343	535	2,850	1,491
Capital.....	8,701	39	2,638	663	4,076	1,285
Expenses.....	\$16,285,267	\$192,762	\$5,473,730	\$1,620,269	\$3,825,833	\$5,172,043
Services.....	20,579,538	567,270	10,127,393	1,728,333	5,616,521	2,540,021
Salaries.....	11,802,587	340,270	6,599,236	612,619	3,112,591	1,137,871
Wages.....	3,291,139	81,692	1,840,190	257,781	800,487	301,959
Materials.....	8,511,448	258,578	4,750,046	354,838	2,312,104	835,882
Miscellaneous.....	5,797,414	126,101	2,133,980	760,886	1,765,102	1,011,345
Value of products.....	2,979,537	100,899	1,394,177	354,828	738,828	390,805
Value added by manufacture (value of products less cost of materials).....	23,422,479	711,279	11,624,000	1,082,416	6,383,694	2,721,090
	17,625,065	585,178	9,490,020	1,221,530	4,618,592	1,709,745

Of the related industries covered by the table, photo-engraving and stereotyping and electrotyping are the most important, as measured by total value

of products, the former reporting substantially one-half and the latter more than one-fourth of the total for the five industries.

Comparison with earlier censuses.—Comparable statistics for the industry as a whole are not available for censuses prior to 1889. Statistics for book and job printing and publishing were first reported separately in 1869, when there were 960 establishments, employing a total of 17,613 wage earners, and reporting products valued at \$41,075,971. Statistics for music printing and publishing were first shown separately at the census of 1859, only two establishments being reported; the industry was next reported separately at the census of 1889. Statistics for the printing and publishing of newspapers and periodicals were first shown separately at the census of 1869, in which year the returns showed 1,199 establishments, employing a total of 13,130 wage earners, and reporting products valued at \$25,393,029. There was a special report on newspapers and periodicals at the census of 1879, but the statistics gathered were not sufficiently comprehensive for use in comparison with those of

later censuses. Bookbinding and blank-book making, the returns for which prior to 1909 were not combined with those for the printing and publishing industry, were treated as a separate industry as far back as the census of 1849, in which year there were 235 establishments in the industry, employing 3,468 wage earners, and reporting products valued at \$3,225,678. Statistics for steel and copper plate engraving, including plate printing, were first given separately at the census of 1879, 55 establishments reporting a total of 1,916 wage earners and products valued at \$2,998,616. Lithographing was first shown separately at the census of 1849, when there were 11 establishments, employing a total of 162 wage earners and reporting products valued at \$136,000.

Table 3 summarizes the statistics for the printing and publishing industry as a whole, for each census from 1889 to 1909, inclusive.

	Number or amount.				Per cent of increase. <sup>1</sup>			
	1909	1904	1899	1889	1899-1909	1904-1909	1899-1904	1889-1899
Number of establishments.....	31,445	27,793	23,814	17,724	32.0	13.1	16.7	34.4
Persons engaged in the industry.....	383,466	316,047	( <sup>2</sup> )	( <sup>2</sup> )	22.9	22.9		
Proprietors and firm members.....	30,424	28,368	( <sup>2</sup> )	( <sup>2</sup> )	7.2	7.2		
Salaried employees.....	99,608	68,592	40,685	( <sup>2</sup> )	144.8	45.2	68.6	
Wage earners (average number).....	258,434	219,687	195,290	161,261	32.4	18.0	12.2	( <sup>3</sup> )
Primary horsepower.....	297,793	156,380	119,775	87,453	148.6	79.0	38.9	77.6
Capital.....	\$568,345,708	\$432,853,984	\$333,003,432	\$223,863,731	76.7	35.9	30.0	48.8
Expenses.....	619,158,045	440,599,477	303,446,296	252,387,964	104.0	38.6	47.2	20.2
Services.....	268,086,431	194,644,287	139,291,335	121,015,783	92.5	37.5	40.0	15.1
Salaries.....	103,468,261	67,743,298	39,475,220	( <sup>2</sup> )	162.1	62.7	71.6	
Wages.....	164,828,180	127,195,989	99,816,115	( <sup>2</sup> )	64.9	29.4	27.4	
Materials.....	201,774,590	142,614,182	103,654,284	81,874,561	94.7	41.6	37.5	26.6
Miscellaneous.....	149,297,024	109,141,008	60,500,677	49,497,620	146.8	36.8	80.4	22.2
Value of products.....	737,876,087	552,473,353	395,186,629	313,856,256	86.7	33.6	39.8	25.9
Value added by manufacture (value of products less cost of materials).....	536,101,497	409,959,171	291,532,345	231,981,695	83.9	30.8	40.6	25.7

<sup>1</sup> Where percentages are omitted, comparable figures are not available.

<sup>2</sup> Comparable figures not available.

<sup>3</sup> Figures not strictly comparable.

Notwithstanding certain elements of possible incomparability in the figures, it is evident that there was a much more rapid development in the industry from 1899 to 1909 than during the preceding decade. During the more recent period the number of salaried employees more than doubled, the number of wage earners increased almost one-third, and the value of products increased nearly seven-eighths.

Growth of different branches of the industry from 1899 to 1909.—Table 4 shows, for the six branches of the industry separately, the most important statistical items for 1909 and 1899.

The publishing of newspapers and periodicals, the largest of the six branches of the industry, showed marked increases during the decade 1899-1909 in all respects except in average number of wage earners. The comparatively small gain in this particular is due to the increased use of typesetting and typecasting machines; it is worthy of note that notwithstanding the small increase in number of wage earners the

total wages paid increased 47.8 per cent. The increase in value of products was 82.1 per cent.

The relative increases in the next largest branch of the industry, book publishing and book and job printing, were much greater than in the case of newspapers and periodicals, the average number of wage earners increasing 60.8 per cent, while the reported value of products more than doubled. The bookbinding and blank-book making and lithographing branches reported about the same percentage of increase in value of products. The average number of wage earners increased 24.8 per cent in the former, and 16 per cent in the latter branch.

The printing and publishing of music was the least important of the branches of the industry, as measured by value of products, in 1909, but its rate of growth for the decade was much more rapid than that of any other branch. In addition to the music printed by establishments in this branch of the industry, considerable quantities are printed in establishments doing book and job work.



SUMMARY, BY STATES.

The industry as a whole.—Table 5 summarizes the more important statistics for the industry as a whole, by states, the states being arranged according to the

value of products reported for 1909. Percentages of increase, such as are shown for certain branches of the industry in other tables, are not shown here because for many of the states the data of previous censuses are not sufficiently comparable.

**Table 5** PRINTING AND PUBLISHING—ALL BRANCHES COMBINED: 1909

STATE.	Number of establishments.	Wage earners.			Value of products.			Value added by manufacture.		
		Average number.	Per cent of total.	Rank.	Amount.	Per cent of total.	Rank.	Amount.	Per cent of total.	Rank.
United States .....	31,445	258,434	100.0	.....	\$737,876,087	100.0	.....	\$536,101,497	100.0	.....
New York.....	4,426	63,120	24.4	1	216,946,482	29.4	1	160,452,222	29.9	1
Illinois.....	2,608	28,644	11.1	2	87,247,090	11.8	2	62,567,117	11.7	2
Pennsylvania.....	2,461	24,696	9.6	3	70,584,179	9.5	3	47,831,430	8.9	3
Massachusetts.....	1,279	17,632	6.8	4	47,445,006	6.4	4	34,564,465	6.4	4
Ohio.....	1,655	16,756	6.1	5	41,657,306	5.6	5	29,752,952	5.5	5
Missouri.....	1,322	10,790	4.2	6	29,651,153	4.0	6	21,024,401	3.9	6
California.....	1,240	7,556	2.9	7	25,031,877	3.4	7	18,704,574	3.5	7
Michigan.....	1,045	7,219	2.8	8	17,348,341	2.3	8	12,413,815	2.3	8
Minnesota.....	950	5,641	2.2	10	15,982,212	2.2	9	11,886,107	2.2	9
Indiana.....	892	6,756	2.6	9	14,356,376	1.9	10	10,331,836	1.9	10
New Jersey.....	684	5,451	2.1	11	12,332,700	1.7	11	8,860,540	1.7	11
Iowa.....	1,110	4,853	1.9	13	12,128,657	1.6	12	8,841,560	1.6	12
Wisconsin.....	833	5,360	2.1	12	11,860,644	1.6	13	8,474,588	1.6	14
Texas.....	1,067	4,408	1.7	14	11,587,255	1.6	14	8,780,015	1.6	13
Washington.....	506	2,624	1.0	20	9,286,188	1.3	15	7,062,598	1.3	15
Maryland.....	371	3,386	1.3	15	8,359,779	1.1	16	5,895,391	1.1	16
Tennessee.....	413	2,914	1.1	18	7,173,230	1.0	17	5,219,645	1.0	17
Kansas.....	798	3,232	1.2	16	7,008,865	0.9	18	4,719,059	0.9	22
Colorado.....	439	2,366	0.9	23	6,961,721	0.9	19	5,155,609	1.0	18
Nebraska.....	674	2,329	0.9	24	6,667,290	0.9	20	4,955,946	0.9	19
Kentucky.....	431	3,135	1.2	17	6,453,842	0.9	21	4,808,658	0.9	21
Georgia.....	442	2,395	0.9	22	6,400,241	0.9	22	4,812,466	0.9	20
Connecticut.....	363	2,878	1.1	19	6,370,450	0.9	23	4,601,233	0.9	23
Virginia.....	369	2,555	1.0	21	5,369,738	0.7	24	3,964,864	0.7	24
Oregon.....	324	1,459	0.6	29	5,040,523	0.7	25	3,937,110	0.7	25
District of Columbia.....	156	1,565	0.6	27	4,899,492	0.7	26	3,804,610	0.7	26
Oklahoma.....	598	1,698	0.7	25	3,988,542	0.5	27	2,984,419	0.6	27
Louisiana.....	268	1,544	0.6	28	3,823,473	0.5	28	2,810,180	0.5	28
Rhode Island.....	147	1,454	0.6	30	3,780,075	0.5	29	2,716,400	0.5	29
Maine.....	195	1,651	0.6	26	3,437,812	0.5	30	2,336,192	0.4	30
Alabama.....	274	1,117	0.4	33	2,768,247	0.4	31	2,102,254	0.4	31
North Carolina.....	322	1,376	0.5	31	2,497,493	0.3	32	1,852,764	0.3	32
Utah.....	122	967	0.4	35	2,404,602	0.3	33	1,631,341	0.3	34
Montana.....	135	691	0.3	41	2,111,229	0.3	34	1,708,569	0.3	33
Arkansas.....	205	981	0.4	34	2,082,365	0.3	35	1,546,742	0.3	35
West Virginia.....	235	1,255	0.5	32	1,992,036	0.3	36	1,451,498	0.3	38
South Dakota.....	392	825	0.3	38	1,975,976	0.3	37	1,519,482	0.3	36
North Dakota.....	330	788	0.3	39	1,909,514	0.3	38	1,469,733	0.3	37
Florida.....	174	905	0.3	36	1,865,848	0.3	39	1,431,639	0.3	39
South Carolina.....	161	834	0.3	37	1,600,591	0.2	40	1,260,672	0.2	40
Mississippi.....	225	736	0.3	40	1,307,604	0.2	41	1,007,511	0.2	41
Idaho.....	132	468	0.2	44	1,148,033	0.2	42	905,129	0.2	42
New Hampshire.....	143	677	0.3	42	1,130,647	0.2	43	871,858	0.2	43
Vermont.....	115	666	0.3	43	1,038,843	0.1	44	789,033	0.1	44
Arizona.....	64	268	0.1	47	784,487	0.1	45	616,420	0.1	45
New Mexico.....	93	283	0.1	46	588,782	0.1	46	467,739	0.1	46
Nevada.....	54	180	0.1	48	519,243	0.1	47	406,728	0.1	47
Wyoming.....	65	162	0.1	49	489,544	0.1	48	399,472	0.1	48
Delaware.....	48	288	0.1	45	480,464	0.1	49	342,912	0.1	49

New York is by far the most important state in the printing and publishing industry. This state reported nearly one-fourth of all the wage earners in the industry and almost three-tenths of the total value of prod-

ucts. Illinois ranked second and Pennsylvania third. The majority of the states held the same or practically the same rank in "value added by manufacture" as in value of products.

MANUFACTURES.

Book and job printing.—Table 6 summarizes, by states, the more important statistics for the book-publishing and job-printing branch of the industry.

The ranking of the states in this branch of the industry corresponds closely with their ranking in the industry as a whole, the first eight states having the same rank in each case.

For New York, the leading state, the percentages of increase from 1899 to 1909 were somewhat higher than those for the United States as a whole. Of the 10 states which led in value of products in 1909, Indiana showed the most rapid increase from 1899 to 1909 both in average number of wage earners (139.5 per cent), and in value of products (243.3 per cent).

Table 6

STATE.	Number of establishments: 1909	Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. <sup>1</sup>													
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Wage earners (average number).			Value of products.			Value added by manufacture.				
				1909	1904			1909	1904			1909	1904	1909	1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904
United States.	10,708	108,687	100.0			\$250,925,934	100.0			\$173,275,387	100.0			60.8	23.9	29.8	106.0	37.4	49.9	102.4	33.3	51.0		
New York	2,185	26,580	24.5	1	1	69,706,292	27.8	1	1	50,676,333	29.2	1	1	63.3	26.6	29.0	121.9	39.2	59.4	123.0	33.4	67.2		
Illinois	1,034	16,005	15.3	2	2	39,474,143	15.7	2	2	26,819,177	15.5	2	2	58.8	28.4	23.7	99.7	39.5	43.2	86.7	35.0	38.3		
Pennsylvania	1,030	9,618	8.8	3	3	21,810,516	8.7	3	3	14,985,773	8.1	3	3	33.8	9.2	22.5	70.0	14.5	48.4	57.2	6.5	47.6		
Massachusetts	692	7,064	6.5	4	4	17,138,951	6.8	4	4	12,515,638	7.2	4	4	30.2	17.3	10.9	40.5	38.6	1.4	34.6	37.3	-1.0		
Ohio	664	6,814	6.3	5	5	14,987,412	6.0	5	5	9,924,970	5.7	5	5	47.7	16.2	21.7	88.7	30.0	45.2	91.2	27.7	49.7		
Missouri	392	5,821	5.4	6	6	12,240,660	4.9	6	6	8,086,641	4.7	6	6	66.5	21.1	37.5	100.8	25.1	60.5	124.0	20.5	80.7		
California	2,907	2,907	2.7	9	7	7,438,072	3.0	7	7	5,046,631	2.9	7	7	80.8	14.4	58.0	171.2	29.0	110.1	166.6	21.3	119.8		
Michigan	335	3,112	2.9	8	9	6,185,479	2.5	8	8	4,237,202	2.4	8	8	98.1	37.5	44.1	161.5	56.1	67.6	151.1	60.2	56.7		
Indiana	234	3,121	2.9	7	8	5,680,867	2.3	9	9	3,869,744	2.2	9	9	130.5	29.8	84.5	243.3	46.0	66.6	135.1	57.1	49.6		
Minnesota	223	2,070	1.9	10	11	4,602,128	1.8	10	11	3,133,003	1.8	10	10	92.7	16.6	65.4	143.4	35.1	80.2	134.6	28.5	82.6		
Texas	211	1,730	1.6	12	15	4,110,397	1.6	11	12	2,832,560	1.6	11	12	140.9	42.9	68.7	245.5	75.6	96.8	231.4	77.7	80.4		
Maryland	183	1,787	1.6	11	12	3,657,154	1.5	12	13	2,460,068	1.4	12	15	37.0	29.1	6.1	62.4	60.8	0.9	74.1	67.9	3.7		
New Jersey	315	1,718	1.6	13	10	3,655,413	1.5	13	10	2,253,207	1.3	13	11	18.7	-6.8	27.4	79.3	1.0	77.5	67.7	-6.7	79.6		
Wisconsin	196	1,575	1.4	15	16	2,959,012	1.2	14	15	1,963,145	1.1	15	16	120.0	35.2	62.7	204.6	47.8	106.1	202.6	43.8	110.4		
Connecticut	206	1,638	1.5	14	14	2,939,348	1.2	15	14	2,058,469	1.2	14	14	67.1	24.5	34.3	56.5	35.1	15.8	60.7	37.4	14.0		
Iowa	182	1,242	1.1	19	20	2,775,855	1.1	16	19	1,797,564	1.0	17	19	45.3	46.5	-0.8	129.4	70.1	34.9	125.1	66.6	35.2		
Virginia	142	1,322	1.2	18	17	2,761,673	1.1	17	21	1,907,486	1.1	16	21	93.8	32.9	45.9	154.8	77.5	43.5	153.7	87.4	35.4		
Tennessee	123	1,369	1.3	16	18	2,534,189	1.0	18	18	1,686,767	1.0	18	20	63.6	42.0	15.2	102.7	51.3	34.0	107.1	58.0	30.6		
Kentucky	117	1,352	1.2	17	13	2,307,423	0.9	19	16	1,632,455	0.9	20	17	90.7	1.3	88.3	136.6	24.8	89.5	158.6	28.4	101.4		
Washington	159	924	0.8	22	26	2,358,505	0.9	20	24	1,672,622	1.0	19	22	203.9	72.7	76.0	341.1	90.2	131.9	323.4	81.3	133.5		
Colorado	104	1,003	0.9	21	21	2,211,325	0.9	21	20	1,531,738	0.9	21	18	101.8	20.4	67.6	113.4	37.0	55.7	101.8	33.8	50.8		
Georgia	113	1,036	1.0	20	19	2,152,840	0.9	22	25	1,466,502	0.8	22	25	28.0	22.3	4.7	210.3	82.5	70.0	225.1	92.2	69.2		
Nebraska	101	720	0.7	24	23	1,736,323	0.7	23	23	1,141,013	0.7	24	23	31.1	11.6	17.5	97.0	36.5	44.8	106.1	28.9	52.9		
Rhode Island	92	843	0.8	23	22	1,706,716	0.7	24	22	1,159,380	0.7	23	24	35.7	18.2	14.8	76.4	32.3	33.3	91.5	35.5	41.3		
Kansas	121	639	0.6	25	27	1,556,168	0.6	25	27	1,024,776	0.6	26	27	66.4	41.1	18.0	134.8	92.2	21.1	153.3	37.4	37.1		
Oregon	95	575	0.5	28	30	1,508,501	0.6	26	28	1,034,051	0.6	25	28	261.6	90.4	89.9	320.0	99.9	114.6	339.3	106.0	113.3		
Dist. Columbia	80	601	0.6	27	25	1,249,735	0.5	27	17	922,994	0.5	27	13	-12.1	-3.0	-10.4	53.3	-28.2	113.5	49.0	-38.7	143.1		
Louisiana	84	635	0.6	26	24	1,248,770	0.5	28	26	840,533	0.5	28	20	39.3	-1.2	41.0	113.8	15.5	85.1	65.6	15.1	69.9		
Oklahoma	61	328	0.3	32	41	885,449	0.4	29	39	539,933	0.3	31	39	84.0	26.3	45.7	168.6	58.8	69.1	190.5	58.5	83.3		
Alabama	65	471	0.4	30	29	856,220	0.3	30	30	503,000	0.3	30	30	84.0	26.3	45.7	168.6	58.8	69.1	190.5	58.5	83.3		
North Carolina	91	549	0.5	29	31	826,447	0.3	31	31	557,532	0.3	30	31	230.7	104.8	61.4	290.3	111.1	84.8	345.6	104.3	118.1		
Utah	32	296	0.3	33	33	766,551	0.3	32	32	450,048	0.3	33	32	153.0	75.1	44.4	332.4	130.4	87.7	300.9	69.8	100.7		
Maine	87	454	0.4	31	28	672,053	0.3	33	29	469,046	0.3	32	29	64.5	6.8	54.0	61.8	7.1	51.1	66.4	11.0	49.9		
Arkansas	38	284	0.3	34	38	612,853	0.2	34	35	386,754	0.2	34	35	173.1	93.2	41.3	252.2	137.9	48.0	255.8	116.4	64.4		
South Carolina	38	267	0.2	35	37	444,645	0.2	35	38	306,450	0.2	36	38	25.9	75.7	28.3	59.6	129.7	30.5	62.4	144.9	-33.7		
Florida	38	237	0.2	38	36	439,957	0.2	36	34	322,094	0.2	35	34	134.7	53.9	52.5	257.6	65.0	116.6	.....	68.9	.....		
West Virginia	52	253	0.2	37	32	418,066	0.2	37	33	290,057	0.2	37	33	145.6	31.1	87.4	227.3	43.6	128.0	.....	39.7	.....		
Vermont	54	259	0.2	36	35	378,892	0.2	38	37	266,977	0.2	38	37	78.6	61.9	10.3	64.6	60.1	2.9	60.9	60.3	2.2		
New Hampshire	66	194	0.2	39	34	329,405	0.1	39	36	235,035	0.1	39	36	.....	20.5	.....	147.5	35.6	82.5	.....	33.1	.....		
Mississippi	27	156	0.1	40	40	303,269	0.1	40	44	215,484	0.1	40	43	.....	.....	.....	86.6	161.9	-28.7	66.5	.....	-40.6		
Montana	15	81	0.1	43	43	278,750	0.1	41	42	207,291	0.1	41	42	.....	.....	.....	.....	134.9	.....	.....	.....	.....		
North Dakota	16	99	0.1	42	42	242,675	0.1	42	40	170,301	0.1	42	41	.....	.....	.....	83.8	53.4	19.8	.....	59.1	.....		
South Dakota	13	73	0.1	44	44	184,657	0.1	43	43	114,536	0.1	43	44	.....	.....	.....	.....	58.6	.....	.....	.....	.....		
Delaware	17	108	0.1	41	39	157,725	0.1	44	41	102,754	0.1	44	40	.....	.....	.....	.....	42.6	3.6	37.7	.....	-4.4		
Idaho	16	52	(*)	45	47	130,907	(*)	45	47	100,555	0.1	45	46	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Arizona	7	52	(*)	45	45	120,354	(*)	46	45	83,662	(*)	46	45	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Nevada	4	29	(*)	46	49	61,032	(*)	47	49	46,498	(*)	47	48	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Wyoming	4	13	(*)	47	46	38,566	(*)	48	46	26,030	(*)	48	47	.....	.....	.....	.....	.....	.....	.....	.....	.....		
New Mexico	4	8	(*)	48	48	17,125	(*)	49	48	12,626	(*)	49	49	.....	.....	.....	.....	.....	.....	.....	.....	.....		

<sup>1</sup> A minus sign (-) denotes decrease. Percentages not shown where base is less than 100 for wage earners, or less than \$100,000 for value of products or value added by manufacture, or where to give percentages would lead to the disclosure of individual operations.  
<sup>2</sup> Less than one-tenth of 1 per cent.

Music printing and publishing.—Table 7 summarizes, by states, the more important statistics for establishments engaged solely in the printing, or chiefly in the printing and publishing, or in the publishing only, of music.

Only 7 states are shown separately in this table, though the industry was reported from 19 states and

Table 7

PRINTING AND PUBLISHING, MUSIC.

STATE.	Number of establishments: 1909	Wage earners.		Value of products.		Value added by manufacture.		Per cent of increase. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Amount: 1909	Per cent of total: 1909	Amount: 1909	Per cent of total: 1909	Wage earners (average number).			Value of products.			Value added by manufacture.		
								1899-1909	1901-1909	1899-1904	1899-1909	1901-1909	1899-1904	1899-1909	1901-1909	1899-1904
United States.....	178	738	100.0	\$5,575,903	100.0	\$4,589,701	100.0	-5.1	27.9	-25.8	145.4	34.4	82.5	151.8	27.3	97.9
New York.....	71	383	51.9	3,110,433	55.8	2,697,368	58.8	78.1	34.9	32.1	264.3	43.5	153.9	289.1	40.9	176.1
Illinois.....	24	62	8.4	940,517	17.0	663,685	14.5				235.3	63.4	105.2	179.5	28.0	118.3
Massachusetts.....	11	102	13.8	468,197	8.4	394,128	8.6	-36.2		-43.8	14.9	-9.3	26.6	24.9	-0.2	25.2
Ohio.....	15	60	8.1	384,537	6.9	298,594	6.5				47.5	43.8	2.6	26.0	28.6	-2.0
Pennsylvania.....	20	80	10.8	375,823	6.7	309,432	6.7	-66.1		-70.8	0.7	-11.6	13.8	17.0	-15.1	37.7
Michigan.....	4	25	3.4	85,706	1.5	41,131	0.9									
Missouri.....	7	11	1.5	62,159	1.1	55,211	1.2									
All other states.....	26	16	2.0	142,441	2.6	130,182	2.8									

<sup>1</sup> A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners, or is less than \$100,000 for value of products or value added by manufacture, or where to give percentages would lead to the disclosure of individual operations.

Newspapers and periodicals.—Table 8 summarizes, by paper and periodical branch of the printing and publishing industry, the more important statistics for the news-

Table 8

PRINTING AND PUBLISHING, NEWSPAPERS AND PERIODICALS.

STATE.	Number of establishments: 1909	Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Wage earners (average number).			Value of products.			Value added by manufacture.		
											1899-1909	1901-1909	1899-1904	1899-1909	1901-1909	1899-1904	1899-1909	1901-1909	1899-1904
United States.....	18,871	108,672	100.0	\$408,090,122	100.0		\$308,730,517	100.0		14.9	12.2	2.4	82.1	31.3	38.7	78.7	29.2	38.3	
New York.....	1,589	19,312	17.8	111,826,233	27.5	1	85,846,266	27.8	1	17.3	19.1	-1.5	77.6	30.4	36.2	77.2	27.5	39.0	
Pennsylvania.....	1,152	10,939	10.1	41,419,477	10.2	2	28,991,148	9.4	3	14.4	8.1	5.8	78.2	36.7	30.3	67.8	31.8	27.3	
Illinois.....	1,396	8,289	7.6	39,794,109	9.8	3	30,467,415	9.9	2	10.8	15.0	-3.7	105.1	38.9	47.6	99.6	40.2	42.4	
Massachusetts.....	446	6,252	5.8	23,393,517	5.8	4	17,312,184	5.6	4	15.1	15.0	0.1	39.5	11.3	25.4	34.8	11.5	20.9	
Ohio.....	890	6,462	5.9	21,453,156	5.3	5	16,351,381	5.3	5	1.6	4.3	-2.6	76.0	30.7	34.6	75.7	30.1	35.1	
Missouri.....	863	4,060	3.7	15,759,042	3.9	6	11,775,650	3.8	7	8.0	-1.4	9.6	70.3	19.8	42.1	67.0	19.5	39.8	
California.....	705	3,650	3.4	15,238,695	3.8	7	12,085,985	3.9	6	36.0	3.2	31.8	122.2	31.0	69.7	122.3	30.4	70.4	
Minnesota.....	688	3,193	2.9	10,664,883	2.6	8	8,283,756	2.7	8	17.6	24.2	-5.3	84.2	33.5	33.0	75.6	37.5	27.8	
Iowa.....	908	3,452	3.2	8,984,413	2.2	9	6,784,297	2.2	10	11	1.7	2.8	-1.0	82.6	34.9	34.9	76.1	29.6	
Michigan.....	661	2,938	2.7	8,804,189	2.2	10	6,820,939	2.2	9	10	0.8	-6.7	8.0	72.0	35.4	66.5	29.5	28.6	
Indiana.....	637	3,457	3.2	8,185,958	2.0	11	6,243,294	2.0	11	9	-15.2	4.8	-19.2	34.3	12.9	19.0	34.2	9.8	
Texas.....	849	2,644	2.4	7,408,772	1.8	12	5,880,777	1.9	12	12	44.0	10.0	21.5	118.6	30.1	60.6	113.6	32.9	
Wisconsin.....	590	2,612	2.4	6,923,631	1.7	13	5,263,639	1.7	13	13	-2.5	-4.2	1.8	68.7	24.5	35.5	64.4	35.8	
Washington.....	330	1,573	1.5	6,622,041	1.6	14	5,194,188	1.7	14	17	151.3	32.3	89.9	401.3	93.9	158.5	366.1	92.0	
New Jersey.....	326	2,410	2.2	6,068,017	1.5	15	4,655,891	1.5	15	14	16.0	13.3	2.5	62.6	35.2	20.3	61.0	31.6	
Kansas.....	666	2,476	2.3	5,140,503	1.3	16	3,482,982	1.1	18	20	40.2	27.6	9.9	118.9	64.8	32.8	91.9	42.5	
Nebraska.....	567	1,679	1.5	4,877,342	1.2	17	3,775,381	1.2	18	16	18.4	11.2	6.4	91.0	31.8	45.0	99.9	35.2	
Tennessee.....	284	1,830	1.4	4,598,257	1.1	18	3,606,754	1.1	17	18	60.9	12.4	43.1	108.3	35.6	63.7	90.4	30.8	
Colorado.....	327	1,216	1.1	4,487,712	1.1	19	3,454,564	1.1	19	15	-6.7	15.5	-19.2	77.7	16.9	52.0	71.2	15.2	
Georgia.....	322	1,811	1.2	4,111,006	1.0	20	3,252,138	1.0	20	23	24.9	16.1	7.5	143.7	54.7	57.5	147.1	55.5	
Maryland.....	148	980	0.9	3,653,521	0.9	21	2,759,800	0.9	21	19	-35.9	-8.9	-29.6	39.5	13.5	22.9	34.9	7.6	
Kentucky.....	302	1,964	1.3	3,987,851	0.8	22	2,669,605	0.9	23	21	18.2	12.0	5.5	51.2	18.0	28.2	48.7	14.3	
Oregon.....	215	782	0.7	3,324,597	0.8	23	2,732,667	0.9	22	27	28.2	25.5	3.8	208.3	74.1	77.1	226.0	78.7	
Dist. Columbia.....	55	700	0.6	3,183,726	0.8	24	2,552,395	0.8	24	25	16.7	63.6	-23.7	73.0	52.7	13.2	63.8	45.9	
Connecticut.....	132	1,125	1.0	3,168,850	0.8	25	2,404,430	0.8	25	22	-2.3	-0.7	-1.6	48.7	14.4	30.0	41.7	9.3	
Oklahoma.....	533	1,324	1.2	3,011,885	0.7	26	2,373,909	0.8	26	28	156.1	24.0	106.6	359.3	55.6	195.5	364.9	56.7	
Maine.....	100	1,098	1.0	2,587,690	0.6	27	1,749,940	0.6	29	24	-16.1	-14.1	-2.4	18.2	-2.2	20.8	4.4	-10.8	
Louisiana.....	170	740	0.7	2,360,051	0.6	28	1,109,546	0.6	28	26	-15.2	17.5	-27.8	64.7	14.5	43.9	60.8	8.0	
Virginia.....	217	980	0.9	2,273,053	0.6	29	1,844,734	0.6	27	29	27.1	18.9	6.9	98.5	36.3	45.6	97.8	37.0	
Alabama.....	204	617	0.6	1,873,970	0.5	30	1,482,024	0.5	31	31	13.6	13.8	-0.2	122.8	33.1	67.4	117.2	29.6	
Montana.....	118	605	0.6	1,820,270	0.4	31	1,492,200	0.5	30	32	33.0	43.0	-7.0	99.7	33.1	50.0	102.2	35.8	
South Dakota.....	378	752	0.7	1,790,294	0.4	32	1,404,521	0.5	32	37	78.2	40.0	27.3	182.8	62.0	74.6	177.5	55.4	
Rhode Island.....	43	454	0.4	1,727,900	0.4	33	1,332,782	0.4	33	30	-7.0	-15.8	10.4	83.7	17.5	56.3	72.0	13.0	
North Carolina.....	231	827	0.8	1,671,046	0.4	34	1,295,232	0.4	35	33	26.6	17.6	7.7	102.0	32.4	62.5	93.2	29.8	
North Dakota.....	314	689	0.6	1,666,839	0.4	35	1,299,432	0.4	34	38	111.3	62.4	38.7	183.5	75.0	62.0	177.1	69.6	
West Virginia.....	181	974	0.9	1,528,039	0.4	36	1,138,277	0.4	37	34	37.8	29.7	6.2	68.4	21.0	39.2	58.2	16.0	
Arkansas.....	257	697	0.6	1,469,612	0.4	37	1,159,988	0.4	36	35	16.2	-6.8	24.7	75.0	24.0	41.2	73.7	22.8	
Florida.....	136	668	0.6	1,425,891	0.4	38	1,109,546	0.4	38	40	119.0	71.7	27.5	196.8	63.4	81.6	208.4	63.5	
Utah.....	85	564	0.5	1,358,849	0.3	39	1,052,109	0.3	39	36	30.9	61.1	-18.8	128.9	19.8	91.0	131.1	13.2	
South Carolina.....	122	558	0.5	1,144,051	0.3	40	944,099	0.3	40	39	35.1	18.5	14.0	124.1	35.5	65.6	128.7	35.1	
Idaho.....	115	415	0.4	1,014,066	0.2	41	801,924	0.3	41	44	121.9	66.7	33.2	238.2	92.1	76.1	144.5	88.3	
Mississippi.....	197	577	0.5	1,001,482	0.2	42	789,928	0.3	42	41	31.1	21.2	8.2	78.8	25.1	42.9	77.2	22.6	
New Hampshire.....	73	476	0.4	788,232	0.2	43	625,043	0.2	43	42	-16.6	0.2	-16.8	4.5	10.0	-5.1	6.7	10.4	
Arizona.....	57	216	0.2	658,133	0.2	44	532,758	0.2	44	45	55.4	39.4	11.5	177.7	68.3	65.0	179.5	61.1	
Vermont.....	58	398	0.4	660,263	0.2	45	514,985	0.2	45	43	-8.7	-10.4	1.8	18.9	-6.4	27.0	19.3	-3.8	
New Mexico.....	88	268	0.3	564,749	0.1	46	450,425	0.1	46	47	88.7	88.7		185.9	101.8	41.7	174.8	65.5	
Nevada.....	50	151	0.1	468,211	0.1	47	360,230	0.1	48	45				912.6	81.2	137.7		63.7	
Wyoming.....	61	149	0.1	451,178	0.1	48	373,442	0.1	47	46	73.3	35.							

MANUFACTURES.

As the great bulk of newspaper circulation is local in character, the rank of a state in the publication of newspapers and periodicals is likely to correspond roughly with its rank in population. The publication of periodicals other than newspapers is, however, very largely confined to a few great cities, from which these publications are distributed over a wide area, so that the rank of a state in this line of printing and publishing may have little correspondence with its rank in population.

New York, which was first in population in 1910, was also first in value of products of newspapers and periodicals in 1909; Pennsylvania was second and Illinois third in both respects. Massachusetts, however, although sixth in population, ranked fourth in the value of products of this branch of the industry, and

Ohio, which was fourth in population, ranked fifth in value of products. But the greatest difference in this respect shown by any of the leading states appears in the case of Minnesota, which, although nineteenth in population, was eighth in the value of products reported by establishments publishing newspapers and periodicals.

The highest percentage of increase in average number of wage earners from 1899 to 1909 was shown by Oklahoma (156.1 per cent); the highest in value of products (401.3 per cent) and in value added by manufacture (375 per cent) by the state of Washington.

**Bookbinding and blank-book making.**—Table 9 summarizes, by states, the more important statistics for the bookbinding and blank-book making branch of the industry.

**Table 9** BOOKBINDING AND BLANK-BOOK MAKING.

STATE.	Number of establishments: 1909	Wage earners.		Value of products.		Value added by manufacture.		Per cent of increase. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Amount: 1909	Per cent of total: 1909	Amount: 1909	Per cent of total: 1909	Wage earners (average number).			Value of products.			Value added by manufacture.		
								1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904
		<b>United States</b> .....	1,054	19,938	100.0	\$31,742,416	100.0	\$20,112,510	100.0	24.8	12.6	10.9	52.7	25.8	21.3	53.7
New York.....	354	8,430	42.3	13,544,524	42.7	8,614,698	42.8	17.9	5.6	11.6	49.7	21.3	23.4	45.6	17.7	23.7
Massachusetts.....	94	2,763	13.9	3,729,355	11.7	2,415,784	12.0	5.9	10.3	-4.0	3.1	9.9	-6.2	9.6	21.8	-10.0
Pennsylvania.....	122	2,098	10.5	3,401,166	10.7	2,002,591	10.0	30.6	5.7	23.6	70.6	14.6	48.9	54.5	9.3	41.3
Illinois.....	92	1,749	8.8	2,838,815	8.9	1,892,057	9.4	31.6	12.0	17.5	44.0	10.6	30.2	73.8	16.0	49.8
Michigan.....	32	781	3.9	1,634,672	5.1	897,403	4.5	300.5	244.1	16.4	595.4	272.2	86.8	502.7	310.3	46.9
Ohio.....	52	628	3.1	884,715	2.8	597,304	3.0	58.2	64.0	-3.5	61.1	93.6	16.8	57.0	88.7	-16.3
Missouri.....	30	529	2.7	810,126	2.6	563,610	2.8	52.9	37.8	11.0	110.8	68.1	25.4	115.7	60.7	34.2
New Jersey.....	30	548	2.7	795,657	2.5	486,134	2.4	131.2	85.8	24.5	234.5	96.0	70.6	187.1	66.4	72.5
Wisconsin.....	32	592	3.0	787,240	2.5	460,563	2.3	4.8	-13.1	20.5	32.7	-0.7	33.6	44.8	2.1	41.9
California.....	28	290	1.5	608,659	1.9	449,332	2.2	28.9	-38.0	108.0	154.9	-4.3	166.3	155.8	-1.6	160.0
Minnesota.....	23	240	1.2	445,653	1.4	273,320	1.4	19.4	35.6	-11.9	24.9	35.7	-7.9	69.2	18.1	43.2
Indiana.....	16	142	0.7	412,641	1.3	160,729	0.8	-34.6	.....	-57.1	-17.0	43.8	-42.3	-25.2	47.2	-49.1
Kansas.....	7	81	0.4	219,844	0.7	151,700	0.8	.....	.....	.....	.....	4.9	.....	.....	.....	.....
Maryland.....	19	183	0.9	181,519	0.6	143,004	0.7	-6.6	24.5	-25.0	4.7	28.0	-18.2	4.3	27.5	-18.2
Virginia.....	6	166	0.8	179,073	0.6	111,837	0.6	45.6	-1.8	48.2	.....	36.8	.....	.....	.....	.....
Maine.....	8	99	0.5	178,069	0.6	117,206	0.6	.....	-2.0	.....	.....	39.9	.....	.....	.....	.....
Iowa.....	14	75	0.4	145,866	0.5	112,522	0.6	.....	.....	.....	.....	4.2	.....	.....	9.1	.....
District of Columbia.....	9	64	0.3	140,190	0.4	80,924	0.4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut.....	17	64	0.3	101,422	0.3	64,777	0.3	.....	.....	.....	.....	-3.0	.....	.....	.....	.....
Washington.....	12	45	0.2	101,315	0.3	68,511	0.3	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states.....	67	371	1.9	601,895	1.9	447,604	2.2	.....	.....	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners, or is less than \$100,000 for value of products or value added by manufacture, or where to give percentages would lead to the disclosure of individual operations.

New York, which led in this branch of the industry, reported 42.7 per cent of the total value of products in 1909. Massachusetts was second and Pennsylvania third, but the production of these two states combined was slightly more than one-half that of New York alone.

Of the states for which figures are given, Michigan reported the highest percentages of increase from 1899 to 1909 in the average number of wage earners (300.5 per cent) and in value of products (595.4 per cent).

**Engraving, steel and copper plate, including plate**

**printing.**—Table 10 summarizes, by states, the more important statistics for establishments engaged primarily in steel and copper plate engraving, including plate printing.

The three leading states in 1909 were New York, Illinois, and Pennsylvania. In number of wage earners, value of products, and value added by manufacture, the percentage of gain for the decade 1899-1909 was much higher in Illinois than in either of the other two states.

Table 10

ENGRAVING, STEEL AND COPPER PLATE, INCLUDING PLATE PRINTING.

STATE.	Number of establishments: 1909	Wage earners.		Value of products.		Value added by manufacture.		Per cent of increase. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Amount: 1909	Per cent of total: 1909	Amount: 1909	Per cent of total: 1909	Wage earners (average number).			Value of products.			Value added by manufacture.		
								1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904
								1909	1909	1904	1909	1909	1904	1909	1909	1904
United States.....	316	5,328	100.0	\$9,432,479	100.0	\$7,214,880	100.0	61.2	48.8	8.4	84.9	58.7	16.5	85.4	64.4	12.8
New York.....	96	2,091	39.3	4,219,344	44.7	3,290,600	45.6	24.7	16.5	7.0	54.7	32.8	16.5	64.3	42.8	15.0
Illinois.....	33	976	18.3	1,740,554	18.5	1,221,317	16.9	191.3	120.8	31.9	247.0	128.2	52.1	195.8	123.8	32.1
Pennsylvania.....	40	978	18.4	1,498,485	15.9	1,137,930	15.8	75.0	66.0	5.7	85.9	62.5	14.4	83.7	65.6	10.9
Massachusetts.....	21	307	5.8	492,654	5.2	397,438	5.5	59.1	80.1	-14.5	39.3	84.9	-24.7	36.5	102.2	-32.5
Missouri.....	13	110	2.1	157,074	1.7	123,261	1.7				35.2	1.5	33.2		1.2	
New Jersey.....	8	90	1.7	140,148	1.5	120,514	1.7									
District of Columbia.....	7	101	1.8	131,588	1.4	106,854	1.5									
Kentucky.....	4	106	2.0	119,924	1.3	92,300	1.3									
Oregon.....	7	62	1.0	109,732	1.2	94,726	1.3									
California.....	10	46	0.9	101,678	1.1	81,715	1.1									
All other states.....	77	469	8.8	709,298	7.5	548,135	7.6									

<sup>1</sup> A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners, or less than \$100,000 for value of products or value added by manufacture.

Lithographing.—Table 11 summarizes, by states, the more important statistics for establishments engaged primarily in lithographing. New York, Ohio, and Illinois were the leading states in 1909. Decreases for

the decade in number of wage earners, value of products, and value added by manufacture are shown in several states, but gains in other states resulted in marked increases for the United States.

Table 11

LITHOGRAPHING.

STATE.	Number of establishments: 1909	Wage earners.		Value of products.		Value added by manufacture.		Per cent of increase. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Amount: 1909	Per cent of total: 1909	Amount: 1909	Per cent of total: 1909	Wage earners (average number).			Value of products.			Value added by manufacture.		
								1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904
								1909	1909	1904	1909	1909	1904	1909	1909	1904
United States.....	318	15,073	100.0	\$34,109,233	100.0	\$22,178,502	100.0	16.0	19.5	-2.9	53.4	35.1	13.5	54.5	31.3	17.7
New York.....	131	6,324	42.0	14,539,656	42.6	9,326,957	42.1	-0.2	2.0	-2.7	31.4	16.3	13.0	28.2	10.2	16.4
Ohio.....	24	1,736	11.5	3,870,147	11.3	2,517,059	11.3	3.5	30.1	-20.5	41.7	46.2	-3.1	54.3	44.2	7.0
Illinois.....	29	963	6.4	2,440,952	7.2	1,502,566	6.8	53.6	51.4	1.4	74.3	69.6	2.8	102.5	56.7	29.2
Massachusetts.....	15	1,044	6.9	2,222,332	6.5	1,529,283	6.9	-3.2	16.8	-17.1	24.2	29.7	-4.2	24.0	34.3	-7.7
Pennsylvania.....	28	983	6.5	2,078,712	6.1	1,304,556	5.9	31.6	30.5	0.8	80.1	48.1	27.7	76.4	47.9	10.3
California.....	15	663	4.4	1,043,923	4.8	1,040,061	4.7	57.5	38.7	13.5	123.7	62.3	40.9	131.3	69.6	44.9
Wisconsin.....	10	554	3.7	1,153,013	3.4	758,901	3.4	29.7	12.1	15.7	61.1	34.9	19.4	53.4	30.8	17.3
Maryland.....	6	390	2.6	798,601	2.3	484,941	2.2	38.8	18.5	17.1	59.8	24.4	28.5	51.9	18.1	28.7
Missouri.....	12	259	1.7	622,092	1.8	420,028	1.9	-32.7	-25.6	-9.6	-9.6	-18.1	10.4	-10.7	-15.3	5.4
Michigan.....	5	316	2.1	567,765	1.7	360,181	1.6	-7.9	-12.2	5.0	20.9	-21.0	52.9	13.7	-27.7	57.2
Washington.....	3	70	0.5	185,491	0.5	114,214	0.5									
All other states.....	40	1,771	11.7	3,980,549	11.7	2,819,755	12.7									

<sup>1</sup> A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners, or less than \$100,000 for value of products.

PERSONS ENGAGED IN THE INDUSTRY.

Summary: 1909.—Table 12 shows, for 1909, the number of persons engaged in the printing and publishing industry as a whole and in each of its six branches, classified according to occupational status and sex, and in the case of wage earners, according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

The average number of persons engaged in the industry as a whole during 1909 was 388,466, of whom 258,434, or 66.5 per cent, were wage earners,

49,332, or 12.7 per cent, proprietors and officials, and 80,700, or 20.8 per cent, clerks, this class including other subordinate salaried employees. Of the total number of persons engaged in the industry, 301,681, or 77.7 per cent, were males, and 86,785, or 22.3 per cent, females.

Of the clerks and other subordinate salaried employees, 32 per cent, and of the wage earners 16 years of age and over, 23 per cent, were females. The average number of wage earners under 16 years of age was only 6,333, of which number about one-sixth were girls. Children constituted only 2.5 per cent of the total number of wage earners.

Table 12

BRANCH OF INDUSTRY AND CLASS OF PERSONS.

	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
<b>Printing and publishing—all branches combined</b> .....	<b>388,466</b>	<b>301,681</b>	<b>86,785</b>
Proprietors and officials.....	49,332	47,351	1,981
Proprietors and firm members.....	30,424	29,130	1,294
Salaried officers of corporations.....	7,265	6,952	313
Superintendents and managers.....	11,643	11,269	374
Clerks.....	80,700	54,905	25,795
Wage earners (average number).....	258,434	199,425	59,009
16 years of age and over.....	252,101	194,175	57,926
Under 16 years of age.....	6,333	5,250	1,083
<b>Printing and publishing, newspapers and periodicals</b> .....	<b>196,620</b>	<b>157,915</b>	<b>38,705</b>
Proprietors and officials.....	28,587	27,335	1,252
Proprietors and firm members.....	17,890	17,075	815
Salaried officers of corporations.....	3,470	3,295	175
Superintendents and managers.....	7,227	6,965	262
Clerks.....	59,361	41,312	18,049
Wage earners (average number).....	108,672	89,268	19,404
16 years of age and over.....	105,986	86,704	19,282
Under 16 years of age.....	2,686	2,474	212
<b>Printing and publishing, book and job</b> .....	<b>141,937</b>	<b>110,145</b>	<b>31,792</b>
Proprietors and officials.....	17,279	16,683	596
Proprietors and firm members.....	10,778	10,371	407
Salaried officers of corporations.....	2,940	2,841	99
Superintendents and managers.....	3,552	3,471	81
Clerks.....	15,971	9,948	6,023
Wage earners (average number).....	108,687	83,614	25,073
16 years of age and over.....	106,027	81,326	24,701
Under 16 years of age.....	2,660	2,188	472
<b>Printing and publishing, music</b> .....	<b>1,800</b>	<b>1,290</b>	<b>510</b>
Proprietors and officials.....	284	270	14
Proprietors and firm members.....	162	151	11
Salaried officers of corporations.....	70	67	3
Superintendents and managers.....	52	52	0
Clerks.....	778	421	357
Wage earners (average number).....	738	599	139
16 years of age and over.....	729	592	137
Under 16 years of age.....	9	7	2
<b>Lithographing</b> .....	<b>17,932</b>	<b>14,670</b>	<b>3,262</b>
Proprietors and officials.....	803	788	15
Proprietors and firm members.....	198	194	4
Salaried officers of corporations.....	326	318	8
Superintendents and managers.....	279	276	3
Clerks.....	2,056	1,508	488
Wage earners (average number).....	15,073	12,314	2,759
16 years of age and over.....	14,800	12,175	2,625
Under 16 years of age.....	183	139	44
<b>Bookbinding and blank-book making</b> .....	<b>23,698</b>	<b>13,375</b>	<b>10,323</b>
Proprietors and officials.....	1,792	1,714	78
Proprietors and firm members.....	1,066	1,026	40
Salaried officers of corporations.....	349	335	14
Superintendents and managers.....	377	353	24
Clerks.....	1,968	1,335	633
Wage earners (average number).....	19,938	10,320	9,618
16 years of age and over.....	19,337	10,012	9,325
Under 16 years of age.....	601	314	287
<b>Engraving, steel and copper plate, including plate printing</b> .....	<b>6,479</b>	<b>4,286</b>	<b>2,193</b>
Proprietors and officials.....	587	501	86
Proprietors and firm members.....	330	313	17
Salaried officers of corporations.....	101	96	5
Superintendents and managers.....	156	152	4
Clerks.....	568	321	245
Wage earners (average number).....	5,326	3,404	1,922
16 years of age and over.....	5,132	3,270	1,862
Under 16 years of age.....	194	128	66

In the newspaper and periodical branch of the industry, editors and managing editors are classed as "superintendents and managers," and subeditors, reporters, and other writers, if regularly employed, as "clerks." Occasional correspondents and other persons collecting information or writing articles for newspapers at space rates are not included among employees at all, and payments to them are included with miscellaneous expenses.

The proportion of female wage earners in the book-binding and blank-book making branch in 1909 was 48.2 per cent; in steel and copper plate engraving, 36.1 per cent; in the newspaper and periodical branch, 17.9 per cent; in lithographing, 18.3 per cent, and in book and job printing and publishing, 23.2 per cent.

The average number of wage earners in each state in the industry as a whole for 1909, 1904, and 1899 is given in Table 66. The average number distributed by sex and age is not shown for the individual states, but Table 67 gives such a distribution of the number employed on December 15, or the nearest representative day.

In order to compare the distribution of the persons engaged in the industry in 1909 according to occupational status with that in 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made for the industry as a whole in Table 13.

Table 13

CLASS.	PERSONS ENGAGED IN THE INDUSTRY—ALL BRANCHES COMBINED.				
	1909		1904		Per cent of increase: 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	388,466	100.0	316,047	100.0	22.9
Proprietors and firm members.....	30,424	7.8	28,368	9.0	7.2
Salaried employees.....	69,698	25.6	68,592	21.7	45.2
Wage earners (average number).....	288,434	66.5	219,087	69.3	18.0

Table 14 shows the average number of wage earners in the industry as a whole, distributed according to age, and in the case of those 16 years of age or over, according to sex, for 1909, 1904, and 1899. Little change in conditions is shown from census to census, except that the proportion of children reported was much lower in 1909 and 1904 than in 1899.

Table 14

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY—ALL BRANCHES COMBINED.					
	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	258,434	100.0	219,087	100.0	185,260	100.0
16 years of age and over.....	252,101	97.5	213,213	97.3	185,089	95.3
Male.....	194,175	75.1	163,917	74.8	146,121	74.8
Female.....	57,926	22.4	49,296	22.5	39,868	20.4
Under 16 years of age.....	6,333	2.4	5,874	2.7	9,271	4.7

Wage earners employed, by months.—Table 15 gives, for the industry as a whole, the number of wage earners employed on the 15th (or the nearest representative day) of each month during the year 1909 for 42 states and the District of Columbia in which an average of 500 or more wage earners were employed.

