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FOURTEENTH CENSUS OF THE UNITED STATES
MANUFACTURES: 1919

THE RUBBER INDUSTRY

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or for which products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1919, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city, county, or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city, county, or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Classification by industries.—The establishments were assigned to the several classes of industries according to their products of chief value. The products reported for a given industry may thus, on the one hand, include minor products different from those covered by the class designation, and, on the other hand, may not represent the total product covered by this designation, because some products of this class may be made in establishments in which it is not the product of chief value.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1919 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners.

The number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date did not portray such conditions, an earlier date was requested.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, by sex, without distinction of age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The number of wage earners reported for the representative day, though given in certain tables for each separate industry, is not totaled for all industries combined, because, in view of the variations of date, such a total is not believed to be significant. It would involve more or less duplication of persons working in different industries at different times, would not represent the total number employed in all industries at any one time, and would give an undue weight to seasonal industries as compared with industries in continual operation.

In order to determine as nearly as possible the age distribution of the average number of wage earners for an industry, the per cent distribution by age of the wage earners for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. The percentages thus obtained have been applied to the average number of wage earners for the year to determine the average numbers 16 years and over, and under 16, employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calcu-

late accurately even so simple an average as this, since the number of wage earners fluctuates from month to month in every industry, and in some cases to a very great extent. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month, and while representing the number according to the pay rolls to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital (amount actually invested).—The instructions on the schedule for securing data relating to capital were as follows:

"The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises."

These instructions were identical with those employed at the censuses of 1914 and 1900. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include certain Federal taxes and state, county, and local taxes. Under "Federal taxes" there are included the internal revenue tax on manufactures (tobacco, beverages, etc.), excise taxes when included in values reported for products, corporation capital stock tax, and corporation income tax, but not the income tax for individuals and partners.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not always a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry, from a manufacturing standpoint, is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power equipment of the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, fuel oils, gasoline and other volatile oils, and gas, and represent the quantity used during the year. As only the principal kinds of fuel are shown, comparison as to the total cost of all fuel is impracticable.

THE RUBBER INDUSTRY.

GENERAL STATISTICS.

General character of the industry.—This report presents statistics for establishments engaged primarily in the manufacture of rubber goods or products in which rubber is the principal material. The reports received were classified into three groups: (1) Establishments whose principal products were rubber belting and hose; (2) establishments making rubber boots and shoes; and (3) establishments engaged primarily in the manufacture of rubber tires, tubes, and other rubber goods.

Rubber products were also manufactured by establishments engaged primarily in the manufacture of other products to the value of \$9,134,403 in 1919, and \$752,503 in 1914.

Importance and growth of the industry.—Table 1 summarizes the statistics for each census since 1879, with percentages of increase for each five-year period. With few exceptions, increases are noticeable at each succeeding census. The exceptionally large increases, however, from 1914 to 1919, in salaries and wages, cost of materials, and value of products, are due largely to a general rise of prices and wages following the World War, and do not, therefore, fairly measure the growth of the industry for that period. A truer index of the growth of the industry is found in the increase of the average number of wage earners, and the primary horsepower. The addition of the Federal income tax since 1914 will account for the increase in "Rent and taxes." "Contract work" or work performed by employees other than those in the plants reporting, has little significance, since it represents merely the methods of manufacture used by establishments, which vary from year to year.

States, ranked by value of products.—Ohio, as shown by Table 2, is preeminently the leading state in the manufacture of rubber goods. It has been in this position for the last several censuses. In 1919, this state reported 48.5 per cent of the total value of products and 40.2 per cent of the total number of wage earners. Massachusetts, second in importance, contributed only 13.3 per cent and 15.7 per cent, respectively, of these two items. Although 30 states reported rubber manufactures, the industry has become centralized in Ohio, Massachusetts, New Jersey, Connecticut, Michigan, Pennsylvania, Wisconsin, New York, Indiana, and Rhode Island, named in the order of their rank by value of products. Combined, these 10 states produced 96.6 per cent of the total value of

products for the industry in 1919 and employed 96.2 per cent of the total average number of wage earners.

Persons engaged in the industry.—The classification by sex, for 1919, was reported separately, but for 1914 and 1909, was obtained in the same manner as the distribution by age. The age classification of the average number of wage earners in Table 3 is an estimate obtained by the method described in the "Explanation of terms." Figures by states will be found in Table 16.

Wage earners, by months.—The statistics for wage earners in Table 4 shows the regularity or irregularity of employment, in accordance with the existing industrial conditions during the Census year reported. The number employed in the industry during 1919, month by month, ranged from a maximum of 173,824 in October, to a minimum of 144,931 in January, the minimum number being equivalent to 83.4 per cent of the maximum. Figures for the principal states are shown separately for belting and hose, boots and shoes, and tires, tubes, and other rubber goods, while for the United States the number of males and females is also shown separately for 1919.

Prevailing hours of labor.—Table 5 shows a marked shortening of the working day for the industry since 1914. In that year only 17.8 per cent were reported as employed fewer than 54 hours per week, as against 82.7 per cent in 1919. In 1914 the "60" and "Over 60" groups constituted 6.9 per cent of the total wage earners, as compared with 3.7 per cent in 1919.

Size of establishments, by average number of wage earners.—Analysis of Table 6 discloses the significant fact that 181 establishments, or 37.9 per cent of the total number, employed fewer than 21 wage earners each, while only 1,361, or nine-tenths of one per cent, of the total number of wage earners were employed therein. On the other hand the class "over 1,000" wage earners, comprising 35 establishments, employed 109,101 wage earners, or 68.8 per cent of the total average number, illustrating the extent of manufacturing operations in a few large establishments.

Size of establishments, by value of products.—At the census of 1909 and 1914, establishments with products valued at \$100,000 to \$1,000,000 constituted one group, but at the census of 1919 this group was subdivided into groups of \$100,000 to \$500,000 and \$500,000 to \$1,000,000. Separate figures for the number of establishments and value of products have been com-

piled, however, from the returns for 1914. Table 7, therefore, gives combined figures for these two groups in the case of all items for 1909, and in the case of the average number of wage earners and the value added by manufacture for 1914. The statistics in the table show the degree of concentration of production in large establishments. In 1919 the group "\$1,000,000 and over," included 137 establishments, or 28.7 per cent of the total number for the industry; employed 145,665 wage earners, or 91.9 per cent of the total average number; and reported products to the value of \$1,070,086,951, or 94.0 per cent of the total value.

Character of ownership.—Table 8 emphasizes the predominance of the corporate form of ownership. Corporations owned 85.3 per cent of the total number of establishments for the industry in 1919; employed 99.5 per cent of the total average number of wage earners; and reported 99.5 per cent of the total value of products. During the five year period, 1914 to 1919, the average number of wage earners employed by corporations increased by 84,764, or 116.1 per cent;

and the value of products by \$835,019,019, or 280.3 per cent.

Number and horsepower of types of prime movers.—From 1914 to 1919, as shown by Table 9, there was an increase in the total horsepower for the industry of 230,344 horsepower or 115.4 per cent, due in a large measure to rented power which increased by 159,677 horsepower or 465.7 per cent. Owned power during the period increased by 70,667 horsepower or 42.7 per cent.

Fuel consumed.—Table 10 shows the principal kinds of fuel used for the industry in 1919 and 1914. The principal fuel consumed in this industry is coal. In the consumption of anthracite coal New Jersey was the leading state, while in the consumption of bituminous coal Ohio ranked first, followed by New Jersey and Massachusetts. In the consumption of fuel oil Rhode Island was the leading state, followed by Ohio and New Jersey. Ohio was the only state that reported the consumption of any considerable quantity of gas.

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TABLE 1.—COMPARATIVE SUMMARY: 1919, 1914, 1909, 1904, 1899, 1889, AND 1879.