Table 15

WAGE EARNERS EMPLOYED IN THE INDUSTRY—ALL BRANCHES COMBINED: 1909<sup>1</sup>

STATE.	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
<b>United States</b> .....	<b>258,434</b>	<b>256,480</b>	<b>257,342</b>	<b>258,805</b>	<b>256,592</b>	<b>255,470</b>	<b>253,550</b>	<b>251,757</b>	<b>252,543</b>	<b>258,707</b>	<b>263,715</b>	<b>260,378</b>	<b>269,884</b>
Alabama.....	1,117	1,114	1,104	1,108	1,102	1,104	1,103	1,100	1,098	1,112	1,141	1,156	1,162
Arkansas.....	981	991	996	981	993	961	952	967	973	974	998	1,008	1,018
California.....	7,556	7,350	7,410	7,401	7,526	7,571	7,471	7,421	7,417	7,578	7,720	7,784	7,925
Colorado.....	2,808	2,809	2,824	2,816	2,846	2,807	2,805	2,878	2,873	2,877	2,400	2,410	2,483
Connecticut.....	2,878	2,885	2,944	2,902	2,920	2,880	2,830	2,835	2,793	2,841	2,891	2,917	2,907
District of Columbia.....	1,565	1,591	1,590	1,614	1,577	1,572	1,545	1,483	1,478	1,524	1,591	1,606	1,609
Florida.....	905	907	927	917	893	873	854	873	888	895	959	950	994
Georgia.....	2,395	2,381	2,355	2,386	2,374	2,373	2,343	2,350	2,371	2,435	2,446	2,430	2,483
Illinois.....	28,644	28,516	28,776	29,015	28,350	27,908	27,689	27,953	28,050	28,945	29,054	29,054	29,892
Indiana.....	6,756	6,738	6,701	6,764	6,764	6,749	6,690	6,670	6,617	6,742	6,889	6,870	6,883
Iowa.....	4,853	4,893	4,909	4,883	4,867	4,781	4,720	4,702	4,736	4,804	4,889	4,975	5,052
Kansas.....	3,232	3,176	3,190	3,226	3,202	3,177	3,162	3,155	3,196	3,242	3,316	3,349	3,413
Kentucky.....	3,185	3,149	3,151	3,163	3,146	3,144	3,108	3,078	3,069	3,108	3,150	3,100	3,202
Louisiana.....	1,544	1,530	1,522	1,543	1,538	1,531	1,526	1,528	1,531	1,537	1,571	1,582	1,598
Maine.....	1,651	1,672	1,725	1,789	1,701	1,632	1,884	1,558	1,537	1,555	1,627	1,695	1,730
Maryland.....	3,386	3,362	3,362	3,383	3,355	3,370	3,354	3,303	3,295	3,306	3,466	3,474	3,500
Massachusetts.....	17,532	17,750	17,750	17,757	17,643	17,351	17,260	16,889	16,748	17,413	17,707	17,988	18,158
Michigan.....	7,219	7,090	7,000	7,117	7,070	7,074	7,100	7,160	7,226	7,283	7,303	7,441	7,576
Minnesota.....	5,641	5,608	5,635	5,613	5,588	5,510	5,533	5,518	5,583	5,644	5,744	5,807	5,905
Mississippi.....	736	727	731	723	714	712	722	723	737	748	759	764	765
Missouri.....	10,790	10,587	10,744	10,784	10,747	10,747	10,618	10,503	10,584	10,817	10,967	11,161	11,218
Montana.....	691	667	676	678	676	682	687	695	700	697	709	705	717
Nebraska.....	2,320	2,279	2,284	2,294	2,315	2,300	2,285	2,303	2,335	2,358	2,446	2,446	2,418
New Hampshire.....	677	708	721	703	671	667	668	654	646	653	665	675	698
New Jersey.....	5,451	5,373	5,245	5,270	5,306	5,433	5,470	5,442	5,366	5,441	5,610	5,732	5,728
New York.....	63,120	62,621	62,849	63,423	62,637	62,481	61,751	61,100	61,422	63,138	64,241	65,534	66,147
North Carolina.....	1,376	1,351	1,369	1,376	1,387	1,364	1,386	1,346	1,362	1,397	1,388	1,433	1,403
North Dakota.....	788	771	777	769	771	785	778	782	780	794	813	817	822
Ohio.....	15,756	15,651	15,641	15,746	15,689	15,419	15,265	15,219	15,499	15,889	16,290	16,356	16,428
Oklahoma.....	1,698	1,626	1,640	1,636	1,648	1,669	1,661	1,688	1,678	1,699	1,804	1,801	1,831
Oregon.....	1,450	1,450	1,453	1,452	1,453	1,456	1,439	1,424	1,437	1,461	1,484	1,487	1,505
Pennsylvania.....	24,696	24,611	24,562	24,689	24,690	24,673	24,160	23,889	23,855	24,653	25,246	25,436	25,938
Rhode Island.....	1,454	1,411	1,413	1,423	1,430	1,420	1,426	1,416	1,456	1,505	1,556	1,556	1,570
South Carolina.....	834	817	841	839	847	848	831	816	818	828	836	843	844
South Dakota.....	825	794	803	816	824	817	825	811	821	827	855	850	858
Tennessee.....	2,914	2,790	2,851	2,873	2,830	2,857	2,925	2,904	2,932	3,011	2,998	2,982	3,002
Texas.....	4,408	4,344	4,347	4,358	4,274	4,300	4,323	4,288	4,295	4,412	4,556	4,607	4,791
Utah.....	967	984	976	974	957	984	978	925	937	962	956	978	1,004
Vermont.....	660	656	677	668	655	661	660	665	649	652	665	680	699
Virginia.....	2,555	2,542	2,526	2,544	2,524	2,532	2,507	2,504	2,517	2,566	2,604	2,642	2,652
Washington.....	2,624	2,529	2,571	2,577	2,580	2,635	2,600	2,630	2,636	2,631	2,676	2,687	2,670
West Virginia.....	1,255	1,241	1,223	1,231	1,239	1,236	1,239	1,242	1,248	1,262	1,279	1,304	1,311
Wisconsin.....	5,360	5,299	5,275	5,363	5,249	5,280	5,294	5,246	5,307	5,346	5,472	5,558	5,632

<sup>1</sup> The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

The largest number of wage earners employed during any month of 1909 was 269,884, in December, and the smallest number 251,757, in July, the minimum number being equal to 93.3 per cent of the maximum. In 1904 also the maximum number (228,441) and the minimum (212,067) were reported for December and July, respectively, the minimum number in that year being equal to 92.8 per cent of the maximum. In 32 of the states, including all of the important ones in the industry, the month of maximum employment was the same as that for the country as a whole (December); but there was considerable variation as to the month of minimum employment, only 12 states reporting July, the month returned by the country as a whole. New York and Ohio reported their minimum number of wage earners for July, Illinois for June, and Massachusetts and Pennsylvania for August.

In the two leading branches of the industry, book

and job printing, and newspaper and periodical printing and publishing, the months of maximum and of minimum employment were the same, but the variations were much more pronounced in the first named branch.

The months of maximum and minimum employment for 1909, and the number of wage earners reported for these months, are given for each state in Table 67.

Prevailing hours of labor.—In Table 16 the wage earners in the industry as a whole have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or a smaller number of hours.

Table 16

STATE.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY— ALL BRANCHES COMBINED: 1909							
	Total.	In establishments with prevailing hours—						
		48 and under.	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Be- tween 60 and 72.	72 and over.
United States.....	258,434	138,850	41,510	47,320	19,124	10,911	488	231
Alabama.....	1,117	447	32	351	99	183	.....	.....
Arkansas.....	961	419	49	182	87	237	3	4
California.....	7,556	5,485	1,038	778	119	119	17	.....
Colorado.....	2,306	1,769	77	173	308	39	10	.....
Connecticut.....	2,878	1,372	659	474	346	27	.....	.....
Dist. of Columbia.....	1,565	1,259	161	61	83	.....	1	.....
Florida.....	905	408	59	314	93	43	7	1
Georgia.....	2,395	793	226	664	302	390	.....	20
Illinois.....	28,644	18,064	4,496	3,983	1,293	629	57	122
Indiana.....	6,756	3,912	500	1,002	628	706	3	5
Iowa.....	4,853	1,720	500	1,282	568	719	3	1
Kansas.....	3,232	1,264	184	720	608	442	8	6
Kentucky.....	3,135	1,074	804	779	180	283	5	10
Louisiana.....	1,544	773	195	356	119	91	1	9
Maine.....	1,651	673	142	690	208	38	.....	.....
Maryland.....	3,386	1,170	974	1,082	240	215	.....	.....
Massachusetts.....	17,532	11,404	1,853	2,911	1,342	20	.....	2
Michigan.....	7,219	2,718	833	2,384	833	500	1	.....
Minnesota.....	6,641	1,905	2,106	863	395	210	162	.....
Mississippi.....	736	337	7	117	24	247	3	1
Missouri.....	10,790	6,457	974	1,883	856	614	5	1
Montana.....	691	339	5	177	104	6	.....	.....
Nebraska.....	2,329	971	178	792	118	288	1	11
New Hampshire.....	677	180	76	132	205	84	.....	.....
New Jersey.....	5,451	3,251	1,141	640	315	79	25	.....
New York.....	63,120	34,754	15,083	8,512	4,081	670	28	2
North Carolina.....	1,376	527	70	308	137	297	37	.....
North Dakota.....	788	377	46	268	58	39	.....	.....
Ohio.....	15,750	6,888	1,951	4,670	1,485	744	18	.....
Oklahoma.....	1,698	1,122	58	323	32	163	.....	.....
Oregon.....	1,459	1,188	81	166	7	13	4	.....
Pennsylvania.....	24,696	14,412	3,297	4,287	1,965	730	25	.....
Rhode Island.....	1,454	529	525	98	278	21	3	.....
South Carolina.....	834	336	122	126	34	196	7	13
South Dakota.....	825	207	73	447	7	91	.....	.....
Tennessee.....	2,914	1,149	386	782	262	335	.....	.....
Texas.....	4,408	2,191	608	769	320	497	29	4
Utah.....	967	438	253	69	198	7	2	.....
Vermont.....	666	181	61	317	61	46	.....	.....
Virginia.....	2,555	726	341	1,105	178	197	6	2
Washington.....	2,624	1,878	294	324	37	86	2	3
West Virginia.....	1,255	601	35	479	41	99	.....	.....
Wisconsin.....	5,360	2,219	744	1,613	333	415	22	14

More than one-half (53.7 per cent) of the wage earners employed in the industry as a whole in 1909 were in establishments where the prevailing hours were 48 or less per week, 41.8 per cent were employed in establishments where the prevailing hours were between 48 and 60, and less than three-tenths of 1 per cent were employed in establishments where the prevailing hours were over 60. In all but 6 of the states for which separate data are shown, 48 hours or less per week constituted the most common time of employment. The exceptions were Minnesota, where the prevailing hours were between 48 and 54; Maine, South Dakota, Vermont, and Virginia, where they were 54; and New Hampshire, where they were between 54 and 60.

#### CHARACTER OF OWNERSHIP.

Table 17 presents statistics with respect to the character of ownership of establishments in the printing and publishing industry as a whole for the United States.

In 1909, of the total number of establishments, 22.8 per cent were under corporate ownership, as compared with 19.3 per cent in 1904. In 1909 the value of prod-

ucts of these establishments represented 70 per cent of the total for the industry, and in 1904, 66.7 per cent. Of the 1,046 establishments shown in 1909 as operating under forms of ownership other than individual, firm, or corporate, 38 were controlled by cooperative associations. Five of these belonged to the book and job printing branch of the industry and 33 to the newspaper and periodical branch. Of the remaining 1,008 establishments under miscellaneous or unclassified forms of ownership, 60 were classed under "book and job printing," 947 under "newspapers and periodicals," and 1 under "bookbinding and blank-book making." Most of these establishments are owned by various educational, religious, commercial, fraternal, and other similar organizations. The single "bookbinding and blank-book making" establishment under "other" form of ownership was the bindery owned by Middlesex County, Mass., which binds books exclusively for the office of the register of deeds and other county offices.

Table 17

CHARACTER OF OWNERSHIP.	PRINTING AND PUBLISHING—ALL BRANCHES COMBINED.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
	Total.....	31,445	27,793	\$737,876,087
Individual.....	18,248	16,646	137,013,324	109,431,410
Firm.....	4,967	5,260	66,502,891	69,366,483
Corporation.....	7,184	5,354	516,400,736	368,729,392
Other.....	1,046	533	17,059,136	4,946,068
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	58.0	59.9	18.7	19.8
Firm.....	15.8	18.9	9.0	12.6
Corporation.....	22.8	19.3	70.0	66.7
Other.....	3.4	1.9	2.3	0.9

Table 18 gives statistics for establishments classified according to form of ownership for the 42 states and the District of Columbia employing an average of more than 500 wage earners in 1909. The 1,046 establishments under "other" forms of ownership have in this table been included with those under corporate ownership.

In 1909, 57,373 wage earners, or 22.2 per cent of the total, were employed in establishments under individual ownership; 29,227, or 11.3 per cent, in those under firm ownership; and 171,834, or 66.5 per cent, in those owned by corporations (including those under "other" ownership).

There was considerable variation among the states in the relative importance of the establishments under the three different forms of ownership. Thus, in New York, the leading state in the industry, establishments controlled by corporations constituted 33.2 per cent of the total number of establishments, gave employment to 72.4 per cent of the wage earners, and reported 75.4 per cent of the total value of products. In Mississippi, on the other hand, corporations controlled only 12.9 per cent of the establishments, and these establishments gave employment to but 19.7 per cent of the wage earners, and contributed only 24.7 per cent of the total value of products.

Table 18

PRINTING AND PUBLISHING—ALL BRANCHES COMBINED: 1909

STATE.	Number of establishments owned by—			Wage earners in establishments owned by—			Value of products of establishments owned by—			Value added by manufacture in establishments owned by—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	18,248	4,967	1,230	57,373	29,227	171,834	\$137,913,324	\$66,502,891	\$533,459,872	\$103,122,046	\$48,229,884	\$384,749,567
Alabama.....	163	52	59	410	137	570	683,299	229,582	1,855,366	548,473	179,810	1,373,971
Arkansas.....	194	66	35	412	193	376	697,547	398,252	986,566	545,670	294,601	706,471
California.....	709	194	337	1,885	719	4,952	6,762,762	1,812,739	16,456,366	5,142,337	1,398,227	12,164,010
Colorado.....	253	64	122	480	171	1,715	1,275,015	396,552	5,290,154	1,023,225	312,011	3,820,373
Connecticut.....	211	40	112	768	250	1,854	1,695,722	407,612	4,307,116	1,188,745	310,114	3,102,374
District of Columbia.....	81	18	57	447	98	1,020	865,107	215,341	3,819,044	649,235	183,525	2,971,850
Florida.....	109	20	45	273	60	566	476,367	103,628	1,285,853	374,391	77,218	950,030
Georgia.....	235	73	134	529	275	1,591	982,051	551,848	4,865,742	757,817	376,323	3,678,326
Illinois.....	1,352	423	883	3,764	2,524	22,356	10,252,467	5,610,653	71,353,970	7,889,022	4,118,519	50,558,676
Indiana.....	546	150	196	1,973	893	3,980	3,593,194	2,084,753	8,678,429	2,626,657	1,511,269	6,193,910
Iowa.....	702	208	200	1,685	729	2,439	3,399,193	1,429,501	7,299,963	2,616,071	1,086,901	5,138,588
Kansas.....	590	116	92	1,908	361	983	4,077,366	658,399	2,273,070	2,058,120	499,308	1,801,631
Kentucky.....	230	66	135	697	223	2,215	1,109,186	354,049	4,870,657	900,977	287,955	3,619,726
Louisiana.....	151	46	71	356	185	1,003	617,554	313,121	2,692,798	484,255	234,977	2,091,178
Maine.....	108	21	66	305	138	1,208	474,022	88,828	2,679,962	354,161	210,710	1,765,321
Maryland.....	209	62	100	824	728	1,834	1,529,893	2,023,281	4,806,615	1,134,455	1,329,550	3,431,866
Massachusetts.....	739	153	387	4,039	2,380	11,107	7,731,293	4,721,255	34,992,458	5,557,548	3,208,082	25,797,925
Michigan.....	595	177	270	1,805	734	4,080	3,198,694	1,407,300	12,742,347	2,405,930	985,368	9,022,517
Minnesota.....	584	169	207	1,297	545	3,799	2,852,132	1,300,754	11,829,326	2,114,132	987,307	8,784,668
Mississippi.....	159	37	29	439	152	145	721,905	262,614	323,085	558,451	187,748	261,312
Missouri.....	772	208	342	2,154	740	7,896	5,794,603	1,337,608	22,518,042	4,181,750	1,001,995	15,840,656
Montana.....	78	16	41	191	32	468	637,693	104,087	1,469,449	435,760	85,907	1,186,912
Nebraska.....	491	86	97	783	220	1,326	1,900,499	515,816	4,250,975	1,472,044	375,873	3,108,029
New Hampshire.....	104	17	22	294	77	306	468,207	124,601	537,839	338,293	100,447	433,118
New Jersey.....	442	91	151	1,345	486	3,020	2,679,391	982,232	8,671,077	1,946,114	720,267	6,194,168
New York.....	2,309	648	1,469	10,736	6,683	45,701	34,420,640	18,983,100	163,542,742	25,878,131	13,606,595	120,967,496
North Carolina.....	161	57	104	470	211	695	665,546	309,947	1,522,000	485,063	223,521	1,144,180
North Dakota.....	257	37	36	389	71	328	997,800	176,783	335,651	713,023	138,609	618,101
Ohio.....	829	283	543	2,745	1,615	11,896	6,510,373	3,232,528	31,914,405	4,891,752	2,306,498	22,554,702
Oklahoma.....	397	109	92	647	265	786	1,233,929	551,112	2,203,601	989,002	429,366	1,566,051
Oregon.....	200	47	77	375	138	946	1,108,857	371,464	3,560,202	906,158	288,325	2,742,627
Pennsylvania.....	1,445	435	581	6,029	4,101	14,566	14,139,129	8,453,297	47,991,753	10,199,621	6,064,175	31,567,634
Rhode Island.....	86	25	36	305	127	1,022	629,556	259,822	2,890,697	472,949	194,093	2,049,358
South Carolina.....	83	35	43	268	156	410	387,400	213,157	1,000,034	309,331	160,922	790,419
South Dakota.....	272	40	80	402	71	352	851,676	176,221	948,079	678,653	135,884	704,945
Tennessee.....	208	92	113	426	440	2,048	793,011	874,406	5,505,813	594,148	600,649	4,024,848
Texas.....	678	198	191	1,297	778	2,333	2,726,781	1,685,556	7,174,018	2,175,050	1,283,057	5,321,908
Utah.....	52	17	53	171	77	719	364,586	169,855	1,870,161	280,492	114,194	1,286,655
Vermont.....	74	16	25	263	98	305	363,777	166,152	528,914	263,837	117,361	407,845
Virginia.....	186	66	117	734	440	1,381	1,188,764	717,294	3,463,680	875,675	488,571	2,600,618
Washington.....	315	72	119	882	233	1,509	3,335,207	1,017,854	4,933,127	2,538,270	875,807	3,648,521
West Virginia.....	132	32	71	296	87	872	498,579	134,993	1,358,464	384,493	101,732	965,273
Wisconsin.....	501	125	207	1,301	486	3,573	2,189,286	814,780	8,886,578	1,651,255	592,961	6,230,372

<sup>1</sup> Includes 1,046 cooperative establishments reporting products valued at \$17,059,136.

SIZE OF ESTABLISHMENTS.

Classification by value of products.—Table 19 presents statistics for 1909 and 1904 for establishments in the industry as a whole, grouped according to the value of their products.

VALUE OF PRODUCTS PER ESTABLISHMENT.	PRINTING AND PUBLISHING—ALL BRANCHES COMBINED.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	31,445	27,793	\$737,876,087	\$562,473,353
Less than \$5,000.....	16,524	15,824	40,128,238	37,040,171
\$5,000 and less than \$20,000.....	9,698	7,849	93,342,071	74,540,077
\$20,000 and less than \$100,000.....	3,976	3,186	108,339,719	133,756,198
\$100,000 and less than \$1,000,000.....	1,173	889	298,983,798	221,885,094
\$1,000,000 and over.....	74	45	137,082,261	85,251,813
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	52.6	56.9	5.4	6.7
\$5,000 and less than \$20,000.....	30.8	28.2	12.6	13.5
\$20,000 and less than \$100,000.....	12.6	11.5	22.8	24.2
\$100,000 and less than \$1,000,000.....	3.7	3.2	40.5	40.2
\$1,000,000 and over.....	0.2	0.2	18.6	15.4

In 1909 and 1904 less than 1 per cent of the establishments manufactured products valued at \$1,000,000 or over. While such establishments represented a very small proportion of the entire number of establishments at both censuses, they reported 18.6 per cent of the total value of products in 1909 and 15.4 per cent in 1904. Establishments manufacturing products valued at \$100,000 and less than \$1,000,000 were the most important class, as measured by value of products, reporting 40.5 per cent of the total production for the industry, this being a slight gain in proportion for the five-year period. Each group with products valued at less than \$100,000 showed a smaller proportion of the total value of products in 1909 than in 1904.

The small establishments—that is, those manufacturing products valued at less than \$20,000—constituted more than four-fifths (83.4 per cent) of the entire number of establishments in the industry in 1909, but the value of their products amounted to

only 18.1 per cent of the total. More than half (52.6 per cent) of the establishments reported a production of less than \$5,000 each in 1909.

The average value of products per establishment increased from \$19,878 in 1904 to \$23,466 in 1909, and the average value added by manufacture, as computed from the figures in Table 3, from \$14,750 to \$17,049. The average number of wage earners per establishment increased from 7.9 in 1904 to 8.2 in 1909.

Table 20 gives for each branch of the industry the average number of wage earners, value of products, and value added by manufacture per establishment in 1909. Lithographing leads in these averages by a large margin, the printing and publishing of music following in value of products and value added by manufacture.

Table 20

BRANCH OF INDUSTRY.	AVERAGE PER ESTABLISHMENT: 1909		
	Average number of wage earners.	Value of products.	Value added by manufacture.
All branches combined	8	\$23,466	\$17,049
Printing and publishing, book and job	10	23,434	18,182
Printing and publishing, music	4	31,325	25,785
Printing and publishing, newspapers and periodicals	6	21,519	16,360
Bookbinding and blank-book making	19	30,116	19,082
Engraving, steel and copper plate, including plate printing	17	29,850	22,832
Lithographing	47	107,262	69,744

Classification by number of wage earners.—Table 21 classifies the establishments in 42 states and the District of Columbia according to the number of wage earners employed.

Table 21

STATE.	PRINTING AND PUBLISHING—ALL BRANCHES COMBINED: 1909																			
	Total.		Establishments employing—																	
			No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.		
Es-tab-lish-ments.	Wage earners (average number)	Es-tab-lish-ments.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.
United States...	31,445	258,434	6,940	17,210	40,714	5,044	52,969	1,387	44,463	490	34,853	280	41,971	64	21,269	26	17,284	4	4,911	
Alabama.....	274	1,117	47	185	460	32	322	9	265	1	70									
Arkansas.....	295	981	53	205	444	31	291	5	131											
California.....	1,240	7,556	343	648	1,505	180	1,961	42	1,347	16	1,113	10	1,115							
Colorado.....	439	2,366	118	246	540	57	595	9	296	5	326	4	600	1	261					
Connecticut.....	363	2,878	82	169	410	76	854	28	893	6	397	2	324							
Dist. of Columbia..	156	1,565	40	63	147	31	316	14	453	7	510	1	130							
Florida.....	174	905	29	112	243	23	230	7	192	3	235									
Georgia.....	442	2,305	104	253	592	61	612	17	554	5	360	2	277							
Illinois.....	2,603	28,644	708	1,218	2,948	433	4,686	144	4,505	54	3,784	34	5,372	11	3,289	6	4,000			
Indiana.....	892	6,756	140	512	1,236	187	1,880	33	1,109	13	822	6	863			1	846			
Iowa.....	1,110	4,853	158	777	1,778	135	1,378	34	1,080	3	217	3	420							
Kansas.....	798	3,232	154	544	1,195	79	796	14	432	6	416			1	393					
Kentucky.....	431	3,135	90	257	659	59	639	13	379	6	452	5	720							
Louisiana.....	268	1,544	48	164	388	40	432	13	444	2	156	1	124							
Maine.....	195	1,551	32	99	249	44	404	16	592	3	228	1	118							
Maryland.....	371	3,386	65	194	496	75	791	26	849	7	530	4	720							
Massachusetts.....	1,279	17,332	326	521	1,371	277	3,019	92	2,890	32	2,279	20	2,089	7	2,426	4	2,558			
Michigan.....	1,045	7,210	214	589	1,420	175	1,891	45	1,454	12	837	9	1,363	1	254					
Minnesota.....	950	5,641	195	584	1,268	119	1,194	35	1,166	11	775	5	718			1	520			
Mississippi.....	225	736	25	173	408	24	242	3	86											
Missouri.....	1,322	10,790	282	778	1,844	172	1,721	48	1,591	24	1,681	12	1,714	5	1,526	1	714			
Montana.....	135	691	24	92	207	11	161	5	178	3	205		1,714							
Nebraska.....	674	2,329	189	415	807	51	546	13	428	5	355	1	193							
New Hampshire.....	143	677	29	84	189	24	265	4	94	2	129									
New Jersey.....	684	5,451	150	366	966	125	1,193	25	795	9	607	7	1,219	2	671					
New York.....	4,426	63,120	1,261	1,771	4,638	885	9,574	286	9,231	111	8,089	72	10,884	25	8,543	11	7,250	4	4,911	
North Carolina.....	322	1,376	47	212	527	57	605	4	112	2	132									
North Dakota.....	330	788	60	248	431	17	152	5	205											
Ohio.....	1,655	15,756	326	817	2,060	351	3,714	101	3,161	38	2,632	18	2,562	3	1,112	1	515			
Oklahoma.....	598	1,698	166	442	893	45	432	9	281	2	122									
Oregon.....	324	1,459	72	195	416	49	497	4	118	3	208	1	220							
Pennsylvania.....	2,461	24,696	548	1,211	3,066	474	5,012	137	4,411	48	3,467	36	5,663	6	2,256	1	821			
Rhode Island.....	147	1,454	29	75	180	32	381	5	211	2	138	4	544							
South Carolina.....	161	834	19	105	293	32	287	3	107	2	147									
South Dakota.....	392	825	72	300	538	16	178	4	109											
Tennessee.....	413	2,914	111	229	536	41	394	19	629	8	588	4	514	1	253					
Texas.....	1,067	4,408	199	725	1,590	109	1,107	23	641	7	495	4	575							
Utah.....	122	967	25	65	164	23	217	6	218	1	68	2	300							
Vermont.....	115	666	18	62	157	27	257	8	252											
Virginia.....	369	2,555	62	219	546	59	644	18	550	10	693	1	122							
Washington.....	506	2,624	162	312	659	73	762	11	412	6	494	2	297							
West Virginia.....	235	1,255	30	161	390	34	356	8	273											
Wisconsin.....	833	5,360	144	500	1,139	136	1,379	33	1,116	14	1,038	6	688							

Of the 31,445 establishments reported in 1909, 22.1 per cent employed no wage earners, 54.7 per cent employed from 1 to 5 wage earners each, 16 per cent, from 6 to 20, and only 7.2 per cent, more than 20. There were only 490 establishments which employed from 51

to 100 wage earners each, 344 that employed from 101 to 500 each, and 26 that employed from 501 to 1,000. Four establishments, all in New York, reported more than 1,000 wage earners each. Of the total number of wage earners, 36.3 per cent were reported by estab-

lishments employing from 1 to 20, 17.2 per cent by establishments employing from 21 to 50, 13.5 per cent by establishments employing from 51 to 100, 24.5 per cent by establishments employing from 101 to 500, 6.7 per cent by establishments employing from 501 to 1,000, and 1.9 per cent by establishments employing more than 1,000.

**EXPENSES.**

As stated in the Introduction, the census figures for expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total reported expenses in the industry as a whole in 1909 to have been \$619,158,045, distributed as follows: Cost of materials, \$201,774,590, or 32.6 per cent; wages, \$164,628,180, or 26.6 per cent; salaries, \$103,458,251, or 16.7 per cent; and miscellaneous expenses, \$149,297,024, or 24.1 per cent. This latter item includes rent payments amounting to \$13,648,406; taxes, \$2,699,575; and payments for contract work, \$36,384,359. The remainder, besides covering advertising expenses, traveling expenses, repairs, insurance, etc., includes various special items peculiar to the publishing industry, such as royalties and other payments to authors and contributors, and costs of news service. It is because of these special items that the proportion for miscellaneous expenses is higher in this industry than in most other industries. Salaries, in this industry, represented a larger proportion of total expenses than in any other of the 43 industries of the country reporting products to the value of \$100,000,000 or more, and the proportion represented by materials was smaller than in any other of these industries with the exception of distilled liquors and malt liquors.

The percentages of the total reported expenses represented by the several classes are shown for each of the six branches of the industry in Table 22.

BRANCH OF INDUSTRY.	PERCENTAGE OF TOTAL REPORTED EXPENSES REPRESENTED BY—			
	Cost of materials.	Salaries.	Wages.	Miscellaneous expenses.
All branches combined.....	32.6	16.7	26.6	24.1
Printing and publishing, book and job..	36.5	11.8	31.3	20.4
Printing and publishing, music.....	21.9	19.7	9.8	48.7
Printing and publishing, newspapers and periodicals.....	28.9	20.6	22.1	28.3
Bookbinding and blank-book making...	42.2	11.5	35.1	11.1
Engraving, steel and copper plate, including plate printing.....	28.1	14.6	43.0	14.2
Lithographing.....	39.4	12.9	33.7	14.0

The high percentage represented by miscellaneous expenses in establishments engaged in the music printing and publishing branch of the industry is presumably due to the fact that royalty payments and payments for contract work form a larger proportion of the total payments than in the other branches. The proportion for miscellaneous expenses shown for establishments engaged in printing and publishing newspapers and periodicals was also high for the reason already stated in the case of establishments in the music printing and publishing branch of the industry.

Naturally there are variations among the several states in the distribution of expenses. Table 23 shows the percentages formed by the several items of expense for 14 of the principal states for 1909; the absolute amounts are shown in Table 67. The figures relate to all six branches of the industry combined.

STATE.	PER CENT OF TOTAL EXPENSES FOR THE PRINTING AND PUBLISHING INDUSTRY—ALL BRANCHES COMBINED: 1909			
	Cost of materials.	Salaries.	Wages.	Miscellaneous expenses.
United States.....	32.6	16.7	26.6	24.1
California.....	30.1	18.2	30.6	21.1
Illinois.....	33.4	16.7	24.9	25.0
Indiana.....	34.6	14.2	30.3	21.0
Iowa.....	34.8	16.9	27.4	20.9
Massachusetts.....	31.5	14.8	28.5	25.3
Michigan.....	34.7	18.0	28.2	19.1
Minnesota.....	31.7	17.5	27.2	23.7
Missouri.....	34.3	16.9	26.3	22.5
New Jersey.....	35.5	13.4	37.1	14.0
New York.....	30.0	17.7	28.1	20.2
Ohio.....	34.4	15.8	27.1	22.7
Pennsylvania.....	39.0	15.1	24.6	21.3
Texas.....	30.4	18.0	30.2	21.5
Wisconsin.....	34.3	15.3	29.5	20.9

For New Jersey, miscellaneous expenses represented only 14 per cent of the total expenses, the lowest proportion shown by any state for which figures are given, while wages formed a higher proportion than in any other state. In this state the bookbinding and blank-book making, engraving, and lithographing branches of the industry are of relatively greater consequence than in some of the other states, and in these branches miscellaneous expenses are relatively small and wage payments relatively large. For New York, where the publishing business is particularly important, the proportion represented by miscellaneous expenses was exceptionally large, owing to payments for contract work and other expenses peculiar to the publishing business.

**ENGINES, POWER, AND FUEL.**

Engines and power.—Table 3 shows that the total amount of power used increased from 67,453 horsepower in 1889 to 297,763 horsepower in 1909. Table 24 shows statistics of power as reported at the censuses of 1909, 1904, and 1899.

**Table 24** PRINTING AND PUBLISHING—ALL BRANCHES COMBINED.

POWER.	PRINTING AND PUBLISHING—ALL BRANCHES COMBINED.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
<b>Primary power, total.....</b>	<b>62,048</b>	<b>29,805</b>	<b>6,957</b>	<b>297,763</b>	<b>166,380</b>	<b>119,775</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Owned.....	9,460	8,826	6,957	93,806	83,253	74,065	31.5	50.0	61.8
Steam.....	1,090	1,705	2,741	59,240	54,897	54,723	19.9	33.0	45.7
Gas.....	7,755	6,207	3,714	32,152	24,964	15,115	10.8	15.0	12.6
Water wheels.....	62	87	502	600	798	2,821	0.2	0.5	2.4
Water motors.....	553	767	(1)	1,720	2,534	(1)	0.6	1.5	(1)
Other.....				94	60	1,406	(2)	(2)	1.2
Rented.....	52,588	20,979	(1)	203,957	83,127	45,710	68.5	50.0	38.2
Electric.....	52,588	20,979	(1)	197,692	75,479	33,582	68.4	45.4	28.0
Other.....				6,265	7,648	12,128	2.1	4.6	10.1
<b>Electric motors.</b>	<b>60,731</b>	<b>24,666</b>	<b>852</b>	<b>229,312</b>	<b>93,219</b>	<b>41,413</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Run by current generated by establishment.....	8,143	3,687	852	31,620	17,740	7,831	13.8	10.0	18.9
Run by rented power.....	52,588	20,979	(1)	197,692	75,479	33,582	86.2	81.0	81.1

<sup>1</sup> Not reported.

<sup>2</sup> Less than one-tenth of 1 per cent.

Printing and publishing is one of the few important industries in which rented electric current is used to a greater extent than steam as a source of power, and this condition arose during the decade 1899-1909. In 1899 steam power predominated with a total of 54,723 horsepower, but its gain for the decade was only 8.3 per cent. On the other hand, the amount of rented electric power in 1899 was only 33,582 horsepower, but this power increased 124.8 per cent during the following five years, surpassing steam power in amount in 1904. During the next five years such power increased 161.9 per cent, the total horsepower in 1909 being 197,692, and constituting practically two-thirds of all the primary power reported for the industry. There was also a decided increase during the decade in the number and horsepower of electric motors operated by current generated in the same establishment.

Table 25 shows, for 1909, the amount of the several kinds of power and of the different kinds of fuel used in the industry as a whole in 42 states and the District of Columbia.

**Table 25** PRINTING AND PUBLISHING—ALL BRANCHES COMBINED: 1909

STATE.	Primary horsepower.								Electric horsepower.		Fuel used.						
	Number of establishments reporting.	Total horsepower.	Owned by establishments reporting.					Rented.		Total, rented and generated by establishment.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.	Electric.	Other.			Anthracite (long tons).	Bituminous (short tons).				
<b>United States.....</b>	<b>21,871</b>	<b>297,763</b>	<b>93,806</b>	<b>59,240</b>	<b>32,152</b>	<b>2,320</b>	<b>94</b>	<b>197,692</b>	<b>6,265</b>	<b>229,312</b>	<b>31,620</b>	<b>154,932</b>	<b>348,698</b>	<b>2,895</b>	<b>19,834</b>	<b>41,265</b>	<b>1,633,686</b>
Alabama.....	178	1,092	308	120	173	15		784		788	4	2	1,522	10	343	334	1,799
Arkansas.....	180	846	334	72	262			512		513	1	49	686	27	601	621	4,287
California.....	890	7,674	513	100	346	67		6,946	215	6,951	5	98	751		482	3,018	36,686
Colorado.....	276	2,045	308	115	158	35		1,737		1,862	125	31	4,930	17	52	233	6,248
Connecticut.....	270	3,425	1,051	724	258	69		2,115	259	2,227	112	3,406	3,119		202	8,590	
District of Columbia.....	95	1,703	817	686	131			886		1,215	329	566	2,105		3		7,094
Florida.....	120	794	239	22	214	3		551	4	551	4	231	46	27	495	2,421	
Georgia.....	269	2,008	439	78	345	16		1,568	1	1,568		105	2,037	31	140	697	4,574
Illinois.....	1,756	26,975	9,219	7,361	1,736	47	75	17,334	422	20,632	3,298	2,317	83,242	209	88	2,741	69,461
Indiana.....	687	17,868	2,915	1,498	1,373	32	12	14,947	6	16,273	1,320	1,035	19,520	159	524	1,552	36,513
Iowa.....	564	5,527	2,144	556	1,545	42	1	3,372	11	3,378	6	460	13,048	114	242	2,766	23,165
Kansas.....	180	4,868	1,297	159	1,114	24		3,566	5	3,702	136	93	3,405	6	19	1,138	71,209
Kentucky.....	291	2,945	745	237	477	31		2,200		2,275	75	30	6,021		78	427	22,001
Louisiana.....	163	1,494	370	160	203	7		1,124		1,125	1	1	610		30	677	7,533
Maine.....	160	1,565	578	383	128	67		882	105	1,024	142	1,154	1,192	65	231	323	4,837
Maryland.....	267	3,694	1,974	1,515	444	15		1,661	59	2,208	547	2,224	5,504		33	223	16,207
Massachusetts.....	923	47,629	6,678	5,752	861	65		40,353	598	44,904	4,551	9,408	22,059	131	125	221	86,614
Michigan.....	813	7,651	2,501	1,393	1,067	36		5,071	79	5,614	543	1,557	12,807	297	1,838	1,470	23,663
Minnesota.....	653	5,765	1,504	710	785	9		4,257	4	4,446	189	1,874	6,879	56	1,774	1,147	17,653
Mississippi.....	124	496	194	4	190			302	4	302		1	484	23	62	486	652
Missouri.....	374	10,472	3,538	2,261	1,253	24		6,934		8,803	1,869	2,106	28,071	30	1,494	3,442	70,006
Montana.....	94	679	228	54	109	65		451		451		195	640		254	284	1,677
Nebraska.....	453	2,552	1,044	240	786	9		1,403	105	1,428	25	324	6,351	114	10	1,198	5,535
New Hampshire.....	110	1,865	139	42	49	48		1,701	25	1,718	17	623	214	7	201	60	1,237
New Jersey.....	504	5,636	2,750	2,161	535	54		2,714	172	3,681	967	8,518	5,624	62	25	276	19,200
New York.....	2,883	53,973	17,413	13,586	3,073	752	2	33,594	2,066	41,571	7,077	75,871	20,814	244	629	1,840	235,216
North Carolina.....	203	1,119	422	146	268	8		689	8	689		215	1,555	22	1,035	540	2,781
North Dakota.....	220	948	528	4	524			417	3	417		564	1,434		59	943	1,768
Ohio.....	1,502	18,417	9,082	5,537	3,473	72		9,140	195	11,873	2,733	562	40,242	26	96	1,118	225,115
Oklahoma.....	393	1,664	658	94	564			1,004	2	1,004		35	872	14	244	835	38,112
Oregon.....	227	1,927	178	64	73	41		1,749		1,749		27	469		1,502	3,677	4,826
Pennsylvania.....	1,795	25,839	13,522	8,363	4,885	269		11,608	709	16,225	4,617	36,151	11,718	17	93	1,026	408,160
Rhode Island.....	110	1,944	1,130	1,050	43	7		806	8	1,138	332	406	2,526	288	34	30	5,829
South Carolina.....	116	603	189	35	154			414		418	4	200	499		208	329	494
South Dakota.....	240	931	628	5	616	7		303		304	1	632	1,490	23	318	960	2,241
Tennessee.....	227	2,965	1,494	1,251	215	28		1,461	10	2,128	667	21	11,099		198	521	6,681
Texas.....	684	4,892	1,480	525	951			2,902	10	3,203	301	285	3,174	75	647	2,728	8,931
Utah.....	73	1,357	836	800	35			521		521		684	3,869		33	39	4,637
Vermont.....	97	625	173	44	64	65		452		452					1	207	3,012
Virginia.....	252	2,210	618	262	225	31		1,692		1,692		770	80	1	380	326	5,774
Washington.....	371	2,232	355	95	161	99		1,874	3	1,878	4	123	1,136	10	1,700	309	48,156
West Virginia.....	174	1,500	973	58	851	64		578	9	741	183	24	750		27	222	65,369
Wisconsin.....	431	5,293	1,968	822	1,075	71		3,053	272	3,442	389	1,007	7,858	431	3,035	1,042	18,071
All other states.....	305	2,496	432	47	360	25		2,064		2,065	1	304	1,814		648	701	3,271

In 1909 New York, Massachusetts, Illinois, Pennsylvania, Ohio, and Indiana together reported 190,701 horsepower, or 64 per cent of the aggregate for the industry.

Electricity constituted the most important source of primary power in all but five of the states given in the table—Rhode Island and Utah, in which steam engines furnished the major portion of the power used, and North Dakota, South Dakota, and West Virginia, in which the use of gas engines predominated. Massachusetts utilized rented electric power to a greater extent than any other state, re-

porting 40,353 horsepower, and New York was second with 33,594 horsepower.

Fuel consumed.—Bituminous coal was the principal kind of fuel used, 348,698 short tons being consumed during 1909. New York and Pennsylvania, however, consumed much larger quantities of anthracite than of bituminous coal. Considerable quantities of oil and natural gas were used in some states. The greatest quantities of gas were reported by Pennsylvania, New York, and Ohio, in the order named, the total for these states amounting to 868,491,000 feet, or 53.2 per cent of the total for the United States.

SPECIAL STATISTICS RELATING TO PRODUCTS.

SUMMARY FOR THE INDUSTRY AS A WHOLE.

Table 26 shows statistics for all products of the printing and publishing industry as a whole for the United States for 1909, 1904, and 1899.

Table 26 PRODUCT.	1909	1904	1899
Total value.....	\$737,876,087	\$552,473,353	\$395,186,629
Publications:			
Newspapers and periodicals.....	337,596,288	256,816,282	175,789,610
Subscriptions and sales.....	135,063,043	111,293,691	79,928,483
Advertising.....	202,533,245	145,517,591	95,861,127
Newspapers.....	232,993,094	( <sup>1</sup> )	( <sup>1</sup> )
Subscriptions and sales.....	84,438,702		
Advertising.....	148,554,392		
Periodicals.....	104,603,194	( <sup>1</sup> )	( <sup>1</sup> )
Subscriptions and sales.....	50,624,341		
Advertising.....	53,978,853		
Ready prints, patent insides and outsides.....	2,293,077	( <sup>1</sup> )	
Books and pamphlets—			
Published, or printed and published.....	62,030,394	53,312,492	
Printed for publication by others.....	10,209,509	( <sup>1</sup> )	
Sheet music and books of music—			
Published, or printed and published.....	5,510,008	4,673,685	219,397,019
Printed for publication by others.....	1,000,966	( <sup>1</sup> )	
Other products for sale and in execution of orders:			
Job printing.....	207,940,227	149,262,070	
Bookbinding and blank books.....	50,552,808	40,788,768	
Electrotyping, engraving, and lithographing.....	47,956,979	35,018,234	
All other products.....	11,885,141	12,601,822	

<sup>1</sup> Not reported separately.

SUMMARY FOR THE PRINTING AND PUBLISHING INDUSTRY PROPER.

While the Bureau of the Census recognizes six branches in the printing and publishing industry, the

business of actual publishing is restricted to three of these, namely, book publishing and job printing, music printing and publishing, and newspapers and periodicals. In each of these branches, the receipts from publications constitute an important share of the value of products; and, naturally, their aggregate value of products represents by far the larger part (89.8 per cent) of the value of products of the industry as a whole. These three branches, then, may be called the printing and publishing industry proper, and at the census of 1909 a supplemental schedule calling for more detailed information than at the two preceding censuses was used in the enumeration of establishments included in these branches. With the exception of Tables 66 and 67 (in which are presented detailed statistics by states for the industry as a whole) the remainder of this bulletin is devoted to the presentation of special statistics secured by this supplemental schedule.

Table 27 shows, by states and geographic divisions, statistics for the value of the several classes of products or receipts of the three branches of book and job printing, printing and publishing of music, and newspapers and periodicals, for 1909. It should be distinctly understood that, for some of the classes of products, large amounts were reported by other branches of the industry not included in the table.

## MANUFACTURES.

## PRINTING AND PUBLISHING, BOOK AND JOB, MUSIC, AND NEWSPAPERS

Table 27		Number of establishments.	Total value.	NEWSPAPERS.			PERIODICALS (OTHER THAN NEWSPAPERS).		
DIVISION AND STATE.				Printed and published or published by establishment reporting.	Printed for publication by others.	Printed and published or published by establishment reporting.		Printed for publication by others.	
						Subscriptions and sales.	Advertising.		Subscriptions and sales.
1	United States.....	29,757	\$682,591,959	\$84,438,702	\$148,554,392	\$1,599,141	\$50,624,341	\$53,978,853	\$7,420,479
2	New England.....	2,061	55,946,214	7,730,096	12,593,729	62,068	4,329,011	2,947,521	1,079,200
3	Maine.....	187	3,259,743	441,950	654,542	4,647	579,386	568,099	816
4	New Hampshire.....	140	1,116,837	239,908	314,626	7,120	6,875	6,808	2,068
5	Vermont.....	112	1,029,155	192,845	266,688	500	15,758	4,668	13,480
6	Massachusetts.....	1,149	41,000,665	5,530,580	8,805,946	38,956	3,644,377	2,185,041	1,021,820
7	Rhode Island.....	135	3,434,616	417,029	1,075,404	.....	26,404	96,749	6,125
8	Connecticut.....	338	6,105,198	907,775	1,676,525	10,845	56,211	86,156	34,300
9	Middle Atlantic.....	6,757	257,972,204	24,903,446	44,522,232	632,663	29,504,230	31,589,196	3,984,801
10	New York.....	3,845	184,642,958	16,114,038	27,225,081	504,216	23,041,075	24,655,093	3,629,012
11	New Jersey.....	641	9,723,430	1,147,614	3,288,563	17,133	181,722	109,584	12,025
12	Pennsylvania.....	2,271	63,605,816	7,641,794	14,007,688	111,314	6,281,433	6,824,519	323,764
13	East North Central.....	6,681	155,871,806	20,153,327	32,084,332	125,029	9,872,923	10,476,442	1,078,315
14	Ohio.....	1,509	36,825,105	4,655,491	8,455,767	19,575	2,730,293	2,136,214	337,478
15	Indiana.....	872	13,873,825	2,371,865	3,364,377	6,170	554,456	439,900	27,341
16	Illinois.....	2,454	89,214,769	8,936,703	13,719,670	38,236	5,722,207	6,893,257	554,554
17	Michigan.....	1,000	15,075,464	2,241,533	4,168,537	20,295	527,735	561,280	141,778
18	Wisconsin.....	786	9,882,643	1,947,735	2,375,981	40,753	338,232	451,311	17,164
19	West North Central.....	5,456	72,353,149	11,536,736	20,019,663	231,405	3,002,994	4,383,757	328,060
20	Minnesota.....	916	15,298,616	1,990,481	4,073,857	49,287	686,977	1,050,936	80,119
21	Iowa.....	1,094	11,784,391	2,176,339	3,076,489	18,506	546,272	962,381	106,748
22	Missouri.....	1,267	28,061,861	3,926,825	7,783,488	15,381	1,087,171	1,528,856	113,776
23	North Dakota.....	330	1,909,514	395,270	679,702	2,673	19,070	6,185	816
24	South Dakota.....	391	1,974,951	436,009	604,206	3,300	54,104	128,075	3,830
25	Nebraska.....	670	6,626,595	1,288,027	2,050,105	114,979	183,869	277,165	7,982
26	Kansas.....	788	6,697,221	1,323,776	1,742,816	27,279	426,031	426,159	14,809
27	South Atlantic.....	2,202	31,464,449	4,649,570	9,332,074	116,151	1,194,945	1,292,739	320,331
28	Delaware.....	47	468,790	65,217	169,714	536	7,796	6,480	232
29	Maryland.....	332	7,311,675	835,240	2,091,959	20,294	82,112	319,173	65,568
30	District of Columbia.....	136	4,449,461	612,345	1,596,119	3,880	460,775	189,145	84,564
31	Virginia.....	359	5,035,626	549,195	1,090,105	13,804	205,608	87,418	52,572
32	West Virginia.....	233	1,946,705	302,338	653,630	1,920	18,884	9,053	7,333
33	North Carolina.....	322	2,497,493	551,416	582,708	26,947	147,008	116,433	12,867
34	South Carolina.....	160	1,583,696	380,308	471,072	2,000	45,265	21,150	11,222
35	Georgia.....	439	6,300,155	945,529	1,953,166	44,410	201,177	523,319	72,985
36	Florida.....	174	1,895,848	317,973	723,571	2,360	17,320	18,568	12,988
37	East South Central.....	1,321	18,926,550	2,774,838	4,736,961	70,042	1,055,526	547,859	176,658
38	Kentucky.....	419	5,755,274	912,874	1,501,955	20,668	247,039	249,066	64,261
39	Tennessee.....	409	7,136,330	930,340	1,793,250	5,702	753,740	256,080	102,403
40	Alabama.....	269	2,730,195	609,978	1,016,105	3,008	39,869	36,894	4,034
41	Mississippi.....	224	1,304,751	280,646	425,651	40,064	14,878	5,819	5,060
42	West South Central.....	2,205	21,118,729	3,861,511	6,708,825	45,168	402,133	638,366	67,690
43	Arkansas.....	265	2,082,365	414,992	575,232	9,840	50,313	19,626	3,803
44	Louisiana.....	254	3,614,821	777,116	1,142,746	1,054	62,395	140,247	33,862
45	Oklahoma.....	594	3,897,334	609,017	1,412,693	18,827	37,781	50,144	9,045
46	Texas.....	1,062	11,524,209	2,000,386	3,578,154	15,447	245,944	428,349	20,980
47	Mountain.....	1,088	14,447,597	2,771,913	5,273,504	32,994	285,318	352,260	29,880
48	Montana.....	133	2,099,029	462,557	875,761	3,500	14,721	24,211	1,170
49	Idaho.....	131	1,145,033	236,579	454,361	1,500	2,125	5,125	500
50	Wyoming.....	65	489,544	122,740	204,210	.....	7,772	4,058	.....
51	Colorado.....	432	6,702,987	1,158,671	2,268,918	23,301	190,280	268,136	22,710
52	New Mexico.....	92	581,874	127,296	232,224	1,853	6,132	1,800	.....
53	Arizona.....	64	784,487	147,781	365,522	1,240	5,654	8,102	5,500
54	Utah.....	117	2,125,400	398,174	635,851	.....	58,634	40,828	.....
55	Nevada.....	54	519,243	118,115	238,657	1,600	.....	.....	.....
56	Pacific.....	1,986	36,491,261	6,057,265	13,283,072	283,621	977,261	1,750,713	375,535
57	Washington.....	489	8,980,546	1,449,317	3,899,456	222,186	95,108	256,088	19,756
58	Oregon.....	310	4,833,068	746,227	1,660,435	4,311	218,675	324,656	143,321
59	California.....	1,187	22,677,617	3,861,721	7,723,181	57,124	663,478	1,169,969	212,468

<sup>1</sup> In addition, printing and publishing, etc., to the value of \$2,942,282 was reported by establishments in other industries.

# PRINTING AND PUBLISHING.

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AND PERIODICALS—VALUE OF PRODUCTS OR RECEIPTS, BY CLASSES: 1909.