	1919	1914	1909	1904	1899	1889	1879	PER CENT OF INCREASE. ¹					
								1914-1919	1909-1914	1904-1909	1899-1904	1889-1899	1879-1889
RUBBER GOODS—ALL BRANCHES. ²													
Number of establishments.....	477	342	267	265	301	167	104	39.5	28.1	0.8	-12.0	80.2	60.6
Persons engaged in the industry.....	206,202	88,821	56,059	47,676	(*)	(*)	(*)	132.2	58.4	17.6	.....	.....	.....
Proprietors and firm members.....	98	87	103	105	(*)	(*)	(*)	.....	-15.5	-1.9	.....	.....	.....
Salaried employees.....	47,555	14,712	6,692	3,698	2,505	859	(*)	223.2	119.8	81.0	47.6	191.6	.....
Wage earners (average number).....	158,549	74,022	49,264	43,873	36,566	20,152	11,789	114.2	50.3	12.3	20.0	81.5	70.9
Primary horsepower.....	420,887	199,543	122,436	86,808	71,169	27,125	(*)	115.4	63.0	41.0	22.0	132.4	.....
Capital.....	\$960,070,726	\$267,671,422	\$162,144,564	\$98,979,636	\$78,463,771	\$36,764,825	\$8,974,187	258.7	65.1	63.8	26.1	113.4	303.7
Salaries and wages.....	278,991,545	60,445,980	32,977,076	24,623,078	18,575,728	9,526,909	4,051,431	361.6	83.3	33.9	32.6	95.0	135.1
Salaries.....	85,228,456	16,278,578	7,840,700	4,538,912	3,149,155	(*)	(*)	423.6	107.6	72.7	44.1	.....	.....
Wages.....	193,763,089	44,167,402	25,136,376	20,084,166	15,426,573	(*)	(*)	338.7	75.7	25.2	30.2	.....	.....
Paid for contract work.....	3,676,318	408,851	25,099	76,188	62,861	(*)	(*)	709.8	1,529.0	-67.1	21.2	.....	.....
Rent and taxes (including internal revenue).....	44,445,822	2,226,322	851,213	4,643,127	4,653,321	(*)	(*)	1,896.4	161.5	.....	.....	.....	.....
Cost of materials.....	594,343,590	103,034,713	122,745,102	80,002,476	60,240,559	26,243,853	16,527,220	264.6	32.8	53.4	32.8	129.5	58.8
Value of products.....	1,138,216,019	300,993,796	197,394,038	148,015,391	99,880,693	42,853,817	25,303,648	278.2	52.5	33.4	48.2	133.1	69.3
Value added by manufacture ³	513,872,429	137,959,083	74,649,536	68,012,915	39,640,134	16,609,964	8,782,428	294.2	84.8	9.8	71.6	133.7	89.1
RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS. ²													
Number of establishments.....	437	301	227	224	261	139	93	45.2	32.6	1.3	-14.2	87.8	.....
Persons engaged in the industry.....	160,824	62,257	31,284	23,651	(*)	(*)	(*)	158.3	99.0	32.3	.....	.....	.....
Proprietors and firm members.....	97	85	102	103	(*)	(*)	(*)	.....	-16.7	-1.0	.....	.....	.....
Salaried employees.....	40,879	11,952	4,661	2,364	1,825	619	(*)	242.0	156.4	97.2	29.5	194.8	.....
Wage earners (average number).....	119,848	50,220	26,521	21,184	20,404	9,183	6,763	133.6	89.4	25.2	3.8	122.2	35.8
Primary horsepower.....	354,188	151,927	70,062	48,381	40,835	12,640	(*)	133.1	92.2	63.4	18.5	223.1	.....
Capital.....	\$782,637,722	\$199,183,033	\$98,507,228	\$16,297,537	\$39,302,353	\$13,709,787	\$9,284,187	292.9	102.2	112.8	17.8	186.8	118.1
Salaries and wages.....	231,756,285	43,905,632	19,525,061	12,269,631	10,297,400	4,516,266	2,450,672	427.0	124.9	59.1	19.2	128.0	84.3
Salaries.....	74,949,457	12,626,877	5,406,113	2,857,263	2,215,597	(*)	(*)	493.6	133.6	89.2	29.0	.....	.....
Wages.....	156,806,828	31,278,755	14,119,848	9,412,368	8,081,803	(*)	(*)	401.3	121.5	50.0	16.5	.....	.....
Paid for contract work.....	3,579,851	368,511	25,099	69,541	56,765	(*)	(*)	871.4	1,398.2	-63.9	22.5	.....	.....
Rent and taxes (including internal revenue).....	40,201,301	1,715,086	505,904	4,415,089	4,403,009	(*)	(*)	2,243.2	239.1	.....	.....	.....	.....
Cost of materials.....	525,086,309	126,111,073	82,191,821	38,912,226	33,482,314	11,113,628	9,641,167	316.8	53.4	111.2	16.2	201.3	15.3
Value of products.....	987,085,015	223,010,784	128,435,747	92,965,909	52,621,580	18,708,917	14,518,924	341.4	74.1	103.6	19.7	181.3	28.9
Value added by manufacture ³	461,401,736	97,400,111	46,243,926	24,083,683	19,139,516	7,595,389	4,877,757	373.2	110.8	92.0	25.8	152.0	55.7
BOOTS AND SHOES, RUBBER.													
Number of establishments.....	25	23	22	22	22	11	9	86.3	7.7	-4.6	33.2	.....	.....
Persons engaged in the industry.....	37,929	20,359	18,899	10,815	14,877	(*)	(*)	.....	.....	.....	.....	.....	.....
Proprietors and firm members.....	1	2	1	2	3	(*)	(*)	.....	.....	.....	.....	.....	.....
Salaried employees.....	5,053	1,670	1,287	822	483	130	(*)	202.6	29.8	56.6	70.2	271.5	.....
Wage earners (average number).....	32,875	18,687	17,612	18,991	14,391	9,134	4,662	75.9	6.1	-7.3	32.0	57.6	95.9
Primary horsepower.....	40,400	24,621	25,903	26,084	25,017	9,543	(*)	100.6	-4.9	-0.7	4.3	102.2	.....
Capital.....	\$131,513,436	\$16,051,404	\$43,905,368	\$39,441,826	\$33,667,533	\$17,790,970	\$2,425,000	185.6	4.9	11.3	17.2	89.2	633.6
Salaries and wages.....	38,284,110	11,944,733	9,958,995	9,740,807	7,023,818	3,966,876	1,469,038	220.5	19.9	2.2	35.7	77.1	170.1
Salaries.....	7,401,388	1,958,279	1,414,743	874,001	597,239	(*)	(*)	278.0	38.4	61.9	46.3	.....	.....
Wages.....	30,882,722	9,986,454	8,544,252	8,866,806	6,426,579	(*)	(*)	209.2	16.9	-3.6	38.0	.....	.....
Paid for contract work.....	96,407	39,140	.....	5,132	(*)	(*)	(*)	146.5	.....	.....	.....	.....	.....
Rent and taxes (including internal revenue).....	3,080,065	345,078	266,368	4,164,590	4,197,692	(*)	(*)	791.0	29.8	.....	.....	.....	.....
Cost of materials.....	59,346,880	23,956,036	29,577,176	32,000,464	22,682,543	11,650,787	6,023,053	110.2	-19.0	-7.6	41.1	94.7	93.4
Value of products.....	116,917,434	53,822,123	49,720,567	70,065,296	41,089,819	18,632,080	9,705,724	117.2	8.2	-29.0	70.5	120.5	92.0
Value added by manufacture ³	66,570,554	29,806,087	20,143,391	38,064,832	18,407,276	6,981,273	3,682,671	122.9	48.3	-47.1	103.8	163.7	89.6
BELTING AND HOSE, RUBBER.													
Number of establishments.....	15	18	18	19	18	17	2	.....	.....	.....	.....	.....	.....
Persons engaged in the industry.....	7,449	6,205	5,876	4,210	1,971	(*)	(*)	20.0	5.6	33.6	113.6	.....	.....
Proprietors and firm members.....	1	1	1	1	3	(*)	(*)	.....	.....	.....	.....	.....	.....
Salaried employees.....	1,623	1,090	744	512	197	110	(*)	48.8	46.5	45.3	159.9	79.1	.....
Wage earners (average number).....	5,820	5,115	5,131	3,698	1,771	1,835	364	13.9	-0.3	38.8	108.8	-3.5	404.1
Primary horsepower.....	26,209	22,995	17,471	12,343	5,317	4,942	(*)	14.4	31.6	41.5	132.1	7.6	.....
Capital.....	\$15,019,508	\$22,436,922	\$19,731,908	\$13,240,273	\$5,493,885	\$5,270,068	\$265,000	104.7	13.7	49.0	141.0	4.2	1,888.7
Salaries and wages.....	8,951,150	4,595,015	3,492,720	2,612,640	1,254,510	1,043,768	131,721	94.8	31.6	33.7	108.3	20.2	692.4
Salaries.....	2,877,611	1,603,422	1,019,844	807,648	336,319	(*)	(*)	69.9	66.0	26.3	140.1	.....	.....
Wages.....	6,073,539	2,991,593	2,472,876	1,804,992	918,191	(*)	(*)	109.3	17.4	37.0	96.6	.....	.....
Paid for contract work.....	.....	1,200	.....	1,515	6,096	(*)	(*)	.....	.....	.....	-75.1	.....	.....
Rent and taxes (including internal revenue).....	1,164,456	164,958	78,941	4,034,48	4,52,620	(*)	(*)	605.9	109.0	.....	.....	.....	.....
Cost of materials.....	18,310,401	12,967,004	10,976,105	9,089,786	4,075,702	3,479,538	863,000	41.2	18.1	20.8	123.0	17.1	303.2
Value of products.....	34,210,540	23,560,889	19,238,324	14,954,186	6,169,044	5,512,840	1,085,000	45.2	22.5	28.6	142.4	11.9	408.1
Value added by manufacture ³	15,900,139	10,593,885	8,202,219	5,864,400	2,093,342	2,033,302	222,000	50.1	28.2	40.9	180.1	3.0	815.9

¹ A minus sign (-) denotes decrease; percentages are omitted where base is less than 100.

² Figures for 1904, 1899, 1889, and 1879 include data for establishments engaged in the manufacture of elastic woven goods and are not strictly comparable with figures for 1909, 1914, and 1919.

³ Figures not available.

⁴ Exclusive of internal revenue.

⁵ Value of products less cost of materials.

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TABLE 2.—PRINCIPAL STATES, RANKED BY VALUE OF PRODUCTS: 1919.

STATE.	Num-ber of estab-lish-ments	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.			STATE.	Num-ber of estab-lish-ments	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
		Average num-ber.	Per cent dis-trib-ution.	Rank.	Amount (ex-pressed in thou-sands).	Per cent dis-trib-ution.	Rank.	Amount (ex-pressed in thou-sands).	Per cent dis-trib-ution.	Rank.			Average num-ber.	Per cent dis-trib-ution.	Rank.	Amount (ex-pressed in thou-sands).	Per cent dis-trib-ution.	Rank.	Amount (ex-pressed in thou-sands).	Per cent dis-trib-ution.	Rank.
United States.	477	158,549	100.0	....	\$1,138,216	100.0	....	\$543,872	100.0	....	Rhode Island.	10	8,533	5.4	5	\$37,151	3.3	10	\$19,219	3.5	6
Ohio.	97	63,766	40.2	1	552,339	48.5	1	252,329	46.4	1	Illinois.	21	1,196	0.8	11	6,711	0.6	11	3,645	0.7	11
Massachusetts.	58	24,909	15.7	2	151,544	13.3	2	79,065	14.5	2	Iowa.	9	839	0.5	13	6,333	0.6	12	2,614	0.5	14
New Jersey.	72	14,946	9.4	3	97,651	8.6	3	44,859	8.2	3	California.	22	736	0.5	14	6,235	0.6	13	3,393	0.6	12
Connecticut.	26	11,499	7.3	4	56,379	5.0	4	28,019	5.3	5	Missouri.	8	1,014	0.7	12	4,981	0.4	15	2,003	0.4	15
Michigan.	7	5,014	3.2	10	50,318	4.4	5	29,139	5.4	4	Georgia.	3	158	0.1	19	931	0.1	18	274	0.1	20
Pennsylvania.	32	6,406	4.0	6	39,783	3.5	6	18,385	3.4	7	Nebraska.	3	124	0.1	21	930	0.1	19	353	0.1	19
Wisconsin.	9	5,281	3.3	9	39,069	3.4	7	17,865	3.3	9	Texas.	6	57	(1)	24	568	(1)	22	376	(1)	23
New York.	43	6,395	4.0	7	37,541	3.3	8	17,850	3.3	10	Oklahoma.	8	208	(1)	27	208	(1)	25	105	(1)	25
Indiana.	16	6,893	3.7	8	37,270	3.3	9	18,165	3.3	8	All other states.	27	1,787	1.1	....	11,911	1.0	....	5,602	1.0	....

1 Less than one-tenth of 1 per cent.

TABLE 3.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1914, AND 1909.