	BOOKS AND PAMPHLETS.		SHEET MUSIC AND BOOKS OF MUSIC.		Engravings, lithographs, etc., printed for publication by others.	Ready prints (patent insides and outsides), for publication by others.	Stereotyped plates, for use by others.	Job printing (not elsewhere included).	Bookbinding.	Blank books.	Electrotyping, engraving, etc.	All other products.
	Printed and published or published by establishment reporting.	Printed for publication by others.	Printed and published or published by establishment reporting.	Printed for publication by others.								
1	\$82,930,394	\$10,209,509	\$5,510,698	\$1,000,966	\$3,355,593	\$2,293,077	\$430,538	\$195,134,476	\$13,603,507	\$5,206,425	\$4,415,267	\$11,885,141
2	5,951,850	1,775,579	619,232	151,874	78,936	68,616	20,513	15,993,407	1,409,945	152,505	432,323	543,800
3	93,415	33,274	.....	.....	30,675	.....	.....	769,773	15,931	5,000	8,877	48,349
4	10,214	14,454	1,200	.....	.....	.....	.....	472,676	24,174	785	7,646	7,683
5	48,422	9,379	.....	.....	52	.....	.....	459,314	9,320	7,218	.....	1,513
6	5,590,317	1,532,115	618,032	151,574	29,792	68,616	15,263	10,240,035	1,220,785	19,183	300,901	181,332
7	33,090	14,041	.....	300	.....	.....	.....	1,451,216	29,829	60,633	8,088	215,699
8	165,383	172,316	.....	.....	18,417	.....	5,250	2,000,393	109,906	59,686	112,811	89,224
9	37,626,122	4,959,413	3,289,695	610,241	1,235,345	506,936	23,331	61,929,566	4,921,274	1,192,632	860,199	5,700,882
10	31,666,569	3,810,337	2,678,706	480,063	992,070	409,084	10,560	39,712,376	3,697,011	696,022	651,149	4,608,990
11	285,253	105,275	5,300	.....	200	.....	2,849	4,190,585	194,131	49,972	31,081	96,143
12	5,674,300	1,043,801	605,089	129,578	243,075	37,852	9,922	18,020,605	1,030,132	446,638	177,969	995,743
13	13,741,083	1,714,956	1,346,060	208,913	751,526	559,091	214,554	54,278,225	3,522,699	1,283,547	1,860,447	2,600,337
14	3,352,801	566,030	395,404	83,895	330,826	103,604	66,492	11,834,961	523,451	337,390	364,271	501,072
15	865,443	171,717	16,311	1,000	30,186	62,905	10,390	4,852,095	417,972	215,997	296,650	169,044
16	8,708,936	630,130	917,713	44,642	201,824	249,920	123,330	28,009,858	2,281,171	635,839	938,139	1,549,734
17	563,857	98,207	9,079	79,966	151,527	38,794	8,205	5,824,069	103,282	74,043	181,763	196,534
18	189,980	248,872	7,553	10	37,663	108,868	125	3,757,212	106,823	20,278	49,624	183,953
19	2,680,168	524,319	120,232	19,888	674,378	645,376	120,108	23,987,787	1,046,644	1,352,533	332,984	1,316,118
20	1,433,132	101,415	10,807	10,000	202,612	102,761	19,014	4,842,133	233,016	190,951	39,213	166,905
21	242,412	42,002	24,459	.....	106,548	155,155	22,116	3,525,260	219,512	211,748	53,779	294,065
22	907,436	193,893	65,492	7,010	294,686	232,028	55,246	10,086,390	319,843	632,845	193,791	614,144
23	3,072	22,690	.....	.....	.....	13,471	1,022	676,752	27,315	33,329	.....	28,138
24	7,480	7,800	.....	.....	.....	15,177	2,101	651,790	14,566	14,566	25,140	28,873
25	18,189	20,860	9,924	2,878	70,532	77,088	11,556	2,064,195	130,618	209,135	520	80,493
26	68,447	142,599	550	.....	.....	49,095	9,053	2,141,267	101,774	79,335	40,681	103,500
27	1,550,243	758,754	63,814	.....	130,347	125,943	3,415	10,288,203	662,467	285,847	211,772	477,834
28	25,230	225	.....	.....	2,000	.....	.....	177,938	4,798	2,390	6,154	80
29	451,428	197,475	1,000	.....	1,250	20,578	510	2,570,528	232,549	60,645	173,837	172,490
30	193,755	110,433	9,505	.....	7,611	.....	.....	1,102,569	417	24	3,400	56,919
31	632,705	162,392	.....	.....	2,500	13,700	1,700	1,965,240	159,764	19,839	16,637	62,887
32	1,100	26,135	.....	.....	61,981	400	.....	645,123	56,238	33,169	100	39,301
33	30,123	128,884	.....	.....	425	31,268	.....	786,869	25,748	52,943	.....	3,914
34	24,670	7,460	.....	.....	280	3,975	.....	555,208	15,420	31,622	4,297	14,447
35	190,922	84,800	53,309	.....	54,300	47,022	.....	1,777,914	152,183	83,915	7,347	165,827
36	250	31,650	.....	.....	.....	.....	1,205	700,844	15,350	1,000	.....	22,469
37	243,875	186,356	28,884	.....	155,408	93,169	6,898	5,935,612	417,966	225,820	123,415	147,833
38	53,727	14,121	.....	.....	61,802	.....	10	2,224,163	240,258	45,361	64,555	55,114
39	187,747	86,365	28,894	.....	63,172	49,983	6,115	2,445,160	101,709	144,655	53,500	77,465
40	1,476	50,066	.....	.....	30,434	30,408	773	809,217	64,851	31,214	.....	9,338
41	925	35,804	.....	.....	.....	12,778	.....	466,472	11,148	4,590	5,000	5,916
42	325,303	75,598	37,981	10,000	137,683	136,523	25,391	6,943,504	336,858	400,360	262,440	663,395
43	2,120	1,679	3,600	.....	25,000	32,089	3,559	823,332	18,290	34,847	8,406	48,987
44	16,872	17,404	.....	.....	38,336	95	6	1,162,096	88,096	56,980	4,000	73,516
45	11,106	5,100	.....	.....	.....	52,409	11,139	1,294,072	28,957	44,419	.....	252,625
46	295,205	51,415	34,381	10,000	74,347	51,330	10,687	3,663,954	201,515	264,114	270,634	308,267
47	137,231	50,461	3,950	.....	66,205	77,238	8,521	4,433,687	465,471	88,208	178,475	192,221
48	650	8,633	.....	.....	.....	.....	.....	596,781	75,962	12,552	5,004	16,927
49	700	16,145	.....	.....	1,040	860	.....	393,852	7,945	12,106	7,010	5,185
50	.....	.....	.....	.....	.....	.....	.....	148,539	650	775	400	400
51	97,901	22,300	3,950	.....	65,165	52,063	5,252	2,062,445	264,115	.....	157,054	37,013
52	8,067	220	.....	.....	.....	.....	.....	200,009	.....	3,713	.....	400
53	.....	200	.....	.....	.....	.....	.....	227,540	5,737	11,474	5,737	.....
54	29,913	2,963	.....	.....	.....	24,315	3,269	650,274	103,062	43,715	2,070	132,332
55	.....	.....	.....	.....	.....	.....	.....	154,247	8,000	.....	600	24
56	674,519	164,073	850	50	125,785	80,166	7,807	11,345,085	820,213	195,373	127,212	222,661
57	78,316	12,864	.....	.....	26,739	25,935	50	2,578,816	173,707	108,638	13,960	19,611
58	3,233	13,848	.....	.....	50,260	19,037	.....	1,423,868	134,778	4,708	17,108	68,633
59	592,971	137,361	850	50	48,766	35,214	7,757	7,342,401	511,728	82,027	96,144	134,417

The geographic divisions leading in 1909 in receipts from subscriptions and sales of newspapers and from newspaper advertising also, were the Middle Atlantic, the East North Central, and the West North Central, in the order named. The states leading in receipts for newspaper advertising were New York, Pennsylvania, and Illinois; but Illinois exceeded Pennsylvania in receipts for subscriptions and sales, New York being first.

In receipts for subscriptions and sales of periodicals other than newspapers, the Middle Atlantic division ranked first, followed by the East North Central and New England divisions. In receipts for periodical advertising, however, the West North Central outranked the New England division. Among the individual states New York was first in receipts for subscriptions and sales, Pennsylvania second, and Illinois third; in receipts for advertising Illinois displaced Pennsylvania by a slight margin.

The business of publishing music is more concentrated geographically than any of the other branches of the printing and publishing industry. Of the total value of music published or printed and published, as shown in this combined table, New York alone reported nearly one-half.

In amount received for books and pamphlets, published or printed and published, the Middle Atlantic division was first, the East North Central division second, and New England third. New York, Illinois, Pennsylvania, and Massachusetts were the leading states in value of output of these products.

The Middle Atlantic division led in receipts from job printing, the East North Central following, with the West North Central third. New York, Illinois, and Pennsylvania were the leading states in the order named. Under the heading "job printing, not elsewhere included" the statistics for book publishing and contract printing include separate reports for the printing departments of certain large mercantile establishments and of manufacturing concerns engaged primarily in industries other than printing and publishing. Such establishments conduct their printing departments as adjuncts to their regular business and not as a source of direct profit.

**BOOK AND JOB PRINTING AND PUBLISHING.**

Table 28 shows, by states, statistics for the several classes of products of book publishing and job printing establishments for 1909. Such statistics are not available for censuses previous to 1909.

**Table 28**

STATE.	PRINTING AND PUBLISHING, BOOK AND JOB—VALUE OF PRODUCTS: 1909									
	Total.	Newspapers and periodicals, printed for publication by others.	Books and pamphlets.		Music, engravings, lithographs, ready prints, and stereotyped plates, printed and published only, or printed for publication by others.	Job printing (not elsewhere included).	Book-binding.	Blank books.	Electrotyping, engraving, etc.	All other products.
			Printed and published, or published only.	Printed for publication by others.						
United States.....	\$250,925,934	\$6,681,624	\$44,394,621	\$9,169,943	\$1,053,128	\$157,099,380	\$12,241,619	\$4,748,250	\$3,943,591	\$7,593,678
California.....	7,438,072	218,417	453,172	132,616	73,770	5,812,574	478,979	79,918	91,243	97,377
Illinois.....	39,474,143	465,027	7,783,151	581,038	518,685	25,306,538	2,243,465	614,592	927,565	1,034,082
Indiana.....	5,680,867	21,190	813,031	164,009	47,073	3,608,386	389,111	209,800	296,573	131,694
Massachusetts.....	17,139,951	329,126	5,158,126	1,334,841	125,753	8,604,920	1,216,935	18,883	220,873	130,494
Michigan.....	6,185,470	139,373	494,438	92,288	192,958	4,762,349	130,397	54,128	166,420	153,110
Minnesota.....	4,602,128	85,168	235,471	99,280	276,545	3,469,377	188,667	163,994	29,145	54,481
Missouri.....	12,240,660	99,577	638,011	185,798	478,092	9,214,409	259,710	632,541	186,958	524,994
New York.....	69,706,292	3,722,464	19,196,562	3,391,799	1,191,972	35,229,938	3,317,799	641,119	504,793	2,509,846
Ohio.....	14,987,412	327,614	2,812,093	553,460	462,390	9,533,896	406,769	307,916	279,512	303,762
Pennsylvania.....	21,810,516	311,449	4,122,762	1,018,603	250,514	14,107,336	928,126	408,740	157,941	504,045
Texas.....	4,110,397	15,614	285,562	48,769	146,364	2,587,550	199,865	264,114	270,034	292,525
All other states.....	47,551,017	946,605	2,382,242	1,567,442	1,288,406	34,862,107	2,481,996	1,352,605	812,525	1,857,189

<sup>1</sup> Includes sheet music and books of music printed and published or published by the establishment reporting to the value of \$28,115, and printed for publication by others to the value of \$150,180; engravings, lithographs, etc., printed for publication by others to the value of \$2,969,917; ready prints to the value of \$1,548,580; and stereotyped plates to the value of \$356,336, combined to avoid disclosures by states.

The printing and publishing, and the publishing only, of books and pamphlets contributed 17.7 per cent of the total value of all products of this branch of the industry. Over two-fifths of this value was reported from New York.

In 1909, as at previous censuses, there was a large duplication of values in book and pamphlet publications, since establishments doing publishing only were included as well as those engaged in job printing. Thus, the value of the same work frequently forms a part of the value of products of both the publishing establishment and of the concern doing the printing.

Table 29 shows the principal statistics for each of the four sub-branches of this part of the industry for 1909.

Table 29	ESTABLISHMENTS DOING CHIEFLY OR WHOLLY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	10,708	108,687	\$66,521,318	\$77,650,547	\$250,925,934	\$173,275,387	
Job printing.....	9,721	99,122	60,596,553	68,074,849	198,000,570	129,931,727	
Book publishing and printing.....	163	7,727	4,353,839	6,019,409	17,338,734	11,319,325	
Book publishing, without printing.....	666	423	316,219	3,327,461	32,859,180	29,531,719	
Linotype work, typesetting, etc....	158	1,415	1,254,705	228,828	2,721,444	2,492,618	

Table 30 shows statistics relative to character and number of books and pamphlets published for 1909. Comparative statistics are not available for previous censuses.

	Titles or editions.	Volumes.	Copies.
Total number published.....	46, 739	54, 620	161, 361, 844
Biography and correspondence.....	554	616	657, 464
Description, geography, and travel.....	847	952	4, 540, 647
Domestic and rural.....	330	336	2, 023, 193
Education.....	10, 390	12, 159	41, 036, 847
Fiction.....	14, 008	15, 772	46, 942, 399
Fine arts, including illustrated gift books.....	541	587	2, 849, 371
History.....	613	954	2, 923, 187
Humor and satire.....	208	211	885, 262
Juvenile.....	4, 167	4, 202	10, 184, 030
Law.....	535	582	1, 490, 194
Literature and collected works.....	2, 047	3, 841	5, 037, 972
Medicine and hygiene.....	681	738	1, 519, 480
Philosophy.....	222	252	265, 077
Physical and mathematical science.....	291	307	356, 413
Poetry and the drama.....	1, 387	1, 574	1, 980, 824
Political and social science.....	658	689	1, 862, 429
Scientific and similar associations.....	1, 082	1, 141	1, 253, 562
Sports and amusements.....	412	423	2, 430, 074
Theology and religion.....	5, 006	6, 539	23, 608, 230
Useful arts.....	512	538	1, 104, 599
Works of reference.....	1, 560	1, 927	7, 709, 500

It will be noted that the number of copies of works on educational topics was nearly equal to the number reported as fiction. Works on theology and religion ranked third.

PRINTING AND PUBLISHING OF MUSIC.

The census of 1909 was the first at which products of establishments publishing music books and sheet music were segregated. Table 31 shows, by states, the statistics relative to the printing and publishing of music, for 1909.

The establishments doing publishing only were much more numerous than those which printed their own publications. Table 32 shows the general statistics for each class of establishments.

STATE.	Total.	SHEET MUSIC AND BOOKS OF MUSIC.		All other products. <sup>1</sup>
		Printed and published, or published by establishment.	Printed for publication by others.	
United States.....	\$5, 575, 903	\$4, 581, 342	\$848, 038	\$146, 523
Illinois.....	946, 617	889, 466	33, 981	23, 070
Massachusetts.....	<sup>2</sup> 352, 312	352, 312		
New York.....	3, 110, 433	2, 583, 342	412, 781	114, 310
Ohio.....	384, 537	309, 605	74, 932	
Pennsylvania.....	375, 823	261, 917	112, 099	1, 807
All other states.....	406, 281	184, 700	214, 245	7, 336

<sup>1</sup> Includes books and pamphlets to the value of \$58,748; job printing to the value of \$6,764; bookbinding and blank books to the value of \$37,219; and other products to the value of \$43,792.  
<sup>2</sup> Excludes music "printed for publication by others" and "all other products," to avoid disclosure of individual operations.

ESTABLISHMENTS DOING—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	178	738	\$438, 928	\$986, 202	\$5, 575, 903	\$4, 589, 701
Printing.....	40	731	436, 730	602, 249	1, 780, 973	1, 178, 724
Publishing only.....	138	7	2, 198	383, 953	3, 794, 930	3, 410, 977

PRINTING AND PUBLISHING OF NEWSPAPERS AND PERIODICALS.

Products and receipts.—Table 33 shows the extent to which publishers of newspapers and periodicals engaged in other branches of the printing and publishing industry in 1909, 1904, and 1899.

KIND.	1909		1904	1899	Per cent of increase. <sup>1</sup>		
	Value.	Per cent of total.	Value.	Value.	1899-1909	1904-1909	1899-1904
Total.....	\$406, 090, 122	100. 0	\$309, 301, 854	\$222, 983, 569	82. 1	31. 3	36. 7
Newspapers and periodicals.....	337, 549, 528	83. 1	256, 816, 282	175, 789, 610	92. 0	31. 4	48. 1
Advertising.....	202, 527, 925	49. 9	145, 517, 591	95, 861, 127	111. 3	39. 2	51. 8
Subscriptions and sales.....	135, 021, 603	33. 2	111, 298, 691	79, 928, 483	68. 9	21. 3	39. 2
Book and job printing.....	62, 022, 414	15. 3	47, 446, 127	41, 745, 652	48. 6	30. 7	13. 7
Books and pamphlets.....	19, 516, 591	4. 8	14, 097, 941	18, 407, 528	0. 0	32. 8	-20. 2
Sheet music and books of music.....	903, 989	0. 2	128, 961	544, 802	65. 9	601. 0	-76. 3
Engravings, lithographs, etc.....	374, 230	0. 1	( <sup>2</sup> )	( <sup>2</sup> )			
Ready prints.....	744, 497	0. 2	( <sup>2</sup> )	( <sup>2</sup> )			
Stereotype plates.....	74, 202	( <sup>3</sup> )	( <sup>2</sup> )	( <sup>2</sup> )			
Job printing, not elsewhere included <sup>4</sup> .....	40, 403, 905	10. 0	32, 619, 225	22, 793, 322	77. 3	23. 9	43. 1
All other products or work.....	6, 518, 180	1. 6	5, 039, 445	5, 448, 307	19. 6	29. 3	-7. 5
Bookbinding.....	1, 840, 131	0. 3	1, 449, 949	2, 067, 450	-35. 2	-7. 6	-29. 9
Blank books.....	442, 973	0. 1	434, 147	554, 557	-20. 1	2. 0	-21. 7
Electrotyping, engraving, etc.....	471, 076	0. 1	647, 037	491, 567	-4. 0	-27. 1	31. 6
Miscellaneous.....	4, 263, 400	1. 1	2, 508, 312	2, 334, 733	81. 6	70. 0	7. 4

<sup>1</sup> A minus sign (-) denotes decrease.  
<sup>2</sup> Not reported separately.

<sup>3</sup> Less than one-tenth of 1 per cent.  
<sup>4</sup> Includes the printing of newspapers and periodicals for publication by others.

## MANUFACTURES.

The receipts from the printing and publishing of newspapers and periodicals increased 92 per cent during the decade 1899-1909, and constituted at the end of that period 83.1 per cent of the total value of products reported by this branch of the printing and publishing industry. The larger part of these receipts, as well as the greater portion of the increase for the decade, was from advertising.

At the censuses prior to 1909 there was no segregation of the various receipts from printing for others from those for printing in general, and for this reason some of the sheet music and books of music so printed, as well as some books and pamphlets, may have been accounted for in 1904 and 1899 under "job printing not elsewhere included," or under "all other products and work." The item "job printing, not elsewhere included" is largely made up of receipts for printing newspapers, books, etc., for publication by others, though more of such work is done by establishments in the job-printing branch of the industry than by those in the newspaper and periodical branch. It is probable that the increase in "job printing, not elsewhere included," was even larger than indicated because the manufacture of engravings, lithographs, ready prints, and stereotype plates for sale, shown separately for 1909, was included with the job printing just mentioned, at the census of 1899.

Receipts from book and job printing for others constituted, in 1909, 15.3 per cent of the entire receipts of establishments in this branch of the industry. This item showed a marked absolute increase in 1909 over 1899, although it constituted a smaller proportion of the total receipts in the later census year.

Table 34 shows statistics for 1909 for newspaper publishing establishments that do no printing and for those that do both printing and publishing.

ESTABLISHMENTS DOING—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	18,871	108,672	\$74,401,593	\$97,359,605	\$406,090,122	\$308,730,517
Printing and publishing.....	15,533	108,137	74,013,775	89,403,701	340,176,310	250,772,609
Publishing only.....	3,338	535	387,818	7,955,904	65,913,812	57,957,908

The 3,338 newspaper and periodical publishing establishments which did no printing in 1909 constituted only 17.7 per cent of the total number of establishments in this branch of the industry and reported only 16.2 per cent of the total value of products reported.

Table 35 shows the ratio of cost of materials, wages, salaries, miscellaneous expense, and value added by manufacture to value of products in 1909 for each of the two classes of establishments—newspapers and periodicals.

Since the cost of contract work is reported under "miscellaneous expenses," it is natural that this item

should be unusually large in proportion to the other items in the reports of the publishers who did no printing, and that the returns of such establishments for wages and for cost of materials should be correspondingly small.

ESTABLISHMENTS DOING—	PERCENTAGE OF VALUE OF PRODUCTS REPRESENTED BY—				
	Salaries.	Wages.	Cost of materials.	Miscellaneous expenses.	Value added by manufacture.
Printing and publishing.....	16.2	21.8	26.3	18.0	73.7
Publishing only.....	21.3	0.6	12.1	51.6	87.9

Distribution.—Table 36 shows, by states, the number of newspapers and periodicals of all classes for 1909 and 1904.

DIVISION AND STATE.	ALL CLASSES—NUMBER.	
	1909	1904
United States.....	22,141	21,848
NEW ENGLAND.....		
Maine.....	1,042	1,175
New Hampshire.....	130	158
Vermont.....	86	124
Massachusetts.....	82	100
Rhode Island.....	537	575
Connecticut.....	47	60
Connecticut.....	160	158
MIDDLE ATLANTIC.....		
New York.....	3,821	3,785
New Jersey.....	1,953	1,933
Pennsylvania.....	348	378
Pennsylvania.....	1,520	1,474
EAST NORTH CENTRAL.....		
Ohio.....	5,086	5,359
Indiana.....	1,181	1,260
Illinois.....	799	858
Michigan.....	1,682	1,753
Wisconsin.....	747	787
Wisconsin.....	677	711
WEST NORTH CENTRAL.....		
Minnesota.....	4,859	4,810
Iowa.....	758	798
Missouri.....	1,004	1,080
North Dakota.....	1,003	1,032
South Dakota.....	333	235
Nebraska.....	402	302
Kansas.....	623	636
Kansas.....	736	727
SOUTH ATLANTIC.....		
Delaware.....	1,656	1,621
Maryland.....	35	34
District of Columbia.....	163	199
Virginia.....	67	65
West Virginia.....	258	241
North Carolina.....	214	222
South Carolina.....	264	240
Georgia.....	138	143
Florida.....	357	318
Florida.....	160	154
EAST SOUTH CENTRAL.....		
Kentucky.....	1,115	1,091
Tennessee.....	339	337
Alabama.....	330	334
Mississippi.....	227	213
Mississippi.....	219	207
WEST SOUTH CENTRAL.....		
Arkansas.....	2,041	1,758
Louisiana.....	288	291
Oklahoma.....	198	197
Texas.....	593	453
Texas.....	962	817
MOUNTAIN.....		
Montana.....	1,044	867
Idaho.....	139	101
Wyoming.....	130	95
Colorado.....	70	51
New Mexico.....	332	331
Arizona.....	67	60
Utah.....	73	60
Utah.....	94	88
Nevada.....	59	31
PACIFIC.....		
Washington.....	1,477	1,382
Oregon.....	369	316
California.....	254	221
California.....	854	845

There was an increase of 1.3 per cent from 1904 to 1909 in the total number of newspapers and periodicals in the entire country. In the New England and East North Central divisions, however, there was a considerable decrease, due to a falling off in every state in these two divisions, with the exception of Connecticut.

Besides the states in these divisions, the following 10 states in other divisions reported a less number for 1909 than for 1904: New Jersey, Minnesota, Iowa, Missouri, Nebraska, Maryland, West Virginia, South Carolina, Tennessee, and Arkansas.

Classification according to character.—Table 37 shows the number of publications classified according to character in 1909 and 1904, and the percentages of increase from 1904 to 1909. Comparable figures for 1899 are not available.

The greatest absolute increase reported for any class was that in number of publications devoted to news, politics, and family reading, but the highest percent-

age of increase was in publications devoted to science and mechanics, with college and school periodicals second. Several classes of publications decreased in number, the largest absolute decrease being in those classed as "miscellaneous."

CHARACTER.	NUMBER.		Per cent of increase: <sup>1</sup> 1904-1909
	1909	1904	
News, politics, and family reading.....	17,698	17,032	3.7
Religious.....	1,251	1,257	-2.8
Agricultural, horticultural, dairy, stock raising, etc.	316	360	-12.2
Commerce, finance, insurance, railroads, etc.....	264	364	-27.5
Trade journals generally.....	685	627	9.2
General literature, including monthly and quarterly magazines.....	340	328	3.7
Medicine and surgery.....	197	192	2.6
Law.....	56	81	-30.9
Science and mechanics.....	139	83	67.5
Fraternal organizations.....	419	450	-6.9
Education and history.....	202	173	16.8
Society, art, music, fashions, etc.....	164	155	5.8
College and school periodicals.....	271	178	52.2
Miscellaneous.....	139	538	-74.2

<sup>1</sup> A minus sign (-) denotes decrease.

Table 38 shows, by states, the number of publications classified according to character for 1909.

CHARACTER OF PUBLICATION AND STATE.	Number.	CHARACTER OF PUBLICATION AND STATE.	Number.	CHARACTER OF PUBLICATION AND STATE.	Number.	CHARACTER OF PUBLICATION AND STATE.	Number.
<b>NEWS, POLITICS, AND FAMILY READING:</b>		<b>AGRICULTURAL, HORTICULTURAL, DAIRY, STOCK RAISING, ETC.—Continued.</b>		<b>GENERAL LITERATURE—Con.</b>		<b>FRATERNAL—Continued.</b>	
United States.....	17,698	New York.....	28	Ohio.....	14	New York.....	37
California.....	674	Ohio.....	7	Pennsylvania.....	17	Ohio.....	30
Georgia.....	286	Pennsylvania.....	12	All other states.....	108	All other states.....	244
Illinois.....	1,169	All other states.....	212	<b>MEDICINE AND SURGERY:</b>		<b>EDUCATION AND HISTORY:</b>	
Indiana.....	718	<b>COMMERCE, FINANCE, INSURANCE, RAILROADS, ETC.:</b>		United States.....	197	United States.....	202
Iowa.....	891	United States.....	264	Illinois.....	20	Illinois.....	58
Kansas.....	679	Illinois.....	23	Michigan.....	11	Massachusetts.....	18
Massachusetts.....	326	Michigan.....	5	Missouri.....	10	New York.....	37
Michigan.....	634	New York.....	91	New York.....	42	Pennsylvania.....	15
Minnesota.....	643	Pennsylvania.....	24	Pennsylvania.....	18	All other states.....	99
Missouri.....	797	All other states.....	121	All other states.....	87	<b>SOCIETY, ART, MUSIC, AND FASHION:</b>	
Nebraska.....	558	<b>TRADE JOURNALS:</b>		<b>LAW:</b>		United States.....	164
New York.....	1,080	United States.....	685	Illinois.....	58	Illinois.....	10
Ohio.....	882	Illinois.....	102	Massachusetts.....	10	Massachusetts.....	9
Pennsylvania.....	1,013	Massachusetts.....	25	Michigan.....	4	New York.....	75
Texas.....	857	Michigan.....	15	Missouri.....	4	Pennsylvania.....	12
Wisconsin.....	596	Missouri.....	37	New York.....	8	All other states.....	58
All other states.....	5,895	New York.....	191	All other states.....	27	<b>COLLEGE AND SCHOOL PERIODICALS:</b>	
<b>RELIGIOUS:</b>		Ohio.....	42	<b>SCIENCE AND MECHANICS:</b>		United States.....	271
United States.....	1,251	Pennsylvania.....	62	United States.....	139	Illinois.....	28
Illinois.....	123	All other states.....	211	District of Columbia.....	2	Massachusetts.....	17
Massachusetts.....	55	<b>GENERAL LITERATURE:</b>		Illinois.....	26	New York.....	26
New York.....	135	United States.....	340	New York.....	52	Pennsylvania.....	20
Ohio.....	142	Illinois.....	36	Pennsylvania.....	20	Texas.....	13
Pennsylvania.....	252	Iowa.....	6	All other states.....	37	All other states.....	158
Tennessee.....	53	Kansas.....	5	<b>FRATERNAL:</b>		<b>MISCELLANEOUS:</b>	
All other states.....	491	Maine.....	10	United States.....	419	United States.....	139
<b>AGRICULTURAL, HORTICULTURAL, DAIRY, STOCK RAISING, ETC.:</b>		Massachusetts.....	18	Illinois.....	49	Illinois.....	17
United States.....	316	Missouri.....	14	Indiana.....	17	Massachusetts.....	9
Illinois.....	36	New York.....	112	Iowa.....	10	New York.....	39
Iowa.....	21			Massachusetts.....	22	All other states.....	74

New York leads in number of publications in the interest of commerce, finance, insurance, railroads, and of trade journals; and in such as are devoted to general literature, education and history, medicine and surgery, science and mechanics, and to society, art, music, and fashion. Illinois is first in number of publications classed under "news, politics, and family reading"; "agricultural, horticultural, dairy, stock raising, etc.," "law," and "fraternal." Pennsylvania leads in religious publications, and in college and school periodicals.

Classification according to language.—Table 39 shows the number of publications in English and in several of the foreign languages for 1909 and 1904, and the percentages of increase from 1904 to 1909.

LANGUAGE.	NUMBER.		Per cent of increase: <sup>1</sup> 1904-1909
	1909	1904	
Total.....	22,141	21,848	1.4
English.....	20,744	20,599	0.7
Foreign (including foreign and English).....	1,397	1,249	11.8
French.....	39	46	-15.2
German.....	692	700	-1.1
Italian.....	104	63	65.1
Scandinavian.....	161	162	-0.6
Letto-Slavic.....	169	128	32.0
All other.....	232	150	54.7

<sup>1</sup> A minus sign (-) denotes decrease.

The number of publications in English did not increase, either absolutely or proportionately, as much as the number in foreign languages, the absolute increase being 145 in the case of the former, as com-

pared with 148 in the case of the latter, and the percentage of gain, seven-tenths of 1 per cent, as compared with 11.8 per cent. The percentage of increase was greatest (65.8 per cent) for publications in Italian, and that for those in Letto-Slavic came next with 32 per cent.

Publications in French and German decreased in number. These statements, however, are not to be taken as necessarily conveying any idea of increase or decrease in circulation, for fewer publications at one census may show a greater circulation than a larger number of publications at another census.

Circulation of newspapers and periodicals in general.—In all tables where average circulation is shown, the figures are for the average circulation per issue as reported to the Bureau of the Census.

At censuses prior to 1909 the Sunday newspapers and periodicals were not shown separately in the reports, but were treated as editions of dailies if published by daily newspapers, or as weeklies if published by concerns publishing no other newspaper. At the census of 1909 these Sunday newspapers and periodicals were tabulated separately.

In tables showing number and circulation of all classes of publications, 1909 and 1904 only, the 1904 figures for circulation of daily—number is not affected—and for both number and circulation of Sunday and weekly publications, are made comparable according to the method employed at the census of 1909. This is true, also, of the 1904 figures for dailies, Sundays, and weeklies, when totals for these are shown in separate tables. It was not possible to change the figures for 1899.

In 1904 and 1899 the average daily circulation was computed in the following manner: The daily non-Sunday circulation as reported was multiplied by six, representing the six days' issues; the Sunday circulation was added, and the total thus obtained divided by seven. This daily average was in many cases greater than the average for the six days, without Sunday, as the Sunday paper generally had the larger circulation.

Table 40 shows the aggregate number of copies per annum of all newspapers and periodicals classified according to period of issue for 1909 and 1904. The figures are derived from the average circulation per issue.

CLASS.	AGGREGATE NUMBER OF COPIES PUBLISHED DURING YEAR.	
	1909	1904
Total.....	11,591,353,613	9,887,416,245
Daily.....	7,578,348,801	6,145,004,739
Sunday.....	694,058,664	625,161,732
Triweekly.....	52,320,684	46,206,204
Semiweekly.....	240,543,576	305,496,256
Weekly.....	2,122,704,180	1,883,789,284
Monthly.....	759,306,420	771,673,860
Quarterly.....	64,232,396	46,838,620
All other classes.....	79,088,892	63,245,490

Table 41 shows the number of all the newspapers and periodicals grouped according to period of issue, and gives the aggregate number of copies per issue of the publications of each class for the years 1909, 1904, and 1899, the figures for 1909 being adjusted to correspond, in the matter of Sunday newspapers and periodicals, with those of 1904 and 1899.

	1909	1904	1899
Number.....	21,653	21,394	18,226
Daily (including Sunday editions of dailies).....			
Number.....	2,600	2,452	2,226
Aggregate circulation.....	24,359,195	19,898,134	15,102,156
Triweekly.....			
Number.....	73	58	62
Aggregate circulation.....	335,389	296,194	228,610
Semiweekly.....			
Number.....	635	645	637
Aggregate circulation.....	2,312,919	2,937,464	2,832,868
Weekly (including exclusively Sunday issues).....			
Number.....	15,129	15,046	12,979
Aggregate circulation.....	41,283,714	36,732,037	34,242,052
Monthly.....			
Number.....	2,491	2,500	1,817
Aggregate circulation.....	63,280,535	64,306,155	37,839,897
Quarterly.....			
Number.....	361	353	237
Aggregate circulation.....	16,058,099	11,709,655	11,067,422
All other.....			
Number.....	364	340	268
Aggregate circulation.....	4,093,874	2,878,594	5,546,329

Table 42 shows the absolute and relative increase in circulation per issue for each class for the 10 years 1899 to 1909 and for each five-year period.

CLASS.	INCREASE IN CIRCULATION PER ISSUE. <sup>1</sup>					
	1899-1909		1904-1909		1899-1904	
	Absolute.	Per cent.	Absolute.	Per cent.	Absolute.	Per cent.
Daily.....	9,257,039	61.3	4,461,061	22.4	4,795,978	31.8
Triweekly.....	106,779	46.7	39,195	13.2	67,584	29.6
Semiweekly.....	-519,949	-18.4	-624,545	-21.2	104,596	3.7
Weekly.....	7,041,662	20.6	4,551,677	12.4	2,489,985	7.3
Monthly.....	25,410,638	67.1	-1,025,620	-1.6	26,436,258	69.8
Quarterly.....	4,990,677	45.1	4,348,444	37.1	642,233	5.8
All other classes.....	-1,452,455	-26.2	1,215,280	42.2	-2,667,735	-48.1

<sup>1</sup> A minus sign (-) denotes decrease.

The circulation of the daily and of the monthly publications increased during the decade in about the same proportions, 61.3 per cent and 67.1 per cent, respectively. That of the triweekly, weekly, and quarterly publications increased considerably, while that of semiweeklies and "all other classes" decreased.

A great increase in the circulation of the quarterlies, as shown by Table 42, took place between 1904 and 1909, and in that of monthly publications, between 1899 and 1904. The decrease in the circulation of the latter class between 1904 and 1909 was due largely to the discontinuance in the state of Maine of several publications of low subscription rates which had reported a very large combined circulation.

Among "all other classes" were included the publications issued semimonthly and bimonthly, semi-

quarterly, and at various infrequent intervals from three to ten times a year, semiannually and annually. From 1899 to 1904, however, there was a great decrease in the circulation of such publications.

**Circulation per 1,000 literate population.**—Table 43 shows the circulation of the newspapers and periodicals classified according to period of issue, the average circulation per issue and the average circulation per 1,000 literate persons 10 years of age and over being given for 1909 and 1899 for each class.

CLASS.	NEWSPAPERS AND PERIODICALS IN ALL LANGUAGES.			
	Average circulation per issue.		Circulation per 1,000 literate population 10 years of age and over. <sup>1</sup>	
	1909	1899	1909	1899
Daily (including Sunday edition of daily).....	24,359,195	15,102,156	369	292
Triweekly.....	335,389	228,610	5	4
Semiweekly.....	2,312,919	2,832,868	35	55
Weekly (including exclusively Sunday).....	41,283,714	34,242,052	625	661
Monthly.....	63,280,535	37,899,897	958	732
Quarterly.....	16,058,099	11,067,422	243	214
All other.....	4,063,874	5,546,329	62	107

<sup>1</sup> Based on literate population 10 years of age and over—1910, 66,064,107; 1900, 51,709,755.

The decrease in average circulation of weekly publications per 1,000 literate population was confined to newspapers, the circulation of weeklies other than newspapers showing an increase during the decade. (See discussion under "weeklies," p. —.) The daily newspapers and the monthly publications showed large increases in circulation per 1,000 literate population, the increases being 26.4 per cent for the daily and 30.9 per cent for the monthly publications.

**Period of issue.**—Table 44 shows the number and aggregate circulation of daily, Sunday, and weekly newspapers in 1909 and 1904, and the absolute and relative increases in each class during the five-year period 1904–1909.

	1909	1904	INCREASE.	
			Absolute.	Per cent.
Daily (exclusive of Sunday):				
Number.....	2,600	2,452	148	6.0
Aggregate circulation.....	24,211,977	19,632,603	4,579,374	23.3
Sunday:				
Number.....	520	494	26	5.3
Aggregate circulation.....	13,347,282	12,022,341	1,324,941	11.0
Weekly:				
Number.....	15,097	15,006	91	0.6
Aggregate circulation.....	40,822,965	36,226,717	4,596,248	12.7

**Dailies.**—The daily newspaper, according to the present census definition, is a publication issued every week day, Sunday editions of such publications being excluded. A morning and evening paper issued by the same plant are counted as two papers. There are a few daily publications that do not contain the general

news. In 1909, 23 such publications were reported, including 15 college dailies, 3 financial guides or financial news reports, 1 agricultural paper, a furniture trade journal, a law publication, a religious journal (Bohemian), and a summer hotel paper. Statistics for these are included in the tables, but their aggregate circulation is insignificant.

Table 45 shows, by geographic divisions and states, the number of daily newspapers, divided into morning and evening publications, for 1909, 1904, and 1899.

DIVISION AND STATE.	NUMBER OF DAILY PUBLICATIONS.								
	Total.			Morning.			Evening.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
United States.....	2,600	2,452	2,226	760	637	595	1,840	1,615	1,631
NEW ENGLAND.....	172	179	192	45	44	50	127	135	142
Maine.....	14	17	15	7	6	5	7	11	10
Massachusetts.....	86	89	98	15	21	25	71	68	73
Rhode Island.....	12	13	12	4	3	3	8	10	9
Connecticut.....	38	36	44	11	9	13	27	27	31
New Hampshire and Vermont.....	22	24	23	8	5	4	14	19	19
MIDDLE ATLANTIC.....	508	492	452	166	134	122	342	358	380
New York.....	231	217	207	84	65	63	147	152	144
New Jersey.....	54	55	49	19	13	7	35	42	42
Pennsylvania.....	223	220	196	63	56	52	160	164	144
EAST NORTH CENTRAL.....	702	694	653	156	128	123	546	566	530
Ohio.....	184	190	170	37	38	24	147	152	146
Indiana.....	172	161	150	38	28	20	134	133	130
Illinois.....	194	192	197	51	36	44	143	156	153
Michigan.....	87	86	70	20	16	14	67	70	56
Wisconsin.....	65	65	60	10	10	15	55	55	45
WEST NORTH CENTRAL.....	344	330	311	77	77	74	267	253	237
Minnesota.....	42	51	44	10	16	12	32	35	32
Iowa.....	68	68	65	15	15	16	53	51	49
Missouri.....	91	92	92	20	24	24	71	68	68
Nebraska.....	34	31	32	11	10	7	23	21	25
Kansas.....	78	65	53	12	6	7	66	59	46
North Dakota and South Dakota.....	31	25	25	9	6	8	22	19	17
SOUTH ATLANTIC.....	186	183	159	75	71	64	111	112	95
Maryland.....	18	20	18	9	10	8	9	10	10
Virginia.....	32	31	37	13	14	15	19	17	22
West Virginia.....	34	33	19	11	11	6	23	22	13
North Carolina.....	31	30	26	9	10	9	22	20	18
South Carolina.....	13	14	7	5	4	3	8	10	4
Georgia.....	27	26	27	14	11	15	13	15	12
Florida.....	19	20	11	7	8	4	12	12	7
Delaware and District of Columbia.....	12	9	14	7	3	5	5	6	9
EAST SOUTH CENTRAL.....	95	86	75	39	33	30	56	53	45
Kentucky.....	35	34	27	16	14	10	19	20	17
Tennessee.....	16	17	16	7	8	9	9	9	7
Alabama.....	26	21	19	11	8	8	15	13	11
Mississippi.....	18	14	13	5	3	3	13	11	10
WEST SOUTH CENTRAL.....	218	183	141	53	34	37	165	149	104
Arkansas.....	29	27	20	6	3	4	23	24	16
Louisiana.....	23	25	23	6	7	8	17	18	15
Oklahoma.....	67	44	15	15	6	3	52	38	12
Texas.....	99	87	83	26	18	22	73	69	61
MOUNTAIN.....	137	105	90	54	35	31	83	70	59
Montana.....	17	12	11	6	5	5	11	7	6
Colorado.....	53	42	42	19	13	13	34	29	29
Arizona.....	19	16	10	8	5	4	11	11	6
Nevada.....	15	9	9	7	3	3	8	6	6
Idaho, Wyoming, New Mexico, and Utah.....	33	26	18	14	9	6	19	17	12
PACIFIC.....	238	200	153	95	81	64	143	119	89
Washington.....	41	29	15	17	10	8	24	19	7
Oregon.....	31	23	21	13	9	9	18	14	12
California.....	166	148	117	65	62	47	101	86	70

The increase during the decade in the total number of daily newspapers in the United States was 374, or 16.8 per cent—every geographic division but New England sharing in the gain. The greatest increases, both absolute and relative, were reported by the Pacific and West South Central divisions. Every state

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in New England except Rhode Island, whose number remained stationary, showed a loss in the number of dailies between 1899 and 1909.

Table 46 shows the average circulation of daily newspapers, not including Sunday editions, in 1909

and 1904, for the total of such publications and also for morning and evening issues. In order to avoid disclosures of the reported circulation of certain newspapers, the statistics for a few of the states have been combined.

Table 46

DIVISION AND STATE.	DAILY NEWSPAPERS AND PERIODICALS.											
	Average combined circulation per issue, exclusive of Sunday editions.								Per cent of total.			
	Total.				Morning.		Evening.		Morning.		Evening.	
	1909	Per cent of total: 1909	1904	Percent of increase: 1904-1909	1909	1904	1909	1904	1909	1904	1909	1904
United States.....	24,211,977	100.0	19,632,603	23.3	9,605,694	7,843,565	14,806,283	11,789,038	39.7	40.0	60.3	60.0
New England.....	2,350,643	9.7	1,975,643	19.0	840,831	891,052	1,509,812	1,084,591	35.8	45.1	64.2	54.9
Maine.....	85,363	0.4	74,287	14.9	44,713	30,175	40,650	44,112	52.4	40.6	47.6	59.4
Massachusetts.....	1,765,690	7.3	1,453,263	21.5	662,632	760,933	1,113,058	692,330	37.0	52.4	63.0	47.6
Rhode Island.....	147,045	0.6	131,050	12.2	30,838	20,186	116,207	110,870	21.0	15.4	78.0	84.6
Connecticut.....	259,543	1.1	229,367	12.7	71,942	51,629	186,601	177,728	27.8	22.5	72.2	77.5
New Hampshire and Vermont.....	94,002	0.4	87,080	7.2	40,706	28,129	53,296	59,551	43.3	32.1	56.7	67.9
Middle Atlantic.....	8,614,971	35.6	7,398,157	16.4	3,505,478	2,911,450	5,109,495	4,486,707	40.7	39.4	59.3	60.6
New York.....	5,253,521	21.7	4,573,040	14.9	2,168,690	1,715,580	3,084,831	2,858,051	41.3	37.5	58.7	62.5
New Jersey.....	437,144	1.8	303,930	48.8	110,959	42,706	326,185	261,224	25.4	14.1	74.6	85.9
Pennsylvania.....	2,924,306	12.1	2,520,587	16.0	1,225,827	1,153,155	1,698,479	1,367,432	41.9	45.7	58.1	54.3
East North Central.....	5,576,164	23.0	4,700,985	18.6	1,778,898	1,481,899	3,797,266	3,219,086	31.9	31.5	68.1	68.5
Ohio.....	1,542,855	6.4	1,357,135	13.7	385,254	342,426	1,157,601	1,014,709	25.0	25.2	75.0	74.8
Indiana.....	625,591	2.6	538,121	16.3	219,665	210,547	405,926	321,574	35.1	40.2	64.9	50.8
Illinois.....	2,323,913	9.6	1,954,329	18.0	889,180	693,700	1,434,733	1,280,029	38.3	35.5	61.7	64.5
Michigan.....	681,919	2.8	544,282	25.3	179,757	141,872	502,162	402,410	26.4	26.1	73.6	73.9
Wisconsin.....	401,886	1.7	307,118	30.9	105,042	87,354	296,844	219,764	26.1	28.4	73.9	71.6
West North Central.....	3,167,058	13.1	2,299,353	37.7	1,339,874	942,117	1,827,184	1,357,236	42.3	41.0	57.7	59.0
Minnesota.....	476,252	2.0	460,811	3.4	116,212	169,018	360,040	290,893	24.4	36.9	75.0	63.1
Iowa.....	450,919	1.8	327,211	37.8	110,794	89,799	340,125	237,412	24.6	27.4	75.4	72.6
Missouri.....	1,624,621	6.7	1,126,760	44.2	802,263	550,210	732,358	576,550	54.9	48.8	45.1	51.2
Nebraska.....	262,109	1.1	185,335	41.0	85,929	56,990	176,180	128,845	32.8	30.7	67.2	69.3
Kansas.....	250,050	1.0	155,368	60.9	95,130	55,900	153,920	99,468	38.4	36.0	61.6	64.0
North and South Dakota.....	103,107	0.4	43,368	137.7	38,546	19,800	64,561	24,068	37.4	44.5	62.6	55.5
South Atlantic.....	1,197,455	4.9	979,712	22.2	574,586	482,131	622,869	497,581	48.0	49.2	52.0	50.8
Maryland.....	310,870	1.3	296,878	4.7	170,516	175,545	140,354	121,333	54.9	59.1	45.1	40.9
Virginia.....	174,149	0.7	131,099	32.8	78,253	64,249	95,896	66,850	44.9	49.0	55.1	51.0
West Virginia.....	99,407	0.4	75,345	31.9	45,086	34,605	54,321	40,740	45.4	45.9	54.0	54.1
North Carolina.....	93,952	0.4	65,232	44.0	49,623	36,391	44,329	28,841	52.8	55.8	47.2	44.2
Georgia.....	51,624	0.2	32,193	60.4	33,115	18,243	18,509	13,950	64.1	50.7	35.9	43.3
Florida.....	215,660	0.9	178,904	20.5	84,541	70,884	131,119	102,020	39.2	43.0	60.8	57.0
Alabama.....	80,300	0.3	54,875	46.3	44,802	30,490	35,498	24,385	55.8	55.6	44.2	44.4
Delaware and District of Columbia.....	171,493	0.7	145,186	18.1	68,650	45,724	102,843	99,462	40.0	31.5	60.0	68.5
East South Central.....	658,675	2.7	467,811	40.8	307,641	210,241	351,034	257,570	46.7	44.9	53.3	55.1
Kentucky.....	226,180	0.9	162,658	39.1	89,164	64,981	137,016	98,277	39.4	39.6	60.6	60.4
Tennessee.....	245,658	1.0	183,050	34.2	127,295	108,968	118,363	74,082	51.8	59.5	48.2	40.5
Alabama.....	139,345	0.6	99,853	39.6	72,982	31,142	66,363	68,711	52.4	31.2	47.6	68.8
Mississippi.....	47,492	0.2	22,250	113.4	18,200	5,750	29,292	16,500	38.3	25.8	61.7	74.2
West South Central.....	712,442	2.9	494,591	44.0	341,142	223,992	371,300	270,599	47.9	45.3	52.1	54.7
Arkansas.....	60,175	0.2	39,942	50.7	29,974	12,050	30,201	27,892	49.8	30.2	50.2	69.8
Louisiana.....	136,226	0.6	134,828	1.0	64,946	63,330	71,280	71,498	47.7	47.0	52.3	63.0
Oklahoma.....	185,479	0.8	74,451	149.1	79,817	31,347	105,662	43,104	43.0	42.1	57.0	57.9
Texas.....	330,562	1.4	245,370	34.7	166,405	117,265	104,157	128,105	50.3	47.8	49.7	52.2
Mountain.....	564,099	2.3	368,008	53.3	293,524	155,519	270,575	212,487	52.0	42.3	48.0	57.7
Montana.....	70,203	0.3	58,669	19.7	36,146	28,269	34,057	30,400	51.5	48.2	48.5	51.8
Colorado.....	335,147	1.4	209,185	60.2	150,250	82,362	175,807	126,823	47.5	39.4	52.5	60.6
Arizona.....	33,328	0.1	22,354	49.1	17,840	9,814	15,488	12,540	53.5	43.9	48.5	56.1
Nevada.....	15,830	0.1	6,930	128.4	9,562	2,980	6,268	3,950	60.4	43.0	39.6	57.0
Idaho, Wyoming, New Mexico, and Utah.....	109,501	0.5	70,868	54.6	70,726	32,094	38,865	38,774	64.5	45.3	35.5	54.7
Pacific.....	1,370,470	5.7	948,345	44.5	623,722	545,164	746,748	403,181	45.5	57.5	54.5	42.5
Washington.....	317,158	1.3	186,618	70.0	111,058	83,449	206,100	103,169	35.0	44.7	65.0	55.3
Oregon.....	150,580	0.6	92,171	63.3	55,375	38,150	95,185	54,021	36.8	41.4	63.2	58.6
California.....	902,752	3.7	669,566	34.8	457,289	423,565	445,463	245,991	50.7	63.3	49.3	36.7

Over one-third of the total circulation for the United States in 1909 was reported by the states of the Middle Atlantic division, and considerable over one-fifth by those of the East North Central division.

Among the individual states New York led with over one-fifth of the total circulation of the country, Pennsylvania following with a little more than one-eighth, and Illinois with about one-tenth. Massachusetts, Missouri, Ohio, and California were the only remaining states having over 3 per cent of the total circulation.

The greatest absolute increase in the total circulation of dailies reported by any division was 1,216,814, reported by the Middle Atlantic division, and the least, 190,864, by the East South Central. The greatest percentage of increase (53.3 per cent) is shown for the Mountain division, and the least (16.4 per cent) for the Middle Atlantic.

Among the states New York reported the greatest absolute increase in circulation (679,881), and Louisiana the least (1,398). Oklahoma, with a total of 185,479 in 1909, reported the highest percentage of gain (149.1 per cent), and Louisiana the lowest (1 per cent).

In 1909 the circulation of the evening exceeded that of the morning publications in eight of the nine geographic divisions. In only two of these—the New England and the South Atlantic—was the relative increase greater than in 1904. The Mountain division is the only one of the divisions in which the morning circulation was greater than the evening, a reversal of conditions as reported for that division for 1904. On the other hand, the Pacific division, in which the morning circulation was the larger in 1904, reported the evening circulation as the larger in 1909.

Maine among the New England states and Missouri among the West North Central states reported in 1909 a larger morning than evening circulation, as

did also 11 other states in other divisions. In most of these states, however, the evening circulation exceeded the morning in 1904.

**Dailies in 10 leading cities.**—Table 47 shows the number and circulation of dailies, both morning and evening, published in 10 leading cities (those having a population in 1910 of 400,000 or over) for 1909 and 1904.

**Table 47** DAILY NEWSPAPERS AND PERIODICALS IN CITIES HAVING A POPULATION OF 400,000 AND OVER.

CITY.	Number.						Average combined daily circulation.		
	Total.		Morning.		Evening.		1909	1904	Per cent increase: 1904-1909
	1909	1904	1909	1904	1909	1904			
Total, 10 cities...	251	234	126	113	125	121	11,371,945	9,915,344	14.7
New York, N. Y....	85	75	44	37	41	38	4,000,922	3,588,193	14.0
Chicago, Ill....	39	34	19	11	20	23	1,809,325	1,584,187	14.2
Philadelphia, Pa....	22	21	12	12	10	9	1,533,507	1,405,866	9.1
St. Louis, Mo....	14	15	7	10	7	5	666,235	585,716	17.8
Boston, Mass....	13	14	5	6	8	8	1,300,069	1,054,365	23.3
Cleveland, Ohio....	13	13	5	4	8	9	403,151	349,058	15.5
Baltimore, Md....	10	11	7	7	3	4	285,000	276,429	3.1
Pittsburgh, Pa....	13	11	6	6	7	5	537,933	466,024	15.4
Buffalo, N. Y....	13	11	2	2	11	9	311,131	285,114	9.1
San Francisco, Cal..	29	29	19	18	10	11	434,582	340,392	27.7

The circulation of daily newspapers and periodicals printed in these 10 cities constituted 47 per cent of the total daily circulation of the entire country in 1909, as against 50.5 per cent in 1904. This change shows that the circulation of dailies published outside of the great centers of population has been increasing during the past few years more rapidly than that of papers in those centers. The circulation of the daily newspapers published in New York City constituted 16.9 per cent of the total for all dailies in the country in 1909, as compared with 18.3 per cent in 1904.

Table 48 shows the circulation of morning and evening dailies in nine of the cities for 1909 and 1904. The statistics for Buffalo must be omitted to avoid disclosing the circulation of individual papers.

**Table 48** MORNING AND EVENING NEWSPAPERS AND PERIODICALS IN CITIES HAVING A POPULATION OF 400,000 AND OVER.

CITY.	Average combined circulation per issue.						Per cent of total.			
	Morning.			Evening.			Morning.		Evening.	
	1909	1904	Percent of increase: <sup>1</sup> 1904-1909	1909	1904	Percent of increase: <sup>1</sup> 1904-1909	1909	1904	1909	1904
Total for 9 cities <sup>2</sup> .....	4,976,143	4,298,534	15.8	6,084,671	5,331,696	14.1	45.0	44.6	55.0	55.4
New York, N. Y. ....	1,806,820	1,394,196	29.6	2,284,102	2,193,997	4.1	44.2	38.9	55.8	61.1
Chicago, Ill. ....	755,683	604,584	25.0	1,053,642	979,603	7.6	41.8	38.2	58.2	61.8
Philadelphia, Pa. ....	753,309	732,829	2.8	780,288	673,037	15.9	49.1	52.1	50.9	47.9
St. Louis, Mo. ....	284,816	318,403	-10.5	381,419	247,313	54.2	42.8	56.3	57.2	43.7
Boston, Mass. ....	500,663	461,221	21.6	739,406	593,144	24.7	43.1	43.7	56.9	56.3
Cleveland, Ohio. ....	158,920	93,917	69.2	244,231	255,141	-4.3	39.4	26.9	60.6	73.1
Baltimore, Md. ....	104,447	170,145	-3.3	120,553	106,284	13.4	57.7	61.6	42.3	38.4
Pittsburgh, Pa. ....	211,131	261,949	-19.4	326,802	204,075	60.1	39.2	56.2	60.8	43.8
San Francisco, Cal. ....	280,354	261,290	7.3	154,228	79,102	95.0	64.5	76.8	35.5	23.2

<sup>1</sup> A minus sign (-) denotes decrease.  
<sup>2</sup> Buffalo not included, as only two morning papers were published in that city, and to present the circulation for these would disclose the business of individual establishments.

The preponderance of the evening circulation was not only maintained from 1904 to 1909, but increased in New York, Chicago, Philadelphia, Boston, and Cleveland; and that of the morning, but with decreasing proportions, in Baltimore and San Francisco. At the census of 1909 St. Louis had, as reported, a larger circulation of evening dailies than of morning; this condition was reversed in 1904. The morning circulation of Pittsburgh dailies was reported as superior in size to the evening for 1904; at the census of 1909 the figures showed that the evening circulation was the larger.

Language.—Table 49 shows the number and circulation of daily newspapers and periodicals in English and in languages other than English for 1909 and 1904.

	NUMBER.		AVERAGE COMBINED CIRCULATION PER ISSUE.				
	1909	1904	1909	Per cent of total.	1904	Per cent of total.	Per cent of increase: 1904-1909
Total.....	2,600	2,452	24,211,977	100.0	19,632,603	100.0	23.3
English.....	2,463	2,325	22,425,606	92.6	18,416,711	93.8	21.8
Foreign.....	137	127	1,786,281	7.4	1,215,892	6.2	46.9

The percentage of increase in the circulation of newspapers in foreign languages was more than double that of publications in English.