CLASS.	Cen-sus year.	Total.	Male.	Fe-male.	PER CENT OF TOTAL.		CLASS.	Cen-sus year.	Total.	Male.	Fe-male.	PER CENT OF TOTAL.	
					Male.	Fe-male.						Male.	Fe-male.
RUBBER GOODS—ALL BRANCHES.	1919	206,202	162,945	43,257	79.0	21.0	BOOTS AND SHOES, RUBBER.	1919	37,959	22,347	15,582	58.9	41.1
	1914	88,821	70,716	18,105	79.6	20.4		1914	20,359	12,407	7,952	60.9	39.1
	1909	56,059	42,702	13,357	76.2	23.8		1909	18,899	11,680	7,219	61.8	38.2
Proprietors and officials.	1919	5,110	4,971	145	97.2	2.8	Proprietors and officials.	1919	865	791	74	91.1	8.6
	1914	1,509	1,570	29	98.2	1.8		1914	160	155	5	91.9	3.1
	1909	1,118	1,094	24	97.9	2.1		1909	194	191	3	98.5	1.5
Proprietors and firm members.	1919	98	91	7	92.9	7.1	Proprietors and firm members.	1919	1	1	....	100.0	....
	1914	87	82	5	94.3	5.7		1914	2	2	....	100.0	....
	1909	103	93	10	90.3	9.7		1909	....	....	....	100.0	....
Salaried officers of corporations.	1919	914	897	17	98.1	1.9	Salaried officers of corporations.	1919	69	69	....	100.0	....
	1914	514	503	11	97.9	2.1		1914	44	44	....	100.0	....
	1909	348	344	4	98.9	1.1		1909	44	44	....	100.0	....
Superintendents and managers.	1919	4,104	3,983	121	97.1	2.9	Superintendents and managers.	1919	795	721	74	90.7	9.3
	1914	998	985	13	98.7	1.3		1914	114	109	5	95.6	4.4
	1909	607	597	10	98.5	1.5		1909	150	147	3	98.0	2.0
Clerks and other subordinate sala- ried employees.	1919	42,537	20,299	13,238	68.9	31.1	Clerks and other subordinate sala- ried employees.	1919	4,189	2,599	1,680	59.9	40.1
	1914	13,200	9,900	3,300	75.0	25.0		1914	1,512	1,050	456	69.8	30.2
	1909	5,677	4,256	1,421	75.0	25.0		1909	1,093	813	280	74.4	25.6
Wage earners (average number).	1919	158,549	128,675	29,874	81.2	18.8	Wage earners (average number).	1919	32,875	19,497	13,328	57.9	42.1
	1914	74,022	59,246	14,776	80.0	20.0		1914	18,687	11,193	7,491	59.9	40.1
	1909	49,261	37,352	11,912	75.8	24.2		1909	17,612	10,676	6,935	60.6	39.4
16 years of age and over.	1919	156,891	127,871	29,020	81.5	18.5	16 years of age and over.	1919	31,928	18,660	13,268	58.4	41.6
	1914	73,376	58,907	14,469	80.3	19.7		1914	18,440	11,094	7,346	60.2	39.8
	1909	48,393	36,003	12,390	76.3	23.7		1909	17,162	10,451	6,711	60.9	39.1
Under 16 years of age.	1919	1,658	804	854	48.5	51.5	Under 16 years of age.	1919	947	387	560	40.9	59.1
	1914	640	339	307	52.5	47.5		1914	247	102	145	41.3	58.7
	1909	871	440	422	51.5	48.5		1909	450	225	225	50.0	50.0
RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS.	1919	190,824	184,261	20,563	83.5	16.5	BELTING AND HOSE, RUBBER.	1919	7,449	6,337	1,112	85.1	14.9
	1914	62,257	53,025	9,232	85.2	14.8		1914	6,205	5,284	921	85.2	14.8
	1909	31,284	25,728	5,556	82.2	17.8		1909	5,876	5,294	582	90.1	9.9
Proprietors and officials.	1919	4,112	4,043	69	98.3	7.7	Proprietors and officials.	1919	139	137	2	98.6	1.4
	1914	1,323	1,299	24	98.2	1.8		1914	116	116	....	100.0	....
	1909	830	809	21	97.5	2.5		1909	94	94	....	100.0	....
Proprietors and firm members.	1919	97	90	7	92.8	7.2	Proprietors and firm members.	1919	....	....	....	100.0	....
	1914	85	80	5	94.1	5.9		1914	....	....	....	100.0	....
	1909	102	92	10	90.2	9.8		1909	1	1	....	100.0	....
Salaried officers of corporations.	1919	806	793	13	98.0	2.0	Salaried officers of corporations.	1919	36	35	1	97.2	2.8
	1914	424	413	11	97.4	2.6		1914	46	46	....	100.0	....
	1909	272	268	4	98.5	1.5		1909	32	32	....	100.0	....
Superintendents and managers.	1919	3,206	3,160	46	98.6	1.4	Superintendents and managers.	1919	103	102	1	99.0	1.0
	1914	814	806	8	99.0	1.0		1914	70	70	....	100.0	....
	1909	456	449	7	98.5	1.5		1909	61	61	....	100.0	....
Clerks and other subordinate sala- ried employees.	1919	36,864	25,712	11,152	69.7	30.3	Clerks and other subordinate sala- ried employees.	1919	1,484	1,078	406	72.6	27.4
	1914	10,714	8,088	2,626	75.5	24.5		1914	974	756	218	77.6	22.4
	1909	3,933	2,927	1,006	74.4	25.6		1909	651	516	135	79.3	20.7
Wage earners (average number).	1919	119,848	104,506	15,342	87.2	12.8	Wage earners (average number).	1919	5,820	5,122	704	87.9	12.1
	1914	50,220	43,038	7,182	86.0	13.1		1914	5,115	4,412	703	86.3	13.7
	1909	26,521	21,092	5,429	82.9	17.1		1909	5,131	4,684	447	91.3	8.7
16 years of age and over.	1919	119,193	104,119	15,074	87.4	12.6	16 years of age and over.	1919	5,770	5,092	678	88.2	11.8
	1914	49,837	43,412	6,425	87.1	12.9		1914	5,099	4,401	698	86.3	13.7
	1909	26,137	21,788	4,349	83.4	16.6		1909	5,094	4,604	490	91.8	8.2
Under 16 years of age.	1919	655	387	268	59.1	40.9	Under 16 years of age.	1919	56	30	26	53.6	46.4
	1914	383	220	157	57.0	41.0		1914	16	11	5	68.8	31.2
	1909	384	204	180	53.1	46.9		1909	37	20	17	54.1	45.9

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TABLE 4.—WAGE EARNERS, BY MONTHS, FOR SELECTED STATES: 1919.

[The month of maximum employment is indicated by bold-face figures and that of minimum employment by *italic* figures.]

INDUSTRY, STATE, AND CENSUS YEAR.	Average number employed during year.	NUMBER EMPLOYED ON THE 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
RUBBER GOODS—ALL BRANCHES.														
United States:														
1919.....	158,540	144,931	140,354	148,683	150,259	152,769	154,825	160,358	165,973	166,948	173,824	166,223	168,441	83.4
Males.....	128,675	113,305	118,024	118,861	121,429	124,802	127,211	131,989	137,379	138,098	143,460	133,243	136,299	79.0
Females.....	29,874	31,626	31,330	29,822	28,830	27,967	27,614	28,369	28,594	28,850	30,364	32,980	32,142	83.7
1914.....	74,022	70,590	74,157	77,759	80,967	82,193	78,650	74,148	68,414	70,412	70,441	69,954	70,579	83.2
RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS.														
United States:														
1919.....	119,848	104,075	108,422	110,130	112,712	116,353	119,028	123,540	128,283	129,013	134,423	125,370	126,827	77.4
Males.....	104,508	88,288	93,152	95,430	98,170	102,072	104,536	108,831	113,468	114,046	118,624	107,513	109,942	74.4
Females.....	15,342	15,787	15,270	14,700	14,542	14,281	14,492	14,709	14,815	14,967	15,799	17,857	16,885	80.0
1914.....	50,220	47,201	50,788	54,078	57,317	58,246	54,624	51,414	46,617	46,629	45,881	44,574	45,271	76.5
California.....	513	427	452	458	495	481	480	513	549	572	561	588	590	72.0
Connecticut.....	5,060	4,070	4,728	4,756	4,666	4,874	5,035	5,125	4,952	5,092	5,407	5,585	5,830	80.0
Illinois.....	650	532	603	592	616	594	706	752	688	637	656	729	695	70.7
Indiana.....	2,917	2,020	3,018	3,129	3,064	2,963	2,715	2,708	2,845	2,922	3,006	3,137	2,871	83.7
Iowa.....	839	640	687	700	783	814	844	911	903	958	995	910	903	54.3
Massachusetts.....	9,406	7,728	7,959	8,842	9,517	9,532	9,212	9,353	9,586	9,692	10,115	10,532	10,804	71.5
Michigan.....	5,044	4,184	4,620	4,828	4,587	4,810	4,786	4,983	5,164	5,279	5,505	5,814	5,968	70.1
Missouri.....	621	662	670	580	543	539	621	668	630	607	659	644	629	80.4
New Jersey.....	12,353	11,321	11,885	12,152	11,880	12,204	12,252	12,355	12,485	12,054	13,021	13,259	13,368	84.7
New York.....	5,370	4,776	4,958	4,774	5,019	5,115	5,441	5,387	5,389	5,627	5,673	6,018	6,263	76.2
Ohio.....	63,637	53,904	56,340	56,747	58,382	61,209	63,649	67,157	71,484	71,834	74,720	63,884	64,354	72.1
Pennsylvania.....	4,880	4,385	4,488	4,445	4,713	4,767	4,752	4,916	4,863	5,002	5,315	5,819	5,895	78.4
Rhode Island.....	2,117	2,685	2,123	2,005	2,008	2,028	1,996	2,054	2,121	2,005	2,063	2,165	2,221	71.7
Wisconsin.....	4,557	4,302	4,397	4,466	4,618	4,498	4,451	4,450	4,556	4,657	4,686	4,818	4,785	89.3
BOOTS AND SHOES, RUBBER.														
United States:														
1919.....	32,875	34,591	35,339	33,977	32,455	31,298	30,642	31,304	31,561	31,578	32,953	34,145	34,657	86.7
Males.....	19,047	19,639	20,004	19,479	18,795	18,231	18,098	18,308	18,484	18,421	19,062	19,778	20,265	89.3
Females.....	13,828	14,952	15,335	14,498	13,660	13,067	12,544	12,996	13,077	13,157	13,891	14,367	14,392	81.8
1914.....	18,687	18,286	18,325	18,613	18,513	18,776	18,752	17,491	16,756	18,617	19,377	20,340	20,398	82.1
Connecticut.....	6,430	6,387	6,600	6,436	6,221	6,209	6,511	6,557	6,568	6,365	6,513	6,563	6,338	94.1
Massachusetts.....	13,062	14,308	14,413	13,767	12,834	12,209	11,765	11,835	12,042	12,136	13,031	13,979	14,435	81.4
BELTING AND HOSE, RUBBER.														
United States:														
1919.....	5,826	6,265	5,593	4,676	5,092	5,118	5,155	5,514	6,120	6,357	6,448	6,708	6,957	65.8
Males.....	5,122	5,378	4,898	3,952	4,464	4,499	4,577	4,850	5,427	5,631	5,774	5,952	6,092	64.9
Females.....	704	887	725	724	628	619	678	664	702	726	674	756	865	65.2
1914.....	5,115	5,103	5,044	5,068	5,137	5,171	5,274	5,243	5,041	5,166	5,183	5,040	4,910	93.1
Massachusetts.....	2,441	2,827	2,358	2,367	2,159	2,152	2,020	2,282	2,579	2,558	2,473	2,660	2,851	71.1
States showing large proportion of females.														
RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS.														
Connecticut.....	857	921	875	862	836	853	860	804	748	820	873	898	934	16.9
Indiana.....	426	459	511	455	430	421	381	369	389	409	423	438	427	14.6
Massachusetts.....	1,354	1,222	1,198	1,290	1,269	1,264	1,304	1,361	1,345	1,396	1,496	1,554	1,549	14.4
New Jersey.....	1,037	1,630	1,654	1,654	1,624	1,627	1,645	1,651	1,665	1,496	1,634	1,673	1,691	13.3
New York.....	1,563	1,621	1,599	1,488	1,446	1,455	1,554	1,511	1,513	1,552	1,603	1,643	1,771	29.1
Ohio.....	6,223	6,276	6,177	5,821	5,754	5,640	5,572	5,726	5,985	6,125	6,481	8,197	7,022	9.8
Pennsylvania.....	735	604	602	753	763	765	771	747	661	695	714	777	788	15.1
Rhode Island.....	877	1,266	951	818	824	789	753	844	852	768	827	891	911	41.4
Wisconsin.....	572	668	562	628	595	554	552	538	541	563	569	594	600	12.6
BOOTS AND SHOES, RUBBER.														
Connecticut.....	2,894	2,980	3,084	2,917	2,750	2,724	2,839	2,911	2,895	2,862	2,943	2,956	2,887	44.9
Massachusetts.....	5,400	6,023	6,168	5,842	5,408	5,053	4,684	4,750	4,841	4,925	5,425	5,854	5,935	41.4

MANUFACTURES.

TABLE 5.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED STATES: 1919 AND 1914.

INDUSTRY AND STATE.	Census year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
			44 and under.	Between 44 and 48.	48. ¹	Between 48 and 54.	54.	Between 54 and 60.	60.	Over 60.
RUBBER GOODS—ALL BRANCHES.....	1919	158,549	4,109	25,449	80,976	20,510	1,453	20,232	5,820	
	1914	74,022	(²)	(²)	3,216	9,959	23,909	31,739	4,750	389
	1909	49,261	(²)	(²)	163	1,201	15,555	23,457	8,881	7
RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS.										
United States.....	1919	119,848	3,385	25,172	49,828	18,391	1,185	19,352	2,535	
	1914	50,220	(²)	(²)	3,216	9,621	8,019	25,427	3,518	399
California.....	1919	513	50	1	375	51	36			
	1914	226	(²)	(²)	55	137	31			
Connecticut.....	1919	5,060		588	348	3,482	23	619		
	1914	2,485				306	181	1,508	307	
Illinois.....	1919	650	133	67	21	196		233		
	1914	563	(²)	(²)	2	38	7	488	28	
Indiana.....	1919	2,917	25		57	85		2,603	87	
	1914	1,499				507	39	448	415	
Iowa.....	1919	839			385	64	150	240		
	1914									
Massachusetts.....	1919	9,406	6	190	3,519	5,214	225	252		
	1914	4,743				246	143	4,348	6	
Michigan.....	1919	5,044	17		4,845	48	2	132		
	1914									
Missouri.....	1919	621	21	6	8	549		37		
	1914	235	(²)	(²)	40	19	20	117		
New Jersey.....	1919	12,353	205		2,554	2,809	337	4,752	1,603	
	1914	6,316	(²)	(²)	10	1,139	41	3,666	1,460	
New York.....	1919	5,370	444		2,634	1,164	1	584	543	
	1914	3,633	(²)	(²)	27	797	1,808	305	686	10
Ohio.....	1919	63,637	2,207	22,480	33,308	2,396	265	2,874	98	
	1914	21,705	(²)	(²)	3,057	6,848	90	12,297	64	340
Pennsylvania.....	1919	4,880	50	1,786	334	285	8	2,230	187	
	1914	3,172	(²)	(²)	12	417	2,701	39		
Rhode Island.....	1919	2,117			752	1,270	86			
	1914	1,541					744	756	41	
Wisconsin.....	1919	4,557	153					4,390	14	
	1914	1,637				17		1,245	375	
BOOTS AND SHOES, RUBBER.										
United States.....	1919	32,875	721		26,881	1,532	5	448	3,285	
	1914	18,687				338	14,859	3,490		
Connecticut.....	1919	6,439			6,439					
	1914									
Massachusetts.....	1919	13,062			13,050	6				
	1914	8,087					8,087			
BELTING AND HOSE, RUBBER.										
United States.....	1919	5,820		277	4,267	587	203	432		
	1914	5,115					1,091	2,822	1,202	
Massachusetts.....	1919	2,441			2,118	323				
	1914									

¹ Includes 48 and under for 1914 and 1909.² Corresponding figures not available.

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TABLE 6.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED STATES: 1919