Table 50 shows the number and circulation, by states, of the dailies published in languages other than English in 1909 and 1904.

STATE.	DAILY PUBLICATIONS IN FOREIGN LANGUAGES.				
	Number.		Average combined circulation per issue.		
	1909	1904	1909	1904	Per cent of increase: <sup>1</sup> 1904-1909
United States.....	137	127	1,786,281	1,215,892	46.9
California.....	13	11	48,633	34,350	41.6
Illinois.....	21	20	271,500	200,180	35.6
Indiana.....	5	7	17,766	14,350	23.8
Massachusetts.....	5	3	16,200	11,232	44.2
Michigan.....	5	4	18,975	11,300	67.9
Missouri.....	6	5	141,151	75,960	85.8
New Jersey.....	3	4	8,850	8,910	-0.7
New York.....	35	28	968,340	557,956	73.6
Ohio.....	11	11	89,665	69,687	28.7
Pennsylvania.....	8	10	75,649	112,127	-32.5
Wisconsin.....	6	8	53,433	54,774	6.7
All other states <sup>2</sup> .....	19	16	71,119	65,066	9.3

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes: In 1909, Colorado, 1 publication; Connecticut, 1; Florida, 1; Iowa, 2; Kentucky, 1; Louisiana, 1; Maryland, 2; Minnesota, 2; Oregon, 1; Rhode Island, 1; Texas, 2; Virginia, 1; Washington, 2; West Virginia, 1. In 1904, Colorado, 1 publication; Iowa, 1; Kentucky, 1; Louisiana, 2; Maryland, 2; Minnesota, 2; New Hampshire, 1; Rhode Island, 1; Texas, 1; Virginia, 2; Washington, 1; West Virginia, 1.

More than half of the circulation of dailies printed in foreign languages in 1909 was of publications issued in New York, which state also showed the greatest gain in circulation of any state between 1904 and 1909. A slight loss in the circulation of such papers

is shown as having taken place in New Jersey, and a much larger one in Pennsylvania.

Table 51 shows the number of dailies printed in each of the foreign languages represented, for 1909 and 1904.

LANGUAGE.	NUMBER OF DAILIES IN FOREIGN LANGUAGES.	
	1909	1904
Total foreign.....	137	127
Arabic.....	1	1
Bohemian.....	7	6
Chinese.....	3	4
Croatian.....	1	1
Danish and Norwegian.....	1	1
Finnish.....	1	1
French.....	9	8
German.....	65	75
Greek.....	1	1
Hungarian.....	3	3
Italian.....	10	7
Japanese.....	8	4
Japanese and English.....	1	1
Norwegian.....	1	1
Norwegian and Danish.....	1	1
Polish.....	9	6
Slavonic (not specified).....	1	1
Slovak.....	1	1
Slovenic.....	3	1
Spanish.....	3	8
Yiddish.....	11	8

<sup>1</sup> Includes 1 Hebrew.

The German dailies led in number in 1909, but with a decrease of 10 as compared with 1904. New York was first and Illinois next in the number of such dailies, a reversal of the conditions in this respect existing at the earlier census. Yiddish dailies were second in number and Italian dailies third. New York reported more dailies in these languages than any other state, and also the only Arabic daily, the only Croatian daily, and the only Greek daily reported. But one Finnish and one Slovak daily were reported, the former from Michigan and the latter from Pennsylvania. The three Chinese dailies were all published in California, while of the three Spanish dailies Texas reported two and Florida one.

Table 52 shows the average daily number of copies of the publications in each language so far as this can be shown without disclosure of the circulation of individual papers for 1909 and 1904.

LANGUAGE.	AVERAGE COMBINED CIRCULATION PER ISSUE.		
	1909	1904	Per cent of increase: <sup>1</sup> 1904-1909
Total.....	1,786,281	1,215,892	46.9
Bohemian.....	52,143	45,267	15.2
Chinese.....	9,500	8,800	8.0
French.....	40,230	47,872	-16.0
German.....	753,116	680,231	10.7
Hungarian.....	54,300	21,700	150.2
Italian.....	100,300	91,350	75.5
Japanese.....	24,603	9,300	159.0
Polish.....	88,937	49,616	79.2
Spanish.....	3,400	3,400	0.0
Yiddish.....	524,900	226,156	132.1
All other languages <sup>2</sup> .....	74,852	35,400	111.4

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes for 1909, Arabic, Croatian, Danish and Norwegian, Finnish, Greek, Japanese-English, Slovak, Slovenian. In 1904, Arabic, Danish and Norwegian, Finnish, Norwegian, Slavonic, not specified, and Slovenian.

In 1909 German dailies had over two-fifths of the total circulation of dailies in foreign languages and the Yiddish followed with nearly one-third. The greatest percentages of increase (each over 150 per cent) were for Yiddish, Japanese, and Hungarian publications. The greatest circulation of Bohemian publications was reported by concerns in Illinois, of French publications, in Massachusetts, and of those in German, Hungarian, Italian, and Yiddish, in New York.

Sunday newspapers and periodicals.—Table 53 shows, by states and geographic divisions, comparative statistics for Sunday newspapers and periodicals published during 1909 and 1904.

**Table 53** SUNDAY NEWSPAPERS AND PERIODICALS (INCLUDING SUNDAY EDITIONS OF DAILIES).

DIVISION AND STATE.	Number.		Circulation.			
	1909	1904	1909	Per cent of total.	1904	Per cent of increase: <sup>1</sup> 1904-1909
United States.....	520	494	13,347,282	100.0	12,022,341	11.0
<b>NEW ENGLAND.....</b>	<b>29</b>	<b>26</b>	<b>1,267,440</b>	<b>9.5</b>	<b>1,047,420</b>	<b>21.0</b>
Massachusetts.....	15	10	1,122,049	8.4	920,441	21.1
Connecticut.....	10	5	86,261	0.6	59,095	46.0
Maine and Rhode Island <sup>2</sup> .....	4	5	59,130	0.5	61,884	-4.5
<b>MIDDLE ATLANTIC.....</b>	<b>81</b>	<b>78</b>	<b>4,509,079</b>	<b>33.8</b>	<b>4,493,843</b>	<b>1.7</b>
New York.....	48	44	2,957,727	22.2	3,001,505	-3.4
New Jersey.....	6	7	70,070	0.5	73,118	-3.3
Pennsylvania.....	27	27	1,481,282	11.1	1,299,160	14.0
<b>EAST NORTH CENTRAL.....</b>	<b>103</b>	<b>105</b>	<b>2,855,912</b>	<b>21.4</b>	<b>2,651,242</b>	<b>7.7</b>
Ohio.....	25	23	645,869	4.8	544,416	15.6
Indiana.....	20	21	206,176	1.6	365,180	-43.5
Illinois.....	38	40	1,616,506	12.1	1,442,721	12.0
Michigan.....	15	12	256,583	1.9	172,687	48.6
Wisconsin.....	8	9	130,778	1.0	126,238	3.0
<b>WEST NORTH CENTRAL.....</b>	<b>64</b>	<b>67</b>	<b>1,649,780</b>	<b>12.4</b>	<b>1,475,300</b>	<b>11.8</b>
Minnesota.....	7	10	237,205	1.8	190,304	24.6
Iowa.....	14	13	169,678	1.3	133,746	26.9
Missouri.....	21	24	978,377	7.3	970,071	0.9
Nebraska.....	8	8	120,050	1.0	99,779	29.3
Kansas.....	6	5	88,044	0.6	60,500	45.5
North Dakota and South Dakota <sup>2</sup> .....	8	7	47,426	0.4	20,900	126.9
<b>SOUTH ATLANTIC.....</b>	<b>55</b>	<b>57</b>	<b>751,231</b>	<b>5.6</b>	<b>589,247</b>	<b>27.5</b>
Maryland.....	5	5	182,582	1.4	182,500	( <sup>3</sup> )
Virginia.....	8	10	79,258	0.6	62,688	26.4
West Virginia.....	7	6	44,939	0.3	36,962	21.6
North Carolina.....	7	8	39,281	0.3	35,091	11.9
South Carolina.....	4	6	32,447	0.2	24,617	31.8
Georgia.....	13	14	172,039	1.3	143,052	20.3
Florida.....	6	5	48,539	0.4	30,390	59.7
Delaware and District of Columbia <sup>2</sup> .....	5	3	152,146	1.1	73,947	105.8
<b>EAST SOUTH CENTRAL.....</b>	<b>35</b>	<b>33</b>	<b>414,052</b>	<b>3.1</b>	<b>274,576</b>	<b>50.8</b>
Kentucky.....	12	10	115,855	0.8	83,115	39.4
Tennessee.....	7	9	183,196	1.4	125,905	45.5
Alabama.....	9	10	78,679	0.6	52,766	49.1
Mississippi.....	7	4	36,322	0.3	12,800	183.8
<b>WEST SOUTH CENTRAL.....</b>	<b>56</b>	<b>43</b>	<b>583,028</b>	<b>4.4</b>	<b>450,472</b>	<b>29.4</b>
Arkansas.....	7	7	50,593	0.4	24,337	107.9
Louisiana.....	8	8	152,920	1.1	159,183	-3.9
Oklahoma.....	11	8	77,326	0.6	43,802	76.5
Texas.....	30	20	302,189	2.3	223,150	35.4
<b>MOUNTAIN.....</b>	<b>39</b>	<b>32</b>	<b>362,439</b>	<b>2.7</b>	<b>313,113</b>	<b>15.8</b>
Montana.....	7	5	46,088	0.4	34,111	41.0
Idaho.....	3	3	13,804	0.1	7,075	80.6
Colorado.....	13	14	223,008	1.7	222,854	0.1
Arizona.....	9	4	17,400	0.1	10,273	69.4
Utah.....	3	3	45,428	0.3	34,200	32.8
Wyoming, New Mexico, and Nevada <sup>2</sup> .....	4	3	14,651	0.1	4,000	266.3
<b>PACIFIC.....</b>	<b>55</b>	<b>53</b>	<b>953,721</b>	<b>7.1</b>	<b>787,128</b>	<b>21.2</b>
Washington.....	13	9	243,663	1.8	130,161	87.2
Oregon.....	6	8	93,142	0.7	58,800	58.4
California.....	36	36	616,916	4.6	598,167	3.1

<sup>1</sup> A minus sign (-) denotes decrease.  
<sup>2</sup> Can not be shown separately without disclosure of individual operations.  
<sup>3</sup> Less than one-tenth of 1 per cent.

The Sunday newspapers and periodicals include and are almost entirely made up of Sunday editions of dailies. At the census of 1899 the number was given as 567, but the circulation was included with that of the dailies (or weeklies if not connected with daily papers). No mention was made of Sunday publications in the reports of the census of 1889, but at the census of 1879 the number was stated to be 252, of which 113 were connected with daily newspapers. During the 30 years following the last-named census, Sunday publications not connected with dailies decreased more than 75 per cent in number, while those connected with dailies gained over 330 per cent.

In the United States as a whole the increase in the total number of Sunday newspapers and periodicals for the five-year period 1904-1909 was 26, and that in average circulation per issue, 1,324,941. The West North Central and South Atlantic divisions reported a decrease in number but an increase in circulation. The other divisions reported increases in both respects, and all save the Middle Atlantic and the East North Central divisions reported increased proportions of the total circulation. These two divisions, nevertheless, together reported 55.2 per cent of the total circulation of Sunday papers in 1909.

The aggregate number of copies reported for 1909 was great enough to furnish 202 copies for each 1,000 literate persons 10 years of age and over reported at the census of 1910.

Sunday newspapers and periodicals published by establishments issuing no daily newspaper numbered 32 in 1909 with a circulation of 460,749, as compared with 40 in 1904 with a circulation of 505,320. New York, Illinois, and New Jersey reported most of the circulation of this class of publications in 1909.

Of the 520 Sunday publications in 1909, 61, with an aggregate circulation of 927,008, were published in languages other than English. In 1904 such papers numbered 54 with a circulation of 915,492.

Table 54 shows the number and circulation of Sunday newspapers in 10 cities having a population of 400,000 or more inhabitants for 1904 and 1909.

**Table 54** SUNDAY NEWSPAPERS IN 10 CITIES HAVING A POPULATION OF 400,000 OR MORE.

CITY.	Number.		Average combined circulation per issue.		Per cent of increase: <sup>1</sup> 1904-1909
	1909	1904	1909	1904	
<b>Total.....</b>	<b>102</b>	<b>101</b>	<b>8,280,707</b>	<b>7,621,353</b>	<b>8.8</b>
New York, N. Y.....	32	30	2,744,990	2,639,348	4.0
Chicago, Ill.....	15	16	1,473,597	1,344,071	9.6
Philadelphia, Pa.....	13	13	1,052,052	952,847	10.4
St. Louis, Mo.....	7	7	670,101	611,405	9.6
Boston, Mass.....	4	5	982,332	835,046	18.8
Cleveland, Ohio.....	5	4	136,340	137,281	35.7
Baltimore, Md.....	6	6	134,378	134,500	( <sup>2</sup> )
Pittsburgh, Pa.....	6	7	385,305	307,526	25.3
Buffalo, N. Y.....	7	6	241,876	220,687	9.6
San Francisco, Cal.....	7	7	359,736	358,652	-7.4

<sup>1</sup> A minus sign (-) denotes decrease.  
<sup>2</sup> Decrease less than one-tenth of 1 per cent.

A comparison of Table 54 with Table 47 shows that the Sunday publications in cities of 400,000 population and over increased at a lower rate, both in number and aggregate circulation, from 1904 to 1909, than the dailies exclusive of Sunday publications. The former class of periodicals increased 1 per cent in number and 8.8 per cent in circulation during the five years mentioned, while the dailies increased 7.3 per cent in number and 14.7 per cent in circulation during the same period. No doubt the growth in the circulation of the Sunday publications issued in these large cities has been checked to some extent by the establishment of Sunday newspapers in smaller places. The only cities, however, to report an actual loss in circulation of Sunday publications were San Francisco and Baltimore.

**Weeklies.**—A weekly "newspaper" is a publication issued once a week and giving general and political news and family reading. It may or may not be published in connection with a daily.

A weekly "periodical" is a publication issued once a week and devoted chiefly to purposes other than the spread of general and political news. The list includes all the "popular" weeklies of large circulation. Some of these contain reviews of current news and political matter, but they are not ordinarily considered as "newspapers." All religious and college weeklies are classed as "periodicals;" also such publications as are devoted to a certain specific interest, as, for instance, agriculture, commerce, fraternal organizations, labor, or science.

Table 55 shows, by states and geographic divisions, the number and circulation of weekly newspapers and periodicals for 1909 and 1904. Papers published on Sundays exclusively are not here included. In Table 41, however, the statistics of all weekly publications, including weeklies published on Sunday, are shown for the United States as a whole for 1909, 1904, and 1899.

Over three-tenths of the circulation of weeklies in 1909 was reported from the states of the Middle Atlantic division, those of the East North Central following with over one-fourth. The Mountain division had the least of all, 1.8 per cent. Among the individual states New York reported nearly one-sixth of the total circulation and Nevada less than one-tenth of 1 per cent of it. Decreases in circulation are shown for 15 states, these ranging from 1.9 per cent in Arkansas to 24.3 per cent in Vermont.

The greatest absolute increase in circulation between

1904 and 1909 by any division was 1,458,123, for the Middle Atlantic division, and the greatest increase by any state (1,419,808) for New York. In general, the highest percentages of increase were shown for the states of the Mountain division.

Table 55

DIVISION AND STATE.	WEEKLY NEWSPAPERS AND PERIODICALS.				
	Number.		Circulation.		
	1909	1904	1909	1904	Percent of increase: 1904-1909
<b>United States.....</b>	<b>15,097</b>	<b>15,006</b>	<b>40,822,965</b>	<b>36,228,717</b>	<b>12.7</b>
<b>NEW ENGLAND.....</b>	<b>590</b>	<b>696</b>	<b>2,500,608</b>	<b>2,116,920</b>	<b>18.1</b>
Maine.....	87	92	186,616	197,485	-5.5
New Hampshire.....	66	104	141,287	146,390	-3.5
Vermont.....	67	82	92,355	122,049	-24.3
Massachusetts.....	271	309	1,911,486	1,445,984	32.2
Rhode Island.....	21	29	34,013	39,542	-14.0
Connecticut.....	78	80	134,479	165,479	-18.5
<b>MIDDLE ATLANTIC.....</b>	<b>2,069</b>	<b>2,138</b>	<b>12,458,495</b>	<b>11,000,372</b>	<b>13.2</b>
New York.....	975	981	6,766,243	5,336,435	26.6
New Jersey.....	247	270	383,231	381,246	0.5
Pennsylvania.....	847	887	5,310,021	5,282,691	0.7
<b>EAST NORTH CENTRAL.....</b>	<b>3,272</b>	<b>3,538</b>	<b>10,466,986</b>	<b>9,908,413</b>	<b>5.6</b>
Ohio.....	699	781	2,913,730	2,747,511	6.0
Indiana.....	517	560	781,896	691,634	-12.3
Illinois.....	1,018	1,039	5,008,590	4,592,043	9.1
Michigan.....	526	570	750,298	774,758	-3.2
Wisconsin.....	512	538	1,012,502	902,487	12.2
<b>WEST NORTH CENTRAL.....</b>	<b>3,925</b>	<b>3,838</b>	<b>7,575,538</b>	<b>6,308,999</b>	<b>20.1</b>
Minnesota.....	614	634	1,269,856	1,151,145	10.3
Iowa.....	784	864	1,419,709	1,167,294	21.6
Missouri.....	731	730	1,871,585	1,739,457	7.6
North Dakota.....	310	212	259,675	175,613	47.9
South Dakota.....	360	263	277,127	198,604	39.5
Nebraska.....	521	535	1,074,554	861,840	24.7
Kansas.....	605	600	1,403,032	1,015,146	38.2
<b>SOUTH ATLANTIC.....</b>	<b>1,116</b>	<b>1,112</b>	<b>2,067,315</b>	<b>1,922,075</b>	<b>7.6</b>
Delaware.....	23	24	25,950	29,815	-13.0
Maryland.....	120	139	185,554	228,001	-18.6
District of Columbia.....	15	24	185,246	213,500	-13.2
Virginia.....	161	149	392,106	352,856	11.1
West Virginia.....	156	166	187,822	213,975	-12.2
North Carolina.....	178	157	395,682	263,091	50.4
South Carolina.....	90	103	133,240	137,439	-3.1
Georgia.....	246	233	423,897	371,274	24.2
Florida.....	127	117	137,818	112,124	22.9
<b>EAST SOUTH CENTRAL.....</b>	<b>810</b>	<b>807</b>	<b>1,905,125</b>	<b>1,601,662</b>	<b>18.9</b>
Kentucky.....	226	230	481,957	466,926	3.2
Tennessee.....	223	230	923,431	753,290	22.6
Alabama.....	179	171	278,245	213,543	30.3
Mississippi.....	182	176	221,492	167,903	31.9
<b>WEST SOUTH CENTRAL.....</b>	<b>1,602</b>	<b>1,391</b>	<b>1,894,359</b>	<b>1,605,514</b>	<b>18.0</b>
Arkansas.....	234	232	241,413	246,118	-1.9
Louisiana.....	141	143	176,193	172,949	1.9
Oklahoma.....	499	387	512,229	352,013	45.5
Texas.....	728	629	964,524	834,434	15.0
<b>MOUNTAIN.....</b>	<b>774</b>	<b>821</b>	<b>742,136</b>	<b>595,358</b>	<b>24.7</b>
Montana.....	101	69	92,027	75,463	21.9
Idaho.....	108	74	91,134	51,265	77.8
Wyoming.....	55	36	39,227	28,000	39.8
Colorado.....	278	274	338,002	294,242	14.9
New Mexico.....	86	53	62,826	38,805	61.7
Arizona.....	41	38	24,675	30,286	-18.5
Utah.....	65	57	71,542	65,742	8.8
Nevada.....	40	20	22,613	11,435	97.8
<b>PACIFIC.....</b>	<b>939</b>	<b>865</b>	<b>1,212,405</b>	<b>1,167,395</b>	<b>3.9</b>
Washington.....	268	226	252,396	217,845	15.9
Oregon.....	176	152	229,585	180,395	27.3
California.....	495	487	730,424	769,155	-5.0

<sup>1</sup> A minus sign (-) denotes decrease.

Separate statistics for weekly "newspapers" and weekly "periodicals" are available only for 1909 and 1904. These are presented by states in Table 56.

The circulation of the weekly periodicals, as reported at the census of 1909, was 48.7 per cent of the combined circulation of weekly newspapers and pe-

riodicals; at the census of 1904 it was 48.1 per cent. The increase in the circulation of the periodicals was 14.1 per cent, as compared with 11.4 per cent for the newspapers. The absolute increase was also greater for periodicals, although they decreased 299 in number, while the newspapers increased 390.

STATE.	NUMBER OF WEEKLY--				AVERAGE COMBINED CIRCULATION PER ISSUE.					
	Periodicals.		Newspapers.		Periodicals.		Per cent of increase: <sup>1</sup> 1904-1909	Newspapers.		Per cent of increase: <sup>1</sup> 1904-1909
	1909	1904	1909	1904	1909	1904		1909	1904	
United States.....	1,194	1,493	13,903	13,513	19,876,630	17,418,166	14.1	20,946,335	18,808,551	11.4
California.....	61	87	434	400	254,521	289,823	-12.2	475,903	479,327	-0.7
Illinois.....	121	160	897	929	3,159,772	3,199,712	-1.2	1,848,818	1,392,331	32.8
Indiana.....	19	39	498	521	206,060	213,568	-3.5	575,806	678,066	-15.1
Iowa.....	27	36	757	828	565,962	279,000	102.9	853,747	888,294	-3.9
Kansas.....	21	14	584	586	212,705	66,290	220.9	1,190,327	948,856	25.4
Kentucky.....	22	32	204	198	183,350	194,700	-3.3	293,607	272,226	7.9
Massachusetts.....	54	62	217	247	1,483,153	1,103,915	34.4	428,333	342,069	26.2
Michigan.....	26	31	509	539	171,602	149,532	14.8	578,696	625,228	-7.4
Minnesota.....	27	37	587	597	161,665	241,398	-33.0	1,108,191	909,747	21.8
Missouri.....	58	65	673	665	583,358	507,319	15.0	1,232,227	1,232,138	4.6
Nebraska.....	21	28	500	507	164,950	271,918	-39.3	909,604	589,922	54.2
New York.....	223	243	752	738	5,090,589	3,716,951	37.0	1,665,654	1,019,484	2.8
North Carolina.....	19	22	159	135	105,406	88,400	87.1	230,276	174,691	31.8
Ohio.....	86	103	613	673	1,687,358	1,390,655	21.3	1,226,372	1,359,856	-9.6
Pennsylvania.....	132	150	715	737	3,920,143	3,896,792	0.6	1,398,878	1,385,899	0.9
Tennessee.....	25	42	198	188	480,896	377,460	29.0	436,535	375,830	16.2
Texas.....	28	39	700	590	207,450	212,250	-2.3	757,074	622,194	21.7
Virginia.....	15	17	146	132	193,367	167,709	15.3	198,739	185,156	7.3
Wisconsin.....	12	27	500	511	167,036	245,736	-32.0	845,406	658,731	28.7
All other states.....	197	254	4,289	3,792	806,287	805,042	0.2	4,636,082	4,073,518	13.8

<sup>1</sup> A minus sign (-) denotes decrease.

The concentration of weekly periodicals is shown in the statement that five states reported 77.2 per cent of the total circulation. These states are Illinois, Massachusetts, New York, Ohio, and Pennsylvania. Among all the states New York showed the greatest absolute gain (1,373,638) and Kansas the greatest percentage of gain (220.9 per cent).

Table 57 shows for 1909 the number and circulation of weekly periodicals other than newspapers, classified according to character, and the per cent distribution of the total circulation.

CHARACTER.	Number: 1909	CIRCULATION OF WEEKLY PERIODICALS: 1909	
		Average, combined per issue.	Per cent of total.
Total.....	1,194	19,876,630	100.0
Religious.....	483	8,544,673	43.0
Agricultural, horticultural, dairy, stock raising, etc.....	92	2,351,368	11.8
Commerce, finance, insurance, railroads, etc.....	84	340,819	1.7
Trade journals.....	195	1,041,785	5.2
General literature.....	52	5,799,136	29.2
Medicine and surgery.....	7	105,811	0.5
Law.....	19	47,843	0.2
Science and mechanics.....	23	289,478	1.5
Fraternal organizations.....	69	454,930	2.3
Education and history.....	14	397,962	2.0
Society, art, music, fashions, etc.....	49	269,945	1.4
College and school periodicals.....	65	72,400	0.4
Miscellaneous.....	42	160,470	0.8

Religious publications contributed over two-fifths of the total circulation, those devoted to general literature being second with almost three-tenths.

Table 58 shows, by states, the number and circulation of weeklies printed in languages other than English for 1909 and 1904.

The circulation of weeklies printed in languages other than English was 8.7 per cent of the total circulation of all weeklies in 1909, compared with 8.2 per cent in 1904.

STATE.	WEEKLY NEWSPAPERS AND PERIODICALS IN LANGUAGES OTHER THAN ENGLISH.				
	Number.		Average combined circulation per issue.		Per cent of increase: <sup>1</sup> 1904-1909
	1909	1904	1909	1904	
United States.....	875	788	3,543,898	2,976,955	19.4
Alabama.....	3	3	5,200	1,900	173.7
Arkansas.....	3	3	3,800	3,200	18.8
California.....	30	29	36,178	42,642	-15.2
Colorado.....	14	9	54,385	22,600	140.6
Connecticut.....	10	11	21,750	27,741	-21.6
Illinois.....	95	81	559,617	543,314	3.0
Indiana.....	9	20	10,750	27,490	-60.9
Iowa.....	42	45	108,583	83,675	29.8
Kansas.....	11	8	18,567	11,830	56.0
Louisiana.....	7	5	22,000	23,989	-8.3
Maryland.....	9	9	20,336	19,970	1.8
Massachusetts.....	29	22	94,106	53,850	74.8
Michigan.....	30	34	72,957	75,280	-3.1
Minnesota.....	43	51	357,589	394,478	-7.0
Missouri.....	26	24	111,218	71,500	55.5
Nebraska.....	34	27	374,112	210,402	77.8
New Jersey.....	32	26	61,407	60,490	1.5
New Mexico.....	19	12	26,015	15,150	71.7
New York.....	94	71	417,494	380,450	9.7
North Dakota.....	10	9	22,490	16,480	36.5
Ohio.....	69	60	369,814	295,355	24.0
Oklahoma.....	5	5	5,276	8,076	-34.7
Oregon.....	5	5	32,900	24,000	37.1
Pennsylvania.....	69	64	185,239	182,289	2.2
Rhode Island.....	3	4	5,400	4,400	22.7
South Dakota.....	12	9	32,200	16,056	100.5
Texas.....	41	27	77,321	48,342	59.9
Utah.....	4	5	4,900	7,050	-30.5
Washington.....	16	12	24,625	30,290	-18.7
Wisconsin.....	73	77	358,819	238,676	50.3
All other states <sup>2</sup> .....	28	21	47,850	43,030	11.2

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes the following: For 1909, Arizona, 6 publications; Delaware, 1; District of Columbia, 1; Florida, 4; Georgia, 3; Kentucky, 2; Maine, 1; Montana, 2; New Hampshire, 1; South Carolina, 1; Tennessee, 2; Virginia, 1; West Virginia, 2; Wyoming, 1; and for 1904, Arizona, 2 publications; District of Columbia, 1; Florida, 2; Georgia, 1; Kentucky, 3; Maine, 3; Montana, 1; New Hampshire, 1; Tennessee, 4; Virginia, 2; West Virginia, 1.

The decreases in circulation shown in several states involved principally publications in German and Swedish. Taking the country as a whole, however, the circulation of the weekly German publications increased. In Oklahoma the decrease was in the circulation of publications in Choctaw and Cherokee-English. Table 59 shows the total circulation of weekly publications in languages other than English.

Table 59

LANGUAGE.	WEEKLY NEWSPAPERS AND PERIODICALS IN LANGUAGES OTHER THAN ENGLISH, AGGREGATE CIRCULATION PER ISSUE.	
	1909	1904
United States.....	3,543,898	2,976,995
Bohemian.....	67,950	67,014
Croatian.....	7,000	4,350
Danish.....	65,950	50,325
Dutch.....	42,850	39,035
Finnish.....	30,950	35,786
French.....	66,283	79,119
German.....	1,668,369	1,417,172
Hungarian.....	11,275	14,800
Italian.....	219,475	168,850
Lithuanian.....	30,100	19,239
Norwegian.....	207,676	206,029
Polish.....	258,820	236,890
Portuguese.....	14,050	8,400
Slovenian.....	11,035	4,500
Spanish.....	82,235	23,200
Swedish.....	449,944	462,909
Yiddish.....	91,180	75,585
All other <sup>1</sup> .....	188,776	63,791

<sup>1</sup> Armenian, Chinese, Estonian, Gaelic, Greek, Hebrew, Indian-English (Chinook), Irish-English, Japanese, Roumanian, Russian, Ruthenian, Servian, Slavish, Slavonic, Slovak, Syrian, and Welsh.

In 1909 the state of Nebraska led in aggregate circulation of weekly publications in German and in Danish; Minnesota led in the publications in Finnish and Norwegian; Michigan in Dutch; Louisiana in French; Ohio in Hungarian; New York in Italian and Yiddish; Illinois in Lithuanian, Polish, Slovenian, and Swedish; California in Portuguese; and New Mexico in Spanish.

Publications with miscellaneous periods of issue.—Table 60 shows, by states and geographic divisions, the number of publications for 1909 issued triweekly, semiweekly, monthly, quarterly, and at "all other" periods.

The East North Central division reported more semiweeklies and triweeklies than were reported from any other division. The Middle Atlantic division led in the number of monthly and of quarterly publications. More triweeklies and monthlies were published in New York than in any other state, but in the pub-

lication of quarterlies Pennsylvania was first among the states, New York and Illinois being second and third, respectively.

Table 60

DIVISION AND STATE.	NUMBER OF PUBLICATIONS, 1909, ISSUED—				
	Semi-weekly.	Tri-weekly.	Monthly.	Quarterly.	At all other periods, except daily, Sunday, and weekly.
United States.....	635	73	2,491	361	364
NEW ENGLAND.....	21	5	164	36	25
Maine.....	2	1	22	1	1
New Hampshire.....	2	1	4	.....	.....
Vermont.....	.....	.....	5	.....	1
Massachusetts.....	5	3	107	31	19
Rhode Island.....	3	.....	8	.....	1
Connecticut.....	9	.....	18	4	3
MIDDLE ATLANTIC.....	97	16	800	156	94
New York.....	46	10	521	54	68
New Jersey.....	4	1	26	5	5
Pennsylvania.....	47	5	253	97	21
EAST NORTH CENTRAL.....	177	18	622	98	91
Ohio.....	54	6	152	37	24
Indiana.....	29	1	52	2	6
Illinois.....	43	5	289	50	45
Michigan.....	28	6	73	4	8
Wisconsin.....	23	.....	56	5	8
WEST NORTH CENTRAL.....	98	8	332	22	66
Minnesota.....	8	.....	68	2	17
Iowa.....	50	4	66	4	14
Missouri.....	13	.....	117	12	18
North Dakota.....	1	.....	5	.....	1
South Dakota.....	3	.....	11	2	3
Nebraska.....	14	2	35	1	8
Kansas.....	9	2	30	1	5
SOUTH ATLANTIC.....	78	7	166	19	29
Delaware.....	.....	.....	8	.....	.....
Maryland.....	2	1	13	2	2
District of Columbia.....	.....	.....	28	5	6
Virginia.....	10	2	28	7	10
West Virginia.....	6	.....	10	.....	1
North Carolina.....	23	.....	15	4	6
South Carolina.....	20	1	8	1	1
Georgia.....	14	3	51	.....	3
Florida.....	3	.....	5	.....	.....
EAST SOUTH CENTRAL.....	44	4	86	21	20
Kentucky.....	23	4	28	2	9
Tennessee.....	10	.....	49	19	6
Alabama.....	6	.....	4	.....	3
Mississippi.....	5	.....	5	.....	2
WEST SOUTH CENTRAL.....	39	2	164	4	16
Arkansas.....	5	.....	12	1	.....
Louisiana.....	6	1	16	.....	3
Oklahoma.....	1	.....	12	.....	3
Texas.....	27	1	64	3	10
MOUNTAIN.....	30	6	53	.....	5
Montana.....	8	.....	5	.....	1
Idaho.....	5	1	.....	.....	.....
Wyoming.....	5	.....	4	.....	.....
Colorado.....	6	.....	31	.....	1
New Mexico.....	1	.....	2	.....	.....
Arizona.....	3	.....	3	.....	1
Utah.....	5	3	8	.....	2
Nevada.....	.....	2	.....	.....	.....
PACIFIC.....	51	7	164	5	18
Washington.....	10	.....	32	.....	5
Oregon.....	10	1	27	1	2
California.....	31	6	105	4	11

Table 61 shows, by states and geographic divisions, the circulation of triweekly and semiweekly publications for 1909, 1904, and 1899.

DIVISION AND STATE.	TRIWEEKLIES AND SEMIWEEKLIES— AVERAGE COMBINED CIRCULATION PER ISSUE.		
	1909	1904	1899
United States.....	2,648,308	3,233,658	3,061,478
<b>NEW ENGLAND.....</b>	<b>60,126</b>	<b>99,444</b>	<b>99,907</b>
Maine, New Hampshire and Vermont.....	16,479	27,140	31,378
Massachusetts.....	23,225	38,025	32,350
Rhode Island.....	5,810	6,719	6,854
Connecticut.....	23,612	27,560	29,325
<b>MIDDLE ATLANTIC.....</b>	<b>502,266</b>	<b>834,711</b>	<b>899,200</b>
New York and New Jersey.....	259,177	387,372	608,942
Pennsylvania.....	243,089	467,339	290,348
<b>EAST NORTH CENTRAL.....</b>	<b>447,297</b>	<b>640,496</b>	<b>840,772</b>
Ohio.....	131,806	113,749	224,461
Indiana.....	51,978	55,965	77,185
Illinois.....	138,165	177,213	176,058
Michigan.....	82,640	99,339	200,073
Wisconsin.....	42,708	194,230	182,995
<b>WEST NORTH CENTRAL.....</b>	<b>598,722</b>	<b>921,393</b>	<b>701,657</b>
Minnesota.....	37,062	63,396	100,660
Iowa.....	156,926	188,630	187,895
Missouri.....	353,481	590,203	320,353
North Dakota and South Dakota.....	5,013	11,910	8,700
Nebraska.....	31,085	24,730	54,208
Kansas.....	15,155	42,524	20,840
<b>SOUTH ATLANTIC.....</b>	<b>438,386</b>	<b>199,813</b>	<b>120,048</b>
Delaware, Maryland, and District of Columbia.....	18,075	17,755	20,060
Virginia.....	16,789	17,000	16,130
West Virginia.....	7,050	7,635	4,900
North Carolina.....	55,801	38,909	24,490
South Carolina.....	44,622	28,401	23,527
Georgia and Florida.....	295,929	90,113	39,941
<b>EAST SOUTH CENTRAL.....</b>	<b>93,478</b>	<b>57,611</b>	<b>141,697</b>
Kentucky.....	61,248	41,058	127,375
Tennessee and Alabama.....	26,230	12,503	12,740
Mississippi.....	6,000	4,050	1,582
<b>WEST SOUTH CENTRAL.....</b>	<b>292,313</b>	<b>260,994</b>	<b>149,575</b>
Arkansas.....	5,868	6,200	12,285
Louisiana and Oklahoma.....	20,629	26,885	35,898
Texas.....	265,816	227,909	101,392
<b>MOUNTAIN.....</b>	<b>75,202</b>	<b>77,455</b>	<b>52,550</b>
Montana.....	13,180	11,200	9,380
Idaho.....	7,185	11,850	4,645
Wyoming.....	9,315	7,677	1,485
Colorado and New Mexico.....	8,109	5,301	2,500
Utah and Nevada.....	37,413	41,427	34,540
<b>PACIFIC.....</b>	<b>131,518</b>	<b>141,741</b>	<b>46,982</b>
Washington.....	59,937	85,811	8,350
Oregon.....	26,725	27,330	14,810
California.....	44,856	28,600	23,822

*Triweeklies and semiweeklies.*—The reduction in circulation of triweeklies and semiweeklies is due in part to the abandonment of semiweekly editions of certain dailies and in part to a decrease in average number of copies reported by some of the others.

*Monthlies.*—Table 62 shows, by states and geographic divisions, the circulation of monthly publications for 1909, 1904, and 1899.

Among the monthlies are many magazines of large circulation; the circulation of such publications increased both from 1899 to 1904 and from 1904 to 1909.

The great decrease of 2,661,775 in circulation shown for Maine from 1904 to 1909 was due principally to the abandonment of two large lines of publications which had large circulations. An allusion to some of these

publications was made in the census special report on "Printing and publishing" for 1904, page 57:

The prominence of the state of Maine in monthly circulation has long been an interesting development in the production of this class of periodicals \* \* \*. Magazines were published in very large editions and at such low subscription rates that they commended themselves to the people of the most moderate resources, especially in remote rural districts. By using the cheapest grades of paper and making small expenditure for literary matter, the cost of production was reduced so low that a profit was secured even upon a subscription price varying from 10 to 25 cents per annum.

Some of these publications are still in existence.

DIVISION AND STATE.	MONTHLY PUBLICATIONS—AVERAGE COMBINED CIRCULATION PER ISSUE.		
	1909	1904	1899
United States.....	63,280,535	64,306,155	37,869,897
<b>NEW ENGLAND.....</b>	<b>6,833,681</b>	<b>11,144,738</b>	<b>8,466,732</b>
Maine.....	3,960,768	6,622,541	6,120,490
New Hampshire.....	9,600	94,500	5,250
Vermont.....	28,500	15,900	25,250
Massachusetts.....	2,789,665	4,374,209	2,257,142
Rhode Island and Connecticut.....	45,150	67,588	48,600
<b>MIDDLE ATLANTIC.....</b>	<b>31,900,048</b>	<b>32,938,941</b>	<b>18,552,791</b>
New York.....	25,635,615	28,217,126	15,277,062
New Jersey.....	156,862	330,129	28,950
Pennsylvania.....	6,107,571	4,385,686	3,246,779
<b>EAST NORTH CENTRAL.....</b>	<b>14,550,220</b>	<b>11,512,571</b>	<b>6,382,698</b>
Ohio.....	2,685,470	2,006,287	1,420,501
Indiana.....	976,962	1,288,928	715,282
Illinois.....	9,492,099	6,344,791	3,072,932
Michigan.....	927,601	1,372,519	984,025
Wisconsin.....	408,088	500,046	189,948
<b>WEST NORTH CENTRAL.....</b>	<b>6,247,642</b>	<b>5,965,219</b>	<b>2,751,055</b>
Minnesota.....	824,955	956,696	452,329
Iowa.....	1,490,861	846,256	301,205
Missouri.....	2,265,275	3,365,168	1,378,586
North Dakota and South Dakota.....	49,750	78,230	41,950
Nebraska.....	684,513	399,444	255,935
Kansas.....	932,288	319,425	321,050
<b>SOUTH ATLANTIC.....</b>	<b>1,285,309</b>	<b>993,818</b>	<b>656,315</b>
Delaware and Maryland District of Columbia.....	117,319	130,300	99,400
Virginia.....	518,784	414,530	354,050
West Virginia.....	183,605	167,448	96,890
North Carolina.....	21,550	14,620	6,400
South Carolina.....	40,265	30,750	12,050
Georgia.....	10,504	7,918	8,000
Florida.....	380,337	120,927	67,425
<b>EAST SOUTH CENTRAL.....</b>	<b>666,363</b>	<b>409,238</b>	<b>546,010</b>
Kentucky.....	136,995	142,550	262,450
Tennessee.....	517,643	247,143	270,150
Alabama.....	8,700	11,820	6,800
Mississippi.....	3,025	7,725	6,610
<b>WEST SOUTH CENTRAL.....</b>	<b>456,346</b>	<b>303,272</b>	<b>100,100</b>
Arkansas.....	136,750	45,330	18,900
Louisiana.....	23,671	16,216	14,750
Oklahoma.....	39,225	29,797	5,050
Texas.....	256,700	211,929	61,400
<b>MOUNTAIN.....</b>	<b>339,961</b>	<b>405,941</b>	<b>102,948</b>
Montana.....	13,800	7,700	6,495
Idaho and Wyoming.....	40,950	15,750	8,500
Colorado.....	230,308	348,815	72,947
New Mexico and Arizona.....	6,870	3,676	706
Utah and Nevada.....	48,033	30,000	14,300
<b>PACIFIC.....</b>	<b>1,000,875</b>	<b>722,417</b>	<b>311,248</b>
Washington.....	161,024	118,491	41,418
Oregon.....	219,351	81,400	75,038
California.....	619,900	522,526	194,792

The decrease in Massachusetts was 1,584,544 copies, due to the discontinuance of two publications in Boston for which a large circulation was reported at the census of 1904. One was devoted to fashions and the other to home topics and "general literature";

the annual subscription price in each case was low. The decrease in New York was 2,581,511 copies, and was reported in the main by publications in New York City treating of special topics relating to dress.

In 1909 over two-fifths of the aggregate circulation of monthly publications for the United States was reported from New York, Illinois ranking second with over one-seventh of the total.

*Quarterlies.*—Table 63 shows, by states, the circulation of the quarterly publications for 1909, 1904, and 1899.

DIVISION AND STATE.	QUARTERLY PUBLICATIONS—AVERAGE COMBINED CIRCULATION PER ISSUE.		
	1909	1904	1899
United States.....	16,053,099	11,709,655	11,067,422
Illinois.....	1,967,553	1,898,000	1,683,434
Massachusetts.....	1,401,844	445,581	363,096
Missouri.....	203,504	191,948	895,050
New York.....	2,437,289	909,317	2,120,625
Ohio.....	2,288,134	2,169,200	1,795,609
Pennsylvania.....	3,516,933	3,758,107	1,991,819
Tennessee.....	3,049,100	1,790,021	1,540,900
All other states.....	593,737	577,481	670,889

The circulation of publications issued four times a year increased 37.1 per cent from 1904 to 1909. The seven states shown separately in the table reported 96.3 per cent of this circulation in 1909.

A large part of the reported circulation of such periodicals is that of religious publications, and consists largely of Sunday-school lesson quarterlies. Tennessee led the states in the output of quarterly publications in 1909, followed closely by Pennsylvania, and then by New York and Ohio. Tennessee, Massachusetts, and Pennsylvania show great gains during the decade in circulation of these periodicals.

*"All other."*—This class of publications includes all issued at periods other than those already discussed. Among others, it embraces fortnightly, semimonthly, trimonthly, bimonthly, semiquarterly, semiannual, and annual publications. A number are published three, seven, nine, and ten times a year, such publications being for the most part devoted to "society, art, music, fashions," etc. Table 64 shows, by states, the circulation of these publications in 1909, 1904, and 1899.

DIVISION AND STATE.	PUBLICATIONS ISSUED AT "ALL OTHER" PERIODS—AVERAGE COMBINED CIRCULATION PER ISSUE.		
	1909	1904	1899
United States.....	4,093,874	2,878,594	5,546,329
Illinois.....	276,335	133,643	189,874
Iowa.....	110,010	56,975	44,990
Massachusetts.....	622,223	396,003	349,350
Minnesota.....	311,170	252,647	183,347
Missouri.....	280,798	149,555	219,465
New York.....	662,819	179,515	1,311,300
Ohio.....	545,279	383,247	390,900
Pennsylvania.....	82,134	154,225	142,041
Texas.....	58,281	16,400	10,250
Virginia.....	6,950	4,300	9,700
All other states.....	1,137,877	1,152,084	2,704,112

*Language.*—Table 65 shows, by states, the number and circulation of the foreign language periodicals issued triweekly, semiweekly, monthly, quarterly, and at "all other" periods for 1909 and 1904.

STATE.	TRIWEEKLY, SEMIWEEKLY, MONTHLY, QUARTERLY, AND "ALL OTHER" PERIODICALS IN FOREIGN LANGUAGES.				
	Number.		Average combined circulation per issue.		
	1909	1904	1909	1904	Per cent of increase: 1904-1909
United States.....	327	283	2,773,610	2,531,776	9.6
California.....	7	6	25,750	8,050	219.9
Illinois.....	47	37	421,826	247,151	70.7
Indiana.....	7	8	78,934	30,990	154.7
Iowa.....	15	12	152,049	167,835	-9.4
Massachusetts.....	13	6	264,732	104,352	153.7
Michigan.....	12	11	40,150	39,550	1.5
Minnesota.....	27	24	158,695	141,000	12.5
Missouri.....	19	14	281,876	112,115	151.4
Nebraska.....	9	5	81,625	303,334	-37.1
New York.....	55	58	527,186	841,627	-37.4
Ohio.....	42	38	317,461	222,442	42.7
Pennsylvania.....	14	20	89,935	68,918	30.5
Wisconsin.....	27	25	209,065	186,663	12.0
All other states <sup>2</sup> .....	33	24	124,326	57,749	115.3

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Includes, in 1909, Colorado, 3 publications; Connecticut, 1; Kansas, 2; Kentucky, 3; Maine, 1; Montana, 1; New Jersey, 1; New Mexico, 1; Oregon, 2; Rhode Island, 1; Tennessee, 2; Texas, 12; Vermont, 1; and Washington, 2. In 1904, Colorado, 2; Delaware, 2; Kansas, 2; Kentucky, 1; Montana, 1; New Hampshire, 2; New Jersey, 5; Oregon, 2; Rhode Island, 1; Texas, 3; Washington, 2; West Virginia, 1.

New York continued to have the greatest circulation despite a considerable decrease during the five-year period 1904-1909. German, German-English, German-English-French, Swedish, Spanish, Spanish-English, Spanish-Portuguese were among the leading languages.

#### DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning establishments engaged in the printing and publishing industry are presented, by states, in Tables 66 and 67.

Table 66 shows, for 1909, 1904, and 1899, the num-

ber of establishments, number of persons engaged in the industry, primary horsepower, capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture.

Table 67 gives detailed statistics for 1909 only.

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PRINTING AND PUBLISHING—ALL BRANCHES COMBINED—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
United States.....	1909	31,445	388,466	30,424	99,608	258,434	297,763	\$588,348	\$103,458	\$164,628	\$201,775	\$737,876	\$536,101
	1904	27,793	316,047	28,368	68,592	219,087	168,380	432,854	67,748	127,196	142,514	552,473	409,959
	1899	23,814			40,685	195,260	119,775	333,003	39,475	99,816	103,654	395,187	291,533
Alabama.....	1909	274	1,955	299	539	1,117	1,692	2,010	462	650	666	2,768	2,102
	1904	241	1,402	269	278	915	712	1,469	245	469	432	1,947	1,515
	1899	196	1,127	232	96	799	443	847	97	342	273	1,160	887
Arizona.....	1909	64	408	51	89	268	221	680	104	232	168	784	616
	1904	50	269	37	43	189	94	397	51	161	107	470	363
	1899	32	182	28	15	139	70	187	18	74	40	237	191
Arkansas.....	1909	295	1,672	417	274	981	846	1,910	212	538	536	2,082	1,546
	1904	277	1,360	361	104	895	538	1,315	93	438	320	1,443	1,123
	1899	230	1,038	261	73	704		778	57	265	237	1,014	777
California.....	1909	1,240	12,215	1,151	3,508	7,556	7,674	17,198	3,829	6,432	6,327	25,032	18,705
	1904	1,091	10,444	1,052	2,312	7,089	5,238	11,746	2,315	5,182	4,525	19,127	14,092
	1899	783			1,048	4,957		7,037	1,060	3,001	2,602	10,586	7,980
Colorado.....	1909	439	3,747	406	975	2,366	2,045	4,941	1,104	1,823	1,806	6,962	5,156
	1904	419	2,916	399	615	1,902	1,531	3,604	701	1,343	1,311	5,467	4,156
	1899	286			372	1,896		2,670	353	1,130	823	3,697	2,874
Connecticut.....	1909	363	4,103	295	930	2,878	3,425	6,322	855	1,737	1,769	6,370	4,601
	1904	328	3,426	285	613	2,528	2,530	4,768	632	1,502	1,276	5,066	3,790
	1899	286	2,824	252	377	2,195		4,328	355	1,234	1,037	4,114	3,077
Delaware.....	1909	48	406	32	86	288	305	602	67	129	138	480	342
	1904	46	359	30	62	267	184	513	47	125	103	398	295
	1899	42			60	334		463	44	135	99	368	269
District of Columbia.....	1909	156	2,411	122	724	1,565	1,703	3,807	844	1,101	1,095	4,900	3,805
	1904	145	1,787	120	516	1,151	986	3,111	585	736	601	3,958	3,357
	1899	148			341	1,401		3,163	324	791	525	2,846	2,321
Florida.....	1909	174	1,303	163	240	905	794	1,683	245	529	434	1,866	1,432
	1904	155	872	156	173	543	382	1,414	173	271	270	1,139	869
	1899	100	582	113	63	406		539	56	180	155	603	448
Georgia.....	1909	442	3,849	422	1,032	2,395	2,008	4,732	1,018	1,344	1,688	6,400	4,812
	1904	359	2,954	383	505	2,066	1,264	3,770	440	964	1,030	3,950	2,950
	1899	287	2,406	300	245	1,861		2,488	219	693	614	2,381	1,767
Idaho.....	1909	132	758	160	130	468	388	1,106	139	373	243	1,148	905
	1904	91	398	96	44	258	140	488	44	178	107	549	442
	1899	69	284	77	17	190		286	12	94	69	307	238
Illinois.....	1909	2,608	43,074	2,384	12,046	28,644	26,975	60,084	12,372	18,437	24,680	87,247	62,557
	1904	2,414	32,909	2,232	7,859	22,818	17,577	41,380	7,738	13,883	17,034	62,292	45,258
	1899	2,150	27,475	2,120	5,073	20,277		28,125	4,537	9,873	11,211	43,327	32,116
Indiana.....	1909	892	9,600	865	1,979	6,756	17,868	11,844	1,650	3,522	4,025	14,356	10,331
	1904	865	8,295	893	1,583	5,819	3,996	9,440	1,275	2,941	3,175	11,473	8,298
	1899	809			932	5,633		6,555	815	2,445	2,422	8,960	6,538
Iowa.....	1909	1,110	8,065	1,163	2,049	4,853	5,527	10,623	1,601	2,591	3,237	12,129	8,842
	1904	1,113	6,665	1,263	1,085	4,317	3,861	7,329	913	2,083	2,048	8,549	6,501
	1899	1,041	6,202	1,223	681	4,298		5,719	517	1,673	1,522	6,226	4,707
Kansas.....	1909	798	4,903	879	792	3,232	4,868	6,053	693	1,650	2,290	7,009	4,719
	1904	724	3,744	849	419	2,476	1,556	3,577	319	1,092	1,055	4,139	3,084
	1899	666			212	2,161		2,528	146	818	797	3,028	2,231
Kentucky.....	1909	431	4,577	391	1,051	3,135	2,945	5,546	961	1,690	1,645	6,454	4,809
	1904	398	3,078	411	679	2,588	2,397	4,784	617	1,201	1,171	4,807	3,630
	1899	336	2,656	314	443	1,899		3,444	390	813	810	3,279	2,460
Louisiana.....	1909	268	2,461	280	637	1,544	1,494	2,996	597	1,061	1,013	3,823	2,810
	1904	240	2,035	219	503	1,313	1,197	2,121	450	896	742	3,184	2,442
	1899	203			215	1,386		1,734	195	744	487	2,098	1,611
Maine.....	1909	195	2,359	155	553	1,651	1,565	2,011	383	779	1,102	3,438	2,336
	1904	217	2,292	182	306	1,804	1,352	2,177	259	768	632	3,400	2,468
	1899	203	2,082	193	246	1,643		2,066	200	619	680	2,688	2,008
Maryland.....	1909	371	4,942	365	1,191	3,386	3,694	6,675	1,264	1,965	2,464	8,360	5,896
	1904	330	4,201	364	936	2,971	2,434	5,068	855	1,511	1,732	6,317	4,585
	1899	333	4,328	384	596	3,348		4,455	556	1,509	1,639	5,587	3,948
Massachusetts.....	1909	1,279	24,410	1,089	5,789	17,532	47,629	33,474	6,048	11,684	12,881	47,445	34,564
	1904	1,144	20,933	1,097	4,724	15,112	11,785	28,265	4,954	9,064	10,918	39,274	28,356
	1899	1,147	19,592	1,177	3,516	14,899		28,957	3,230	8,607	8,948	35,134	26,136
Michigan.....	1909	1,045	11,048	991	2,838	7,219	7,651	13,725	2,561	4,000	4,984	17,348	12,414
	1904	937	8,640	1,009	1,632	5,999	5,292	9,079	1,419	2,981	3,424	12,050	8,626
	1899	829			1,399	5,042		7,380	965	2,198	1,946	8,206	6,260
Minnesota.....	1909	950	9,078	1,036	2,401	5,641	5,765	13,905	2,257	3,507	4,096	15,982	11,886
	1904	919	7,410	984	1,813	4,613	3,958	8,807	1,442	2,633	2,787	11,564	8,777
	1899	731	6,170	815	1,232	4,123		7,784	966	1,967	1,878	8,197	6,319

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PRINTING AND PUBLISHING—ALL BRANCHES COMBINED—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899—Continued.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.					Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).							
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).	Expressed in thousands.														
Mississippi.....	1909	225	1,132	249	147	736	496	\$1,173	\$123	\$387	\$300	\$1,308	\$1,008								
	1904	211	861	242	70	549	295	733	53	254	195	916	721								
	1899	181	738	197	36	505	.....	475	29	194	147	723	576								
Missouri.....	1909	1,323	15,792	1,243	3,759	10,790	10,472	21,998	4,256	6,610	8,627	29,651	21,024								
	1904	1,253	13,912	1,299	2,356	9,757	8,384	16,358	2,934	5,330	6,801	24,412	17,611								
	1899	1,142	11,319	1,184	2,085	8,050	.....	11,961	1,874	4,150	5,082	16,544	11,462								
Montana.....	1909	135	1,046	110	245	691	679	1,651	294	685	403	2,111	1,708								
	1904	92	691	81	129	481	462	1,024	192	542	307	1,487	1,180								
	1899	89	659	80	94	485	.....	771	139	334	194	981	787								
Nebraska.....	1909	674	3,584	674	881	2,329	2,552	4,979	796	1,397	1,711	6,667	4,956								
	1904	631	3,326	673	680	2,073	1,687	3,610	582	1,093	1,294	4,991	3,697								
	1899	557	.....	.....	351	1,800	.....	2,898	308	886	960	3,454	2,494								
Nevada.....	1909	54	270	48	48	180	214	654	72	193	112	519	407								
	1904	29	121	33	21	67	62	168	22	64	33	253	220								
	1899	29	107	36	3	68	.....	92	2	35	18	111	93								
New Hampshire.....	1909	143	984	138	169	677	1,865	1,066	117	356	269	1,131	872								
	1904	126	853	122	86	645	687	1,076	86	333	217	969	752								
	1899	134	884	140	68	676	.....	1,215	65	304	216	912	696								
New Jersey.....	1909	684	7,364	647	1,266	5,451	5,636	13,816	1,309	3,624	3,472	12,333	8,861								
	1904	588	6,001	571	1,063	4,367	4,171	8,732	1,006	2,470	2,285	8,627	6,342								
	1899	480	4,881	487	540	3,854	.....	6,386	515	1,923	1,673	6,104	4,431								
New Mexico.....	1909	93	435	84	69	283	1,230	517	70	174	121	589	468								
	1904	56	239	55	35	149	103	277	29	93	55	295	240								
	1899	35	195	36	17	142	45	163	19	75	34	198	164								
New York.....	1909	4,426	94,893	3,732	28,041	63,120	53,973	158,367	33,251	43,559	56,494	216,946	160,452								
	1904	3,718	77,671	3,563	20,672	53,436	29,652	127,887	22,263	34,071	39,482	164,834	125,352								
	1899	3,146	62,147	3,388	10,047	48,112	.....	101,838	12,776	28,114	31,010	118,071	87,061								
North Carolina.....	1909	322	2,059	307	376	1,376	1,119	2,180	308	661	645	2,497	1,852								
	1904	258	1,475	267	237	971	582	1,274	164	404	382	1,653	1,271								
	1899	203	1,195	219	157	819	.....	793	96	286	244	1,039	795								
North Dakota.....	1909	330	1,294	333	173	785	948	1,955	154	533	440	1,910	1,470								
	1904	229	834	243	76	515	392	1,079	69	313	237	1,110	873								
	1899	140	578	148	48	382	.....	626	42	177	170	720	550								
Ohio.....	1909	1,655	22,754	1,480	5,518	15,756	18,417	38,053	5,459	9,355	11,904	41,657	29,763								
	1904	1,542	19,288	1,513	3,916	13,859	12,272	26,724	3,585	7,873	8,679	31,327	22,648								
	1899	1,340	16,949	1,412	2,329	13,208	.....	20,958	2,105	6,070	6,970	23,833	16,863								
Oklahoma.....	1909	598	2,945	661	586	1,698	1,664	3,734	467	1,044	1,004	3,989	2,985								
	1904	423	1,799	486	174	1,139	652	1,700	135	574	473	2,101	1,628								
	1899	160	757	189	46	522	141	510	32	189	148	693	515								
Oregon.....	1909	324	2,523	514	550	1,459	1,927	3,458	558	1,448	1,103	5,041	3,938								
	1904	245	1,561	246	297	1,018	993	1,088	356	724	658	2,776	2,118								
	1899	207	1,170	230	100	840	.....	1,075	116	400	374	1,494	1,120								
Pennsylvania.....	1909	2,461	36,783	2,557	9,530	24,696	25,839	71,453	8,836	14,335	22,753	70,584	47,831								
	1904	2,162	31,079	2,354	6,397	22,328	20,029	51,094	6,218	12,093	16,074	55,063	33,989								
	1899	1,909	25,404	2,271	4,262	19,901	.....	41,772	3,969	9,785	11,196	40,554	29,168								
Rhode Island.....	1909	147	2,049	139	456	1,454	1,944	3,257	493	956	1,064	3,780	2,710								
	1904	140	1,996	130	434	1,432	939	2,604	304	787	816	3,070	2,254								
	1899	119	1,499	128	124	1,247	.....	1,759	130	663	552	2,048	1,496								
South Carolina.....	1909	161	1,294	171	289	834	603	1,665	230	412	340	1,601	1,261								
	1904	150	985	161	201	623	298	945	152	268	214	1,038	824								
	1899	120	834	125	84	625	.....	680	62	236	188	789	601								
South Dakota.....	1909	392	1,387	359	203	825	931	2,159	170	493	456	1,976	1,520								
	1904	279	1,001	301	108	592	426	1,344	85	312	242	1,222	980								
	1899	209	770	224	52	494	.....	737	37	204	161	746	585								
Tennessee.....	1909	413	4,442	443	1,085	2,914	2,965	6,493	1,086	1,701	1,954	7,173	5,219								
	1904	340	3,373	356	657	2,330	1,914	4,415	657	1,231	1,323	5,091	3,768								
	1899	284	2,604	316	500	1,788	.....	3,602	432	821	882	3,455	2,573								
Texas.....	1909	1,067	7,177	1,159	1,610	4,408	4,392	9,127	1,659	2,785	2,807	11,587	8,780								
	1904	850	5,288	970	1,874	3,444	2,756	6,107	729	2,071	1,763	7,830	6,067								
	1899	776	.....	.....	331	2,561	.....	3,341	335	1,309	976	4,606	3,631								
Utah.....	1909	122	1,475	91	417	967	1,357	2,022	362	685	723	2,405	1,682								
	1904	104	873	94	234	545	262	1,081	234	369	325	1,523	1,198								
	1899	83	.....	95	95	563	.....	835	83	294	206	795	589								
Vermont.....	1909	115	919	109	144	666	625	1,064	126	326	250	1,039	789								
	1904	104	821	103	114	604	420	776	100	271	236	932	696								
	1899	106	801	106	93	602	.....	687	65	240	190	792	602								
Virginia.....	1909	369	3,719	347	817	2,555	2,210	5,456	688	1,307	1,405	5,370	3,965								
	1904	309	2,934	330	503	2,101	1,309	3,566	382	903	973	3,522	2,549								
	1899	259	.....	.....	326	1,655	.....	2,799	224	691	648	2,499	1,851								
Washington.....	1909	506	4,583	552	1,407	2,624	2,232	5,807	1,529	2,140	2,224	9,286	7,062								
	1904	383	2,834	387	650	1,797	2,035	2,850	524	1,354	1,056	4,765	3,709								
	1899	267	1,640	266	267	1,007	.....	1,308	222	543	384	1,975	1,591								

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PRINTING AND PUBLISHING—ALL BRANCHES COMBINED—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899—Continued.

**Table 66—Continued.**

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Expressed in thousands.													
West Virginia.....	1909	235	1,772	237	280	1,255	1,500	\$2,455	\$222	\$634	\$541	\$1,092	\$1,451
	1904	222	1,316	214	158	944	1,196	1,754	125	450	351	1,554	1,203
	1899	178	1,103	186	107	810	.....	1,148	83	334	226	1,035	809
Wisconsin.....	1909	833	7,860	864	1,636	5,360	5,293	10,763	1,505	2,913	3,386	11,861	8,475
	1904	767	7,036	800	1,137	5,099	5,064	8,020	1,009	2,435	2,642	9,252	6,610
	1899	636	.....	.....	583	4,413	.....	6,474	543	1,831	1,727	6,408	4,681
Wyoming.....	1909	05	275	60	53	162	138	437	54	141	90	490	400
	1904	47	186	38	29	119	96	265	33	84	52	313	261
	1899	40	.....	.....	6	94	.....	156	6	52	34	168	134
All other states.....	1904	32	584	25	80	479	318	1,065	93	293	249	954	705
	1899	24	.....	.....	47	356	.....	811	54	190	212	624	412

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Table 67	STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	10 and over.		Under 10.				
						Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female.			
									Maximum month.	Minimum month.								
1	United States.....	31,445	388,466	30,424	18,908	54,905	25,795	258,434	De 269,884	Jy 251,757	272,027	204,388	60,973	5,526	1,140	297,763		
2	Alabama.....	274	1,955	299	163	307	69	1,117	De 1,162	Au 1,098	1,175	936	162	72	5	1,092		
3	Arizona.....	64	408	51	22	58	0	268	De 307	Fe 259	285	256	15	14	.....	821		
4	Arkansas.....	295	1,672	417	69	167	38	981	De 1,018	Je 952	1,041	791	216	34	.....	846		
5	California.....	1,240	12,215	1,151	652	2,209	647	7,556	De 7,925	Ja 7,350	7,967	6,525	1,253	178	11	7,974		
6	Colorado.....	439	3,747	406	184	625	166	2,366	De 2,483	My 2,307	2,508	2,048	401	54	5	2,045		
7	Connecticut.....	363	4,103	295	232	506	192	2,878	Fe 2,944	Au 2,793	2,951	2,285	570	88	8	3,425		
8	Delaware.....	48	406	32	22	46	18	288	Ap 307	Fe 279	315	218	76	19	2	305		
9	District of Columbia.....	156	2,411	122	167	423	134	1,565	Mh 1,614	Au 1,478	1,600	1,303	290	7	.....	1,703		
10	Florida.....	174	1,305	163	85	120	35	655	De 994	Ap 853	1,007	823	148	32	4	794		
11	Georgia.....	442	3,849	422	285	547	200	2,395	De 2,483	Je 2,343	2,510	1,955	400	133	22	2,008		
12	Idaho.....	132	758	160	44	65	21	468	De 501	Mh <sup>1</sup> 453	505	431	56	18	.....	388		
13	Illinois.....	2,608	43,074	2,384	2,026	6,573	3,447	28,644	De 29,892	Je 27,809	30,054	22,269	7,010	561	214	26,975		
14	Indiana.....	892	9,600	865	447	1,021	511	6,756	Oc 6,889	Jy 6,610	6,930	4,858	1,919	141	12	17,888		
15	Iowa.....	1,110	8,065	1,163	448	1,010	591	4,853	De 5,052	Jy 4,702	5,084	3,592	1,346	130	10	5,527		
16	Kansas.....	798	4,903	879	191	351	250	3,232	De 3,413	Jy 3,135	3,428	2,269	1,072	46	11	4,888		
17	Kentucky.....	431	4,577	391	302	529	220	3,155	De 3,202	Au 3,009	3,203	2,568	551	76	8	2,945		
18	Louisiana.....	268	2,461	280	158	417	62	1,544	Fe 1,598	Je 1,522	1,600	1,354	167	78	1	1,494		
19	Maine.....	195	2,359	155	120	146	287	1,651	Mh 1,789	Au 1,537	1,814	1,126	677	9	2	1,565		
20	Maryland.....	371	4,942	395	229	751	211	3,386	De 3,530	Au 3,295	3,547	2,870	472	156	50	3,694		
21	Massachusetts.....	1,279	24,410	1,089	946	2,723	2,120	17,632	De 18,158	Au 16,740	18,317	12,837	4,908	404	108	47,629		
22	Michigan.....	1,045	11,048	991	547	1,020	671	7,219	De 7,576	Ap 7,070	7,532	5,539	1,890	94	9	7,651		
23	Minnesota.....	950	9,078	1,036	434	1,289	678	5,041	De 5,905	Jy 5,513	6,270	4,620	1,585	57	2	5,765		
24	Mississippi.....	225	1,132	249	75	62	20	736	De 765	My 712	776	634	103	38	1	496		
25	Missouri.....	1,322	15,792	1,243	854	2,076	829	10,790	De 11,218	Jy 10,593	11,265	8,056	2,031	200	78	10,472		
26	Montana.....	135	1,046	110	58	160	27	691	De 718	Ja 667	717	637	68	11	1	679		
27	Nebraska.....	674	3,884	674	173	453	255	2,329	No 2,446	Ja 2,279	2,448	1,809	583	53	3	2,552		
28	Nevada.....	54	276	48	20	16	12	180	Mh 195	Au <sup>1</sup> 172	175	154	15	6	.....	214		
29	New Hampshire.....	143	984	138	42	87	40	677	Fe 721	Au 646	710	485	210	14	1	1,865		
30	New Jersey.....	684	7,364	647	301	745	220	5,451	No 5,732	Fe 5,245	5,789	4,717	954	103	15	5,636		
31	New Mexico.....	93	436	84	35	26	8	283	De 289	Mh 277	283	227	42	2	2	1,230		
32	New York.....	4,420	64,893	3,732	4,052	16,007	7,982	63,120	De 66,147	Jy 61,199	66,330	51,021	14,722	507	140	53,973		
33	North Carolina.....	322	2,069	307	152	138	86	1,376	No 1,433	Je 1,336	1,422	1,123	173	121	5	1,119		
34	North Dakota.....	330	1,294	333	60	81	33	788	De 822	Mh 760	832	644	144	36	8	948		
35	Ohio.....	1,655	22,754	1,480	1,276	2,884	1,358	15,756	De 16,428	Jy 15,219	16,555	12,203	4,115	200	37	18,417		
36	Oklahoma.....	598	2,945	601	160	352	74	1,098	De 1,831	Ja 1,626	1,875	1,497	326	52	.....	1,694		
37	Oregon.....	324	2,523	514	124	307	119	1,450	De 1,505	Jy 1,424	1,528	1,279	219	25	5	1,927		
38	Pennsylvania.....	2,461	36,783	2,557	1,781	5,132	2,617	24,096	De 25,938	Au 23,855	26,236	19,323	5,972	747	194	25,539		
39	Rhode Island.....	147	2,049	139	91	271	94	1,454	De 1,570	Ja 1,411	1,570	1,112	421	36	1	1,944		
40	South Carolina.....	161	1,294	171	80	167	42	834	My 848	Jy 816	851	668	128	52	3	603		
41	South Dakota.....	392	1,387	359	58	84	61	825	De 858	Ja 794	878	609	246	23	.....	931		
42	Tennessee.....	413	4,442	443	229	627	229	2,914	So 3,011	Ja 2,799	3,043	2,339	614	88	2	2,965		
43	Texas.....	1,067	7,177	1,159	425	984	201	4,408	De 4,791	Ap 4,274	4,824	3,875	670	254	25	4,392		
44	Utah.....	122	1,475	91	78	276	63	967	De 1,004	Jy 925	1,017	858	136	23	.....	1,357		
45	Vermont.....	115	919	109	45	55	44	666	De 699	Au 640	700	496	202	2	.....	625		
46	Virginia.....	309	3,719	347	250	400	167	2,555	De 2,652	Jy 2,504	2,660	1,931	603	123	3	2,210		
47	Washington.....	506	4,583	552	236	666	205	2,624	No 2,687	Ja 2,529	2,718	2,223	360	113	22	2,232		
48	West Virginia.....	235	1,772	237	103	136	41	1,255	De 1,311	Fe 1,228	1,314	955	287	69	3	1,560		
49	Wisconsin.....	833	7,860	864	349	905	382	5,360	De 5,632	Jy 5,246	5,693	3,878	1,449	204	107	5,293		
50	Wyoming.....	65	275	60	29	15	9	162	Oc 170	Ja <sup>1</sup> 158	170	126	36	8	.....	138		

<sup>1</sup> Same number reported for one or more other months.

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DETAILED STATISTICS, BY STATES: 1909.

	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
1	\$588,345,708	\$619,158,045	\$40,054,453	\$63,403,798	\$164,628,180	\$7,601,152	\$194,173,438	\$13,648,406	\$2,699,576	\$36,384,359	\$96,564,684	\$737,876,087	\$536,101,497
2	2,010,310	2,230,542	227,287	235,057	650,472	38,471	627,522	49,242	17,269	60,800	324,422	2,768,247	2,102,254
3	679,943	650,948	32,021	71,463	232,246	18,094	149,973	25,457	5,606	7,431	107,757	784,487	616,420
4	1,910,317	1,570,254	88,745	123,125	537,648	29,980	505,643	49,510	10,202	23,540	201,863	2,082,365	1,546,742
5	17,197,899	21,017,808	1,253,989	2,576,235	6,432,161	249,418	5,077,885	595,771	72,468	807,294	2,953,877	25,031,877	18,704,574
6	4,941,071	5,959,377	427,678	676,743	1,823,190	76,125	1,729,987	146,941	35,881	224,556	818,270	6,961,721	5,155,609
7	6,322,398	5,207,118	415,042	439,701	1,736,499	89,085	1,679,232	119,508	29,168	195,105	502,878	6,370,450	4,601,233
8	601,624	359,175	33,539	33,660	128,641	7,581	129,971	7,947	2,156	2,219	43,464	480,464	342,612
9	3,806,714	3,850,093	398,129	446,080	1,101,048	48,853	1,046,020	87,708	24,310	252,716	483,718	4,899,492	3,804,610
10	1,633,771	1,442,744	131,184	113,663	528,909	25,700	408,509	39,484	9,925	31,282	154,087	1,865,848	1,431,639
11	4,732,337	5,352,220	462,973	554,668	1,343,791	64,318	1,523,987	108,190	35,969	314,167	974,757	6,400,241	4,812,466
12	1,105,986	865,376	63,887	75,177	372,575	23,326	219,578	30,553	6,854	8,810	64,616	1,148,033	905,129
13	60,084,133	73,964,422	4,788,751	7,683,416	18,436,024	845,568	23,834,405	1,705,047	259,085	4,738,140	11,773,086	87,247,090	62,567,117
14	11,825,923	11,040,247	669,948	980,380	3,522,460	198,531	3,826,009	234,940	69,866	552,921	1,585,152	14,358,376	10,331,836
15	10,623,049	9,452,758	637,913	953,384	2,591,448	180,299	3,106,798	211,762	52,422	273,435	1,435,297	12,128,557	8,841,560
16	6,063,359	5,454,808	279,599	413,161	1,449,580	82,618	2,207,188	109,795	39,706	109,428	613,793	7,008,865	4,719,650
17	5,545,596	5,184,657	474,611	486,027	1,690,244	94,440	1,550,744	100,750	41,382	138,578	607,981	6,453,842	4,808,658
18	2,996,167	3,339,901	279,381	317,803	1,060,750	40,680	972,613	91,751	10,079	80,066	480,778	3,823,473	2,810,180
19	2,610,654	2,825,084	137,078	195,489	778,961	41,143	1,080,477	51,126	14,110	33,737	462,463	3,437,812	2,336,192
20	6,675,108	7,155,217	446,123	818,119	1,965,077	79,607	2,384,751	173,159	34,361	365,580	866,410	8,559,779	5,895,391
21	33,473,465	40,953,662	2,347,176	3,701,135	11,633,634	435,058	11,837,763	949,141	285,437	3,204,475	6,084,313	47,445,006	34,564,455
22	13,725,083	14,206,556	947,686	1,613,036	3,999,521	198,278	4,736,248	265,437	87,487	520,944	1,837,919	17,348,341	12,413,816
23	13,905,155	12,018,008	859,228	1,398,108	3,507,290	184,688	3,911,517	279,965	71,089	538,219	2,168,084	15,982,212	11,886,107
24	1,172,781	940,084	75,002	47,952	386,737	21,274	278,819	29,841	9,623	15,950	74,866	1,307,604	1,007,511
25	21,008,017	25,140,164	1,730,506	2,525,240	6,009,769	294,406	8,332,344	543,702	87,774	810,272	4,206,159	29,651,153	21,024,401
26	1,650,672	1,751,203	128,010	170,690	684,914	29,668	373,032	44,889	12,120	29,730	283,190	2,111,229	1,708,669
27	4,978,018	5,151,107	300,866	495,092	1,397,460	84,150	1,627,194	129,910	27,609	143,280	945,545	6,667,290	4,955,946
28	653,877	427,391	37,284	34,705	133,073	15,076	97,439	14,277	4,259	2,461	28,817	519,243	406,728
29	1,066,016	867,571	66,943	49,543	366,049	21,270	237,519	28,237	5,253	20,439	82,318	1,130,647	871,858
30	13,816,049	9,776,922	691,034	718,342	3,624,266	153,202	3,318,949	215,244	49,869	198,868	906,148	12,332,700	8,860,549
31	516,469	436,606	41,172	29,677	173,551	9,206	111,837	15,713	4,159	925	61,368	583,782	467,739
32	158,366,653	188,269,238	11,505,635	21,745,628	43,559,305	1,936,855	54,557,405	4,122,786	517,924	16,969,882	33,353,918	216,946,482	160,452,222
33	2,170,580	1,950,059	169,625	136,478	661,015	49,652	601,077	41,018	16,720	77,785	202,689	2,497,493	1,852,764
34	1,955,261	1,386,077	76,345	78,036	533,432	42,888	396,893	45,378	15,147	17,850	180,102	1,909,514	1,469,733
35	88,053,269	34,564,572	2,394,908	3,063,222	9,354,848	396,268	11,508,091	649,970	211,913	1,391,211	5,594,068	41,657,306	29,752,962
36	3,704,380	3,086,300	199,888	267,214	1,043,968	51,378	952,745	118,635	29,970	72,608	359,964	3,988,542	2,984,419
37	3,457,404	3,803,963	198,290	359,927	1,447,620	64,466	1,038,947	111,181	26,027	155,876	401,629	5,040,523	3,937,110
38	71,452,379	58,370,844	3,653,825	5,177,830	14,335,047	657,657	22,005,032	1,161,539	172,017	2,280,491	8,841,589	70,584,179	47,831,430
39	3,257,320	2,974,579	214,555	278,704	955,965	41,715	1,021,960	76,308	22,769	69,309	302,300	3,780,075	2,716,400
40	1,604,485	1,207,074	100,839	128,014	411,586	29,014	317,905	24,855	11,984	26,926	162,061	1,600,591	1,260,672
41	2,159,070	1,385,567	69,451	100,074	493,317	41,755	414,730	38,799	12,137	21,670	193,625	1,975,976	1,519,482
42	6,493,325	5,970,963	393,302	692,192	1,701,128	78,598	1,874,987	105,383	35,717	271,812	817,844	7,173,230	5,219,045
43	9,126,338	9,234,550	609,021	983,697	2,784,633	135,553	2,671,687	235,162	53,813	273,302	1,421,961	11,687,255	8,780,015
44	2,022,354	2,164,540	128,192	238,413	685,443	41,863	681,368	59,137	15,144	60,085	262,855	2,494,602	1,681,341
45	1,064,164	860,256	62,576	63,390	325,564	22,250	227,551	21,724	5,934	16,692	104,266	1,038,543	789,033
46	5,466,014	4,417,837	354,442	333,487	1,307,388	74,381	1,330,493	76,813	29,369	237,021	674,443	5,369,738	3,964,864
47	5,867,064	7,537,158	664,116	885,284	2,140,463	82,918	2,140,672	211,795	33,146	367,380	1,031,382	9,286,188	7,062,698
48	2,255,140	1,553,608	117,495	104,873	634,488	26,389	514,149	39,545	12,589	16,030	87,840	1,692,086	1,451,498
49	10,700,425	9,868,531	628,646	376,191	2,913,124	150,555	3,235,501	228,581	55,674	360,508	1,414,762	11,860,644	8,474,588
50	437,204	345,712	34,240	19,471	140,084	9,148	30,924	12,597	2,548	1,628	44,272	489,544	399,472

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AUTOMOBILES, INCLUDING BODIES  
AND PARTS

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# THE AUTOMOBILE INDUSTRY.

## GENERAL STATISTICS.

**Classification of establishments.**—The statistics of the automobile industry as given in the present bulletin cover the operations of two classes of establishments: (1) Those which manufactured complete automobiles as their product of chief value, and (2) those in which the greater part of the value of products represented automobile bodies and parts. In the statistics for the industry as a whole a large amount of duplication is involved, as the greater part of the products of the establishments engaged primarily in the manufacture of bodies and parts were utilized as materials in the establishments that manufactured chiefly complete automobiles, and a number of these latter establishments, moreover, reported the manufacture for sale to other automobile manufacturers of considerable quantities of bodies and parts. The statistics for the factories which produce complete machines and those which manufacture bodies and parts do not, however, indicate the full extent and importance of the automobile industry, because of the large number of establishments in other industries which manufacture engines or motors, parts of machinery, tools, rubber tires, and other parts and accessories of automobiles. In the census reports many of these establishments are included under the classification "foundry and machine-shop products." The manufacture of automobile rubber tires constitutes part of a separate industry, and although a number of manufacturers of rubber goods reported the value of tires produced, the practice was not general and their total value, therefore, can not be definitely determined. Moreover, many automobile parts, particularly tires, manufactured by establishments not assigned to the classification now under discussion, are sold to dealers or to automobile owners, and do not enter into the value of products of the automobile industry as here presented.

Table 1 presents a summary of the statistics of the automobile industry for the United States as a whole for 1909.

Of the 743 establishments engaged in the manufacture of automobiles, including bodies and parts, in 1909, only 265 manufactured complete automobiles as their product of chief value, but these establishments employed more than two-thirds of the average number of wage earners engaged in the entire industry. The total value of products in the year 1909 for the two branches of the industry combined was \$249,202,075, of which \$193,823,108 was the value of products reported by the establishments engaged principally in

the manufacture of automobiles and \$55,378,967 that reported by establishments engaged principally in the manufacture of automobile bodies and parts. The total obtained by adding the figures for the two branches of the industry involves considerable duplication, as already explained. Probably a better measure of the actual value of the products of the automobile industry as a whole is found in the total value of the complete machines manufactured, which was \$164,269,324.

Of the 126,593 automobiles turned out by establishments of the industry in 1909, all but 23 were made in establishments reporting complete automobiles as the product of chief value. In addition to the automobiles manufactured by establishments assigned to this industry, 694 automobiles were reported by establishments engaged primarily in the manufacture of other products.

Table 1	Total. <sup>1</sup>	ESTABLISHMENTS MANUFACTURING PRINCIPALLY—	
		Automobiles.	Automobile bodies and parts.
Number of establishments.....	743	265	478
Persons engaged in the industry.....	85,359	58,142	27,217
Proprietors and firm members.....	405	83	322
Salaried employees.....	9,233	6,765	2,468
Wage earners (average number).....	75,721	51,294	24,427
Primary horsepower.....	75,550	50,641	24,909
Capital.....	\$178,837,111	\$134,592,965	\$39,244,146
Expenses.....	\$210,690,666	\$163,647,228	\$47,043,438
Services.....	\$58,173,291	\$39,854,578	\$18,318,713
Salaries.....	\$9,479,424	\$6,674,104	\$2,805,320
Wages.....	\$48,693,867	\$33,180,474	\$15,513,393
Materials.....	\$131,645,736	\$107,731,446	\$23,914,290
Miscellaneous.....	\$20,871,639	\$16,081,204	\$4,810,435
Value of products.....	\$249,202,075	\$193,823,108	\$55,378,967
Value added by manufacture (value of products less cost of materials).....	\$117,556,339	\$88,091,662	\$31,464,677
Automobiles made:			
Number.....	126,593	126,570	23
Value.....	\$164,269,324	\$164,203,524	\$65,800

<sup>1</sup> In addition, 694 automobiles, valued at \$830,080, and bodies and parts to the value of \$4,413,266, were reported by establishments engaged primarily in the manufacture of brass and bronze products, carriages and wagons, street-railroad cars, machinery, and other products.

An average value per automobile computed from the total number of those manufactured in 1909 would have but slight significance, because of the many sizes and varieties included in the total number. Even a computation of the average value for the different classes of machines for which separate statistics are presented is unsatisfactory for the same reason.

**Comparison with earlier censuses.**—Table 2 summarizes the statistics of the automobile industry (both branches combined) for the censuses of 1909, 1904, and 1899.

**Table 2**

	AUTOMOBILES, INCLUDING BODIES AND PARTS.			
	Number or amount.			Percent of increase: 1904-1909
	1909	1904	1899 <sup>1</sup>	
Number of establishments . . . . .	743	178	57	317.4
Persons engaged in the industry . . . . .	85,359	13,333	(?)	540.2
Proprietors and firm members . . . . .	405	103	(?)	293.2
Salaried employees . . . . .	9,233	1,181	268	681.8
Wage earners (average number) . . . . .	75,721	12,049	2,241	528.4
Primary horsepower . . . . .	75,550	10,169	3,164	647.4
Capital . . . . .	\$173,837,111	\$23,083,860	\$5,768,857	653.1
Expenses . . . . .	\$210,090,066	\$25,833,736	\$3,700,844	715.6
Services . . . . .	\$58,173,291	\$8,416,217	\$1,615,428	591.2
Salaries . . . . .	\$9,479,424	\$1,257,239	\$294,770	654.0
Wages . . . . .	\$48,693,867	\$7,158,978	\$1,320,658	580.2
Materials . . . . .	\$131,045,736	\$13,151,365	\$1,804,287	901.0
Miscellaneous . . . . .	\$20,871,639	\$4,266,154	\$281,129	389.2
Value of products . . . . .	\$249,202,075	\$30,033,536	\$4,748,011	728.7
Value added by manufacture (value of products less cost of materials) . . . . .	\$117,550,339	\$16,882,171	\$2,943,724	598.3
Automobiles made <sup>2</sup> . . . . .	120,593	21,692	3,723	483.6

<sup>1</sup> Establishments whose chief products were automobile bodies and parts were not included as a part of the industry until 1904.

<sup>2</sup> Figures not available.

<sup>3</sup> In addition, 694 automobiles in 1909 and 1,133 automobiles in 1904 were reported by establishments engaged primarily in other industries.

The automobile industry is one of the most recent to be included in the census of manufactures, having been first reported separately at the census of 1904. At the census of 1899 the manufacture of automobiles was reported as a part of the carriage and wagon industry, but the returns of establishments engaged exclusively or primarily in the manufacture of automobiles have since been tabulated separately, and are presented in the comparative table as the statistics for the industry in 1899. The totals for that year do not include statistics for establishments whose chief products were automobile bodies and parts, but it is doubtful whether there were any such establishments at that time. In 1899 the industry was largely in the experimental stage, and that being the case, a com-

parison of the totals for 1899 with the statistics for the succeeding censuses is of no great significance. The statistics for the censuses of 1904 and 1909, however, are fairly comparable and indicate a remarkable growth of the industry during the intervening period, the value of products being more than eight times as great in 1909 as in 1904. It is probable, however, that the figures representing the value of products may exaggerate somewhat the real growth of the industry, because, as already explained, they involve duplication to the extent that the products of one branch of the industry reappear in the materials for the other branch. Because of the increase in the relative importance of the branch of the industry engaged principally in the production of automobile bodies and parts, this duplication would have more effect upon the later figures than upon the earlier. Statistics as to the number of wage earners and the value added by manufacture, considered as a measure of the growth of the industry as a whole, are free from this objection. In 1909 the number of wage earners was more than six times as great as it was in 1904 and the "value added" more than seven times as great. The increase in the number of automobiles manufactured is another measure of growth, the number in 1909 being very nearly six times the number in 1904.

Between 1904 and 1909 the manufacture of automobiles, including bodies and parts, advanced in rank among the manufacturing industries of the country from seventy-seventh place to twenty-first with respect to value of products and from seventieth to twentieth with respect to average number of wage earners.

Table 3 gives separate statistics for the two branches of the industry for 1909 and 1904, with percentages of increase.

**Table 3**

	AUTOMOBILES.			AUTOMOBILE BODIES AND PARTS.		
	1909	1904	Per cent of increase.	1909	1904	Per cent of increase.
Number of establishments . . . . .	265	121	119.0	478	57	738.6
Persons engaged in the industry . . . . .	58,142	11,246	417.0	27,217	2,087	1,204.1
Proprietors and firm members . . . . .	83	53	56.6	322	50	544.0
Salaried employees . . . . .	6,765	954	609.1	2,468	227	987.2
Wage earners (average number) . . . . .	51,294	10,239	401.0	24,427	1,810	1,249.6
Primary horsepower . . . . .	50,641	7,624	564.2	24,909	2,485	902.4
Capital . . . . .	\$134,592,965	\$20,555,247	554.8	\$39,244,146	\$2,528,613	1,452.0
Expenses . . . . .	\$163,647,228	\$22,859,882	615.9	\$47,043,438	\$2,973,854	1,481.9
Services . . . . .	\$39,854,578	\$7,255,375	449.3	\$18,318,713	\$1,160,842	1,478.1
Salaries . . . . .	\$6,674,104	\$1,076,425	520.0	\$2,805,320	\$180,834	1,463.3
Wages . . . . .	\$33,180,474	\$6,178,950	437.0	\$15,513,393	\$980,008	1,483.0
Materials . . . . .	\$107,731,446	\$11,658,138	824.1	\$23,914,290	\$1,493,227	1,601.5
Miscellaneous . . . . .	\$16,061,204	\$3,946,369	307.0	\$4,810,435	\$319,785	1,404.3
Value of products . . . . .	\$193,823,108	\$26,645,064	627.4	\$55,378,967	\$3,368,472	1,634.3
Value added by manufacture (value of products less cost of materials) . . . . .	\$86,091,662	\$14,986,926	474.4	\$31,464,677	\$1,896,245	1,560.2

The large relative increases shown for the period from 1904 to 1909 in the branch of the industry which reported automobiles as the chief product were in all cases greatly exceeded by those for the branch of the industry chiefly engaged in the manufacture of automobile bodies and parts. The average number of wage earners employed in the establishments in the automobile branch was about five times as great in 1909 as

in 1904, while the average number employed in establishments whose chief products were automobile bodies and parts was more than thirteen times as great in the later as in the earlier year. In 1909 the value of products was more than seven times the figure for 1904 in the automobile branch and more than sixteen times the figure for 1904 in the other branch of the industry.

Summary, by states.—Table 4 presents the more important statistics for the combined industry, by states, the states being arranged according to the value of products reported for 1909. Separate figures are given for 19 states, the statistics for the 9 other states in which the industry was carried on in 1909 being combined under the heading of "all other states"

to avoid the disclosure of the operations of individual establishments. It may be noticed that certain numbers are omitted in the several series of numbers showing the rank of the states in the industry. This is because there are certain states included with "all other states" which outrank some of the states for which separate figures are given.

**Table 4**

AUTOMOBILES, INCLUDING BODIES AND PARTS.

STATE.	Number of establishments: 1909	Wage earners.			Value of products.				Value added by manufacture.				Percent of increase: 1904-1909 <sup>1</sup>			
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Wage earners (average number).	Value of products.	Value added by manufacture.
				1909	1904			1909	1904			1909	1904			
United States.....	743	75,721	100.0	.....	.....	\$249,202,075	100.0	.....	.....	\$117,556,339	100.0	.....	.....	528.4	729.7	596.3
Michigan.....	113	25,444	33.6	1	1	96,651,451	38.8	1	1	42,769,030	36.4	1	1	841.3	1,108.6	839.2
Ohio.....	75	12,130	16.0	2	2	38,838,754	15.6	2	2	20,316,756	17.3	2	2	345.6	510.9	434.0
New York.....	113	9,861	13.0	3	3	30,979,527	12.4	3	3	16,071,425	13.7	3	3	433.3	627.2	583.0
Indiana.....	67	6,797	9.0	4	6	23,764,070	9.5	4	7	8,769,201	7.5	4	7	733.0	1,349.9	976.0
Connecticut.....	28	3,815	5.0	7	4	11,608,228	4.7	5	4	6,811,924	5.8	5	4	.....	.....	.....
Wisconsin.....	30	4,298	5.7	5	7	11,440,242	4.6	6	6	6,100,028	5.2	6	6	.....	.....	.....
Massachusetts.....	62	4,138	5.5	6	5	11,359,224	4.6	7	5	5,867,746	5.0	7	5	276.2	326.5	320.6
Illinois.....	65	2,382	3.1	9	9	7,153,318	2.9	8	9	3,174,699	2.7	8	9	1,326.3	1,903.9	1,195.9
Pennsylvania.....	44	3,199	4.2	8	8	6,531,733	2.6	9	8	2,480,880	2.1	9	8	465.2	432.8	297.0
New Jersey.....	24	1,024	1.4	10	10	2,007,516	0.8	11	10	1,115,339	0.9	11	10	.....	.....	.....
Missouri.....	17	368	0.5	13	11	1,676,840	0.7	12	11	651,636	0.5	13	11	.....	.....	.....
California.....	41	478	0.6	12	14	1,470,169	0.6	13	14	770,441	0.7	12	14	.....	.....	.....
Iowa.....	11	248	0.3	14	.....	580,106	0.2	14	.....	254,414	0.2	14	.....	.....	.....	
Maryland.....	5	202	0.3	15	.....	532,761	0.2	15	.....	247,646	0.2	15	.....	.....	.....	
Minnesota.....	11	130	0.2	16	17	429,286	0.2	16	15	175,993	0.2	17	15	.....	.....	.....
Colorado.....	4	82	0.1	18	.....	206,408	0.1	18	.....	147,585	0.1	18	.....	.....	.....	
Texas.....	4	56	0.1	19	.....	183,580	0.1	19	.....	62,152	0.1	20	.....	.....	.....	
Nebraska.....	6	18	( <sup>2</sup> )	21	.....	57,423	( <sup>2</sup> )	22	.....	29,176	( <sup>2</sup> )	23	.....	.....	.....	
Washington.....	5	14	( <sup>2</sup> )	23	.....	56,358	( <sup>2</sup> )	23	.....	33,888	( <sup>2</sup> )	23	.....	.....	.....	
All other states.....	18	1,037	1.4	.....	.....	3,614,581	1.4	.....	.....	1,706,320	1.5	.....	.....	.....	.....	

<sup>1</sup> Percentages are based on figures in Table 22. Percentages are omitted where comparable figures can not be given or where base is less than 100 for wage earners, or less than \$100,000 for value of products or value added by manufacture.

<sup>2</sup> Less than one-tenth of 1 per cent.

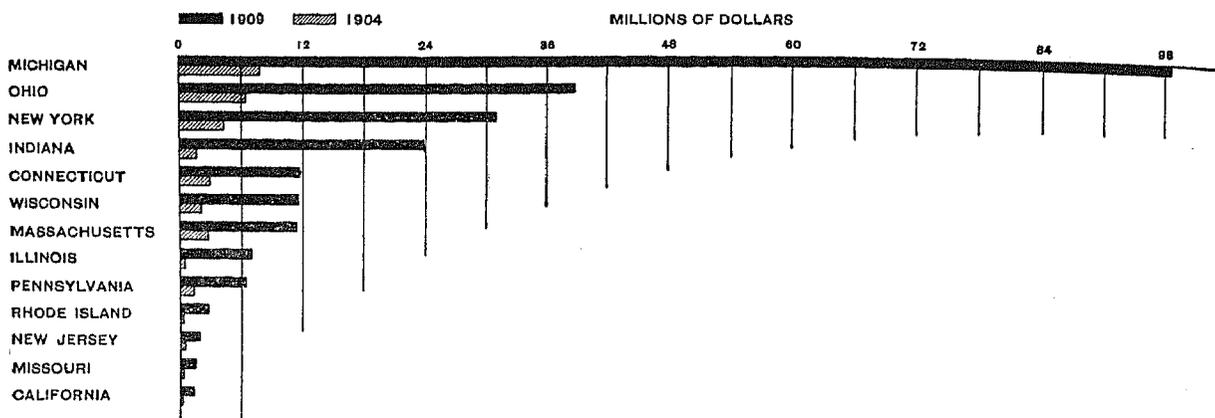
Michigan is the leading state in the industry, holding first rank at the censuses of 1909 and 1904 in respect to the average number of wage earners employed, the value of products, and the value added by manufacture. In 1909 the factories in Michigan reported 33.6 per cent of the average number of wage earners employed in the industry, 38.8 per cent of the value of products, and 36.4 per cent of the value added by manufacture. The average number of wage earners employed in establishments of the industry in this state and the value added by manufacture were more than nine times as great in 1909 as in 1904, while the gross value of products was more than twelve times as great in the later as in the earlier year. In 1909, 71.6 per cent of the wage earners, 76.3 per cent of the value of products, and 74.9 per cent of the value added by manufacture were reported from four states, namely, Michigan, Ohio, New York, and Indiana. In the case of each of the states for which separate figures

are given in the table, large percentages of increase are shown for every item for the period 1904-1909. Between 1904 and 1909 several changes took place in the rank of the different states as determined by value of products. The three leading states, Michigan, Ohio, and New York, in the order named, held the same rank at both censuses, as did Wisconsin, which ranked sixth. Indiana showed the most pronounced gain in rank, having advanced from seventh place in 1904 to fourth in 1909. Illinois became eighth instead of ninth, and California thirteenth instead of fourteenth. On the other hand, Massachusetts dropped from fifth place in 1904 to seventh in 1909, while Pennsylvania went from eighth to ninth.

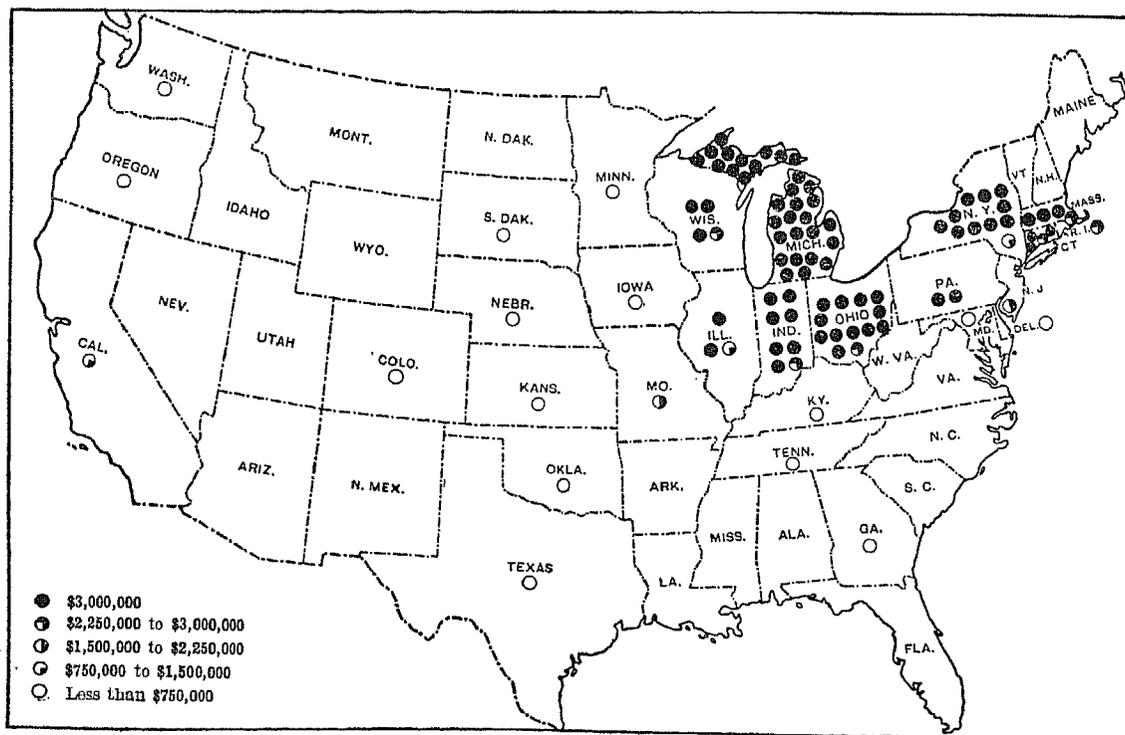
The following diagram shows graphically the value of products for the most important states in the industry in 1909 and 1904, while the map shows graphically the value of products in 1909 for each state from which the industry was reported for that year.

MANUFACTURES.

VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1904.



VALUE OF PRODUCTS, BY STATES: 1909.



Persons engaged in the industry.—Table 5 shows, by classes, for 1909, the number of persons engaged in the industry. It should be borne in mind that the sex and age classification of the average number of wage earners in this and in other tables is an estimate obtained by the method described in the Introduction.

The total number of persons engaged in the industry in 1909 was 85,359, of whom 75,721, or 88.7 per cent, were wage earners, 2,564, or 3 per cent, proprietors and officials, and 7,074, or 8.3 per cent, clerks—the last named class including other subordinate salaried employees. Of the persons engaged in the industry in 1909, 82,918, or 97.1 per cent, were males and 2,441, or

2.9 per cent, were females. Among the latter, 1,652, or 67.7 per cent, were clerks and 768, or 31.5 per cent, were wage earners, while but 21, or nine-tenths of 1 per cent, were proprietors and officials. The average number of children under 16 years of age employed as wage earners in the industry in 1909 was 162, of whom 159 were males and 3 were females.

The average number of wage earners is given in Table 22, by states, for 1909, 1904, and 1899. The sex and age distribution of the average number of wage earners is not shown for the individual states, but Table 23 gives such a distribution of the number employed on December 15, 1909, or the nearest representative day.

**Table 5**  
BRANCH OF INDUSTRY AND CLASS OF PERSONS.

BRANCH OF INDUSTRY AND CLASS OF PERSONS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
<b>Automobiles, including bodies and parts.</b>	<b>88,359</b>	<b>82,918</b>	<b>2,441</b>
Proprietors and officials.....	2,564	2,543	21
Proprietors and firm members.....	405	397	8
Salaried officers of corporations.....	758	743	10
Superintendents and managers.....	1,401	1,393	3
Clerks.....	7,074	5,422	1,652
Wage earners (average number).....	75,721	74,953	768
16 years of age and over.....	75,559	74,794	765
Under 16 years of age.....	162	159	3
<b>Automobiles.....</b>	<b>58,142</b>	<b>56,541</b>	<b>1,601</b>
Proprietors and officials.....	1,350	1,344	6
Proprietors and firm members.....	83	81	2
Salaried officers of corporations.....	371	369	2
Superintendents and managers.....	896	894	2
Clerks.....	5,498	4,275	1,223
Wage earners (average number).....	51,294	50,922	372
16 years of age and over.....	51,187	50,818	369
Under 16 years of age.....	107	104	3
<b>Automobile bodies and parts.....</b>	<b>27,217</b>	<b>26,377</b>	<b>840</b>
Proprietors and officials.....	1,214	1,199	15
Proprietors and firm members.....	322	316	6
Salaried officers of corporations.....	387	379	8
Superintendents and managers.....	506	504	1
Clerks.....	1,576	1,147	429
Wage earners (average number).....	24,427	24,031	396
16 years of age and over.....	24,372	23,976	396
Under 16 years of age.....	55	55	

In order to compare the distribution of persons engaged in the industry according to occupational status in 1909 with that shown at the census of 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 6.

**Table 6**  
PERSONS ENGAGED IN THE INDUSTRY AS A WHOLE.

CLASS.	1909		1904		Percent of increase: 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	88,359	100.0	13,333	100.0	540.2
Proprietors and firm members..	405	0.5	103	0.8	293.2
Salaried employees.....	9,233	10.8	1,181	8.9	681.8
Wage earners (average number).	75,721	88.7	12,049	90.4	528.4

Salaried employees increased in number at a greater rate than either of the other classes, forming a somewhat larger percentage of the total number of persons engaged in the industry in 1909 (10.8 per cent) than in 1904 (8.9 per cent). The percentage of increase in the average number of wage earners was much greater than that in proprietors and firm members, but the proportion which each of these classes represented of the total was smaller in the later than in the earlier year.

Table 7 shows the average number of wage earners employed in the industry, distributed according to age periods, and in the case of those 16 years of age and over, according to sex, for 1909, 1904, and 1899.

**Table 7**  
AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY AS A WHOLE.

CLASS.	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	75,721	100.0	12,049	100.0	2,241	100.0
16 years of age and over.....	75,559	99.8	11,977	99.4	2,235	99.7
Male.....	74,794	98.8	11,937	99.1	2,231	99.5
Female.....	765	1.0	40	0.3	4	0.2
Under 16 years of age.....	162	0.2	72	0.6	6	0.3

Practically all the wage earners employed in the industry as a whole (98.8 per cent in 1909 and 99.1 per cent in 1904) were males 16 years of age and over. The proportion represented by females 16 years of age and over was somewhat higher in 1909 than at the preceding censuses, while the proportion represented by children under 16 years of age was somewhat lower in 1909 than in 1904. The numbers of women and children employed are, however, so small that the changes in the relative importance of these classes since 1904 have little significance.

Wage earners employed, by months.—Table 8 gives the number of wage earners employed in the manufacture of automobiles (including bodies and parts) on the 15th (or the nearest representative day) of each month during the year 1909 for the 10 states in which the average number of wage earners employed during the year exceeded 500.

**Table 8**  
WAGE EARNERS EMPLOYED IN THE INDUSTRY AS A WHOLE: 1909<sup>1</sup>

STATE.	Average number during the year.	1909											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
<b>United States.....</b>	<b>75,721</b>	<b>62,724</b>	<b>68,806</b>	<b>71,142</b>	<b>73,752</b>	<b>75,481</b>	<b>76,176</b>	<b>76,549</b>	<b>78,468</b>	<b>77,445</b>	<b>77,280</b>	<b>82,956</b>	<b>89,866</b>
Connecticut.....	3,815	<i>3,320</i>	3,454	3,587	3,690	3,719	3,671	3,596	3,761	4,047	4,003	4,348	4,566
Illinois.....	2,382	<i>2,252</i>	2,369	2,505	2,433	2,524	2,435	2,508	2,484	2,375	2,134	2,107	2,448
Indiana.....	6,797	<i>5,488</i>	6,020	6,427	6,582	6,710	6,666	6,378	6,485	6,349	7,437	8,197	8,825
Massachusetts.....	4,188	<i>3,538</i>	3,791	4,164	4,216	4,317	4,271	4,325	4,157	4,067	4,307	4,274	4,437
Michigan.....	25,444	<i>20,464</i>	21,893	23,474	24,788	26,085	26,842	28,642	29,006	27,011	25,404	25,419	28,902
New Jersey.....	1,024	<i>897</i>	919	956	963	953	1,035	1,047	1,048	1,026	1,081	1,149	1,211
New York.....	9,861	<i>8,917</i>	9,262	9,730	9,947	9,827	9,621	8,269	9,167	9,601	10,534	11,379	12,073
Ohio.....	12,130	<i>10,034</i>	10,680	11,118	11,381	11,217	11,191	11,674	12,135	12,494	13,394	14,542	15,700
Pennsylvania.....	3,199	<i>2,849</i>	2,410	2,571	2,766	2,962	3,304	3,477	3,500	3,678	3,637	3,781	3,953
Wisconsin.....	4,298	<i>3,432</i>	3,688	4,061	4,246	4,393	4,365	3,955	3,990	4,154	4,674	5,063	5,514

<sup>1</sup> The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

The largest number of wage earners employed in the industry as a whole during any month of 1909 was 89,886 in December, and the smallest number 62,724, in January. Although the number of wage earners employed in January was equal to only 69.8 per cent of the number reported for December, the industry can not be classed as seasonal, the difference in employment during 1909 being due rather to the increasing demands made on the factories in the later months of the year. In 1904 in the automobile branch of the industry, which gave employment to 85 per cent of the wage earners reported for the combined industry in that year, the month of greatest employment was June, and the minimum number of wage earners, reported for September, was equal to 64.9 per cent of the maximum.

**Prevailing hours of labor.**—In the next table the wage earners have been classified according to the hours of labor prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment is classified as a total according to the hours prevailing in that establishment, even though some employees worked a greater or less number of hours.

**Table 9** AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY AS A WHOLE: 1909

STATE.	Total.	In establishments with prevailing hours—						
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
United States..	75,721	330	2,253	22,734	26,669	22,280	48	1,407
Connecticut.....	3,815	46	72	1,398	884	1,461	16	.....
Illinois.....	2,882	18	250	994	363	713	.....	.....
Indiana.....	6,797	3	19	1,605	3,488	1,767	.....	.....
Massachusetts.....	4,138	3	232	2,645	1,242	16	.....	.....
Michigan.....	25,444	2	17	4,775	7,086	13,564	.....	.....
New Jersey.....	1,024	.....	51	680	144	149	.....	.....
New York.....	9,861	86	1,525	4,068	2,248	1,932	.....	2
Ohio.....	12,130	2	64	4,469	6,055	1,051	.....	489
Pennsylvania.....	3,199	1	.....	746	2,267	195	.....	.....
Wisconsin.....	4,298	4	.....	273	2,121	985	.....	915

More than nine-tenths (94.7 per cent) of the wage earners employed in the industry in 1909 worked in establishments reporting from 54 to 60 hours per week, inclusive, as the prevailing hours of labor. Establishments reporting more than 54 but less than 60 hours as the period of employment per week employed 35.2 per cent of the wage earners, establishments reporting 54 hours 30 per cent, and establishments reporting 60 hours 29.4 per cent. Only 1.9 per cent were employed in establishments where the usual hours of labor per week were more than 60, and only 3.4 per cent in establishments where they were less than 54. Practically all the wage earners employed in establishments where the prevailing hours of labor were more than 60 per week were reported from Wisconsin and Ohio, and more than three-fifths (62.4 per cent) of those employed in establishments where the hours of labor were less than 54 per week were reported from New York.