INDUSTRY AND STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING--																	
	Establishments.	Wage earners (average number).	No wage earn- ers.	1 to 5 wage earn- ers, inclusive.		6 to 20 wage earn- ers, inclusive.		21 to 50 wage earn- ers, inclusive.		51 to 100 wage earn- ers, inclusive.		101 to 250 wage earn- ers, inclusive.		251 to 500 wage earn- ers, inclusive.		501 to 1,000 wage earn- ers, inclusive.		Over 1,000 wage earn- ers.		
			Establish- ments.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.	Establish- ments. Wage earn- ers.				
RUBBER GOODS--ALL BRANCHES.																				
United States..... 1919..	477	158,549	10	78	197	93	1,164	76	2,659	58	4,312	62	10,076	40	14,782	25	16,258	35	109,101	
..... 1914..	342	74,022	10	58	167	75	808	60	1,978	33	2,501	37	5,944	29	10,602	27	18,881	13	33,081	
RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS.																				
United States.....	437	119,848	10	76	190	91	1,141	75	2,616	56	4,155	60	9,767	30	11,343	19	11,907	20	78,729	
California.....	20	513	3	6	16	5	62	5	205	2	173	1	230	3	1,179	2	1,194	1	2,224	
Connecticut.....	21	5,090	1	2	7	6	66	3	69	2	173	1	148	1	184	1	184	1	2,224	
Illinois.....	20	650	1	5	12	8	123	2	82	3	249	1	184	1	176	2	871	1	1,251	
Indiana.....	15	2,917	1	1	2	1	17	2	66	7	534	1	176	2	871	1	871	1	1,251	
Iowa.....	9	830	1	1	1	3	48	1	24	1	57	2	325	1	385	1	385	1	1,251	
Massachusetts.....	47	9,406	1	5	14	7	96	9	289	10	721	10	1,305	2	823	1	571	2	5,527	
Michigan.....	7	5,014	2	3	2	2	25	1	47	1	124	1	124	1	124	1	124	1	4,845	
Missouri.....	7	621	1	1	2	2	14	3	97	1	152	1	152	1	358	1	358	1	3,824	
New Jersey.....	65	12,353	4	10	13	178	12	416	10	707	14	2,414	6	2,136	3	2,668	3	3,824		
New York.....	40	5,370	2	11	26	5	60	6	165	3	233	7	1,187	2	752	3	1,926	1	1,021	
Ohio.....	96	63,637	13	38	22	249	20	737	6	469	13	2,011	12	4,427	3	1,802	7	53,904		
Pennsylvania.....	31	4,880	11	26	4	48	2	84	7	458	2	463	1	412	3	1,603	1	1,786		
Rhode Island.....	6	2,117	1	1	1	1	1	44	1	85	2	335	1	335	1	565	1	1,088		
Wisconsin.....	8	4,557	1	1	1	14	2	69	1	153	1	153	1	153	2	1,062	2	3,259		
BOOTS AND SHOES, RUBBER.																				
United States.....	25	32,875	2	7	1	6	6	6	6	6	6	6	6	5	1,983	4	2,025	13	27,954	
Connecticut.....	5	6,439	1	1	1	1	1	1	1	1	1	1	1	1	251	1	251	4	6,188	
Massachusetts.....	8	13,062	1	1	1	6	6	6	6	6	6	6	6	1	251	2	1,668	5	11,388	
BELTING AND HOSE, RUBBER.																				
United States.....	15	5,826	1	1	1	17	1	43	2	157	2	309	5	1,456	2	1,426	2	2,418		
Massachusetts.....	3	2,441	1	1	1	1	1	1	1	1	1	1	1	1	323	1	880	1	1,238	

TABLE 7.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919, 1914, AND 1909.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
All classes.....	477	342	267	158,549	74,022	49,264	\$1,138,216,019	\$300,993,796	\$197,394,638	\$543,872,420	\$137,659,083	\$74,049,536
Less than \$5,000.....	15	26	20	12	32	24	39,084	64,221	53,582	16,992	35,941	24,688
\$5,000 to \$20,000.....	58	52	45	210	259	204	656,031	528,766	500,593	372,120	286,135	239,508
\$20,000 to \$100,000.....	90	84	65	1,181	1,485	987	4,808,270	4,212,430	3,340,262	1,735,765	1,938,851	1,421,341
\$100,000 to \$500,000.....	131	70	88	5,635	13,065	9,672	29,582,013	18,652,321	34,000,274	13,607,632	19,250,061	12,509,325
\$500,000 to \$1,000,000.....	46	38	38	5,946	13,065	38,377	33,043,670	26,917,050	150,500,017	13,828,527	116,448,095	60,454,614
\$1,000,000 and over.....	137	63	40	145,665	58,281	38,377	1,070,080,951	250,619,008	150,500,017	514,311,393	116,448,095	60,454,614
PER CENT DISTRIBUTION.												
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....	3.1	7.6	7.5	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
\$5,000 to \$20,000.....	12.2	15.2	16.9	0.1	0.3	0.4	0.1	0.2	0.3	0.1	0.2	0.3
\$20,000 to \$100,000.....	18.9	24.6	24.3	0.7	2.0	2.0	0.4	1.4	1.7	0.3	1.4	1.9
\$100,000 to \$500,000.....	27.5	23.1	33.0	3.5	18.0	19.6	2.6	6.2	17.2	2.5	14.0	16.8
\$500,000 to \$1,000,000.....	9.6	11.1	14.2	3.8	18.0	19.6	2.9	8.9	17.2	2.5	14.0	16.8
\$1,000,000 and over.....	28.7	18.4	18.4	91.9	78.7	77.9	94.0	83.3	80.8	94.6	84.4	81.0

¹Less than one-tenth of 1 per cent.

MANUFACTURES.

TABLE 8.—CHARACTER OF OWNERSHIP: 1919, 1914, AND 1909.

	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.		Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes.....	1919	477	158,549	\$1,138,216,019	\$543,872,429	Per cent distribution: Individuals.....	1919	9.9	0.4	0.3	
	1914	342	74,022	300,993,796	137,959,083		1914	11.7	1.0	0.8	0.3
	1909	267	49,264	197,394,038	74,649,536		1909	16.5	1.4	1.2	0.6
Individuals.....	1919	47	593	3,727,425	1,482,954	Corporations.....	1919	85.3	99.5	99.5	99.6
	1914	40	774	2,350,052	891,744		1914	82.7	98.7	99.0	99.1
	1909	44	685	2,365,077	844,030		1909	73.4	98.1	98.3	98.3
Corporations.....	1919	407	157,804	1,132,958,162	541,582,216	All others.....	1919	4.8	0.1	0.1	0.1
	1914	283	73,040	297,930,143	136,729,985		1914	5.6	0.3	0.2	0.2
	1909	196	48,349	194,092,094	73,386,455		1909	10.1	0.5	0.5	0.6
All others.....	1919	23	152	1,530,432	807,250						
	1914	19	208	704,601	337,354						
	1909	27	230	937,467	419,051						

TABLE 9.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919, 1914, AND 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909
Primary power, total.....	10,001	2,237	1,013	429,887	199,543	122,436	100.0	100.0	100.0
Owned.....	641	627	580	235,926	165,250	113,812	54.9	82.8	93.0
Steam.....	555	556	529	226,539	158,547	106,613	52.7	79.5	87.1
Engines.....	489	(2)	(2)	120,458	(2)	(2)	28.0	(2)	(2)
Turbines.....	66	(2)	(2)	106,081	(2)	(2)	24.7	(2)	(2)
Internal-combustion engines.....	32	30	23	3,773	1,091	2,361	0.9	0.8	1.9
Water wheels, turbines, and motors.....	54	41	37	5,614	5,021	4,808	1.3	2.5	3.9
Rented.....	9,360	1,610	424	193,961	34,284	8,624	45.1	17.2	7.0
Electric.....	9,360	1,610	424	193,961	33,983	7,909	45.0	17.0	6.5
Other.....				614	301	715	0.1	0.2	0.6
Electric.....	16,654	6,176	1,502	356,024	114,803	27,591	100.0	100.0	100.0
Rented.....	9,360	1,610	424	193,961	33,983	7,909	54.5	29.6	28.7
Generated by establishments reporting.....	7,294	4,566	1,078	162,063	80,820	19,682	45.5	70.4	71.3

¹ Figures for horsepower include for 1909 the amount reported under the head of "Other" owned power.² Figures not available.

TABLE 10.—FUEL CONSUMED, BY STATES: 1919.