**Character of ownership.**—The next table shows data as to character of ownership for establishments engaged in the industry in the United States in 1909 and 1904.

**Table 10** AUTOMOBILES, INCLUDING BODIES AND PARTS.

CHARACTER OF OWNERSHIP.	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	743	178	\$249,202,075	\$30,033,536
Individual.....	162	35	4,184,686	2,003,043
Firm.....	103	30	9,214,425	1,575,642
Corporation.....	478	113	235,802,964	26,454,851
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	21.8	19.7	1.7	6.7
Firm.....	13.9	16.9	3.7	5.2
Corporation.....	64.3	63.4	94.6	88.1

In both 1909 and 1904 more than five-eighths of the total number of establishments were under corporate ownership, the percentage being slightly higher in 1909 than in 1904. This group of establishments, however, contributed a much larger proportion of the total value of products in 1909 than in 1904, 94.6 per cent as compared with 88.1 per cent. The proportion of establishments under individual ownership increased slightly during the five-year period, but the value of products reported for this group formed a smaller percentage of the total in 1909 than in 1904. As shown by Table 10, establishments owned by firms represented a smaller proportion of the total number of establishments and contributed a smaller proportion of the total value of products in the later than in the earlier year.

Table 11 gives statistics in respect to the character of ownership, or legal organization, of the establishments engaged in the industry in the states where an average of more than 500 wage earners were employed in 1909.

In all the states for which separate figures are included in the table, establishments under corporate ownership constituted more than half of the total number and reported the majority of the wage earners and the greater part of the value of products and value added by manufacture. The establishments owned by individuals attained their greatest relative importance in Massachusetts, where they did a business about one-tenth as great as that done by corporations. The establishments owned by firms were of greatest importance in Wisconsin, where they did about half as much business as was done by corporations. In all the other states shown in the table the business done by either individuals or firms was relatively unimportant, although in New York products to the value of over \$1,000,000 were reported from establishments owned by individuals, and in Ohio and also in Michigan products to the value of over \$1,500,000 were reported by firms. These amounts are, however, small as compared with the production reported by corporations in those states.

Table 11

STATE.	AUTOMOBILES, INCLUDING BODIES AND PARTS: 1909											
	Number of establishments owned by—			Wage earners in establishments owned by—			Value of products of establishments owned by—			Value added by manufacture in establishments owned by—		
	Individu-als.	Firms.	Corpora-tions.	Individu-als.	Firms.	Corpora-tions.	Individu-als.	Firms.	Corpora-tions.	Individu-als.	Firms.	Corpora-tions.
United States.....	162	103	478	1,641	2,512	71,568	\$4,184,686	\$9,214,425	\$235,802,964	\$2,282,376	\$5,126,602	\$110,147,361
Connecticut.....	3	2	23	55	(X)	3,700	107,691	(X)	11,560,537	67,763	(X)	6,744,161
Illinois.....	16	8	41	86	62	2,234	220,925	181,152	6,751,741	128,350	98,809	2,947,540
Indiana.....	9	10	48	74	410	6,313	106,876	510,698	23,146,496	75,507	288,594	8,405,100
Massachusetts.....	20	8	34	370	128	3,642	1,044,768	346,727	9,997,729	563,066	176,869	5,127,811
Michigan.....	10	9	94	71	515	24,858	172,570	1,701,035	94,777,846	92,321	887,940	41,788,769
New Jersey.....	4	2	18	85	(X)	999	55,762	(X)	1,953,764	50,558	(X)	1,084,771
New York.....	23	17	73	413	258	9,190	1,003,804	686,829	29,288,894	604,838	382,963	15,083,624
Ohio.....	10	13	52	147	228	11,755	227,816	1,608,896	37,002,042	137,171	788,593	19,390,992
Pennsylvania.....	15	6	23	143	42	3,014	374,220	78,846	6,078,667	169,466	53,901	2,257,513
Wisconsin.....	6	5	19	29	701	3,568	91,846	3,552,677	7,795,719	38,734	2,125,081	3,936,213

NOTE.—In some states, in order to avoid disclosing the returns for individual establishments, the figures for one group have been consolidated with those for establishments under some other form of ownership. In such cases an (X) is placed in the column from which the figures have been omitted and the figures for the group with which they have been combined are printed in italics.

Size of establishment.—Table 12 groups the establishments engaged in the manufacture of automobiles, including bodies and parts, according to the value of their products and shows for each group, for 1909 and 1904, the number of establishments and value of products, together with the percentage of the respective totals contributed by each group.

Table 12

VALUE OF PRODUCTS PER ESTABLISHMENT.	AUTOMOBILES, INCLUDING BODIES AND PARTS.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	743	178	\$249,202,075	\$30,033,538
Less than \$5,000.....	89	32	240,866	92,802
\$5,000 and less than \$20,000.....	170	44	1,937,965	477,744
\$20,000 and less than \$100,000.....	225	54	10,760,970	2,705,085
\$100,000 and less than \$1,000,000.....	200	38	65,875,412	12,762,176
\$1,000,000 and over.....	56	10	170,386,862	13,995,609
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	12.0	18.0	0.1	0.3
\$5,000 and less than \$20,000.....	22.9	24.7	0.8	1.6
\$20,000 and less than \$100,000.....	30.7	30.3	4.3	9.0
\$100,000 and less than \$1,000,000.....	26.9	21.3	26.4	42.5
\$1,000,000 and over.....	7.5	5.6	68.4	46.6

Of the 743 establishments reported as engaged in the industry in 1909, 56, or 7.5 per cent, had products valued at more than \$1,000,000 each. The corresponding figures for 1904 were 10 out of 178 establishments, or 5.6 per cent. Although these establishments were relatively unimportant numerically, they reported a large proportion of the total value of products, the percentage for 1909 (68.4) being much larger than that for 1904 (46.6). On the other hand, the establishments in each of the four remaining groups contributed a smaller proportion of the value of products in 1909 than in 1904. Only a small percentage of the value of products was reported by the establishments having products of less than \$100,000 in value—5.2 per cent in 1909 and 10.9 per cent in 1904—notwithstanding the fact that such establish-

ments formed 65.6 per cent of the total number in 1909 and 73 per cent in 1904.

As computed from the figures in Table 2, the average number of wage earners per establishment in the industry as a whole increased from 68 in 1904 to 102 in 1909, the average value of products from \$168,728 to \$335,400, and the average value added by manufacture from \$94,844 to \$158,218. In 1909 the average value of products per establishment for establishments engaged chiefly in manufacturing automobiles was \$731,408, and for those manufacturing chiefly automobile bodies and parts, \$115,856.

In some respects, and especially from the standpoint of conditions under which persons engaged in the industry work, the best classification of establishments to bring out the feature of size is a classification according to the number of wage earners employed. Table 13 gives such a classification, showing the number of establishments in each group and the average number of wage earners employed in each of the 10 states where an average of more than 500 wage earners were employed in 1909.

There were 220 establishments employing from 1 to 5 wage earners each, 173 employing from 6 to 20, and 122 employing from 21 to 50, these three classes of establishments comprising, respectively, 29.6 per cent, 23.3 per cent, and 16.4 per cent of the total number of establishments. Although the establishments in these three groups thus constituted 69.3 per cent of the total number, however, they reported only 9.1 per cent of the wage earners. The great majority of the wage earners, 83.9 per cent, were in establishments having more than 100 wage earners each. The single group having the largest number of wage earners was that consisting of establishments with over 1,000 wage earners each, these establishments employing in the aggregate 24,707 wage earners, or 32.6 per cent of the total number.

STATE.	Establishments employing in 1909—																			
	Total.		No wage earners.		1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
	Es- tab- lish- ments.	Wage earners (average num- ber).	Es- tab- lish- ments.	Es- tab- lish- ments.	Wage earn- ers.	Es- tab- lish- ments.	Wage earn- ers.	Es- tab- lish- ments.	Wage earn- ers.	Es- tab- lish- ments.	Wage earn- ers.	Es- tab- lish- ments.	Wage earn- ers.	Es- tab- lish- ments.	Wage earn- ers.	Es- tab- lish- ments.	Wage earn- ers.	Es- tab- lish- ments.	Wage earn- ers.	
United States.....	743	75,721	12	220	597	173	2,119	122	4,146	73	5,337	77	12,477	31	11,291	20	15,047	15	24,707	
Connecticut.....	28	3,815	1	4	9	4	38	6	188	5	354	6	1,099	2	556	1	957	1	1,280	
Illinois.....	65	2,382	.....	28	65	13	156	12	402	6	466	4	737	.....	.....	.....	.....	.....	.....	
Indiana.....	67	0,797	.....	22	57	13	173	11	401	4	300	10	1,846	4	1,424	2	1,219	1	1,377	
Massachusetts.....	62	4,138	.....	2	13	40	17	214	17	583	5	390	4	567	2	744	2	1,595	.....	
Michigan.....	113	25,444	.....	19	61	21	241	19	604	14	1,044	23	3,637	5	2,025	7	5,212	5	12,620	
New Jersey.....	24	1,024	.....	8	29	6	90	3	91	4	270	2	264	1	280	.....	.....	.....	.....	
New York.....	113	9,861	.....	2	27	75	380	24	773	13	934	10	1,672	3	984	2	1,520	3	3,523	
Ohio.....	75	12,130	.....	1	14	30	17	204	9	356	9	586	10	1,421	9	3,245	2	1,351	4	4,898
Pennsylvania.....	44	3,199	.....	3	9	24	13	134	8	271	2	163	5	771	3	1,192	1	644	.....	
Wisconsin.....	30	4,298	.....	12	30	9	114	2	92	1	84	2	400	.....	.....	.....	.....	.....	.....	

**Expenses.**—As stated in the Introduction, the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of interest or depreciation and consequently can not be used for determining profits. Facts of interest, however, can be brought out concerning the relative importance of those classes of expenses which were reported. As shown by Table 2, the total reported expenses in 1909 amounted to \$210,690,666, of which \$131,645,736, or 62.5 per cent, represented materials; \$48,693,867, or 23.1 per cent, wages; \$9,479,424, or 4.5 per cent, salaries; and \$20,871,639, or 9.9 per cent, miscellaneous expenses. Since the cost of materials, as previously explained, involves a certain amount of duplication, the figures and percentages here presented exaggerate somewhat the relative importance of this item. The item of miscellaneous expenses includes \$882,511 paid as rent of factories, \$600,921 as taxes, \$550,329 for contract work, and \$18,837,878 for other miscellaneous expenses, including traveling expenses, insurance, and other sundry items. Although there is necessarily some variation among the several states in the proportions of the total expenses formed by the respective items, the differences are not great, and are due largely to differences in the processes carried on in the various establishments. As a result of the extensive development of that branch of the industry chiefly engaged in the manufacture of automobile bodies and parts, many establishments which turn out complete automobiles merely assemble parts made elsewhere, and in establishments of this character a greater proportion of the total expense is incurred for materials and a smaller proportion for wages than in establishments which make to a considerable extent the parts which they use in the construction of complete automobiles. In the United States as a whole, the cost of materials represented 65.8 per cent of the total expenses in the case of establishments whose chief products were complete automobiles, and 50.8 per cent in the case of those whose chief products were automobile bodies and parts.

**Engines and power.**—Table 14 shows the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current), and their total horsepower at the censuses of 1909, 1904, and 1899. It also shows separately the number and horsepower of electric motors, including those operated by current generated in the establishment reporting.

POWER.	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	2,548	153	61	75,550	10,109	3,164	100.0	100.0	100.0
Owned.....	473	153	48	46,612	8,915	2,815	61.7	88.2	89.0
Steam.....	273	74	33	39,325	7,376	2,610	52.0	73.0	82.5
Gas.....	192	77	13	7,000	1,459	130	9.3	14.4	4.1
Water wheels.....	8	2	2	287	80	75	0.4	0.8	2.4
Rented.....	2,075	(1)	13	28,938	1,194	349	38.3	11.8	11.0
Electric.....	2,075	(1)	13	27,641	1,051	164	36.6	10.4	5.2
Other.....	.....	.....	.....	1,297	143	185	1.7	1.4	5.8
Electric motors.....	2,932	108	45	41,820	4,229	601	100.0	100.0	100.0
Run by current generated by establishment.....	857	108	32	14,188	3,178	437	33.9	75.1	72.7
Run by rented power.....	2,075	(1)	13	27,641	1,051	164	66.1	24.9	27.3

<sup>1</sup> Not reported.

The total horsepower used in the industry in 1909 was more than seven times as great as the amount used in 1904. At both censuses the greater part of the power was furnished by steam engines, but such power formed a much smaller proportion of the total primary power in 1909 than in 1904, the percentages being 52 and 73, respectively. On the other hand, rented electric power formed 36.6 per cent of the total primary power used in the industry in 1909, as compared with only 10.4 per cent in 1904.

The proportion of the total primary power developed by the use of gas and other internal combustion en-

gines in 1909 was below that for 1904. But little water power was used in the industry and the proportion which such power formed of the total was less in 1909 than in 1904.

Table 15 shows for 1909, for the 10 leading states, the amount of each of the several kinds of power used and also the quantity of the different kinds of fuel consumed.

**Table 15** AUTOMOBILES, INCLUDING BODIES AND PARTS.

STATE.	Primary horsepower.		Owned by establishments reporting.						Rented.		Electric horsepower.		Fuel used.						
	Number of establishments reporting.	Total horsepower.	Total.	Steam engines.	Gas engines.	Water wheels.	Other.	Elec. tric.	Other.	Total, rented and generated by establishment.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).		
												Anthra-cite (long tons).	Bitumi-nous (short tons).						
United States.....	664	75,550	46,612	39,325	7,000	287	.....	27,641	1,297	41,829	14,188	17,346	319,497	14,282	2,183	86,873	385,468		
Connecticut.....	26	3,937	2,271	2,173	98	.....	.....	.....	.....	1,666	.....	2,453	787	820	16,115	44	4	15,749	21,732
Illinois.....	61	1,786	661	480	161	20	.....	.....	.....	1,052	73	1,160	108	7	11,839	161	.....	163	3,196
Indiana.....	62	5,813	3,904	3,480	444	.....	.....	.....	.....	1,909	.....	2,866	957	44	34,783	1,182	20	7,085	19,276
Massachusetts.....	56	2,806	1,831	1,465	196	170	.....	.....	.....	607	458	697	90	2,561	7,411	75	12	164	7,302
Michigan.....	111	25,938	12,945	11,388	1,557	.....	.....	.....	.....	12,526	467	16,346	3,820	1,451	98,900	5,178	1,810	34,939	90,610
New Jersey.....	20	1,311	1,144	1,066	78	.....	.....	.....	.....	167	.....	692	525	1,372	3,105	20	.....	126	1,718
New York.....	96	9,398	6,474	5,304	1,075	95	.....	.....	.....	2,894	30	4,116	1,222	5,046	33,557	5,207	2	4,590	70,739
Ohio.....	85	14,433	9,983	7,881	2,102	.....	.....	.....	.....	4,445	5	8,094	3,649	1,057	61,588	1,591	212	16,653	151,524
Pennsylvania.....	33	2,746	2,376	2,185	191	.....	.....	.....	.....	364	6	2,258	1,894	3,590	22,405	410	.....	4,638	7,039
Wisconsin.....	29	3,153	2,904	2,285	699	.....	.....	.....	.....	189	.....	1,043	854	1,039	21,009	199	11	1,344	6,929
All other states.....	100	4,139	2,059	1,658	399	2	.....	.....	.....	1,822	258	2,104	282	359	8,183	215	112	1,422	5,403

More than one-third (34.3 per cent) of the total horsepower shown for the industry in 1909 was used by establishments in Michigan, and these, together with the factories of Ohio and New York, reported 65.9 per cent of the total. These three states used 62.5 per cent of the total steam power, 67.6 per cent of the power generated by gas and other internal combustion engines, and 71.9 per cent of the rented electric power. Michigan led in the amount of steam power and of rented electric power employed, but was second in respect to power generated by gas and other internal combustion engines, Ohio being first.

Fuel consumed.—The amount expended for fuel and rent of power in 1909, \$1,661,724, is distributed, by states, in Table 23, and the quantity of fuel used is shown for the leading states in Table 15.

Bituminous coal was the principal kind of fuel in this industry, 319,497 tons having been consumed in 1909; of anthracite coal, only 17,346 tons were used; of oil, including gasoline, 86,873 barrels; of gas, 385,468,000 feet; and of coke, 14,282 tons. Michigan led all other states in the consumption of bituminous coal and oil, but Ohio was first in the amount of gas consumed.

SPECIAL STATISTICS RELATING TO PRODUCTS.

Automobiles made, classified according to kind of propelling power.—Table 16 shows the total number and value of the automobiles reported for the industry in 1909 and 1904, classified according to motive power, with the proportion which each class represented of the total and the percentages of increase between the two censuses.

**Table 16**

	1909	Per cent distribution: 1909	1904	Per cent distribution: 1904	Per cent of increase: 1904-1909
Number of establishments.....	265	.....	121	.....	119.0
Automobiles: <sup>1</sup>					
Number.....	126,593	100.0	21,692	100.0	483.6
Value.....	\$164,269,324	100.0	\$23,751,234	100.0	591.6
Gasoline—					
Number.....	120,393	95.1	18,699	86.2	543.8
Value.....	\$153,529,663	93.5	\$19,566,941	82.4	684.6
Electric—					
Number.....	3,828	3.0	1,425	6.6	168.5
Value.....	\$7,259,430	4.4	\$2,496,255	10.5	190.8
Steam—					
Number.....	2,374	1.9	1,568	7.2	51.4
Value.....	\$3,480,241	2.1	\$1,688,038	7.1	106.2

<sup>1</sup> Statistics for 1909 include 23 automobiles, valued at \$65,800, of which 1 was gasoline and 22 were electric, made in establishments whose principal products were automobile bodies and parts, but do not include 694 automobiles, valued at \$830,080, reported by establishments in other industries, chiefly the carriage and wagon industry.

Of the automobiles turned out by establishments engaged in the industry in 1909, 95.1 per cent were gasoline vehicles, the proportion being considerably larger than that in 1904 (86.2 per cent). The number of gasoline automobiles made in 1909 was more than six times as great as the number made in 1904. Steam and electric vehicles gained in number at a much less rapid rate, showing increases of 51.4 and 168.5 per cent, respectively, and each of these classes formed a smaller proportion of the total number in 1909 than at the preceding census. In 1904 more steam than electric automobiles were reported, but in 1909 the reverse was true. It will be observed that for each of the three kinds of automobiles shown in the table a greater relative increase is shown in the value than in the number. This does not necessarily indicate an increase of prices; it may mean simply an increase in the proportion of more expensive machines.

Table 17 shows, by states, the number and value of automobiles using the several kinds of motive power made in establishments engaged in the industry in 1909 and 1904.

KIND OF POWER AND STATE.	NUMBER.		VALUE.	
	1909	1904	1909	1904
<b>All kinds (gasoline, electric, and steam)</b> .....	126,593	21,692	\$164,269,324	\$23,751,234
California.....	578	12	815,157	13,600
Connecticut.....	2,915	832	7,364,852	1,958,082
Illinois.....	3,442	205	4,475,642	262,691
Indiana.....	17,253	1,020	17,604,936	1,428,463
Iowa.....	399	.....	425,550	.....
Maryland.....	246	.....	386,623	.....
Massachusetts.....	3,466	2,365	6,229,438	2,052,943
Michigan.....	64,800	9,125	70,359,749	6,532,804
Minnesota.....	138	.....	217,250	.....
Missouri.....	701	.....	1,011,346	.....
New Jersey.....	96	51	187,339	71,400
New York.....	8,064	1,808	17,509,582	3,071,093
Ohio.....	14,299	2,808	23,550,112	5,197,360
Pennsylvania.....	1,999	963	4,148,661	1,134,775
Wisconsin.....	5,591	2,390	7,085,562	1,856,094
<b>Gasoline</b> .....	120,393	18,639	153,529,653	19,568,941
California.....	578	12	815,157	13,600
Indiana.....	16,707	595	16,734,648	1,034,519
Maryland.....	246	.....	386,623	.....
Massachusetts.....	2,739	1,765	5,436,311	1,662,943
Michigan.....	64,262	9,114	69,130,223	6,537,404
Minnesota.....	138	.....	217,250	.....
Missouri.....	701	.....	1,011,346	.....
New York.....	7,529	1,496	16,446,788	2,169,093
Ohio.....	10,947	1,811	17,999,332	3,853,621
Wisconsin.....	5,591	2,388	7,085,562	1,853,094
<b>Electric</b> .....	3,826	1,425	7,259,430	2,496,255
Indiana.....	546	424	870,288	391,444
Michigan.....	538	11	1,229,526	15,400
Ohio.....	1,641	200	2,732,580	196,000
<b>Steam</b> .....	2,374	1,568	3,480,241	1,688,038
Ohio.....	1,711	797	2,818,200	1,147,739

The manufacture of automobiles in establishments whose products of chief value were either the completed vehicles or bodies and parts was carried on in 1909 in 24 states. The bulk of the output, however, was confined to a few states. The establishments in Michigan, Ohio, Indiana, and New York together reported 104,416 automobiles, valued at \$129,024,379, or 82.5 per cent of the total number and 78.5 per cent of the total value shown for the automobile industry in 1909, as compared with 14,761, or 68 per cent, and \$16,249,720, or 68.4 per cent, respectively, in 1904.

Michigan was the leading state at each census in respect to both the total number and total value of motor vehicles manufactured. The automobiles made in Michigan, where the industry is largely centralized, represented 51.2 per cent of the total number and 42.8 per cent of the total value in 1909, and 42.1 per cent and 27.6 per cent, respectively, in 1904.

Indiana and Ohio ranked second and third, respectively, in 1909 in the total number of automobiles produced, but in the value of the output Ohio was second and Indiana third. While less than half as many automobiles were made in New York as in Indiana, the value of all machines produced in the former state was practically equal to that reported for the latter.

More than half (64,262, or 53.4 per cent) of the total number of gasoline automobiles and nearly half (\$69,130,223, or 45 per cent) of their total value were reported by Michigan in 1909. Ohio was the leading state in the production of electric and steam automobiles, reporting 37.6 per cent and 81 per cent, respectively, of the total value of these machines in 1909.

Automobiles made, classified according to use and type.—Table 18 shows for the leading states the number and value of the several types of automobiles made in the establishments engaged in the industry in 1909 and 1904.

CLASS AND STATE.	NUMBER.		VALUE.	
	1909	1904	1909	1904
<b>All classes</b> .....	126,593	21,692	\$164,269,324	\$23,751,234
<b>Pleasure and family vehicles</b> .....	121,868	20,261	155,821,331	21,651,331
<b>Touring cars</b> .....	76,114	7,220	113,403,188	11,781,521
Connecticut.....	2,165	292	5,613,262	1,008,383
Illinois.....	2,059	57	2,746,214	75,838
Indiana.....	6,838	387	10,710,289	736,869
Massachusetts.....	2,063	307	4,073,171	692,439
Michigan.....	43,855	2,561	51,365,984	2,402,125
New York.....	5,440	397	12,296,292	995,982
Ohio.....	6,479	2,521	14,307,300	4,967,731
<b>Runabouts</b> .....	36,204	12,131	28,030,479	8,831,504
Connecticut.....	393	209	815,888	283,800
Illinois.....	433	54	292,908	35,800
Indiana.....	8,139	230	5,055,208	173,054
Massachusetts.....	983	1,153	654,838	816,844
Michigan.....	18,173	6,432	13,399,037	4,057,439
New York.....	1,097	1,082	1,539,659	1,183,564
Ohio.....	2,900	186	2,948,588	124,629
<b>All other varieties</b> .....	9,550	910	14,387,664	1,038,306
Illinois.....	470	47	909,530	70,297
Indiana.....	2,104	372	1,445,357	476,050
Michigan.....	1,855	30	3,990,988	21,000
New York.....	507	60	1,480,735	79,600
Ohio.....	4,114	100	5,374,614	109,000
Pennsylvania.....	67	51	80,805	73,300
<b>Business vehicles</b> .....	4,725	1,431	8,447,993	2,099,903
<b>Delivery wagons</b> .....	1,862	251	1,918,856	455,457
Illinois.....	447	.....	400,410	.....
Indiana.....	107	18	167,358	20,160
Michigan.....	401	51	319,071	35,250
New York.....	139	77	282,080	191,457
Ohio.....	469	.....	242,105	.....
Pennsylvania.....	242	.....	406,325	.....
<b>Trucks</b> .....	1,366	160	3,165,512	491,490
Illinois.....	28	.....	46,955	.....
Indiana.....	43	.....	109,492	.....
Michigan.....	372	51	994,311	36,390
New York.....	475	81	880,724	349,500
Ohio.....	202	1	386,945	5,000
<b>All other varieties</b> .....	1,497	1,020	3,363,625	1,152,956
Connecticut.....	119	164	259,028	468,400
Indiana.....	22	13	127,232	22,300
Massachusetts.....	280	673	509,646	269,200
Michigan.....	144	.....	289,458	.....
New York.....	406	111	1,020,183	291,000
Ohio.....	135	.....	290,200	.....
Pennsylvania.....	127	5	323,026	13,300

Of the various classes of automobiles distinguished in this table, the most important in point of numbers and of value is that of touring cars, the total number of this class manufactured in 1909 being 76,114, with a value of \$113,403,188, as compared with 7,220, valued at \$11,781,521, in 1904. Such cars represented 60.1 per cent of the total number and 69 per cent of the total value of automobiles made in 1909. The class next in importance is that of runabouts, of which 36,204 were produced, with a value of \$28,030,479, in 1909, and 12,131, valued at \$8,831,504, in 1904. In 1909, of all other varieties of pleasure and family vehicles, which includes buggies, limousines, cabs, surreys, victorias, etc., 9,550, valued at \$14,387,664, were produced.

In the production of touring cars and of runabouts, Michigan was the leading state in 1909, reporting 45.3 per cent and 47.8 per cent, respectively, of the total

value of such machines. In 1904 Michigan reported 20.4 per cent of the total value of touring cars, being exceeded in the value of this class of machines by Ohio, which reported 42.2 per cent of the total. In the value of runabouts, however, Michigan led in 1904 with 45.9 per cent. Indiana ranked next to Michigan in the production of runabouts in 1909, while Ohio was the second state in the value of touring cars produced. In the production of "all other varieties" of pleasure and family vehicles, Ohio was the leading state in 1909, reporting 37.4 per cent of their total value in that year. In 1904 Indiana led, reporting 45.8 per cent of the total value of these cars produced.

In the number of delivery wagons manufactured in 1909 Michigan was outranked by Ohio and Illinois, and in their value by Illinois and Pennsylvania. In 1904 New York was the leading state in the value of this class of vehicles.

New York reported the largest number of motor trucks in 1909, but the aggregate value was less than

that reported by Michigan. In 1904, however, New York led both in the number and in the value of such vehicles, reporting 71.1 per cent of the value.

New York led in the value of "all other varieties" of business vehicles in 1909, reporting 30.3 per cent of the total value. In 1904 Connecticut was the leading state in this respect, reporting 40.6 per cent of the total value.

All the states for which comparative figures are given show large relative increases in the total number and value of automobiles manufactured, except that Massachusetts reported a smaller number and value for runabouts in 1909 than in 1904, while for "all other varieties" of business vehicles Connecticut reported a smaller number and value, and Massachusetts a smaller number, in 1909 than in 1904.

Automobiles made, classified according to motive power and type.—Table 19 shows the number and value of the several kinds of automobiles, classified also according to motive power, as reported for 1909 and 1904, with percentages of increase.

CLASS.	TOTAL.		GASOLINE.		ELECTRIC.		STEAM.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
<b>Total:</b> <sup>1</sup>								
1909.....	128,593	\$164,269,324	120,393	\$153,529,653	3,826	\$7,259,430	2,374	\$3,480,241
1904.....	21,892	\$23,751,234	18,699	\$19,566,941	1,425	\$2,496,255	1,568	\$1,688,038
Per cent of increase.....	483.6	591.6	643.8	684.6	188.5	190.8	51.4	108.2
<b>Touring cars:</b>								
1909.....	76,114	\$113,403,188	73,883	\$109,844,295	243	\$387,526	1,988	\$3,171,267
1904.....	7,220	\$11,781,521	6,444	\$10,576,023	39	\$55,038	737	\$1,150,460
Per cent of increase.....	954.2	862.0	1,046.5	938.6	( <sup>2</sup> )	( <sup>2</sup> )	169.7	175.7
<b>Runabouts:</b>								
1909.....	36,204	\$28,030,479	35,347	\$27,116,901	496	\$648,630	361	\$264,048
1904.....	12,131	\$8,831,504	10,990	\$7,976,821	455	\$453,304	677	\$401,379
Per cent of increase <sup>3</sup> .....	198.4	217.4	221.4	239.9	9.0	43.1	-46.7	-34.0
<b>Delivery wagons:</b>								
1909.....	1,862	\$1,918,856	1,645	\$1,474,063	217	\$444,793	.....	.....
1904.....	251	\$455,457	140	\$215,897	109	\$235,560	2	\$4,000
Per cent of increase.....	641.8	321.3	1,075.0	582.8	99.1	88.8	.....	.....
<b>Trucks:</b>								
1909.....	1,366	\$3,165,512	1,060	\$2,384,703	276	\$780,809	.....	.....
1904.....	160	\$491,490	55	\$50,390	105	\$441,100	.....	.....
Per cent of increase.....	753.8	544.1	( <sup>2</sup> )	( <sup>2</sup> )	162.9	77.0	.....	.....
<b>All other varieties:</b>								
1909.....	11,047	\$17,751,289	8,428	\$12,709,691	2,594	\$4,997,672	25	\$43,926
1904.....	1,930	\$2,191,262	1,061	\$747,810	717	\$1,311,253	152	\$132,199
Per cent of increase <sup>3</sup> .....	472.4	710.1	694.3	1,598.6	261.8	281.1	-83.6	-66.8

<sup>1</sup> In addition, 694 automobiles were reported in 1909 and 1,138 in 1904 by establishments engaged primarily in other industries.

<sup>2</sup> Per cent not shown where base is less than 100 for number or less than \$100,000 for value.

<sup>3</sup> A minus sign (-) denotes decrease.

The largest percentage of increase in the total number and value for the five-year period 1904-1909 is shown for gasoline touring cars, of which more than eleven times as many were made in 1909 as in 1904. About three-fifths of the gasoline machines made in 1909 were touring cars. Of electric vehicles, touring cars made a greater relative gain in number and value than any of the other three types for which separate figures are shown, although runabouts were the most numerous class and trucks had the greatest value. The use of steam as a motive power for automobiles is confined almost entirely to touring cars, and there was a considerable increase in the manufacture of steam cars of this class. The figures here presented indicate that the application of steam to other types of automobiles is not only very limited but is decreasing.

Automobiles made, classified according to horsepower rating.—Table 20 shows the numbers of the various kinds of machines made in 1909, classified according to horsepower rating.

More than nine-tenths of the automobiles made in establishments engaged in the industry in 1909 had motors of from 10 to 49 horsepower, 40.5 per cent of the total number being rated at from 30 to 49 horsepower, 27.9 per cent at from 20 to 29 horsepower, and 23.2 per cent at from 10 to 19 horsepower. Only 6 per cent of the total number were rated at less than 10 horsepower, and only 2.5 per cent at more than 50 horsepower.

Of the passenger automobiles turned out by the factories of the industry in 1909, 61.7 per cent were touring cars and 29.4 per cent runabouts. The

majority of the runabouts were low-powered machines, 78.7 per cent being rated at from 10 to 29 horsepower. Nearly all the high-powered automobiles were touring cars. More than nine-tenths of the touring cars were vehicles of over 20 horsepower, 60.3 per cent of the total number being rated at from 30 to 49 horsepower and 28.6 per cent at from 20 to 29 horsepower.

CLASS.	NUMBER OF AUTOMOBILES MANUFACTURED: 1909						
	Total number.	Classified according to horsepower rating.					
		Less than 10.	10 to 19.	20 to 29.	30 to 49.	50 to 89.	90 or more.
<b>Total number.....</b>	<b>126,593</b>	<b>7,539</b>	<b>29,353</b>	<b>35,257</b>	<b>51,218</b>	<b>3,197</b>	<b>29</b>
Passenger vehicles (pleasure, family, and public conveyances).....	123,338	7,220	28,154	34,346	50,510	3,079	29
Buggies.....	4,582	482	3,705	339	56	.....	.....
Runabouts.....	36,204	4,532	17,548	10,931	3,029	157	7
Touring cars.....	76,114	177	5,415	21,773	45,926	2,802	21
Closed (cabs, limousines, etc.).....	5,205	1,589	1,474	1,250	829	62	1
All other (omnibuses, sight-seeing wagons, ambulances, patrol wagons, etc.).....	1,233	440	12	53	670	58	.....
Business vehicles (merchandise).....	3,255	319	1,199	911	708	118	.....
Delivery wagons.....	1,862	263	878	624	97	.....	.....
Trucks.....	1,366	56	317	286	606	101	.....
All other.....	27	.....	4	1	5	17	.....

Imports and exports.—Table 21, compiled from the reports of the Bureau of Foreign and Domestic Commerce, Department of Commerce, shows the number

and value of the automobiles imported and of those exported for the fiscal years 1906 to 1910, inclusive.

YEAR. <sup>1</sup>	IMPORTS.		EXPORTS.		EXCESS OF EXPORTS OVER IMPORTS.	
	Number.	Value.	Number.	Value.	Number.	Value.
1906.....	1,100	\$3,844,505	( <sup>2</sup> )	\$3,497,016	( <sup>2</sup> )	<sup>3</sup> \$347,489
1907.....	1,176	4,041,025	2,862	4,890,886	1,686	849,861
1908.....	1,045	2,500,134	2,477	4,656,991	1,432	2,156,857
1909.....	1,624	2,905,391	3,184	5,387,021	1,560	2,481,630
1910.....	1,473	2,851,446	6,926	9,548,700	5,453	6,697,254

<sup>1</sup> Fiscal year ending June 30.

<sup>2</sup> Figures not available.

<sup>3</sup> Excess of imports over exports.

Data as to imports and exports are not available for years prior to 1906, in which year the value of the imports of automobiles was 9.9 per cent greater than that of the exports. In each year from 1907 to 1910 the value of exports exceeded that of imports, until in 1910 the excess in value amounted to \$6,697,254, or 234.9 per cent.

In the four fiscal years, 1907 to 1910, for which figures as to number and value of automobile exports and imports are available, 5,318 motor vehicles, valued at \$12,297,996, were imported, and 15,449, valued at \$24,483,598, were exported, the excess of the exports being 10,131 in number and \$12,185,602 in value. During this four-year period 452 foreign-made automobiles, or 8.5 per cent of the number imported, were exported.

#### DETAILED STATE TABLES.

The principal statistics secured from the census inquiry concerning the industry are presented, by states, in Tables 22 and 23.

Table 22 shows, for 1909, 1904, and 1899, the number of establishments, number of persons engaged in

the industry, primary horsepower, capital invested, amounts paid for the various items of expense reported, value of products, and value added by manufacture.

Table 23 gives similar but more detailed statistics for 1909 only.

# THE AUTOMOBILE INDUSTRY.

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AUTOMOBILES, INCLUDING BODIES AND PARTS—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
<b>United States.....</b>	1909 1904 1899	743 178 57	85,359 13,333 .....	405 103 .....	9,233 1,181 288	75,721 12,049 2,241	75,550 10,109 .....	\$173,837 23,084 5,769	\$9,479 1,257 295	\$48,694 7,159 1,321	\$131,646 13,151 1,804	\$249,202 30,034 4,748	\$117,558 16,883 2,944
California.....	1909 1904 1899	41 6 .....	539 21 .....	50 4 .....	61 3 .....	478 14 .....	305 32 .....	701 49 .....	71 5 .....	368 10 .....	700 13 .....	1,470 36 .....	770 23 .....
Connecticut.....	1909 1904 1899	28 17 .....	4,444 1,131 .....	8 4 .....	621 62 .....	3,815 1,065 .....	3,937 1,283 .....	12,131 3,713 .....	634 86 .....	2,878 784 .....	4,866 1,163 .....	11,068 2,644 .....	6,812 1,481 .....
Illinois.....	1909 1904 1899	65 12 4	2,804 192 .....	41 8 .....	381 17 36	2,382 167 303	1,786 136 .....	4,084 401 975	426 28 28	1,653 107 218	3,970 112 292	7,154 357 748	3,175 245 456
Indiana.....	1909 1904 1899	67 11 .....	7,753 921 .....	36 6 .....	920 99 .....	6,797 816 .....	5,813 760 .....	16,722 1,194 .....	370 80 .....	4,131 496 .....	14,995 824 .....	23,764 1,639 .....	8,799 815 .....
Massachusetts.....	1909 1904 1899	62 18 12	4,624 1,229 .....	33 15 .....	448 114 18	4,138 1,100 303	2,896 909 .....	7,458 1,939 476	497 128 24	2,793 709 188	5,491 1,268 307	11,359 2,663 769	5,868 1,396 462
Michigan.....	1909 1904 1899	113 33 .....	28,098 2,953 .....	20 17 .....	2,625 201 .....	25,444 2,735 .....	25,938 1,800 .....	52,926 4,347 .....	2,570 236 .....	15,491 1,268 .....	53,832 3,443 .....	96,651 7,997 .....	42,769 4,654 .....
Missouri.....	1909 1904 1899	17 13 .....	449 37 .....	6 3 .....	75 13 .....	368 21 .....	184 20 .....	800 24 .....	85 5 .....	252 10 .....	1,025 31 .....	1,677 63 .....	652 32 .....
New Jersey.....	1909 1904 1899	24 5 4	1,159 83 .....	8 1 .....	127 22 35	1,024 60 201	1,311 367 .....	2,703 310 763	160 14 54	615 40 144	892 44 176	2,008 119 479	1,116 75 303
New York.....	1909 1904 1899	113 35 15	11,610 2,101 .....	59 21 .....	1,890 231 56	9,861 1,849 288	9,398 1,254 .....	25,102 3,347 639	1,604 231 57	7,016 1,227 166	14,908 1,907 173	30,980 4,260 456	16,072 2,353 283
Ohio.....	1909 1904 1899	75 22 3	13,468 2,939 .....	42 8 .....	1,286 269 7	12,180 2,722 86	14,433 1,877 .....	30,892 4,226 68	1,430 254 5	7,746 1,617 52	18,522 2,553 60	38,839 6,358 145	20,317 3,805 85
Pennsylvania.....	1909 1904 1899	44 6 8	3,566 631 .....	29 .....	338 65 10	3,199 566 60	2,746 423 .....	6,971 1,453 297	384 79 18	1,808 362 43	4,051 601 31	6,532 1,226 99	2,481 625 68
Wisconsin.....	1909 1904 1899	30 8 .....	4,647 537 .....	18 8 .....	331 59 .....	4,298 520 .....	3,153 645 .....	8,746 1,240 .....	443 54 .....	2,733 300 .....	5,340 845 .....	11,440 1,875 .....	6,100 1,030 .....
All other states.....	1909 1904 1899	64 14 11	2,158 508 .....	41 8 .....	330 86 100	1,787 414 1,000	3,650 603 .....	4,601 841 2,551	395 57 109	1,210 233 510	3,005 347 765	5,660 797 2,062	2,665 456 1,287

<sup>1</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>2</sup> Figures can not be shown without disclosing individual operations.  
<sup>3</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.

This table indicates that the total primary power decreased from 19,847 horsepower in 1899 to 5,730 in 1904, and afterwards increased slightly, to 5,932 in 1909. Steam power constituted by far the largest proportion of the total primary power at each census, but the proportion which it represented of the total decreased from 84.9 per cent in 1899 to 61.2 per cent in 1909. The power of gas and other internal combustion engines was second in importance in 1909.

Fuel consumed.—Table 7 shows the amount of each kind of fuel consumed in the industry in 1909. The amount expended for fuel and rent of power is shown, by states, in Table 9.

KIND.	Unit.	Quantity.
Anthracite coal .....	Long tons.....	1,471
Bituminous coal .....	Short tons.....	20,481
Coke .....	Short tons.....	380
Wood .....	Cords.....	3
Oil, including gasoline.....	Barrels.....	5,282
Gas.....	1,000 feet.....	49,886

Products.—Table 8 gives a detailed statement of the number and value of the several kinds of bicycles and motorcycles manufactured for 1909, 1904, and 1899.

PRODUCT.	1909	1904	1899
All products, <sup>1</sup> value.....	\$10,698,567	\$5,153,240	\$31,915,908
Bicycles:			
Number.....	168,824	225,309	1,112,880
Value.....	\$2,436,996	\$3,203,505	\$22,127,310
Individual—			
Number.....	168,824	225,203	1,109,423
Value.....	\$2,436,996	\$3,199,222	\$21,925,421
Chain—			
Number.....	168,033	221,528	1,067,524
Value.....	\$2,388,475	\$3,081,206	\$20,081,000
Chainless—			
Number.....	791	3,675	41,899
Value.....	\$48,521	\$118,016	\$1,883,821
Tandem—			
Number.....		106	3,457
Value.....		\$4,283	\$201,880
Tricycles (for adults):			
Number.....		32	328
Value.....		\$3,350	\$17,261
Motorcycles:			
Number.....	18,628	2,300	160
Value.....	\$3,015,988	\$354,980	\$33,674
Individual—			
Number.....	18,496	2,295	159
Value.....	\$2,985,866	\$354,130	\$32,950
Triars—			
Number.....	132	5	1
Value.....	\$30,122	\$850	\$724
All other products, including parts and repairs.....	\$5,245,583	\$1,591,405	\$9,737,663

<sup>1</sup> In addition, the following products were made by establishments engaged primarily in the manufacture of products other than those covered by the industry designation: In 1909, 64,883 bicycles, valued at \$791,163, and other products, including parts, etc., valued at \$679,927; in 1904, 25,178 bicycles, valued at \$537,418; 28 motorcycles, valued at \$4,200 and other products, including parts, valued at \$34,341; and in 1899, 69,811 bicycles, valued at \$1,529,177, and other products, valued at \$24,000.

As already stated, the industry was declining at the census of 1899, yet more than a million bicycles were made in that year. The output in 1904 was barely one-fifth as great and there had been a further decline by 1909. No tandem bicycles or tricycles for adults were manufactured in 1909, although their manufacture had been reported at the two preceding censuses. On the other hand, the development of the motorcycle branch of the industry has practically all taken place within the decade covered by the table, and more particularly in the second half of the decade.

If to the figures shown in the table are added those representing the number and value of bicycles and motorcycles reported as secondary products of other industries, it will be seen that the number of bicycles made decreased from 1,182,691, valued at \$23,656,487, in 1899 to 250,487, with a value of \$3,740,923, in 1904, and 233,707, valued at \$3,228,189, in 1909, while the output of motorcycles increased from 160, valued at \$33,674, in 1899, to 2,328, valued at \$359,180, in 1904, and 18,628, with a value of \$3,015,988, in 1909.

In the value of "all other products, including parts and repairs," the increase from 1904 to 1909 was \$3,654,178. As these parts consist largely of frames, pedals, saddles, handle bars, coaster brakes, etc., and as but few establishments reporting complete bicycles or motorcycles manufacture all the parts, there is necessarily a considerable duplication in the combined value of products of the industry. The extent of this duplication is uncertain, but some idea of it may be obtained from the fact that parts to the value of more than \$2,800,000 were reported by establishments which confined their operations to the manufacture of this class of products. A large proportion of these parts, however, were without doubt sold to bicycle repair shops, the operations of which are not covered by these statistics.

Detailed statistics, by states.—The principal data secured by the census inquiry concerning the manufacture of bicycles, motorcycles, and parts, other than statistics as to the quantity and value of specific products, are presented in Table 9. One or more establishments were reported from 16 states, but the greater part of the value of products were reported from 4 states. Massachusetts ranked first and Ohio second, these two states together contributing nearly one-half the total value of products.

# THE AUTOMOBILE INDUSTRY.

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DETAILED STATISTICS, BY STATES: 1909.

	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
1	\$173,837,111	\$210,690,666	\$4,740,385	\$4,739,039	\$48,693,867	\$1,661,724	\$129,984,012	\$682,511	\$600,921	\$550,329	\$18,837,878	\$249,202,075	\$117,556,339
2	700,812	1,247,826	41,647	29,671	368,308	10,070	689,658	35,637	5,410	9,520	57,905	1,470,169	770,441
3	125,225	176,073	1,800	8,342	63,949	6,892	51,931	10,128	1,178	2,800	29,053	200,408	147,685
4	12,131,142	9,430,363	343,540	290,013	2,878,187	128,719	4,729,585	25,007	51,291	4,700	981,321	11,668,228	6,811,924
5	4,083,973	6,774,357	267,622	158,547	1,653,186	61,312	3,917,807	96,973	12,110	70,947	535,853	7,153,818	3,174,699
6	16,721,696	22,012,580	389,562	480,130	4,130,674	114,003	14,880,866	41,582	34,022	32,382	1,909,359	23,764,070	8,769,201
7	678,060	540,926	15,976	13,124	145,329	5,708	319,984	4,677	475	-----	35,653	580,106	254,414
8	525,226	468,358	26,372	10,132	118,398	4,376	280,739	360	2,090	-----	25,893	532,761	247,646
9	7,457,889	9,849,642	303,335	193,700	2,793,231	75,400	5,416,073	132,834	50,000	41,943	843,121	11,359,224	5,867,746
10	52,926,297	77,168,738	1,130,784	1,439,111	15,490,755	531,063	59,351,353	99,328	185,038	78,061	4,863,240	96,651,451	42,769,630
11	239,468	409,736	20,840	12,224	75,229	3,075	250,218	12,829	-----	-----	34,718	423,286	175,993
12	799,848	1,494,317	59,852	24,993	251,848	8,523	1,016,621	21,856	2,366	4,850	103,408	1,676,840	651,696
13	114,575	49,934	3,600	480	14,545	610	27,637	1,188	376	-----	1,498	57,423	29,170
14	2,702,587	1,876,480	102,287	58,027	615,300	27,898	864,279	23,361	5,878	-----	179,450	2,007,516	1,115,339
15	25,102,473	27,304,888	863,733	739,801	7,016,306	256,504	14,651,508	272,763	47,751	2,873	3,513,529	30,979,527	16,071,425
16	30,891,660	32,192,594	634,690	795,222	7,746,477	248,700	18,273,289	38,778	145,525	220,067	4,088,937	38,838,754	20,310,766
17	6,971,377	6,821,594	210,540	173,918	1,807,802	71,286	3,979,567	45,107	10,157	-----	523,217	6,531,733	2,480,880
18	55,940	187,036	5,100	7,282	39,731	1,110	120,318	5,990	3,107	-----	5,298	189,580	62,152
19	15,794	45,366	1,200	900	15,063	581	21,889	2,652	73	-----	3,008	55,358	39,383
20	8,745,869	9,540,256	238,340	206,793	2,732,951	79,110	5,261,104	8,231	31,952	78,285	905,489	11,440,242	6,100,028
21	2,847,200	3,038,702	81,565	96,629	736,600	28,775	1,879,486	3,230	11,459	3,000	197,928	3,614,581	1,700,320

<sup>a</sup>All other states embrace: Delaware, 1 establishment; Georgia, 1; Kansas, 4; Kentucky, 2; Oklahoma, 1; Oregon, 2; Rhode Island, 2; South Dakota, 3; Tennessee, 2.

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BICYCLES, MOTORCYCLES,  
AND PARTS

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## BICYCLES, MOTORCYCLES, AND PARTS.

**Description of the industry.**—Some of the establishments in this industry manufacture complete bicycles and motorcycles, themselves making all or most of the parts which enter into the finished products. Some, on the other hand, manufacture only parts, such as saddles, seat posts, frames, gears, handlebars, and chains, while some establishments do little more than assemble parts made by others. The total value of products, by reason of these conditions, involves considerable duplication. At the censuses of 1889, 1899, and 1904 the industry designation was "bicycles and tricycles," and the published reports for those years include the statistics for the output of children's

tricycles and velocipedes, establishments making which were classified under "toys and games" at the census of 1909. The comparability of the general data for the industry, however, is not greatly affected by this change.

**Comparison with earlier censuses.**—Table 1 summarizes the statistics for the industry for each census from 1889 to 1909, inclusive.

Prior to the census of 1889 the manufacture of bicycles was of such little importance that it did not receive a distinct classification in the census reports, and the statistics were included with those of the carriage and wagon industry.

**Table 1**

	NUMBER OR AMOUNT.				PER CENT OF INCREASE. <sup>1</sup>			
	1909	1904	1899	1889	1899-1909	1904-1909	1899-1904	1889-1899
Number of establishments.....	95	101	312	27	-69.6	-5.0	-67.6	1,055.6
Persons engaged in the industry.....	5,017	3,761	19,768	( <sup>2</sup> )	-74.6	33.4	-81.0	.....
Proprietors and firm members.....	78	81	209	( <sup>2</sup> )	-62.7	-3.7	-61.2	.....
Salaried employees.....	502	361	2,034	( <sup>2</sup> )	-75.3	39.1	-82.3	.....
Wage earners (average number).....	4,437	3,319	17,525	1,797	-74.7	33.7	-81.1	875.2
Primary horsepower.....	5,932	5,730	19,847	1,558	-70.1	3.5	-71.1	1,179.9
Capital.....	\$9,780,102	\$5,883,458	\$20,783,659	\$2,058,072	-67.2	66.2	-80.2	1,347.2
Expenses.....	9,569,392	5,525,002	28,987,707	2,066,594	-67.0	73.2	-80.0	1,302.7
Services.....	3,490,561	2,322,201	9,943,052	1,105,728	-64.9	50.3	-76.6	799.2
Salaries.....	682,362	350,798	1,753,235	( <sup>2</sup> )	-66.8	66.0	-80.0	.....
Wages.....	2,908,199	1,971,403	8,189,817	( <sup>2</sup> )	-64.5	47.5	-75.9	.....
Materials.....	5,082,569	2,628,146	16,792,051	718,848	-69.7	93.4	-84.3	2,238.0
Miscellaneous.....	996,262	574,655	2,252,604	242,018	-55.8	73.4	-74.5	830.8
Value of products.....	10,698,567	5,153,240	31,915,908	2,568,326	-66.5	107.6	-83.9	1,142.7
Value added by manufacture (value of products less cost of materials).....	5,615,998	2,525,094	15,123,857	1,849,478	-62.9	122.4	-83.3	717.7

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.

<sup>2</sup> Comparable figures not available.

The evolution of the bicycle from primitive and unserviceable types to a useful and attractive means of travel may be said to have taken place between 1868 and 1890; and its perfection and standardization into practically one form of structure, the modern "safety," between 1890 and 1895. During this latter period the popularity of the bicycle became so widespread that the industry grew very rapidly, but about 1897 it began to decline.

In 1889 there were 27 establishments engaged in the industry, which gave employment to an average of 1,797 wage earners and reported products valued at \$2,568,326. At the census of 1899, after the industry had begun to decline, the average number of wage earners was nearly ten times and the value of products more than twelve times as great as in 1889. During the five-year period ending with 1904 the industry declined very rapidly. The number of establishments decreased from 312 to 101, or 67.6 per cent; the average number of wage earners from 17,525 to 3,319, or 81.1 per cent; the value of products from \$31,915,908 to \$5,153,240, or 83.9 per cent; and the

value added by manufacture (value of products less cost of materials) from \$15,123,857 to \$2,525,094, or 83.3 per cent.

A considerable recovery of the industry as a whole is indicated by the statistics for 1909. While the number of establishments in that year shows a decrease from the number in 1904, the average number of wage earners increased 1,118, or 33.7 per cent, and the value of products, \$5,545,327, or 107.6 per cent. The most important factor in the renewal of activity in the industry has been the growing demand for motorcycles.

**Persons engaged in the industry.**—Table 2 shows, for 1909, the number of persons engaged in the industry, classified according to occupational status and sex, and in the case of wage earners according to age (see Introduction).

The average number of persons engaged in the bicycle and motorcycle industry during 1909 was 5,017, of whom 4,437, or 88.4 per cent, were wage earners. Of the total number of persons engaged in the industry only 3.3 per cent were females.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
All classes.....	5,017	4,853	164
Proprietors and officials.....	206	204	2
Proprietors and firm members.....	78	77	1
Salaries officers of corporations.....	59	50	1
Superintendents and managers.....	78	77	1
Clerks <sup>1</sup> .....	374	256	118
Wage earners (average number).....	4,437	4,393	44
16 years of age and over.....	4,353	4,315	38
Under 16 years of age.....	84	78	6

<sup>1</sup> Includes stenographers and other subordinate salaried employees.

In order to compare the distribution of the persons engaged in the industry according to occupational status in 1909 with that in 1904, it is necessary to use the classification employed at the earlier census (see Introduction). Such a comparison is made in Table 3.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.				Per cent of increase: 1904-1909 <sup>1</sup>
	1909		1904		
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	5,017	100.0	3,761	100.0	33.4
Proprietors and firm members.....	78	1.6	81	2.2	-3.7
Salaried employees.....	502	10.0	361	9.6	39.1
Wage earners (average number).....	4,437	88.4	3,319	88.2	33.7

<sup>1</sup> A minus sign (-) denotes decrease.

**Character of ownership.**—Table 4 presents data with respect to the character of ownership of the establishments engaged in the industry.

CHARACTER OF OWNERSHIP.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	95	101	\$10,698,567	5,153,240
Individual.....	47	58	536,206	519,368
Firm.....	14	11	227,762	118,531
Corporation.....	34	32	9,934,599	4,515,341
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	49.5	57.4	5.0	10.1
Firm.....	14.7	10.9	2.1	2.3
Corporation.....	35.8	31.7	92.9	87.6

Of the establishments reported in 1909 about half were operated by individuals. The value of the products of such establishments, however, represented only 5 per cent of the total value reported. Nearly all of the business is done by establishments under corporate ownership.

**Size of establishments.**—Table 5 presents statistics for 1909 and 1904 for establishments classified according to the value of their products.

The table shows a considerable increase in the relative importance of establishments having products valued at \$100,000 and over; this class of establishments reported 90.6 per cent of the total value of products in 1909.

VALUE OF PRODUCTS PER ESTABLISHMENT.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	95	101	\$10,698,567	\$5,153,240
Less than \$5,000.....	34	36	94,688	109,096
\$5,000 and less than \$20,000.....	22	33	225,737	296,280
\$20,000 and less than \$100,000.....	17	19	681,434	799,315
\$100,000 and over.....	122	13	9,096,708	3,947,049
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	35.8	35.6	0.9	2.1
\$5,000 and less than \$20,000.....	23.2	32.7	2.1	5.7
\$20,000 and less than \$100,000.....	17.9	18.8	6.4	15.5
\$100,000 and over.....	23.2	12.9	90.6	76.6

<sup>1</sup> Includes two establishments with products valued at more than \$1,000,000, to avoid disclosure of individual operations.

**Expenses.**—As stated in the Introduction, the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of interest or depreciation, and consequently can not properly be used for determining profits. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expense which were reported. Table 1 shows the total expenses in 1909 to have been \$9,569,392, distributed as follows: Cost of materials, \$5,082,569, or 53.1 per cent; wages, \$2,908,199, or 30.4 per cent; salaries, \$582,362, or 6.1 per cent; and miscellaneous expenses, \$996,262, or 10.4 per cent. It is natural that some pronounced variations from these proportions should appear in certain states, corresponding to differences in the character of the product manufactured. Some establishments produce finished bicycles or motorcycles, themselves making all or most of the parts, some manufacture only parts, and others merely assemble parts made by others.

**Engines and power.**—The amount of power used in the industry was first reported at the census of 1889. Table 1 shows that the total horsepower used increased from 1,558 in 1889 to 5,932 in 1909. Table 6 shows the number of engines or other motors, according to their character, employed in generating power, and their total horsepower, as reported at the censuses of 1909, 1904, and 1899.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	144	127	241	5,932	5,730	19,847	100.0	100.0	100.0
Owned.....	56	85	241	5,006	5,172	18,082	84.4	90.3	91.1
Steam.....	26	49	177	3,628	4,906	16,853	61.2	85.6	84.9
Gas.....	27	34	45	1,201	231	601	21.3	4.0	3.3
Water wheels.....	2	2	19	115	35	568	1.9	0.6	2.9
Water motors.....	1			2			( <sup>1</sup> )		
Rented.....	88	42	( <sup>2</sup> )	926	558	1,765	15.6	9.7	8.9
Electric.....	88	42	( <sup>2</sup> )	810	336	756	13.7	5.9	3.8
Other.....				116	222	1,009	2.0	3.9	5.1
Electric motors.....	146	92	70	2,534	1,737	2,497	100.0	100.0	100.0
Run by current generated by establishment.....	58	50	70	1,724	1,401	1,741	68.0	80.7	69.7
Run by rented power.....	88	42	( <sup>2</sup> )	810	336	756	32.0	19.3	30.3

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Not reported.

This table indicates that the total primary power decreased from 19,847 horsepower in 1899 to 5,730 in 1904, and afterwards increased slightly, to 5,932 in 1909. Steam power constituted by far the largest proportion of the total primary power at each census, but the proportion which it represented of the total decreased from 84.9 per cent in 1899 to 61.2 per cent in 1909. The power of gas and other internal combustion engines was second in importance in 1909.

Fuel consumed.—Table 7 shows the amount of each kind of fuel consumed in the industry in 1909. The amount expended for fuel and rent of power is shown, by states, in Table 9.

KIND.	Unit.	Quantity.
Anthracite coal .....	Long tons.....	1,471
Bituminous coal .....	Short tons.....	20,481
Coke .....	Short tons.....	380
Wood .....	Cords.....	3
Oil, including gasoline.....	Barrels.....	5,282
Gas.....	1,000 feet.....	49,886

Products.—Table 8 gives a detailed statement of the number and value of the several kinds of bicycles and motorcycles manufactured for 1909, 1904, and 1899.

PRODUCT.	1909	1904	1899
All products, <sup>1</sup> value.....	\$10,698,567	\$5,153,240	\$31,915,908
Bicycles:			
Number.....	168,824	225,309	1,112,880
Value.....	\$2,436,996	\$3,203,505	\$22,127,310
Individual—			
Number.....	168,824	225,203	1,109,423
Value.....	\$2,436,996	\$3,199,222	\$21,925,421
Chain—			
Number.....	168,033	221,528	1,067,524
Value.....	\$2,388,475	\$3,081,206	\$20,081,000
Chainless—			
Number.....	791	3,675	41,899
Value.....	\$48,521	\$118,016	\$1,883,821
Tandem—			
Number.....		106	3,457
Value.....		\$4,283	\$201,880
Tricycles (for adults):			
Number.....		32	328
Value.....		\$3,350	\$17,261
Motorcycles:			
Number.....	18,628	2,300	160
Value.....	\$3,015,988	\$354,980	\$33,674
Individual—			
Number.....	18,496	2,295	159
Value.....	\$2,985,866	\$354,130	\$32,950
Triars—			
Number.....	132	5	1
Value.....	\$30,122	\$850	\$724
All other products, including parts and repairs.....	\$5,245,583	\$1,591,405	\$9,737,663

<sup>1</sup> In addition, the following products were made by establishments engaged primarily in the manufacture of products other than those covered by the industry designation: In 1909, 64,883 bicycles, valued at \$791,163, and other products, including parts, etc., valued at \$679,927; in 1904, 25,178 bicycles, valued at \$537,418; 28 motorcycles, valued at \$4,200 and other products, including parts, valued at \$34,341; and in 1899, 69,811 bicycles, valued at \$1,529,177, and other products, valued at \$24,000.

As already stated, the industry was declining at the census of 1899, yet more than a million bicycles were made in that year. The output in 1904 was barely one-fifth as great and there had been a further decline by 1909. No tandem bicycles or tricycles for adults were manufactured in 1909, although their manufacture had been reported at the two preceding censuses. On the other hand, the development of the motorcycle branch of the industry has practically all taken place within the decade covered by the table, and more particularly in the second half of the decade.

If to the figures shown in the table are added those representing the number and value of bicycles and motorcycles reported as secondary products of other industries, it will be seen that the number of bicycles made decreased from 1,182,691, valued at \$23,656,487, in 1899 to 250,487, with a value of \$3,740,923, in 1904, and 233,707, valued at \$3,228,189, in 1909, while the output of motorcycles increased from 160, valued at \$33,674, in 1899, to 2,328, valued at \$359,180, in 1904, and 18,628, with a value of \$3,015,988, in 1909.

In the value of "all other products, including parts and repairs," the increase from 1904 to 1909 was \$3,654,178. As these parts consist largely of frames, pedals, saddles, handle bars, coaster brakes, etc., and as but few establishments reporting complete bicycles or motorcycles manufacture all the parts, there is necessarily a considerable duplication in the combined value of products of the industry. The extent of this duplication is uncertain, but some idea of it may be obtained from the fact that parts to the value of more than \$2,800,000 were reported by establishments which confined their operations to the manufacture of this class of products. A large proportion of these parts, however, were without doubt sold to bicycle repair shops, the operations of which are not covered by these statistics.

Detailed statistics, by states.—The principal data secured by the census inquiry concerning the manufacture of bicycles, motorcycles, and parts, other than statistics as to the quantity and value of specific products, are presented in Table 9. One or more establishments were reported from 16 states, but the greater part of the value of products were reported from 4 states. Massachusetts ranked first and Ohio second, these two states together contributing nearly one-half the total value of products.

MANUFACTURES.

BICYCLES, MOTORCYCLES, AND PARTS—DETAILED STATISTICS, BY STATES: 1909.

**Table 9**

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.							WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.		Under 16.		
					Male.	Female.		Number, 15th day of—			Male.	Female.	Male.		Female.
								Maximum month.	Minimum month.						
United States.....	95	5,017	78	128	256	118	4,437	Je 4,998	Ja 3,991	5,035	4,897	43	88	7	5,932
California.....	5	19	6	1	1	11	De <sup>1</sup> 13	Ja <sup>1</sup> 10	13	12	1	.....	.....	.....	12
Colorado.....	4	13	5	.....	.....	8	Mh <sup>1</sup> 9	De 6	8	7	.....	.....	.....	.....	9
Illinois.....	14	1,005	8	12	66	9	Je 1,047	Ja 726	933	929	.....	.....	.....	.....	775
Massachusetts.....	10	950	7	21	45	34	De 1,100	Ja 713	1,100	1,066	4	30	.....	.....	890
Minnesota.....	6	71	4	7	1	5	Jy 54	Ja 38	50	50	.....	.....	.....	.....	40
New York.....	20	636	15	24	23	16	My 673	Se 469	604	592	3	9	.....	.....	406
Ohio.....	6	1,037	2	12	58	23	De 1,089	Jy 711	1,181	1,181	.....	.....	.....	.....	1,895
Pennsylvania.....	11	355	10	7	20	7	Je 428	Ja 186	355	352	.....	.....	.....	.....	205
All other states <sup>2</sup> .....	19	901	21	44	42	24	770	.....	.....	791	708	35	41	7	1,691

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
United States.....	\$9,780,102	\$9,569,392	\$276,409	\$305,953	\$2,908,199	\$121,456	\$4,961,113	\$34,969	\$37,334	\$48,414	\$875,545	\$10,698,567	\$5,615,998
California.....	22,797	25,370	1,525	663	9,208	463	9,613	2,015	95	143	1,654	31,367	21,291
Colorado.....	13,950	25,309	.....	.....	5,326	395	17,825	1,320	93	.....	350	33,365	15,145
Illinois.....	1,270,356	1,755,516	25,322	53,072	600,233	19,099	954,033	9,271	3,088	1,080	90,318	1,777,464	804,332
Massachusetts.....	2,070,335	2,302,332	54,959	98,079	570,565	24,911	1,352,665	2,000	8,119	115	181,919	2,706,258	1,328,682
Minnesota.....	224,113	284,735	9,982	2,596	31,701	1,298	213,731	3,271	733	10,050	11,373	325,520	110,401
New York.....	853,498	1,048,199	52,205	21,771	344,872	11,604	510,406	11,469	1,705	2,555	91,612	1,165,271	643,261
Ohio.....	2,245,317	2,075,493	40,700	53,528	686,355	35,007	1,031,170	1,000	13,410	.....	214,323	2,308,316	1,242,139
Pennsylvania.....	635,429	629,584	16,830	17,560	193,353	6,003	332,873	986	975	.....	61,014	597,071	258,195
All other states <sup>2</sup> .....	2,431,807	1,422,835	74,836	53,684	457,586	22,076	538,797	3,637	9,110	34,471	222,982	1,753,935	1,192,462

<sup>1</sup> Same number reported for one or more other months.  
<sup>2</sup> All other states embrace: Connecticut, 4 establishments; Indiana, 2; Iowa, 1; Missouri, 2; New Jersey, 2; North Carolina, 2; Vermont, 1; Wisconsin, 5.

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CARRIAGES AND WAGONS  
AND MATERIALS

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(829)

# THE CARRIAGE AND WAGON INDUSTRY.

## GENERAL STATISTICS.

**Summary for the United States: 1909.**—The industry "carriages and wagons and materials" includes the manufacture of all varieties of carriages, wagons, sleighs, and sleds (except children's carriages and sleds), and also the manufacture of parts and materials, such as bodies, tops, cushions, hubs, felloes, spokes, wheels, whiffletrees, carriage boots and aprons, axles, dashboards, neck yokes, whip sockets, etc. Many small carriage and wagon repair shops were not canvassed by the census, no such shop being included unless it made five or more complete vehicles during the census year, but a great deal of repair work was done incidentally by the establishments that were canvassed.

Table 1 distinguishes two classes of establishments: (1) Those whose chief products were complete carriages and wagons, and (2) those whose chief products were carriage and wagon parts or materials.

The 5,492 establishments in both branches of the industry gave employment in 1909 to an average of 82,944 persons, of whom 69,928 were wage earners, and paid \$45,555,126 in salaries and wages. The total cost of materials used in 1909 was \$81,951,288, which was equal to about half (51.3 per cent) of the total value of products (\$159,892,547), while the value added to materials by manufacture was \$77,941,259.

A considerable part of the value of products reported represents receipts for repair work.

Of the 5,492 establishments canvassed for 1909, 4,870, or 88.7 per cent, were engaged primarily in the manufacture of carriages and wagons, and of the total value of products, \$125,366,912, or 78.4 per cent, was contributed by this class of establishments.

	Total for the industry.	ESTABLISHMENTS ENGAGED PRIMARILY IN MANUFACTURING—	
		Carriages and wagons.	Carriage and wagon materials.
Number of establishments.....	5,492	4,870	622
Persons engaged in the industry.....	82,944	63,607	19,337
Proprietors and firm members.....	6,213	5,701	512
Salaried employees.....	6,803	5,366	1,437
Wage earners (average number).....	69,928	52,540	17,388
Primary horsepower.....	126,032	78,785	47,247
Capital.....	\$175,473,728	\$143,230,790	\$32,242,938
Expenses.....	139,176,014	109,052,007	30,124,007
Services.....	45,555,126	35,893,774	9,661,352
Salaries.....	7,960,207	6,272,025	1,687,581
Wages.....	37,594,919	29,621,148	7,973,771
Materials.....	81,951,288	63,890,422	18,060,866
Miscellaneous.....	11,669,600	9,267,811	2,401,789
Value of products.....	159,892,547	125,366,912	34,525,635
Value added by manufacture (value of products less cost of materials).....	77,941,259	61,476,490	16,464,769

**Comparison with earlier censuses.**—Table 2 summarizes the statistics of the industry for each census from 1879 to 1909, inclusive.

	CARRIAGES AND WAGONS AND MATERIALS.									
	Number or amount.					Per cent of increase. <sup>1</sup>				
	1909	1904	1899	1889	1879	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889
Number of establishments.....	5,492	5,588	6,782	5,111	4,253	-19.1	-1.7	-17.7	32.0	20.2
Persons engaged in the industry.....	82,944	90,751	(2)	(2)	(2)	-8.5	-5.5	-	-	-
Proprietors and firm members.....	6,213	6,575	(2)	(2)	(2)	-	-	-	-	-
Salaried employees.....	6,803	6,294	5,026	(2)	(2)	35.4	8.1	25.2	-	-
Wage earners (average number).....	69,928	77,882	78,812	66,521	52,896	-5.3	-10.2	5.5	(?)	(?)
Primary horsepower.....	126,032	106,159	83,771	49,458	10,813	50.4	18.7	28.7	69.4	357.4
Capital.....	\$175,473,728	\$152,344,657	\$128,961,660	\$106,483,418	\$45,008,211	36.1	15.2	18.1	21.1	136.6
Expenses.....	139,176,014	134,584,694	112,099,689	99,623,941	(2)	24.2	3.4	20.1	12.5	-
Services.....	45,555,126	44,943,700	38,324,427	39,896,254	21,721,619	18.9	1.4	17.3	-3.0	83.7
Salaries.....	7,960,207	6,581,021	4,759,114	(2)	(2)	67.3	21.0	38.3	-	-
Wages.....	37,594,919	38,362,679	33,565,313	(2)	(2)	12.0	-2.0	14.3	-	-
Materials.....	81,951,288	77,527,911	68,771,919	53,410,673	35,378,181	22.7	5.7	16.1	25.0	51.0
Miscellaneous.....	11,669,600	12,113,083	7,003,353	6,317,014	(2)	66.6	-3.7	73.0	10.9	-
Value of products.....	159,892,547	155,868,849	138,261,783	118,942,634	76,065,969	15.6	2.6	12.7	16.2	58.4
Value added by manufacture (value of products less cost of materials).....	77,941,259	78,340,938	71,489,844	65,531,961	39,687,788	9.0	-0.5	9.6	9.1	65.1

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.  
<sup>2</sup> Comparable figures not available.  
<sup>3</sup> Figures not strictly comparable.

The carriage and wagon industry has existed in this country since early colonial times, and its growth up to the census of 1904 about kept pace with the increase of population. The advent of the automobile, and later of the motor truck, has had a decidedly retarding

influence on the industry. Many establishments reported at censuses prior to 1909 or 1904 as manufacturing carriages and wagons have since turned wholly or in part to the manufacture of automobiles and have been assigned to the automobile industry.

The value of products reported for 1909, while more than double that in 1879, was only 15.6 per cent in excess of that in 1899. The greatest increase in value of products, \$43,876,665, or 58.4 per cent, was between 1879 and 1889. There was a moderate increase from 1899 to 1904 but only a very slight increase from 1904 to 1909. Between 1899 and 1909

there was a decrease in number of establishments and of wage earners, while seven of the items included in the table show a decrease between 1904 and 1909.

Summary, by states.—Table 3 summarizes by states the more important statistics of the industry, the states being arranged according to the value of products reported for 1909.

Table 3

STATE.	Number of establishments: 1909	CARRIAGES AND WAGONS AND MATERIALS.																					
		Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. <sup>1</sup>												
		Average number: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Wage earners (average number).			Value of products.			Value added by manufacture.						
											1909	1904	1899	1899	1904	1899	1904	1899	1904	1899			
United States...	5,492	69,928	100.0	.....	\$159,892,547	100.0	.....	\$77,941,259	100.0	.....	-5.3	-10.2	5.5	15.6	2.6	12.7	9.0	-0.5	9.6				
Ohio.....	407	8,815	12.6	2	1	21,949,459	13.7	1	1	10,535,458	13.5	1	1	-24.4	-20.1	-5.4	-3.7	-8.6	5.3	-0.8	4.9		
Indiana.....	221	8,867	12.7	1	2	21,655,440	13.5	2	2	9,197,717	11.8	2	3	1.8	-5.7	7.9	37.0	12.4	21.8	26.7	9.6	15.6	
Illinois.....	325	5,852	8.4	5	6	16,831,283	10.5	3	6	7,351,948	9.4	4	6	34.7	13.5	13.0	87.0	47.7	26.5	53.1	30.2	21.4	
New York.....	610	6,116	8.7	4	3	13,292,531	8.3	4	4	7,483,813	9.6	3	2	-18.3	-22.5	5.4	-5.1	-9.2	4.6	-7.5	-11.4	4.4	
Pennsylvania.....	655	7,498	10.7	3	4	12,748,383	8.0	5	5	7,041,358	9.0	5	4	17.2	0.5	16.6	21.9	10.9	9.9	13.4	6.8	6.2	
Michigan.....	212	4,034	5.8	6	5	10,158,883	6.4	6	3	4,896,627	6.3	6	5	-34.0	-37.0	4.7	-21.2	-31.8	15.5	-8.2	-24.1	20.8	
Wisconsin.....	286	3,437	4.9	7	7	8,899,171	5.6	7	7	3,730,572	4.8	7	7	-1.2	-6.7	5.9	20.5	10.0	15.0	3.2	-6.5	10.4	
Missouri.....	243	3,202	4.7	8	8	8,468,856	5.3	8	8	3,609,026	4.6	8	8	10.5	4.4	5.2	31.4	10.3	19.1	8.6	5.6	2.8	
Kentucky.....	161	2,777	4.0	9	9	5,141,107	3.2	9	9	2,428,601	3.1	9	10	23.6	1.6	21.7	40.3	-6.6	50.2	39.4	-9.8	54.5	
Iowa.....	119	1,441	2.1	14	16	4,786,321	3.0	10	12	2,038,810	2.6	10	12	-15.8	11.0	21.1	20.0	42.0	-15.5	-0.1	20.8	-17.3	
North Carolina.....	138	1,629	2.3	11	14	3,282,634	2.1	11	15	1,389,128	1.8	14	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	
New Jersey.....	256	1,601	2.3	12	11	3,250,450	2.0	12	11	1,970,097	2.5	11	11	-24.4	-19.4	-6.2	-17.0	-6.1	11.6	.....	.....	101.4	
Massachusetts.....	177	1,539	2.2	13	10	3,184,835	2.0	13	10	1,903,054	2.4	12	9	-53.0	-30.2	-22.7	-49.4	-35.3	-21.7	-45.4	-34.2	-17.0	
Tennessee.....	129	1,706	2.4	10	12	3,039,613	1.9	14	13	1,600,187	2.1	13	13	47.5	-9.7	63.3	79.7	-7.3	93.7	75.4	0.6	76.3	
Georgia.....	83	1,059	1.5	16	17	2,560,031	1.6	15	16	1,192,629	1.5	17	17	31.1	-5.0	38.0	94.4	11.2	74.9	52.4	10.4	38.1	
Virginia.....	130	1,329	1.9	15	15	2,485,221	1.6	16	17	1,201,941	1.6	16	16	37.9	-0.2	38.2	56.7	8.4	44.5	34.8	9.7	22.9	
Minnesota.....	134	868	1.2	18	20	2,174,705	1.4	17	19	1,191,707	1.5	18	19	-25.6	-6.0	-20.9	3.2	16.4	11.4	4.2	19.1	-12.5	
California.....	155	760	1.1	19	18	2,052,434	1.3	18	14	1,203,368	1.6	15	14	-17.7	-22.4	6.2	3.8	-17.8	12.8	19.0	0.2	-19.8	26.0
Arkansas.....	58	973	1.4	17	22	1,664,467	1.0	19	23	844,811	1.1	19	23	179.6	111.5	32.2	199.8	115.5	39.1	245.9	98.1	74.6	
Maryland.....	126	757	1.1	20	19	1,330,068	0.8	20	20	788,890	1.0	20	20	-1.6	-20.0	23.0	34.2	-10.4	49.8	30.2	0.8	29.9	
Connecticut.....	92	578	0.8	21	13	1,076,582	0.7	21	18	693,941	0.9	21	15	-64.8	-61.6	8.3	-66.0	-51.0	30.6	-63.9	-50.5	-27.0	
Maine.....	150	472	0.7	22	23	966,093	0.6	22	21	508,935	0.7	22	21	37.2	2.8	33.4	34.2	1.0	32.8	28.7	2.3	26.8	
Texas.....	50	412	0.6	25	31	829,726	0.5	23	32	510,543	0.7	23	32	42.1	.....	.....	.....	.....	.....	.....	.....	.....	
New Hampshire.....	44	420	0.6	24	21	733,755	0.5	24	22	388,185	0.5	25	22	-31.8	-19.4	-15.4	-19.0	-6.4	13.5	-30.3	-21.3	-11.5	
Washington.....	37	241	0.3	31	32	720,054	0.4	25	28	490,913	0.5	24	26	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Alabama.....	35	424	0.6	23	24	683,880	0.4	26	24	380,849	0.5	26	24	-8.0	11.6	-17.6	14.0	-7.6	23.3	9.5	5.0	4.3	
West Virginia.....	51	347	0.5	28	27	675,478	0.4	27	25	357,394	0.5	28	25	11.2	11.6	-0.3	37.8	5.0	30.4	27.5	5.3	21.1	
Mississippi.....	41	365	0.5	26	26	641,957	0.4	28	27	308,213	0.5	27	25	60.1	14.8	30.5	112.6	30.6	63.6	115.2	31.0	64.3	
Nebraska.....	22	200	0.3	34	36	576,918	0.4	29	35	325,748	0.4	29	35	61.3	33.3	21.0	133.6	81.4	28.7	107.6	71.0	21.0	
Kansas.....	46	246	0.4	30	30	530,483	0.3	30	34	285,649	0.4	31	34	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Louisiana.....	40	358	0.5	27	28	528,757	0.3	31	29	322,739	0.4	30	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	
South Carolina.....	23	272	0.4	29	25	463,566	0.3	32	26	219,186	0.3	34	29	-20.0	-21.4	1.8	12.1	-15.8	32.4	5.8	-14.7	24.0	
Florida.....	39	230	0.3	33	33	452,590	0.3	33	33	242,324	0.3	33	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Rhode Island.....	40	238	0.3	32	29	421,913	0.3	34	31	258,746	0.3	32	30	-19.0	4.4	-22.4	-20.2	14.1	-30.1	-23.6	2.4	-25.4	
Delaware.....	25	163	0.2	35	35	290,113	0.2	35	36	106,056	0.2	36	36	-41.4	-1.2	-40.6	-25.1	1.4	-26.1	-32.8	7.1	-37.2	
Colorado.....	21	124	0.2	36	34	260,295	0.2	36	30	174,845	0.2	35	31	-28.7	-20.9	1.7	-32.5	-31.4	-1.6	-28.9	-28.9	.....	
Oklahoma.....	19	123	0.2	37	40	232,880	0.1	37	41	152,006	0.2	37	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Oregon.....	15	62	0.1	39	38	192,659	0.1	38	38	124,410	0.2	38	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Vermont.....	38	94	0.1	38	37	158,200	0.1	39	37	100,479	0.1	39	37	-49.5	.....	.....	.....	.....	.....	.....	.....	.....	
South Dakota.....	10	48	0.1	41	43	131,384	0.1	40	43	71,061	0.1	41	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Dist. Columbia.....	6	59	0.1	40	39	128,107	0.1	41	40	81,104	0.1	40	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Montana.....	4	28	(?)	42	42	78,609	(?)	42	39	49,682	0.1	42	39	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Wyoming.....	10	8	(?)	47	46	41,624	(?)	44	47	19,209	(?)	45	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	
North Dakota.....	3	9	(?)	46	42	18,885	(?)	46	46	11,398	(?)	47	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	
All other states.....	6	47	0.1	.....	.....	102,672	0.1	.....	.....	61,302	0.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	

<sup>1</sup> Percentages are based on figures in Table 19. A minus sign (-) denotes decrease. Percentages are omitted where comparable figures can not be given, or where the base is less than 100 for wage earners or less than \$100,000 for value of products or value added by manufacture.  
<sup>2</sup> Less than one-tenth of 1 per cent.

In determining the rank of the states all states are considered, regardless of whether or not they are shown separately in the table; hence some omissions occur in the several series of numbers indicating rank, as certain states included under "all other states" held a higher rank in some items than some of the states for which separate figures are given.

The carriage and wagon industry is well distributed throughout the United States, establishments being reported for all states except Nevada. In 1909, as in 1904, Ohio ranked first in respect to both value of

products and value added by manufacture, while in 1904 it ranked first in number of wage earners also. Indiana ranked second as to value of products in both years, and first as to number of wage earners in 1909. Most of the states held the same, or practically the same, rank in respect to value added by manufacture in 1909 as in respect to value of products, North Carolina and California being the most conspicuous exceptions. Illinois, which ranked third in importance, as measured by value of products, in 1909, showed a more rapid development in the industry

during the period from 1899 to 1909 than any other of the leading states, the number of wage earners increasing 34.7 per cent and the value of products 87 per cent. Higher percentages of increase during the period are shown, however, by some of the states of less importance in the industry, particularly Arkansas.

Sixteen of the states for which percentages of increase are given in the table show decreases between 1899 and 1909 in the number of wage earners, 10 in the value of products, and 10 in value added by manufacture. Of the 10 states with the greatest value of products in 1909, Ohio, New York, and Michigan reported a smaller number of wage earners, value of products, and value added by manufacture in that year than in 1899, while Iowa shows decreases in the number of wage earners and value added by manufacture, and Wisconsin a decrease in number of wage earners.

The diagram on page 6 shows graphically the value of products reported for the most important states in the industry in 1909 and 1899, and the map shows the distribution of the industry, by states, for 1909.

Persons engaged in the industry.—Table 4 shows, for 1909, the number of persons engaged in the industry, classified according to occupational status and sex, and in the case of wage earners, according to age. The sex and age classification of the average number of wage earners is estimated by the method described in the Introduction.

BRANCH OF INDUSTRY AND CLASS OF PERSONS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
Carriages and wagons and materials.....	82,944	80,536	2,408
Proprietors and officials.....	8,844	8,706	138
Proprietors and firm members.....	6,213	6,103	110
Salaried officers of corporations.....	1,166	1,143	23
Superintendents and managers.....	1,465	1,460	5
Clerks.....	4,172	2,991	1,181
Wage earners (average number).....	69,928	68,839	1,089
16 years of age and over.....	69,397	68,315	1,082
Under 16 years of age.....	531	524	7
Carriages and wagons.....	63,607	61,827	1,780
Proprietors and officials.....	7,627	7,521	106
Proprietors and firm members.....	5,701	5,613	88
Salaried officers of corporations.....	853	837	16
Superintendents and managers.....	1,073	1,071	2
Clerks.....	3,440	2,494	946
Wage earners (average number).....	52,540	51,812	728
16 years of age and over.....	52,213	51,489	724
Under 16 years of age.....	327	323	4
Carriage and wagon materials.....	19,337	18,709	628
Proprietors and officials.....	1,217	1,185	32
Proprietors and firm members.....	512	490	22
Salaried officers of corporations.....	313	306	7
Superintendents and managers.....	392	389	3
Clerks.....	732	497	235
Wage earners (average number).....	17,388	17,027	361
16 years of age and over.....	17,184	16,826	358
Under 16 years of age.....	204	201	3

The average number of persons engaged in the industry as a whole during 1909 was 82,944, of whom 69,928, or 84.3 per cent, were wage earners, 8,844, or 10.7 per cent, proprietors and officials, and 4,172, or 5 per cent, clerks—the last-named class including other subordinate salaried employees.

Of the total number of persons engaged in the industry, 80,536, or 97.1 per cent, were males and 2,408, or 2.9 per cent, were females. Nearly half of the females were reported as clerks, of which class they constituted 28.3 per cent. The average number of boys under 16 years employed as wage earners was 524, or six-tenths of 1 per cent of the total number of wage earners reported.

There are some differences between the two branches of the industry with respect to the proportions in the several occupational classes and with respect to the sex and age distribution. Relatively more women and children were employed in the manufacture of carriage and wagon materials than in the manufacture of carriages and wagons.

The average number of wage earners in each state, as reported at the censuses of 1909, 1904, and 1899, is given in Table 19. The distribution of the average number by sex and age is not shown for the individual states, but Table 20 gives for 1909 such a distribution for the number employed on December 15, or the nearest representative day. Female wage earners were reported from only 26 states, the largest number, 272, being employed in Indiana.

In order to compare the distribution of persons engaged in the industry according to occupational status in 1909 with that in 1904 it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made for the industry as a whole in Table 5.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY—BOTH BRANCHES COMBINED.				
	1909		1904		Per cent of increase: <sup>1</sup> 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	82,944	100.0	90,751	100.0	-8.6
Proprietors and firm members.....	6,213	7.5	6,575	7.2	-5.5
Salaried employees.....	6,803	8.2	6,294	6.9	8.1
Wage earners (average number).....	69,928	84.3	77,882	85.8	-10.2

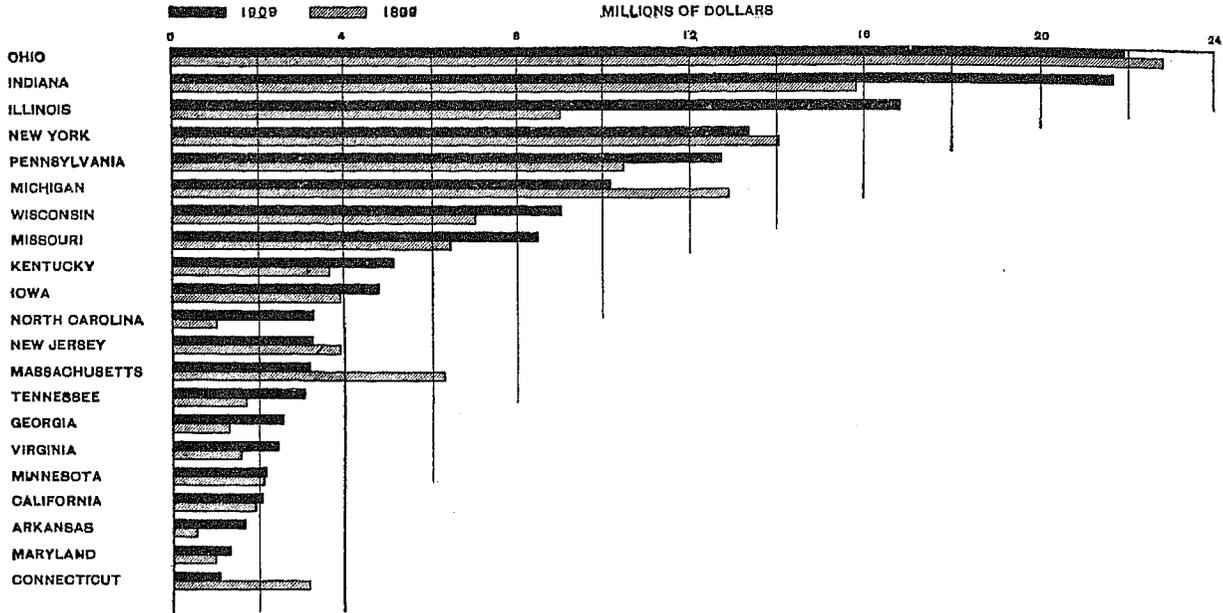
<sup>1</sup> A minus sign (-) denotes decrease.

Salaried employees increased 8.1 per cent during the period, proprietors and firm members and wage earners decreasing in number.

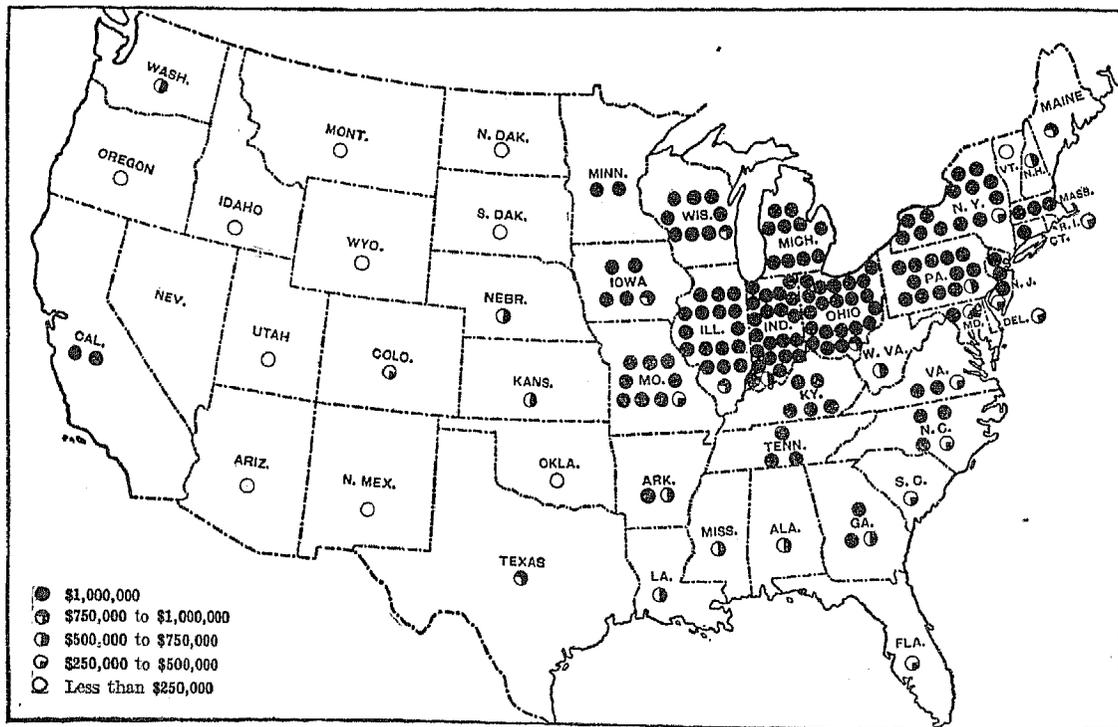
Table 6 shows the average number of wage earners in the industry distributed according to age, and in the case of those 16 years of age and over according to sex, for 1909, 1904, and 1899. (See Introduction.) The proportions of men, women, and children employed were practically the same at the three censuses.

MANUFACTURES.

THE CARRIAGE AND WAGON INDUSTRY—VALUE OF PRODUCTS, FOR LEADING STATES: 1909 AND 1899.



THE CARRIAGE AND WAGON INDUSTRY—VALUE OF PRODUCTS, BY STATES: 1909.



**Table 6**

AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY—BOTH BRANCHES COMBINED.

CLASS.	1900		1904		1890	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	69,928	100.0	77,882	100.0	73,812	100.0
16 years of age and over..	69,397	99.2	77,146	99.1	73,231	99.2
Male.....	68,315	97.7	75,043	97.5	72,158	97.8
Female.....	1,082	1.5	1,203	1.5	1,073	1.5
Under 16 years of age....	531	0.8	736	0.9	581	0.8

Wage earners employed, by months.—Table 7 gives the number of wage earners employed in the industry as a whole on the 15th (or the nearest representative day) of each month during the year 1909 for

the 21 states in which an average of 500 or more wage earners were employed during the year.

The largest number of wage earners reported for any month of 1909 was 73,240, for May, and the smallest number, 66,567, for January, the minimum number being equal to 90.9 per cent of the maximum. In 1904 the maximum number, 83,753, was reported for April, and the minimum number, 73,413, for November, the latter number being equal to 87.7 per cent of the maximum. Both in 1909 and in 1904 a larger number of wage earners were employed during the spring than during other seasons. Of the 21 states shown for 1909, 7 reported the greatest activity in May and 5 in April, and 13 reported January as the month in which the smallest number was employed.

**Table 7**

WAGE EARNERS EMPLOYED IN THE INDUSTRY—BOTH BRANCHES COMBINED: 1909<sup>1</sup>

STATE.	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		United States.....	69,928	<b>66,567</b>	<b>69,390</b>	<b>71,775</b>	<b>72,892</b>	<b>73,240</b>	<b>72,181</b>	<b>69,618</b>	<b>68,326</b>	<b>67,894</b>	<b>67,949</b>
Arkansas.....	973	<i>837</i>	<b>861</b>	916	889	958	907	965	973	1,096	1,062	1,081	1,080
California.....	760	<i>677</i>	<b>686</b>	719	771	806	821	819	800	785	762	741	729
Connecticut.....	578	<i>521</i>	<b>537</b>	579	625	641	635	605	589	558	556	552	541
Georgia.....	1,059	<i>955</i>	<b>1,010</b>	1,031	1,053	1,024	1,049	984	1,032	1,083	1,072	1,183	1,228
Illinois.....	5,852	<i>5,345</i>	<b>5,738</b>	5,919	6,013	6,089	6,017	5,735	5,724	5,820	5,816	5,933	6,060
Indiana.....	8,807	<b>8,646</b>	<b>9,144</b>	<b>9,429</b>	<b>9,418</b>	<b>9,315</b>	<b>9,100</b>	<b>8,630</b>	<b>8,505</b>	<b>8,390</b>	<b>8,253</b>	<b>8,588</b>	<b>8,966</b>
Iowa.....	1,441	<i>1,323</i>	<b>1,435</b>	1,475	1,589	1,573	1,516	1,466	1,433	1,323	1,323	1,293	1,310
Kentucky.....	2,777	<b>2,740</b>	<b>2,848</b>	2,876	<b>2,913</b>	2,908	2,787	2,759	2,738	2,679	2,648	<i>2,642</i>	2,790
Maryland.....	757	<b>713</b>	<b>726</b>	773	796	794	788	772	764	763	749	712	727
Massachusetts.....	1,539	<b>1,422</b>	<b>1,449</b>	1,565	1,668	<b>1,720</b>	1,714	1,600	1,551	1,521	1,457	1,389	1,382
Michigan.....	4,034	<b>4,073</b>	<b>4,316</b>	4,340	4,347	4,261	4,043	3,772	<b>3,512</b>	3,635	3,794	4,009	4,308
Minnesota.....	868	<i>818</i>	<b>847</b>	894	916	918	909	881	848	833	821	867	864
Missouri.....	3,302	<i>3,085</i>	<b>3,320</b>	3,533	3,548	3,517	3,418	3,322	3,306	3,197	3,172	3,109	3,127
New Jersey.....	1,601	<i>1,497</i>	<b>1,507</b>	1,546	1,610	1,637	1,636	1,651	1,655	1,636	1,622	1,617	1,608
New York.....	6,116	<b>5,933</b>	<b>6,051</b>	6,285	6,342	6,384	6,244	6,111	6,049	<b>5,925</b>	5,932	5,968	6,173
North Carolina.....	1,629	<i>1,536</i>	<b>1,591</b>	1,600	1,651	1,675	1,628	1,579	1,631	1,584	1,625	1,698	1,760
Ohio.....	8,815	<b>8,540</b>	<b>9,043</b>	9,489	9,574	<b>9,596</b>	9,267	8,505	<b>7,944</b>	8,011	8,332	8,472	8,947
Pennsylvania.....	7,498	<i>7,188</i>	<b>7,273</b>	7,446	7,614	7,804	7,832	7,871	7,763	7,233	7,208	7,300	7,344
Tennessee.....	1,706	<i>1,555</i>	<b>1,561</b>	1,677	1,600	1,622	1,743	1,653	1,719	1,795	1,791	1,833	1,822
Virginia.....	1,329	<i>1,225</i>	<b>1,266</b>	1,320	1,328	1,392	1,364	1,304	1,371	1,360	1,331	1,331	1,355
Wisconsin.....	3,437	<i>3,239</i>	<b>3,336</b>	3,389	3,426	3,469	3,501	3,439	3,406	3,510	3,561	3,550	3,417

<sup>1</sup> The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

The months of maximum and minimum employment for 1909, and the number of wage earners reported for such months, are shown for each state in Table 20.

Prevailing hours of labor.—In Table 8 the wage earners have been classified according to the number of hours of labor per week prevailing in the establishments in which they are employed. In making this classification the average number of wage earners employed during the year in each establishment is classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or less number of hours.

Approximately 40 per cent of the wage earners employed in the industry in 1909 were in establishments where the prevailing number of hours was 60 per week. Only 11.6 per cent were employed in establishments where the prevailing hours were less than 54 per week, and less than 1 per cent were in establishments working more than 60 hours per week.

**Table 8**

AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY—BOTH BRANCHES COMBINED: 1909

STATE.	Total.	In establishments with prevailing hours—						
		48 and under.	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Be- tween 60 and 72.	72 and over.
United States.....	69,928	3,204	4,875	11,659	21,954	27,771	406	59
Arkansas.....	973	10	.....	34	180	746	3	.....
California.....	760	270	48	327	72	.....	.....	3
Connecticut.....	578	6	6	238	125	153	.....	.....
Georgia.....	1,059	50	.....	14	142	847	.....	3
Illinois.....	5,852	114	82	1,133	3,077	1,442	.....	4
Indiana.....	8,807	193	850	997	4,447	2,375	.....	.....
Iowa.....	1,441	49	157	237	63	785	120	.....
Kentucky.....	2,777	667	37	508	678	886	1	.....
Maryland.....	757	3	54	276	87	337	.....	.....
Massachusetts.....	1,539	18	498	704	172	147	.....	.....
Michigan.....	4,034	55	.....	53	2,105	1,821	.....	.....
Minnesota.....	868	3	25	36	182	622	.....	.....
Missouri.....	3,302	471	182	881	417	1,220	130	1
New Jersey.....	1,601	51	116	407	669	339	18	1
New York.....	6,116	224	1,410	1,329	1,235	1,918	.....	.....
North Carolina.....	1,629	19	8	32	252	1,306	4	8
Ohio.....	8,815	641	651	1,634	1,993	3,896	.....	.....
Pennsylvania.....	7,498	44	165	826	3,086	2,752	19	6
Tennessee.....	1,706	102	89	100	201	1,211	1	2
Virginia.....	1,329	3	7	343	168	783	9	11
Wisconsin.....	3,437	8	.....	119	1,241	2,069	.....	.....

MANUFACTURES.

Sixty hours per week was the most common working time reported in 13 of the 21 states for which separate data are shown. Three states, however—Massachusetts, California, and Connecticut—had more than half of their wage earners in establishments operating 54 hours or less per week; and California reported over one-third as employed in establishments operating 48 hours or less per week. Only 12 of the 21 states reported any wage earners working over 60 hours per week.

**Character of ownership.**—Table 9 presents data with respect to the character of ownership of the establishments in the industry.

The most important distinction shown is that between corporate and all other forms of ownership. In 1909, of the total number of establishments reported, 16.1 per cent were under corporate ownership, as compared with 14.4 per cent in 1904. While corporations thus controlled approximately one-sixth of the total number of establishments in 1909, the value of the products of these establishments represented 68.4 per cent of the total value of products of the industry, an appreciably larger proportion than in

1904. There was a pronounced decrease between 1904 and 1909 both in the number of establishments operated by firms and in the value of their products. There was a slight increase in the number of establishments operated by individuals but a decrease in value of their products.

CHARACTER OF OWNERSHIP.	CARRIAGES AND WAGONS AND MATERIALS.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	5,492	5,588	\$159,892,547	\$155,868,849
Individual.....	3,322	3,815	29,460,382	32,376,377
Firm.....	1,286	1,467	21,084,158	126,597,546
Corporation.....	884	806	109,348,007	96,894,926
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	60.5	59.3	18.4	20.8
Firm.....	23.4	26.3	13.2	17.1
Corporation.....	16.1	14.4	68.4	62.2

<sup>1</sup> Includes two establishments reported under "other" ownership, to avoid disclosure of individual operations.

Table 10 gives statistics for establishments under each form of ownership, for the leading states.

STATE.	CARRIAGES AND WAGONS AND MATERIALS: 1909											
	Number of establishments owned by—			Wage earners in establishments owned by—			Value of products of establishments owned by—			Value added by manufacture in establishments owned by—		
	Individu-als.	Firms.	Corpora-tions.	Individu-als.	Firms.	Corpora-tions.	Individu-als.	Firms.	Corpora-tions.	Individu-als.	Firms.	Corpora-tions.
United States.....	3,322	1,286	884	15,476	9,824	44,628	\$29,460,382	\$21,084,158	\$109,348,007	\$17,594,760	\$11,297,135	\$49,049,364
Arkansas.....	19	18	21	119	164	690	155,646	277,761	1,231,060	105,785	165,027	573,999
California.....	101	39	15	418	163	179	1,143,932	454,141	454,361	640,534	282,550	271,284
Connecticut.....	63	18	11	313	87	178	559,631	174,592	342,359	363,054	120,480	210,407
Georgia.....	45	17	21	291	139	629	476,012	290,763	1,793,256	284,983	159,607	748,039
Illinois.....	201	69	55	797	421	4,634	1,714,435	1,052,885	14,063,963	1,000,483	586,986	5,704,470
Indiana.....	94	47	80	487	361	3,019	843,535	874,212	19,937,693	504,928	404,414	3,288,375
Iowa.....	64	35	20	253	393	795	522,717	1,541,056	2,722,548	304,702	712,184	1,021,924
Kentucky.....	80	41	40	376	338	2,063	639,403	556,126	3,945,578	335,009	292,871	1,800,721
Maryland.....	86	31	9	303	201	253	532,666	390,919	400,483	310,756	218,404	253,730
Massachusetts.....	129	34	14	841	443	255	1,618,801	1,046,547	519,487	1,038,312	562,243	302,499
Michigan.....	124	52	36	348	514	3,172	714,140	935,267	8,509,476	437,434	546,982	3,912,211
Minnesota.....	92	30	12	220	180	468	499,642	490,165	1,244,898	317,891	241,503	632,313
Missouri.....	109	70	64	417	368	2,517	721,434	767,542	6,979,880	448,509	425,970	2,731,547
New Jersey.....	192	50	14	882	344	375	1,983,819	610,052	656,585	1,172,471	401,129	397,097
New York.....	414	131	65	2,116	916	3,084	4,434,217	1,605,750	7,252,564	2,661,493	1,057,207	3,765,113
North Carolina.....	71	38	29	423	406	800	692,098	743,277	1,847,259	344,073	336,833	708,222
Ohio.....	183	97	127	1,266	1,164	6,395	2,345,765	2,858,841	16,744,853	1,348,446	1,312,097	7,874,916
Pennsylvania.....	437	153	65	2,329	1,389	3,780	3,936,477	2,695,014	6,116,892	2,399,065	1,403,898	3,238,395
Tennessee.....	46	44	39	284	297	1,125	404,778	505,542	2,129,293	216,434	307,132	1,070,021
Virginia.....	80	27	23	325	246	758	350,204	392,928	1,703,089	225,550	241,808	734,489
Wisconsin.....	184	70	32	457	249	2,731	987,657	820,939	7,090,575	537,027	315,695	2,883,850

In 1909, of the total number of wage earners in the industry, 15,476, or 22.1 per cent of the total, were employed in establishments under individual ownership; 9,824, or 14 per cent, in those under firm ownership; and 44,628, or 63.8 per cent, in those owned by corporations.

There was considerable variation among the states in the relative importance of the establishments under the different forms of ownership. Thus in Indiana, the second state in the industry as measured by value of products, establishments controlled by corporations constituted 36.2 per cent of the total number of

establishments, gave employment to 90.4 per cent of the wage earners, and reported 92.1 per cent of the total value of products. In Massachusetts, on the other hand, corporations controlled only 7.9 per cent of the establishments, and these gave employment to but 16.6 per cent of the wage earners, and contributed only 16.3 per cent of the total value of products. In Ohio, which led all other states in value of products, corporations controlled 31.2 per cent of the total number of establishments, reported 76.3 per cent of the total value of products, and gave employment to 72.5 per cent of the wage earners.

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**Size of establishments.**—Table 11 presents statistics for establishments in the industry as a whole, classified according to the value of their products.

VALUE OF PRODUCTS PER ESTABLISHMENT.	CARRIAGES AND WAGONS AND MATERIALS.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	5,492	5,588	\$159,892,547	\$155,868,849
Less than \$5,000.....	2,114	2,098	5,458,031	5,774,443
\$5,000 and less than \$20,000.....	2,222	2,301	22,138,144	22,341,719
\$20,000 and less than \$100,000.....	845	859	35,281,090	34,920,022
\$100,000 and less than \$1,000,000.....	293	322	73,089,147	78,875,449
\$1,000,000 and over.....	13	8	23,926,135	13,957,216
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	38.5	37.5	3.4	3.7
\$5,000 and less than \$20,000.....	40.5	41.2	13.8	14.3
\$20,000 and less than \$100,000.....	15.4	15.4	22.1	22.4
\$100,000 and less than \$1,000,000.....	5.4	5.8	45.7	50.6
\$1,000,000 and over.....	0.2	0.1	15.0	9.0

Of the 5,492 establishments reported for 1909, only 13 manufactured products valued at \$1,000,000 or over. In 1904 there were eight establishments of this class. Such establishments, however, reported 15 per cent of the total value of products in 1909 and 9 per cent in 1904. None of the other groups reported as large a percentage of the total value of products in

1909 as in 1904. Establishments whose products exceeded \$100,000 but were less than \$1,000,000 in value represented only 5.4 per cent of the total number of establishments, but reported 45.7 per cent of the total value of products in 1909. On the other hand, the small establishments—that is, those manufacturing products valued at less than \$20,000—constituted almost four-fifths (79 per cent) of the total number of establishments, but the value of their products was less than one-fifth (17.3 per cent) of the total.

The average value of products per establishment increased from \$27,893 in 1904 to \$29,114 in 1909, and the average value added by manufacture, as computed from the figures in Table 2, from \$14,019 to \$14,192, but the average number of wage earners per establishment shows a decrease from 13.9 in 1904 to 12.7 in 1909. In the carriage and wagon branch of the industry in 1909 the average value of products per establishment was \$25,743 and the average number of wage earners was 10.8. The corresponding figures for establishments making primarily carriage and wagon parts and materials were \$55,507 and 28.

Table 12 presents a classification of establishments according to the number of wage earners employed, for the leading states.