INDUSTRY AND STATE.	COAL.		Coke (tons, 2,000 pounds).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).				
ALL BRANCHES.						
United States.....1919..	137,318	2,149,811	5,316	315,100	52,535	292,884
.....1914..	131,038	1,004,701	3,131	18,843	(1)	376,324
RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS.						
United States.....	84,015	1,928,116	3,651	180,039	43,146	283,760
California.....		75		5,190	188	15,544
Connecticut.....	2,179	65,020		4		5,469
Illinois.....	12	9,940	12		97	132
Indiana.....	150	84,849	75		6,000	
Iowa.....		10,321		69	350	680
Massachusetts.....	853	90,702	2,089	156	4,139	110
Michigan.....		76,760				197
Missouri.....		3,219				
New Jersey.....	43,853	183,375	825	33,321	2,235	539
New York.....	26,423	54,002		250	1,507	7,193
Ohio.....	3,730	1,150,810		58,759	23,920	236,332
Pennsylvania.....	1,271	88,764		24	3,254	10,001
Rhode Island.....	57	9,815		78,680	934	970
Wisconsin.....	6,387	60,013				
BOOTS AND SHOES, RUBBER.						
United States.....	19,853	136,907	1,391	98,000	6,190	2,425
Connecticut.....	1,161	32,536	136			681
Massachusetts.....	12,089	45,992		531	4,561	
BELTING AND HOSE, RUBBER.						
United States.....	32,550	84,728	274	30,452	3,199	6,699
Massachusetts.....	250	40,205	274		28	

¹ Included in figures for fuel oils.

SPECIAL STATISTICS.

Certain additional detailed information concerning the quantity and value of products for the industry is collected by means of supplemental schedules and is summarized in the following tables.

The establishments in the industry were classified according to their product of chief value but in the manufacture of the various products there was much overlapping between the different branches of the industry. For example, there were only 15 establishments that reported the manufacture of belting and hose as a chief product, but 24 establishments classified as tires, tubes, and other rubber goods also reported some belting and hose.

Table 11 shows in comparative form for 1919 and

1914 the quantity and value of the products manufactured. As in 1914, tires were the chief product of the rubber industry, the output of this class being valued in 1919 at \$752,926,708 or 66.1 per cent of the total value of products for the industry, as compared with \$146,421,569, or 48.6 per cent, in 1914. The second most important branch of the industry, rubber boots and shoes, had an output in 1919 of \$90,779,829, or 8 per cent of the total value of products for the industry, as compared with \$50,506,156, or 16.8 per cent, in 1914. The value of belting and hose produced in 1919 totaled \$49,434,534, or 4.3 per cent of the total value of products, as compared with a value of \$24,843,098, or 8.2 per cent, in 1914.

TABLE 11.—DETAILED STATISTICS OF QUANTITY AND VALUE: 1919 AND 1914.

PRODUCT.	1919	1914	PRODUCT.	1919	1914
	Number and amount.	Number and amount.		Number and amount.	Number and amount.
Total value.....	\$1,138,216,019	\$300,998,796	Shoes, rubber:		
Tires:			Pairs.....	66,145,541	57,211,728
Pneumatic—			Value.....	\$64,713,182	\$37,858,222
Automobile—			Shoes, canvas, with rubber soles:		
Casings—			Pairs.....	21,031,684	(²)
Number.....	32,835,509	8,021,371	Value.....	\$25,176,684	(²)
Value.....	\$603,896,200	\$105,678,951	Heels, sold as such and on hand:		
Inner tubes—			Pairs.....	138,468,709	(²)
Number.....	33,255,410	7,907,351	Value.....	\$16,103,501	(²)
Value.....	\$81,312,376	\$20,101,084	Soles, including composition or fiber:		
Motorcycle and bicycle—			Pairs.....	9,777,085	(²)
Casings—			Value.....	\$2,455,306	(²)
Number.....	4,656,121		Rubberized fabrics, sold as such or on hand:		
Value.....	\$13,440,225	3,728,138	Automobile and carriage—		
Inner tubes—		\$9,905,853	Yards.....	40,750,500	(²)
Number.....	1,125,097		Value.....	\$10,696,547	(²)
Value.....	\$1,347,012		All other—		
Solid—			Yards.....	47,162,055	(²)
Truck—			Value.....	\$13,712,376	(²)
Number.....	1,454,807	(²)	Belting, value.....	\$22,436,242	\$7,989,405
Value.....	\$43,917,152		Hose, value.....	\$26,998,292	\$18,853,693
All other—		\$13,735,681	Packing, value.....	\$7,316,819	\$3,507,651
Number.....	6,873,650		Clothing, value.....	\$3,824,430	\$3,799,515
Value.....	\$9,004,543		Druggists' and stationers' supplies, value.....	\$15,801,892	\$7,511,755
Boots, rubber:			Hard rubber goods, value.....	\$34,333,231	(²)
Pairs.....	9,207,703	4,024,480	All other manufactures of rubber, value.....	\$80,719,898	\$41,384,086
Value.....	\$26,066,647	\$12,647,934	Reclaimed rubber, sold and on hand:		
			Pounds.....	125,758,882	(²)
			Value.....	\$20,173,040	\$11,134,958
			All other products, value.....	\$9,711,224	\$8,885,008

¹ In addition, products to the value of \$9,134,403 in 1919, and \$762,503 in 1914, were reported by establishments assigned to other classifications.

² Figures not available.

Table 12 summarizes by states the quantity and value of rubber tires produced in 1919. Ohio was the leading state in every branch of the tire industry and in

the manufacture of automobile casings and inner tubes produced in number and value more than all the other states combined.

TABLE 12.—RUBBER TIRES—PRODUCTION BY PRINCIPAL STATES: 1919.¹

PRODUCT.	Connecticut.	Indiana.	Massachusetts.	New Jersey.	New York.	Ohio.	Pennsylvania.	Wisconsin.	All other states.
Tires:									
Pneumatic—									
Automobile—									
Casings—									
Number.....	(2)	308,670	2,576,982	2,080,937	673,161	19,726,002	1,334,591	1,722,640	4,411,626
Value.....	(2)	\$5,281,109	\$58,439,135	\$32,789,813	\$10,221,489	\$362,932,895	\$21,789,923	\$27,090,046	\$85,351,763
Inner tubes—									
Number.....	451,892	2,939,163	2,482,025	3,312,073	151,974	18,391,055	2,008,060	1,952,510	1,566,648
Value.....	\$1,415,822	\$7,975,250	\$7,576,809	\$10,324,959	\$469,879	\$11,430,711	\$1,316,647	\$3,943,952	\$3,858,556
Motoreycle and bicycle—									
Casings—									
Number.....		(2)	(2)	10,635		1,758,832	(2)	(2)	2,886,654
Value.....		(2)	(2)	\$90,025		\$5,743,923	(2)	(2)	\$7,008,677
Inner tubes—									
Number.....		(2)	(2)	8,902		301,394	243,724	(2)	571,077
Value.....		(2)	(2)	\$16,262		\$117,370	\$380,846	(2)	\$326,534
Solid—									
Truck—									
Number.....	(2)	(2)	(2)	1,774	(2)	1,072,627			380,406
Value.....	(2)	(2)	(2)	\$89,014	(2)	\$36,599,616			\$7,228,522
All other—									
Number.....		238,519			(2)	1,332,431			5,302,700
Value.....		\$835,938			(2)	\$1,581,131			\$1,687,474

¹ Michigan ranked as fifth state in value of products, but figures can not be shown, as to do so would disclose the operation of individual establishments.
² Included in "All other states" to avoid disclosure of individual operations.

Table 13 summarizes, by states for 1919, the quantity and value of boots, shoes, canvas shoes with rubber soles, heels, and soles. In the manufacture of rubber boots and shoes and canvas shoes with rubber soles Massachusetts was the leading state, producing 43.3 per cent of the rubber boots, 39.9 per cent of the rubber shoes, and 30 per cent of the canvas shoes with rubber soles. In the manufacture of heels and soles Ohio ranked first, producing 64.5 per cent of the heels and 21.2 per cent of the soles.

TABLE 13.—BOOTS AND SHOES, BY STATES: 1919.