STATE.	CARRIAGES AND WAGONS AND MATERIALS: 1909																		
	Total.		Establishments employing—																
			No wage earners.		1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.
Es-tab-lish-ments.	Wage earners (average number)	Es-tab-lish-ments.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	
United States.....	5,492	69,928	440	2,998	7,690	1,466	15,451	325	10,645	159	11,120	81	12,178	17	5,551	6	3,339	2	3,954
Arkansas.....	58	973	2	23	52	18	199	11	341	2	132	2	249	.....	.....	.....	.....	.....	.....
California.....	155	700	5	110	294	37	392	3	74	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut.....	62	578	3	57	161	27	261	5	156	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia.....	83	1,059	3	37	108	28	307	11	356	4	288	.....	.....	.....	.....	.....	.....	.....	.....
Illinois.....	325	5,852	25	191	495	68	709	17	539	11	729	7	1,217	5	1,042	1	520	.....	.....
Indiana.....	221	8,867	11	86	230	65	711	27	877	15	1,018	11	1,552	4	1,185	1	682	1	2,612
Iowa.....	119	1,441	13	59	156	34	367	7	280	3	193	3	445	.....	.....	.....	.....	.....	.....
Kentucky.....	161	2,777	4	87	213	46	479	11	395	7	423	5	750	.....	.....	1	517	.....	.....
Maryland.....	126	757	11	78	183	28	259	7	189	2	126	.....	.....	.....	.....	.....	.....	.....	.....
Massachusetts.....	177	1,539	10	85	249	65	697	15	446	2	147	.....	.....	.....	.....	.....	.....	.....	.....
Michigan.....	212	4,034	31	115	247	36	343	9	288	12	825	4	582	4	1,245	1	504	.....	.....
Minnesota.....	134	803	22	89	200	13	133	6	201	3	221	1	113	.....	.....	.....	.....	.....	.....
Missouri.....	243	3,302	22	130	334	61	643	10	555	9	629	4	603	.....	.....	1	538	.....	.....
New Jersey.....	256	1,601	7	169	432	70	733	6	181	4	255	.....	.....	.....	.....	.....	.....	.....	.....
New York.....	610	6,110	55	349	913	154	1,612	26	819	18	1,288	7	1,116	1	368	.....	.....	.....	.....
North Carolina.....	138	1,629	7	70	150	38	412	17	557	5	498	1	102	.....	.....	.....	.....	.....	.....
Ohio.....	407	8,815	9	167	511	135	1,449	48	1,706	27	1,983	21	3,166	.....	.....	.....	.....	.....	.....
Pennsylvania.....	655	7,498	56	343	953	203	2,038	31	975	14	953	6	932	1	255	.....	.....	1	1,342
Tennessee.....	129	1,700	2	65	163	43	513	12	404	6	498	1	123	.....	.....	.....	.....	.....	.....
Virginia.....	130	1,329	10	71	164	37	431	4	144	7	473	1	117	.....	.....	.....	.....	.....	.....
Wisconsin.....	286	3,437	65	163	341	38	411	11	355	1	68	5	828	2	556	1	578	.....	.....

Of the 5,492 establishments reported in 1909, 8 per cent employed no wage earners; 54.6 per cent employed from 1 to 5; 26.7 per cent from 6 to 20; and 5.9 per cent from 21 to 50. There were 159 establishments that employed from 51 to 100 wage earners, and 106 that employed over 100, of which 25 employed over 250. Most of these 25 large concerns were in Illinois, Indiana, and Michigan.

Of the total number of wage earners, 33.1 per cent were reported by establishments employing from

1 to 20, 31.1 per cent by establishments employing from 21 to 100, 25.4 per cent by establishments employing from 101 to 500, and 10.4 per cent by establishments employing more than 500 wage earners each.

**Expenses.**—As stated in the Introduction, the census statistics of expenses do not purport to give the total cost of manufacture, since they take no account of interest or depreciation. Facts of interest can be brought out, however, concerning the relative impor-

tance of the different classes of expenses which were reported. Table 2 shows the total expenses reported for the industry as a whole in 1909 to have been \$139,176,014, divided as follows: Materials, \$81,951,288, or 58.9 per cent; wages, \$37,594,919, or 27 per cent; salaries, \$7,960,207, or 5.7 per cent; and miscellaneous expenses, made up of taxes, rent of factory or works, advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$11,669,600, or 8.4 per cent. The percentages represented by the several classes of expenses are shown for each of the two branches of the industry in Table 13.

CLASS OF EXPENSES.	PER CENT OF TOTAL REPORTED EXPENSES: 1909		
	The industry as a whole.	Carriages and wagons.	Carriage and wagon materials.
Total.....	100.0	100.0	100.0
Cost of materials.....	58.9	58.6	60.0
Salaries.....	5.7	5.8	5.6
Wages.....	27.0	27.2	26.5
Miscellaneous.....	8.4	8.5	8.0

There were considerable variations in the proportions represented by the different classes of expenses in the several states (see Table 20). Among the 21 principal states the proportion of the total expenses represented by salaries ranged from 3.2 per cent in New Jersey to 7 per cent in Kentucky; that represented by wages varied from 20.1 per cent in Iowa to 42.6 per cent in Connecticut; that represented by cost of materials from 43.8 per cent in Connecticut to 66.9 per cent in North Carolina; and that represented by miscellaneous expenses from 6.5 per cent in North Carolina to 11.1 per cent in Michigan. Variations in the proportions may in a measure be accounted for by the varying importance of repair work. In this branch of work few and inexpensive materials are used, while the element of labor, and consequently of wages, is very important. Thus in Connecticut, where a large proportion of the value of products represents receipts for repair work, the proportion of the total expenses formed by wages was above the average for the industry as a whole, while the proportion for cost of materials was considerably less than the average. Some establishments, on the other hand, make extensive use of parts purchased from other establishments, their work consisting largely of assembling. In such cases comparatively little labor is required and the cost of materials constitutes a very large proportion of the total expenses.

**Engines and power.**—The amount of power used in the industry was first reported at the census of 1869. Table 2 shows that the total horsepower used increased from 10,813 in 1879 to 126,032 in 1909. Table 14 shows the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by pur-

chased current), and their total horsepower, as reported at the censuses of 1909, 1904, and 1899. It also shows separately the total number and horsepower of electric motors, including those operated by current generated in the same establishment.

POWER.	CARRIAGES AND WAGONS AND MATERIALS.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
<b>Primary power, total.....</b>	<b>6,501</b>	<b>2,496</b>	<b>2,219</b>	<b>126,032</b>	<b>106,159</b>	<b>83,771</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Owned.....	2,647	2,496	2,219	100,715	90,144	79,322	79.9	90.6	94.7
Steam.....	1,217	1,491	1,668	82,911	82,414	70,864	65.8	77.6	84.6
Gas.....	1,294	858	394	13,120	9,739	4,218	10.4	9.2	5.0
Water wheels.....	127	127	157	4,604	3,837	3,842	3.7	3.6	4.6
Water motors.....	9	20	( <sup>1</sup> )	63	80	( <sup>1</sup> )	( <sup>2</sup> )	0.1	.....
Other.....	.....	.....	.....	17	74	398	( <sup>2</sup> )	0.1	0.5
Rented.....	3,854	( <sup>3</sup> )	( <sup>1</sup> )	25,317	10,015	4,440	20.1	9.4	5.3
Electric.....	3,854	( <sup>3</sup> )	( <sup>1</sup> )	24,969	8,780	3,014	19.8	8.3	3.6
Other.....	.....	.....	.....	348	1,235	1,435	0.3	1.1	1.7
<b>Electric motors.....</b>	<b>4,805</b>	<b>507</b>	<b>156</b>	<b>39,424</b>	<b>16,434</b>	<b>5,805</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Run by current generated by establishment.....	951	507	156	14,455	7,654	2,701	36.7	46.6	48.1
Run by rented power.....	3,854	( <sup>3</sup> )	( <sup>1</sup> )	24,969	8,780	3,014	63.3	53.4	51.9

<sup>1</sup> Not reported. <sup>2</sup> Less than one-tenth of 1 per cent. <sup>3</sup> Figures not available.

The total primary power used in the industry increased from 83,771 horsepower in 1899 to 126,032 horsepower in 1909, or by 50.4 per cent. The most noticeable increase was in the power of electric motors operated by purchased current, which constituted 19.8 per cent of all power used in 1909, as compared with 3.6 per cent in 1899. There was also a marked increase in the relative importance of gas and other internal combustion engines. In 1909 the power of steam engines constituted by far the largest percentage of the total primary power, but it was relatively of much less importance in that year than in 1899.

The number and horsepower of electric motors run by current generated in the establishment also showed a very decided increase, although less relatively than in the case of motors operated by purchased current.

Table 15 shows for 1909 the amount of each of the several kinds of power and of the different kinds of fuel used in the industry in each of the 21 leading states.

The states which ranked highest with respect to the amount of power used in 1909 were Ohio, Indiana, Pennsylvania, New York, and Illinois, the five states which ranked highest in value of products. The total primary horsepower reported for these states in 1909 was 59,818, or 47.5 per cent of the total for the United States. In all of the 21 states except California, Massachusetts, and North Carolina steam was the most important primary power; in these three states rented electric power was most important. Gas and other internal combustion engines were more extensively used in Pennsylvania than in any other state.

Fuel consumed.—As shown by Table 15, bituminous coal was the principal class of fuel used during 1909, 451,304 short tons being consumed, of which amount

Indiana used 20.5 per cent. Gas was also used to a considerable extent, the largest quantity for any state being reported from Pennsylvania.

Table 15

CARRIAGES AND WAGONS AND MATERIALS: 1909

STATE.	Primary horsepower.		Owned by establishments reporting.					Rented.		Electric horsepower.		Fuel used.					
	Number of establishments reporting.	Total horsepower.	Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.	Electric.	Other.	Total, rented and generated by establishments reporting.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
												Anthracite (long tons).	Bituminous (short tons).				
United States.....	3,583	126,032	100,715	82,911	13,120	4,667	17	24,969	348	39,424	14,455	52,258	451,304	18,741	13,503	44,176	477,367
Arkansas.....	47	3,740	3,628	3,560	68	.....	.....	121	.....	231	110	70	1,130	.....	78	79	38,381
California.....	118	957	110	19	82	9	.....	847	.....	847	.....	218	1,617	.....	48	404	1,244
Connecticut.....	59	957	700	408	115	177	.....	257	.....	257	.....	832	1,752	2	177	171	5,440
Georgia.....	47	1,353	946	797	149	.....	.....	407	.....	802	395	70	3,927	16	.....	267	44
Illinois.....	239	9,084	7,136	5,963	583	590	.....	2,548	.....	3,895	1,347	637	47,599	3,453	97	6,745	3,122
Indiana.....	171	13,780	12,127	11,496	631	.....	.....	1,063	.....	5,596	3,933	78	92,691	1,421	907	17,458	5,730
Iowa.....	95	2,387	1,843	1,537	306	.....	.....	524	20	526	2	65	12,979	587	105	1,951	545
Kentucky.....	101	6,617	6,151	0,003	145	.....	.....	431	35	2,783	2,352	9	29,214	952	1,222	141	517
Maryland.....	55	879	601	500	101	.....	.....	278	.....	290	12	482	2,353	.....	33	115	457
Massachusetts.....	134	2,038	1,175	780	310	73	12	826	37	826	.....	858	4,532	45	249	454	37,559
Michigan.....	139	6,362	5,291	4,730	359	202	.....	1,091	10	1,610	549	126	35,477	633	1,619	765	76
Minnesota.....	97	1,657	1,271	872	396	.....	.....	380	6	522	142	288	5,354	132	233	397	155
Missouri.....	176	5,858	5,167	4,642	320	.....	5	691	.....	939	248	179	14,056	165	1,105	467	3,442
New Jersey.....	123	1,645	1,311	865	372	74	.....	333	1	345	12	2,178	4,992	17	31	228	3,435
New York.....	352	10,029	8,391	5,278	1,302	1,811	.....	1,582	56	1,796	214	5,705	28,110	301	1,123	2,087	22,511
North Carolina.....	83	9,110	1,886	1,649	210	27	.....	7,224	.....	7,224	.....	722	3,985	75	2,458	334	.....
Ohio.....	299	14,771	13,546	11,686	1,847	13	.....	1,222	3	3,578	2,356	204	81,415	5,986	101	4,833	63,790
Pennsylvania.....	388	11,644	10,267	7,281	2,816	170	.....	1,106	111	2,740	1,574	36,240	30,824	1,291	200	1,852	107,446
Tennessee.....	91	4,537	4,267	4,060	167	40	.....	217	53	327	110	12	5,736	617	652	308	600
Virginia.....	66	2,032	1,726	1,435	194	97	.....	300	.....	308	2	34	4,879	80	716	228	141
Wisconsin.....	166	6,428	6,061	5,137	868	86	.....	335	.....	1,413	1,078	2,284	24,012	2,379	793	1,654	1,371
All other states.....	507	9,650	7,084	4,213	1,573	1,298	.....	2,550	16	2,566	19	974	14,640	559	1,556	3,283	181,224

SPECIAL STATISTICS REGARDING PRODUCTS.

The United States a whole.—Table 16 presents statistics regarding the number and value of vehicles and the value of all other products, not only for establishments assigned to the industry "carriages and wagons and materials," but also for establishments in other industries which incidentally reported the manufacture of carriages and wagons or parts and materials.

KIND.	PRODUCTS.					
	Total.		Made by establishments in the industry.		Made by establishments in other industries.	
	Number.	Value.	Number.	Value.	Number.	Value.
All products.....	.....	\$164,420,558	.....	\$159,892,547	.....	\$4,528,011
All vehicles: <sup>1</sup>	.....	.....	.....	.....	.....	.....
1900.....	1,585,115	94,607,019	1,519,782	91,263,264	65,333	3,343,755
1904.....	.....	97,802,866	1,711,529	97,190,093	.....	612,173
Classes of vehicles, 1909:	.....	.....	.....	.....	.....	.....
Carriages.....	843,319	48,835,053	823,411	47,756,118	14,908	1,078,935
Wagons.....	629,797	42,026,198	587,685	39,932,910	42,112	2,093,288
Public conveyances.....	2,327	944,882	2,243	930,267	104	5,615
Sleighs and sleds.....	109,108	2,231,767	100,899	2,065,850	8,209	165,917
Automobiles <sup>1</sup> .....	544	569,119	544	569,119	.....	.....
All other products, parts, repairs, etc., 1909.....	.....	69,813,539	.....	68,629,283	.....	1,184,256

<sup>1</sup> Exclusive of automobiles made by establishments not in the carriage and wagon industry.

The value of products reported for the industry itself in 1909 was \$159,892,547, and the value of similar products reported by establishments in other industries was \$4,528,011, giving a total of \$164,420,558. The number of vehicles made by establishments in the industry was

1,519,782 (this number including 544 automobiles), and by establishments in other industries (not including automobiles) 65,333, giving a total of 1,585,115.

The establishments in other industries which reported the production of carriages, wagons, etc., or parts thereof included establishments in the agricultural implement, automobile, foundry and machine-shop, lumber, and other industries. With respect to the item of \$1,184,256 reported as the value of carriage and wagon parts, repairs, etc., made by establishments in other industries, it should be stated that this is probably much less than the true value of carriage and wagon parts so made. Doubtless concerns which made the more important kinds of parts in considerable quantities reported them separately. The concerns making minor parts, particularly if they made them in small quantities, would be less likely to report them. Moreover, there are many articles which can be used as parts or materials in the carriage and wagon industry but which are also equally adapted for use in other industries.

At the census of 1904 detailed statistics were not secured regarding vehicles or parts manufactured by establishments outside of the carriage and wagon industry proper, but the total value of vehicles reported as made by such establishments, \$612,173, is shown in Table 16.

Table 17 presents, for 1909, 1904, and 1899, detailed statistics regarding the products of the establishments in the industry "carriages and wagons and materials."

Table 17 PRODUCT.	1909	1904	1899
Total value of products.....	\$159,892,547	\$155,868,849	\$138,261,763
Complete vehicles of all classes:			
Number.....	1,519,782	1,711,529	1,594,465
Value.....	\$91,263,264	\$97,190,693	\$85,910,177
Carriages (family and pleasure):			
Number.....	828,411	937,409	904,639
Value.....	\$47,756,118	\$55,750,276	\$51,295,393
Two-wheeled, number.....	63,532	29,544	29,089
Four-wheeled, for one or two persons, number.....	637,893	769,635	728,163
Four-wheeled, for three or more persons, number.....	126,981	138,230	147,387
Wagons:			
Number.....	587,685	643,755	570,428
Value.....	\$39,932,910	\$37,195,230	\$31,080,738
Business:			
Number.....	154,631	133,422	( <sup>1</sup> )
Value.....	\$16,440,816	( <sup>1</sup> )	( <sup>1</sup> )
Light and package commodity, number.....	107,190	71,733	( <sup>1</sup> )
Heavy and bulk commodity, number.....	32,780	31,956	( <sup>1</sup> )
Handcarts, number.....	7,330	6,089	( <sup>1</sup> )
Hearses, number.....	807	642	( <sup>1</sup> )
Street sprinklers, number.....	952	109	( <sup>1</sup> )
Street sweepers, number.....	101	48	( <sup>1</sup> )
Other business wagons, number.....	5,471	22,845	( <sup>1</sup> )
Farm (including carts or trucks)—			
Number.....	429,952	505,025	( <sup>1</sup> )
Value.....	\$22,615,875	( <sup>1</sup> )	( <sup>1</sup> )
Government, municipal, etc.—			
Number.....	3,102	5,308	( <sup>1</sup> )
Value.....	\$870,219	( <sup>1</sup> )	( <sup>1</sup> )
Ambulances, number.....	598	245	( <sup>1</sup> )
Mail and mail carriers' wagons and carts, number.....	1,912	4,703	( <sup>1</sup> )
Patrol (fire and police), hose wagons, and prison vans, number.....	592	360	( <sup>1</sup> )
Public conveyances:			
Number.....	2,243	2,711	2,218
Value.....	\$939,207	\$1,314,952	\$1,114,090
Cabs, hacks, and hansom, number.....	1,715	1,888	1,808
Hotel coaches, omnibuses, etc., number.....	528	823	410
Sleighs and sleds:			
Number.....	100,899	127,455	117,006
Value.....	\$2,065,850	\$2,694,550	\$2,290,903
Automobiles: <sup>2</sup>			
Number.....	544	199	174
Value.....	\$569,119	\$235,675	\$120,053
Electric, number.....	46	( <sup>1</sup> )	( <sup>1</sup> )
Gasoline, number.....	498	( <sup>1</sup> )	( <sup>1</sup> )
All other products, including parts and amount received for repair work.....	\$68,629,283	\$58,678,156	\$52,351,586

<sup>1</sup> Not reported separately.

<sup>2</sup> Manufactured in establishments devoted primarily to the manufacture of carriages and wagons.

The total value of products shown for the industry at each census involves a certain amount of duplication, due to the fact that carriage and wagon parts and materials manufactured by certain establishments in the industry are used by other establishments in the industry in making the completed vehicles. As shown in Table 1, the total value of products of establishments engaged exclusively or primarily in manufacturing carriage and wagon parts and materials in 1909 was \$34,525,635; the greater part of the products represented by this amount were doubtless used as materials in the industry, though some were, of course, used in small repair shops.

Of the total value of products of the industry in 1909, which amounted to \$159,892,547, the value of complete vehicles of all classes represented \$91,263,264, or 57.1 per cent, and the value of all other products, consisting chiefly of the value of parts and repair work, was \$68,629,283. The value of vehicles includes \$569,119 representing the value of automobiles made by establishments engaged primarily in the manufacture of carriages and wagons, but the great bulk of it

represents the value of carriages, wagons, sleighs, and sleds. Of the total value of vehicles turned out in 1909, that of family and pleasure carriages formed 52.3 per cent, that of wagons of all kinds 43.8 per cent, that of public conveyances 1 per cent, and that of sleighs and sleds 2.3 per cent.

The number of complete vehicles of all classes manufactured by the establishments in the industry increased from 1,594,465 in 1899 to 1,711,529 in 1904, but decreased to 1,519,782 in 1909, the decrease for the decade being 4.7 per cent, and that for the five-year period 1904-1909, 11.2 per cent. The value of the vehicles manufactured, however, was somewhat greater in 1909 than in 1899. This may be due to an increase in prices of vehicles, but it might readily be attributable, at least in part, to changes in the relative proportions of different classes and grades from the one year to the other. It should be noted, in fact, that each of the classes of vehicles listed in Table 17 includes a variety of types and grades, so that even if values were shown for each class, a comparison of the percentage of increase in the number with the percentage of increase in value would throw little light on the question of the movement of prices.

Between 1899 and 1904 the aggregate number and the value of family and pleasure carriages manufactured increased somewhat, but the number in 1909 was 8.4 per cent less than that in 1899 and the value 6.9 per cent less. Of the family and pleasure carriages, only those with two wheels show an increase in number during the decade.

The aggregate number and value of wagons manufactured increased materially from 1899 to 1904. The number, however, decreased between 1904 and 1909, although the value increased somewhat. The number of wagons made in 1909 was 3 per cent greater than the number made in 1899, and the value 28.5 per cent greater; as compared with 1904, however, there was a decrease of 8.7 per cent in number, and an increase of only 7.4 per cent in value.

The number of public conveyances manufactured also increased during the first five-year period, but decreased almost as much during the second period, and the value of such conveyances made in 1909 was less than in either of the two preceding census years. As before stated, the decrease between 1904 and 1909 in the number of carriages, wagons, and public conveyances manufactured is doubtless attributable to the increasing use of the automobile.

The number of sleighs and sleds manufactured shows a movement similar to that of carriages. It increased from 1899 to 1904, but decreased during the next five years, and in 1909 was 13.8 per cent less than in 1899.

The value of "all other products," consisting chiefly of the value of parts and the receipts for repair work, increased 31.1 per cent between 1899 and 1909.

It may be stated that, of the total value of products of establishments engaged primarily in manufacturing parts and materials, which amounted to \$34,525,635

in 1909, much the greater part is included in the item of \$68,629,283 shown in Table 17 as the value of "all other products." It is probable, therefore, that the value of "all other products" for establishments making complete vehicles was from \$35,000,000 to \$40,000,000, and that most of this represented receipts for repair work.

Vehicles turned out, by states.—Table 18 shows, by states, the number of the several general classes of vehicles manufactured by establishments in the carriage and wagon industry during 1909, 1904, and 1899, and the value of those manufactured during 1909. Data for establishments assigned to other industries are not included.

CARRIAGES AND WAGONS AND MATERIALS—VEHICLES MANUFACTURED, BY STATES.

Table 18 CLASS OF VEHICLES AND STATE.	NUMBER.			Value: 1909	CLASS OF VEHICLES AND STATE.	NUMBER.			Value: 1909
	1909	1904	1899			1909	1904	1899	
<b>CARRIAGES (FAMILY AND PLEASURE.)</b>					<b>WAGONS (BUSINESS, ETC.)—contd.</b>				
<b>United States.....</b>	<b>828,411</b>	<b>937,409</b>	<b>904,639</b>	<b>\$47,756,118</b>	Michigan.....	28,720	52,273	49,903	\$1,586,172
California.....	386	2,100	2,418	39,440	Minnesota.....	17,231	15,059	16,924	1,040,586
Connecticut.....	277	2,381	2,940	42,426	Mississippi.....	1,683	2,012	883	170,601
Georgia.....	21,974	20,919	7,509	1,221,340	Missouri.....	20,140	25,281	24,621	1,888,689
Illinois.....	161,875	56,075	50,979	5,907,089	Nebraska.....	1,074	916	203	111,047
Indiana.....	177,194	178,962	141,734	10,150,893	New Hampshire.....	1,049	1,188	2,394	191,965
Iowa.....	29,809	16,498	20,593	2,100,313	New Jersey.....	4,337	5,647	7,589	655,800
Kentucky.....	24,259	27,195	11,784	1,120,253	New York.....	21,937	19,879	22,775	2,932,813
Maine.....	2,551	2,802	2,294	200,208	North Carolina.....	26,248	23,553	12,316	852,983
Maryland.....	1,708	2,945	3,091	163,336	Ohio.....	28,882	40,905	44,315	2,733,606
Massachusetts.....	2,311	8,106	11,883	278,959	Pennsylvania.....	33,634	35,395	27,138	2,996,485
Michigan.....	91,558	174,889	193,254	4,453,090	Tennessee.....	12,499	20,241	11,666	716,597
Minnesota.....	1,880	3,662	6,361	156,000	Texas.....	1,243	718	1,050	164,623
Missouri.....	97,444	74,650	52,823	3,913,969	Virginia.....	18,835	19,195	9,638	775,528
New Hampshire.....	906	1,943	2,240	81,999	West Virginia.....	2,900	5,117	3,702	176,613
New Jersey.....	5,465	3,341	6,944	440,440	Wisconsin.....	92,011	83,916	70,210	4,853,561
New York.....	25,474	42,249	58,176	2,344,487	All other states.....	4,714	5,686	7,577	589,651
North Carolina.....	31,813	25,157	9,447	1,883,206					
Ohio.....	135,877	139,428	213,092	8,126,285	<b>PUBLIC CONVEYANCES.</b>				
Pennsylvania.....	23,395	33,467	41,400	1,738,125	<b>United States.....</b>	<b>2,243</b>	<b>2,711</b>	<b>2,218</b>	<b>939,267</b>
South Carolina.....	5,160	7,440	5,035	292,404	Connecticut.....	13	179	170	1,500
Tennessee.....	2,470	5,374	1,820	216,491	Illinois.....	148	70	40	107,955
Texas.....	2,513	100	750	169,775	Massachusetts.....	36	142	310	24,592
Virginia.....	13,720	19,366	12,941	785,458	Michigan.....	201	120	118	118,490
Wisconsin.....	24,726	23,466	36,323	1,519,096	New York.....	219	742	656	187,936
All other states.....	3,666	4,834	8,208	410,967	Ohio.....	657	217	41	206,458
					Pennsylvania.....	432	333	141	133,811
<b>WAGONS (BUSINESS, FARM, GOVERNMENT, ETC.)</b>					Tennessee.....	41	168	124	4,760
<b>United States.....</b>	<b>587,685</b>	<b>648,755</b>	<b>570,428</b>	<b>39,832,910</b>	Wisconsin.....	90	103	101	33,390
Alabama.....	4,588	12,512	9,523	236,024	All other states.....	406	637	635	120,075
Arkansas.....	7,415	1,625	1,149	436,663					
California.....	3,347	3,045	2,325	548,865	<b>SLEIGHS AND SLEDS.</b>				
Connecticut.....	1,786	1,944	1,427	220,237	<b>United States.....</b>	<b>100,899</b>	<b>127,455</b>	<b>117,006</b>	<b>2,065,850</b>
Florida.....	1,578	2,652	1,602	116,511	Illinois.....	2,517	5,007	1,880	43,014
Georgia.....	15,708	18,848	11,443	723,135	Indiana.....	1,101	1,378	3,834	20,483
Illinois.....	85,097	72,033	56,364	5,615,109	Iowa.....	8,094	2,766	4,020	130,108
Indiana.....	87,844	92,893	94,224	5,444,456	Maine.....	2,169	2,802	2,315	77,398
Iowa.....	26,495	22,815	31,473	1,432,147	Michigan.....	32,751	53,180	51,149	570,207
Kansas.....	1,166	1,004	995	113,963	Minnesota.....	10,954	10,003	7,530	185,059
Kentucky.....	25,911	49,266	39,362	1,745,448	New York.....	10,823	19,433	14,500	349,643
Louisiana.....	1,269	1,246	1,377	167,599	Ohio.....	7,589	8,479	3,555	78,542
Maine.....	2,259	1,764	1,172	198,434	Pennsylvania.....	3,210	5,551	5,509	90,619
Maryland.....	2,719	1,849	1,144	308,531	Washington.....	1,033	501	956	4,620
Massachusetts.....	3,360	3,278	3,944	688,368	Wisconsin.....	17,720	15,395	17,451	399,310
					All other states.....	2,638	2,990	4,307	116,847

Family and pleasure carriages were made in 44 of the 48 states of the Union in 1909. The five leading states in the manufacture of this class of vehicles, however, Indiana, Ohio, Illinois, Missouri, and Michigan, together reported 603,948 carriages, or 72.9 per cent of the total number for the United States. Of these five leading states, Illinois, Indiana, and Missouri show gains between 1899 and 1909 in the number made, while Michigan and Ohio show losses. Ohio was first in the number of these vehicles in 1899 and 1904, but was second in 1909, being outranked by Indiana. Of the 24 states for which the number of carriages is shown separately, 13 reported decreases in the number made in 1909 as compared with the number in 1899.

Wagons (business, farm, government, etc.) were made in 1909 in every state in which the carriage and wagon industry was conducted. The four leading states, Wisconsin, Indiana, Illinois, and Pennsylvania,

together reported the manufacture of 298,586 wagons, or 50.8 per cent of the total. Of the 31 states for which the numbers are given separately, 17 show an increase between 1899 and 1909 in the number made, and 14 a decrease. Illinois shows the greatest absolute increase and Michigan the largest decrease. Indiana, which was first in the number of wagons manufactured in 1899 and 1904, had in 1909 relinquished first place to Wisconsin, which state had held second place in this respect at the two preceding censuses. In value of vehicles of this class manufactured in 1909, Illinois ranked first, Indiana second, and Wisconsin third.

The most important states in the manufacture of public conveyances in 1909 were Ohio, Pennsylvania, New York, and Michigan.

While the manufacture of sleighs and sleds was reported in 33 states, 71.6 per cent of the total number were made in four states, Michigan, Wisconsin, Minnesota, and New York.

MANUFACTURES.

DETAILED STATISTICS, BY STATES.

The principal facts brought out by the census inquiry concerning the industry are presented by states in Tables 19 and 20.

Table 19 shows, for 1909, 1904, and 1899, the number of establishments, number of persons engaged in the

industry, primary horsepower, capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture.

Table 20 gives the statistics of the industry for 1909 in somewhat greater detail.

CARRIAGES AND WAGONS AND MATERIALS—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horsepower.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Expressed in thousands.													
United States.....	1909	5,492	82,944	6,213	6,803	69,928	129,032	\$175,474	\$7,960	\$37,595	\$81,051	\$159,893	\$77,942
	1904	5,588	90,751	6,575	6,294	77,882	108,159	152,345	6,581	36,383	77,528	158,869	78,341
	1899	6,792	.....	.....	5,026	73,812	83,771	128,982	4,759	33,565	66,772	138,262	71,490
Alabama.....	1909	35	508	40	44	424	991	752	45	194	303	684	381
	1904	26	439	30	29	350	554	581	29	165	377	740	363
	1899	47	.....	.....	20	461	.....	436	19	140	252	600	349
Arkansas.....	1909	58	1,126	63	90	973	3,749	1,823	92	405	820	1,664	844
	1904	33	541	31	50	460	1,632	747	39	174	346	772	420
	1899	40	.....	.....	30	348	.....	400	16	111	311	555	244
California.....	1909	155	1,015	185	70	760	957	1,635	74	610	849	2,052	1,203
	1904	108	1,277	248	49	980	782	1,730	51	715	852	2,352	1,500
	1899	193	.....	.....	37	923	.....	1,603	44	502	776	1,976	1,200
Colorado.....	1909	21	158	25	9	124	125	160	8	87	85	260	175
	1904	35	225	39	9	177	84	263	9	130	133	379	246
	1899	40	.....	.....	11	174	.....	293	11	120	139	385	246
Connecticut.....	1909	92	720	99	43	578	957	1,226	41	372	383	1,077	694
	1904	109	1,730	122	101	1,607	1,329	2,326	131	767	793	2,196	1,403
	1899	135	.....	.....	112	1,644	.....	3,529	136	1,032	1,245	3,166	1,921
Delaware.....	1909	25	208	29	16	163	204	483	13	81	124	200	166
	1904	25	211	32	14	165	204	335	10	85	131	236	155
	1899	26	.....	.....	18	278	.....	504	16	130	140	387	247
District of Columbia.....	1909	6	75	10	6	59	27	134	4	40	47	128	81
	1904	6	59	6	1	52	57	50	2	25	22	75	53
	1899	5	.....	.....	1	42	.....	42	1	19	17	54	37
Florida.....	1909	39	309	51	28	230	354	427	20	136	210	453	243
	1904	31	247	42	9	196	169	222	6	102	124	344	220
	1899	31	.....	.....	3	131	.....	131	2	56	91	198	107
Georgia.....	1909	83	1,252	81	112	1,059	1,353	2,220	128	489	1,367	2,560	1,193
	1904	75	1,293	91	87	1,115	1,110	1,509	97	426	1,232	2,303	1,081
	1899	104	.....	.....	39	808	.....	825	31	257	534	1,317	783
Illinois.....	1909	325	6,746	349	545	5,852	9,684	17,859	644	3,588	9,479	16,831	7,352
	1904	324	5,981	361	465	5,155	7,293	12,005	534	2,778	5,740	11,392	5,046
	1899	361	.....	.....	345	4,345	.....	8,880	350	2,114	4,353	9,002	4,649
Indiana.....	1909	221	10,100	211	1,022	8,867	13,790	29,110	1,295	4,355	12,458	21,655	9,197
	1904	252	10,601	257	938	9,406	13,352	25,879	952	4,184	10,869	19,259	8,390
	1899	323	.....	.....	707	8,714	.....	19,793	683	3,525	8,553	15,811	7,258
Iowa.....	1909	119	1,823	158	229	1,441	2,387	4,468	232	828	2,748	4,786	2,038
	1904	113	1,632	137	197	1,298	1,915	3,302	194	602	1,684	3,371	1,687
	1899	124	.....	.....	163	1,711	.....	4,033	121	712	1,947	3,983	2,041
Kansas.....	1909	46	322	59	17	246	266	439	15	134	245	530	285
	1904	38	279	53	12	214	96	324	9	105	117	321	204
	1899	31	.....	.....	18	161	.....	173	10	68	99	243	144
Kentucky.....	1909	161	3,263	171	315	2,777	6,617	7,759	322	1,164	2,713	5,141	2,428
	1904	131	3,119	133	252	2,734	4,971	5,309	252	1,104	2,814	5,505	2,691
	1899	160	.....	.....	164	2,247	.....	3,734	159	809	1,922	3,664	1,742
Louisiana.....	1909	40	427	45	24	358	568	407	22	196	206	529	323
	1904	40	350	46	11	293	220	237	11	159	151	436	285
	1899	41	.....	.....	13	235	.....	260	8	119	128	360	232
Maine.....	1909	150	667	168	27	472	1,121	1,004	24	257	397	966	569
	1904	158	659	186	14	459	790	692	11	247	400	956	556
	1899	151	.....	.....	17	344	.....	612	11	175	278	720	442
Maryland.....	1909	126	960	154	49	757	879	1,192	45	372	541	1,330	789
	1904	119	1,153	160	52	946	985	1,219	37	415	698	1,488	787
	1899	115	.....	.....	33	769	.....	777	25	294	385	991	606
Massachusetts.....	1909	177	1,857	205	113	1,539	2,088	2,824	109	936	1,282	3,185	1,603
	1904	305	3,040	369	141	2,530	2,807	4,494	133	1,541	2,030	4,922	2,892
	1899	349	.....	.....	154	3,271	.....	5,965	131	1,703	2,803	6,289	3,486
Michigan.....	1909	212	4,707	240	433	4,034	6,362	10,189	532	2,240	5,262	10,159	4,897
	1904	213	7,231	233	593	6,400	8,411	11,302	533	3,053	8,440	14,589	6,449
	1899	271	.....	.....	450	6,111	.....	8,916	399	2,514	7,550	12,887	5,337

<sup>1</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>2</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.

# THE CARRIAGE AND WAGON INDUSTRY.

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CARRIAGES AND WAGONS AND MATERIALS—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899—Contd.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
			Expressed in thousands.										
Minnesota.....	1909	134	1,108	154	86	868	1,657	\$2,331	\$102	\$529	\$983	\$2,175	\$1,192
	1904	141	1,180	175	82	923	1,825	2,224	83	454	867	1,863	1,001
	1899	181			54	1,167		1,924	59	487	964	2,108	1,144
Mississippi.....	1909	41	454	50	39	365	1,350	649	41	154	274	642	368
	1904	24	375	24	33	318	1,003	473	31	132	213	494	281
	1899	30			9	228	211	183	7	88	131	302	171
Missouri.....	1909	243	3,940	277	361	3,302	5,858	7,883	459	1,781	4,860	8,469	3,609
	1904	248	3,765	293	309	3,163	3,431	5,756	347	1,726	4,261	7,678	3,417
	1899	378			222	2,989		4,887	247	1,471	3,122	6,440	3,324
Montana.....	1909	4	34	2	4	28	10	68	5	32	29	79	50
	1904	6	37	8	6	23	21	60	6	20	37	107	70
	1899	7			4	30		64	4	31	32	101	69
Nebraska.....	1909	22	247	23	24	200	224	459	20	131	251	577	326
	1904	20	188	27	11	150	101	212	9	87	128	318	190
	1899	29	197	62	11	124		134	9	67	90	247	157
New Hampshire.....	1909	44	493	44	29	420	1,231	1,067	31	240	346	734	388
	1904	48	603	53	29	521	1,253	1,141	31	297	291	754	493
	1899	59			33	616		1,261	31	320	349	906	557
New Jersey.....	1909	256	1,080	301	78	1,601	1,645	2,973	83	1,019	1,280	3,250	1,970
	1904	213	2,338	247	105	1,986	1,631	2,998	116	1,116	1,349	3,400	2,111
	1899	258			112	2,117		3,250	109	1,031	1,612	3,016	2,304
New York.....	1909	610	7,333	693	524	6,116	10,029	14,576	731	3,740	5,809	13,293	7,484
	1904	635	9,234	756	587	7,891	8,524	15,896	716	4,406	6,201	14,644	8,443
	1899	784			505	7,490		14,647	539	4,009	5,913	14,033	8,089
North Carolina.....	1909	138	1,922	160	135	1,629	9,110	3,168	150	603	1,894	3,283	1,389
	1904	125	1,597	160	64	1,373	1,310	2,010	60	482	1,229	2,304	1,075
	1899	157			29	800		861	19	236	521	1,055	534
Ohio.....	1909	407	10,350	414	1,121	8,815	14,771	20,398	1,282	4,647	11,414	21,949	10,535
	1904	456	12,555	495	1,033	11,027	16,936	19,295	1,069	5,269	12,856	24,003	11,147
	1899	558			954	11,658		17,235	842	5,020	12,181	22,808	10,622
Oklahoma.....	1909	19	153	22	13	123	319	172	12	72	81	233	152
	1904	8	52	8	1	43	15	54	1	23	26	67	41
	1899	7				27		24		9	11	37	28
Oregon.....	1909	15	84	16	6	62	52	65	7	55	68	193	125
	1904	17	84	17	4	63	100	102	1	42	54	135	81
	1899	19			2	50		70	(*)	35	43	113	70
Pennsylvania.....	1909	655	8,757	781	478	7,498	11,544	14,365	500	3,861	5,707	12,748	7,041
	1904	656	8,689	825	403	7,461	9,197	12,368	397	3,647	4,902	11,493	6,591
	1899	797			318	6,399		10,684	296	3,070	4,246	10,455	6,209
Rhode Island.....	1909	40	296	39	19	238	387	408	15	152	163	422	259
	1904	30	269	33	8	228	158	329	7	140	117	370	253
	1899	52			12	294		366	9	173	190	529	339
South Carolina.....	1909	23	317	25	20	272	272	453	25	104	244	464	220
	1904	38	404	42	16	346	320	502	20	118	290	548	258
	1899	56			14	340		314	12	91	206	414	208
South Dakota.....	1909	10	64	10	6	48	94	133	4	38	60	131	71
	1904	3	23	2	2	19	16	54	2	13	10	31	21
	1899	9				25		41		14	20	49	29
Tennessee.....	1909	120	1,992	180	135	1,706	4,537	3,006	160	693	1,439	3,040	1,601
	1904	97	2,148	109	150	1,889	4,408	2,617	158	759	1,668	3,278	1,610
	1899	95			77	1,157		1,138	71	395	779	1,692	913
Texas.....	1909	50	522	54	56	412	374	941	63	267	319	830	511
	1904	34	261	41	9	211	118	286	9	124	130	368	238
	1899	58			8	290		386	7	159	180	506	326
Vermont.....	1909	38	140	45	1	94	429	222	(*)	50	58	158	100
	1904	32	155	46	1	108	324	214	1	59	55	104	109
	1899	57			3	186		316	1	91	98	285	187
Virginia.....	1909	130	1,009	142	138	1,329	2,032	3,029	137	529	1,288	2,485	1,202
	1904	102	1,540	121	87	1,332	1,735	2,078	75	473	1,196	2,292	1,096
	1899	150			42	964		1,373	37	371	694	1,586	892
Washington.....	1909	37	317	46	30	241	254	538	33	203	319	720	401
	1904	25	249	36	12	201	130	230	11	168	188	482	294
	1899	25			8	132		98	9	89	110	283	173
West Virginia.....	1909	51	446	62	37	347	893	671	41	180	318	675	357
	1904	38	383	43	29	311	1,117	493	30	155	300	639	339
	1899	53			15	312		437	13	133	210	496	280
Wisconsin.....	1909	286	4,044	338	269	3,437	6,426	13,706	382	1,930	5,163	8,899	3,736
	1904	330	4,361	410	269	3,682	5,374	10,135	296	1,811	4,092	8,059	3,997
	1899	381			228	3,477		8,455	254	1,046	3,413	7,034	3,621
All other states.....	1909	19	89	22	3	64	96	132	3	51	70	164	94
	1904	26	189	28	15	146	406	202	15	75	119	270	151
	1899	45			22	167		200	11	79	134	309	175

\* Excluding statistics for one establishment, to avoid disclosure of individual operations.  
 † Excluding statistics for two establishments, to avoid disclosure of individual operations.  
 ‡ Less than \$500.

MANUFACTURES.

CARRIAGES AND WAGONS AND MATERIALS—

Table 20		PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.
STATE.	Number of establishments.	Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.				
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female.			
								Maximum month.	Minimum month.								
1	United States .....	5,492	82,944	6,213	2,631	2,991	1,181	69,928	My 73,240	Ja 66,567	72,783	71,104	1,126	546	7	126,032	
2	Alabama .....	35	508	40	22	18	4	424	Oc 441	Au 402	431	421		10		991	
3	Arkansas .....	58	1,126	63	55	28	7	973	Se 1,096	Ja 837	1,114	1,101		13		3,749	
4	California .....	155	1,015	185	42	12	10	760	Je 821	Ja 677	741	733		8		957	
5	Colorado .....	21	158	25	6	3		124	Jy 142	Ja <sup>1</sup> 108	108	108				125	
6	Connecticut .....	92	720	99	23	12	8	578	My 641	Ja 521	547	545	2			957	
7	Delaware .....	25	208	29	9	5	2	163	My <sup>1</sup> 178	De 146	140	144	1	1		204	
8	District of Columbia .....	6	75	10	4	1		59	Se 71	Fe 47	52	52				27	
9	Florida .....	39	309	51	15	11	2	230	Je 243	De 214	238	230		8		354	
10	Georgia .....	83	1,252	81	49	59	4	1,059	De 1,228	Ja 953	1,228	1,186	4	38		1,353	
11	Illinois .....	325	6,746	349	188	260	97	5,852	My 6,099	Ja 5,345	6,094	5,975	106	13		9,634	
12	Indiana .....	221	10,100	211	276	516	230	8,867	Mh 9,429	Oc 8,283	8,974	8,597	272	105		13,790	
13	Iowa .....	119	1,828	158	65	120	44	1,441	Ap 1,559	No 1,203	1,349	1,326	21	2		2,387	
14	Kansas .....	46	322	59	6	6		246	Je 209	De 218	223	221	1	1		266	
15	Kentucky .....	161	3,263	171	128	142	45	2,777	Ap 2,613	No 2,642	2,868	2,747	109	11	1	6,617	
16	Louisiana .....	40	427	45	14	8	2	358	De 379	Je 340	379	378		1		568	
17	Maine .....	150	667	168	14	10	3	472	Fe <sup>1</sup> 526	Au 388	507	507				1,121	
18	Maryland .....	126	960	154	31	12	6	757	Ap 796	No 712	748	739		9		879	
19	Massachusetts .....	177	1,857	205	44	35	34	1,530	My 1,720	De 1,382	1,458	1,441	15	2		2,038	
20	Michigan .....	212	4,707	240	121	209	103	4,034	Ap 4,347	Au 3,512	4,349	4,270	75	4		6,362	
21	Minnesota .....	134	1,108	154	42	29	15	868	My 918	Ja 818	893	888	5			1,657	
22	Mississippi .....	41	454	50	20	18	1	365	No 420	Mh 308	1,489	1,488		1		1,350	
23	Missouri .....	243	3,940	277	166	145	50	3,302	Ap 3,548	Ja 3,035	3,245	3,162	71	11	1	5,858	
24	Montana .....	4	34	2	2	2		28	Je 34	Fe 23	24	24				19	
25	Nebraska .....	22	247	23	6	11	7	200	Ap 221	Ja 178	187	186	1			224	
26	New Hampshire .....	44	493	44	14	10	5	420	Ap 437	Au 400	437	435	2			1,231	
27	New Jersey .....	256	1,980	301	37	32	9	1,601	Au 1,655	Ja 1,497	1,632	1,630	1	1		1,645	
28	New York .....	610	7,333	693	192	257	75	6,116	My 6,384	Se 5,925	6,206	6,101	105			10,029	
29	North Carolina .....	133	1,922	160	75	44	14	1,629	De 1,750	Ja 1,536	1,756	1,671	8	74	3	9,110	
30	North Dakota .....	3	12	3				9	Mh <sup>1</sup> 10	Jy <sup>1</sup> 8	10	10				14	
31	Ohio .....	407	10,350	414	437	447	237	8,815	My 9,566	Au 7,944	9,051	8,757	241	52	1	14,771	
32	Oklahoma .....	19	158	22	8	4	1	123	Jy 134	Ja 114	121	121				319	
33	Oregon .....	15	84	16	4	2		62	Jy 65	Fe 57	62	62				52	
34	Pennsylvania .....	655	8,757	781	193	226	59	7,498	Je 7,932	Ja 7,188	7,455	7,338	33	84		11,544	
35	Rhode Island .....	40	296	39	10	2	7	238	Mh 262	Ja 214	220	217	1	2		387	
36	South Carolina .....	23	317	25	9	8	3	272	De 291	Au 245	291	258	5	23		272	
37	South Dakota .....	10	64	10	3	2	1	48	De 60	Fe 42	60	60				94	
38	Tennessee .....	129	1,992	150	82	38	16	1,706	No 1,833	Ja 1,555	1,892	1,875	4	13		4,537	
39	Texas .....	50	522	54	20	35	1	412	Ap 441	Ja 382	398	390	3	5		374	
40	Vermont .....	38	140	45		1		94	Fe 98	Au 91	97	96		1		499	
41	Virginia .....	130	1,609	142	68	57	13	1,329	My 1,392	Ja 1,225	1,410	1,383	7	19	1	2,032	
42	Washington .....	37	317	46	22	5	3	241	Au 285	Fe 209	223	223				254	
43	West Virginia .....	51	446	62	22	8	7	347	My 373	Au 331	362	357	1	4		893	
44	Wisconsin .....	286	4,044	338	84	142	43	3,457	Oc 3,561	Ja 3,230	3,650	3,594	32	24		6,428	
45	Wyoming .....	10	22	14				8	Mh <sup>1</sup> 9	Je <sup>1</sup> 6	9	9				10	
46	All other states <sup>2</sup> .....	6	55	5	3			47			49	48		1		72	

<sup>1</sup> Same number reported for one or more other months.

# THE CARRIAGE AND WAGON INDUSTRY.

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DETAILED STATISTICS, BY STATES: 1909.

	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).	
	Capital.	Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.			Other.
1	\$175,473,728	\$139,176,014	\$4,506,871	\$3,453,336	\$37,594,919	\$1,771,984	\$80,179,304	\$1,195,640	\$901,237	\$253,512	\$9,319,211	\$159,892,547	\$77,941,259
2	751,944	605,045	26,324	18,469	194,087	10,422	292,609	12,718	5,120	1,456	43,840	683,880	350,849
3	1,823,299	1,433,090	63,079	28,142	404,881	9,146	810,510	6,837	10,301	5,547	94,047	1,664,407	844,811
4	1,635,359	1,681,714	57,312	16,592	609,720	45,633	803,433	61,348	9,008	11,303	67,305	2,052,434	1,203,368
5	160,264	196,393	6,080	2,016	87,891	3,635	81,515	7,155	1,743	166	6,392	260,295	174,845
6	1,225,850	873,724	28,664	12,780	371,838	19,018	933,623	15,758	6,661	15,655	39,727	1,076,582	693,941
7	432,551	234,136	9,366	3,162	81,387	3,472	120,585	3,977	2,236	-----	9,951	290,113	166,056
8	133,720	95,120	2,882	1,084	40,831	924	46,079	1,820	523	-----	1,477	128,107	81,104
9	426,610	406,988	18,348	11,146	135,965	5,068	205,207	10,980	3,365	-----	17,209	452,599	242,324
10	2,219,901	2,162,620	75,734	51,867	489,036	21,365	1,346,037	21,960	16,705	30	139,886	2,500,031	1,192,629
11	17,858,788	14,810,098	343,145	300,393	3,588,016	182,268	9,297,067	105,562	85,148	4,865	903,694	16,831,283	7,351,948
12	29,110,185	19,437,036	695,411	599,627	4,354,584	207,322	12,250,401	23,548	103,075	10,007	1,193,061	21,655,440	9,197,717
13	4,468,233	4,123,887	111,875	120,089	827,785	42,272	2,705,239	24,671	31,988	15,116	244,852	4,786,321	2,038,810
14	438,815	447,561	6,900	7,884	133,863	5,490	239,338	5,005	4,319	375	43,781	530,483	285,649
15	7,759,088	4,627,490	189,725	132,592	1,163,685	55,815	2,656,691	16,238	42,008	4,474	366,262	5,141,107	2,428,601
16	407,273	450,727	15,100	6,806	196,281	8,225	197,793	6,012	1,505	-----	19,005	528,757	322,739
17	1,003,664	718,346	15,559	7,969	257,293	16,097	381,061	8,701	5,446	5,513	20,407	966,093	508,935
18	1,191,906	1,032,974	36,784	8,546	372,416	15,048	526,130	19,434	7,661	3,382	43,573	1,350,068	785,890
19	2,823,051	2,583,858	60,578	48,224	985,994	50,227	1,231,554	53,415	23,208	8,218	122,340	3,184,835	1,903,054
20	10,188,595	9,037,490	268,312	263,898	2,239,979	102,417	5,159,839	20,507	66,374	4,722	911,248	10,158,883	4,896,627
21	2,331,060	1,752,539	65,737	36,601	529,317	32,177	950,821	20,274	15,295	745	101,572	2,174,705	1,191,707
22	648,506	535,943	22,189	19,265	154,105	5,539	268,205	3,100	3,850	16,500	43,160	641,957	368,213
23	7,883,062	7,646,070	284,126	175,184	1,780,649	62,083	4,797,747	103,010	32,782	8,675	401,814	8,468,856	3,609,626
24	67,653	68,932	2,400	2,200	31,514	1,483	27,504	960	1,053	-----	1,818	78,669	49,682
25	459,187	427,495	6,819	13,660	130,589	6,345	244,825	4,322	2,253	300	18,382	576,918	325,748
26	1,066,747	665,258	19,960	11,364	239,898	13,359	332,211	6,597	6,900	925	34,044	733,755	388,185
27	2,973,362	2,573,416	57,394	25,110	1,018,617	43,053	1,236,706	44,966	16,778	3,321	127,471	3,250,456	1,970,697
28	14,576,400	11,359,828	376,948	354,079	3,739,940	172,032	5,636,686	239,547	72,991	38,658	728,017	13,292,531	7,483,813
29	3,168,231	2,830,604	100,358	49,358	602,527	27,384	1,866,122	10,521	22,990	4,298	147,046	3,282,694	1,350,128
30	23,685	15,165	-----	-----	6,940	787	6,700	-----	168	-----	570	18,885	11,898
31	20,397,675	19,320,042	726,241	555,688	4,647,200	211,381	11,202,620	125,421	119,657	22,129	1,709,705	21,940,459	10,535,458
32	172,487	184,715	10,000	2,410	72,481	3,382	77,492	6,340	1,542	10	11,058	232,880	152,006
33	64,965	146,059	6,000	1,200	55,473	3,851	64,398	11,050	354	-----	3,733	192,659	124,410
34	14,364,549	10,889,903	283,212	217,105	3,861,336	181,008	5,526,017	88,121	53,045	14,957	665,102	12,748,353	7,041,358
35	408,410	347,504	10,546	4,386	151,721	7,672	155,495	4,222	2,416	475	10,571	421,913	258,746
36	453,150	412,481	12,565	12,428	104,025	4,026	240,354	3,076	3,112	-----	32,865	463,566	219,186
37	133,121	108,348	2,900	1,380	37,952	3,824	56,499	70	1,215	13	4,495	131,384	71,061
38	3,005,864	2,541,308	114,980	44,563	693,307	22,549	1,416,877	22,021	15,893	40,313	170,805	3,039,013	1,600,187
39	940,529	700,069	36,496	26,829	267,071	12,415	306,768	14,855	5,211	70	30,354	829,726	510,543
40	222,257	114,605	312	50,097	3,654	54,067	921	1,468	742	3,344	158,200	222,257	100,479
41	3,028,729	2,145,690	90,153	46,620	529,313	23,176	1,200,104	15,951	15,838	7,564	156,080	2,485,221	1,201,941
42	538,026	506,646	28,118	4,564	202,601	14,844	304,297	20,888	3,582	531	17,241	720,054	400,913
43	670,757	568,719	30,010	10,594	180,090	7,113	310,971	8,869	3,234	-----	17,829	675,478	357,394
44	13,706,422	8,147,998	184,431	197,150	1,929,904	101,389	5,061,210	11,852	72,248	2,027	587,787	8,899,171	3,786,572
45	32,740	21,239	-----	-----	7,978	577	21,838	360	201	-----	285	41,624	19,209
46	76,460	87,326	3,480	-----	35,733	2,711	38,059	2,400	707	-----	4,236	102,072	61,302

\* All other states embrace: Arizona, 1 establishment; Idaho, 1; New Mexico, 2; Utah, 2.