PRODUCT.	Connecticut.	Massachusetts.	Ohio.	All other states.
Boots, rubber:				
Pairs.....	(1)	3,944,725	(1)	5,222,078
Value.....	(1)	\$8,794,637	(1)	\$17,272,010
Shoes, rubber:				
Pairs.....	14,897,849	26,404,168	(1)	24,843,524
Value.....	\$14,176,228	\$21,010,397	(1)	\$20,520,557
Shoes, canvas, with rubber soles:				
Pairs.....	(1)	6,314,107		14,720,557
Value.....	(1)	\$9,009,760		\$18,166,924
Heels, sold as such or on hand:				
Pairs.....	(1)	40,184,337	80,239,519	9,014,883
Value.....	(1)	\$1,631,794	\$10,205,011	\$1,203,695
Soles, including composition or fiber sold as such or on hand:				
Pairs.....	(1)	6,522,093	2,060,485	1,185,504
Value.....	(1)	\$778,837	\$1,350,727	\$325,742

¹ Included in "All other states" to avoid disclosure of individual operations

Table 14 summarizes, by states for 1919, the value of rubberized fabrics and clothing, belting and hose, and druggists' and stationers' sundries and hard rubber goods. In the manufacture of rubberized fabrics and clothing Massachusetts, the leading state, produced 43.7 per cent of the total value of products; in the manufacture of belting and hose, New Jersey, the leading state, produced 38.8 per cent of the total value of products; and Ohio, the leading state in the manufacture of druggists' and stationers' sundries and hard rubber goods, produced 36.9 per cent of the total value of products.

TABLE 14.—MISCELLANEOUS RUBBER GOODS: 1919.

INDUSTRY AND STATE.	Value.	INDUSTRY AND STATE.	Value.
Rubberized fabrics and clothing:		Druggists' and stationers' sundries and hard rubber goods:	
Massachusetts.....	\$14,530,550	Ohio.....	\$18,513,193
Ohio.....	5,179,085	New Jersey.....	16,002,783
Connecticut.....	4,759,884	New York.....	5,845,340
New Jersey.....	2,772,620	Connecticut.....	3,167,089
New York.....	303,692	Massachusetts.....	2,338,931
Missouri.....	346,838	Indiana.....	1,467,623
Pennsylvania.....	254,450	Pennsylvania.....	663,430
All other states.....	4,086,625	Illinois.....	339,556
Belting and hose, rubber:		All other states.....	1,849,178
New Jersey.....	10,176,384		
Ohio.....	14,046,539		
Massachusetts.....	5,700,923		
New York.....	4,017,232		
California.....	973,198		
All other states.....	5,490,288		

GENERAL TABLES.

Table 15 gives for 1919, 1914, and 1909, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products for the rubber industry combined, and for each of its branches.

Table 16 presents, for 1919, statistics in detail for the industry as a whole, and for each of the groups, such states as can be shown separately without the possibility of disclosing the operations of individual establishments.

TABLE 15.—COMPARATIVE SUMMARY, BY STATES: 1919, 1914, AND 1909.

INDUSTRY AND STATE.	Cen- sus year.	Num- ber of estab- lish- ments	Wage earners (aver- age num- ber).	Primary horse- power.	Expressed in thousands.		
					Wages.	Cost of mate- rials.	Value of prod- ucts.
RUBBER GOODS—ALL BRANCHES.							
United States.....	1919	477	158,549	429,887	\$193,763	\$594,344	\$1,138,216
	1914	342	74,022	199,543	44,167	163,035	300,094
	1909	267	49,264	122,436	25,137	122,745	197,395
RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS.							
United States.....	1919	437	119,848	354,188	156,807	525,686	987,088
	1914	301	50,220	151,927	31,279	126,112	223,611
	1909	227	26,521	79,062	14,120	82,192	128,436
California.....	1919	20	513	1,770	520	1,998	4,941
	1914	11	226	1,180	172	479	905
	1909	5	74	209	61	109	323
Connecticut.....	1919	21	5,060	11,474	5,405	18,233	33,928
	1914	18	2,485	9,598	1,413	5,645	10,188
	1909	13	2,115	6,138	1,116	7,126	11,005
Illinois.....	1919	20	650	2,460	677	1,983	4,136
	1914	17	563	1,951	342	965	1,980
	1909	13	104	293	53	200	381
Indiana.....	1919	15	2,917	11,606	3,018	12,017	20,884
	1914	9	1,499	5,984	839	4,265	6,333
	1909	11	787	5,276	410	2,908	4,313
Massachusetts.....	1919	47	9,406	34,358	11,682	47,070	93,376
	1914	42	4,743	17,515	2,845	14,142	23,011
	1909	29	3,418	10,123	1,769	11,005	15,796
New Jersey.....	1919	65	12,353	40,097	14,300	40,336	84,129
	1914	53	6,319	22,214	3,681	15,172	25,458
	1909	36	4,255	12,003	2,300	13,032	19,543
New York.....	1919	49	5,370	21,778	5,963	16,993	33,033
	1914	45	3,633	11,916	1,897	4,686	10,228
	1909	53	2,060	6,898	1,053	5,650	8,784
RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS— continued.							
Ohio.....	1919	96	63,637	170,402	\$90,981	\$299,363	\$551,118
	1914	54	21,705	58,672	14,578	58,737	109,659
	1909	37	10,382	25,885	5,660	32,442	53,911
Pennsylvania.....	1919	31	4,880	17,414	5,564	19,773	35,792
	1914	19	3,172	8,970	1,744	7,299	12,177
	1909	13	1,205	5,300	566	3,242	4,686
Rhode Island.....	1919	6	2,117	5,803	1,947	7,599	15,887
	1914	6	1,541	3,350	821	4,062	6,080
	1909	5	774	1,075	320	2,075	3,143
All other States.....	1919	76	12,945	36,936	16,450	54,375	109,864
	1914	27	4,337	10,578	2,957	10,660	17,583
	1909	12	1,341	4,959	807	4,334	6,551
BOOTS AND SHOES, RUBBER.							
United States.....	1919	25	32,875	49,400	30,883	50,347	116,917
	1914	23	18,687	24,621	9,986	23,956	53,822
	1909	22	17,612	25,903	8,544	29,577	49,721
Massachusetts.....	1919	8	13,062	21,609	12,763	17,621	44,308
	1914	9	8,087	8,177	4,468	10,455	23,789
	1909	8	6,928	8,330	3,376	10,640	18,722
All other States.....	1919	17	19,813	27,791	18,120	32,726	72,009
	1914	14	10,600	16,444	5,518	13,501	30,033
	1909	14	10,684	17,573	5,168	18,937	30,999
BELTING AND ROSE, RUBBER.							
United States.....	1919	15	5,826	26,299	6,673	18,311	34,211
	1914	18	5,115	22,985	2,902	12,967	23,561
	1909	18	5,131	17,471	2,473	10,976	19,238

TABLE 16.—DETAILED STATEMENT.

INDUSTRY AND STATE.		Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.							WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.						Capital.
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Average number.	Wage earners.		Total.	16 and over.		Under 16.		
						Male.	Female.		Number, 15th day of—			Male.	Female.	Male.	Female.	
									Maximum month.	Minimum month.						
1	RUBBER GOODS--ALL BRANCHES.															
	United States.....	477	206,202	98	5,018	20,200	13,238	158,549	Oct 173,824	Jan 144,931	170,758	149,912	31,036	901	909	Dollars. 9 0,070,726
	RUBBER TIRES, TUBES, AND OTHER RUBBER GOODS.															
2	United States.....	437	100,824	97	4,015	25,712	11,152	110,848	Oct 134,423	Jan 104,075	138,081	121,000	16,330	454	201	782,637,722
3	California.....	20	752	10	71	60	92	513	Nov 588	Jan 427	627	555	72			5,315,252
4	Connecticut.....	21	6,437	4	325	742	300	5,000	Dec 5,830	Apr 4,668	5,830	4,823	917	73	17	35,224,104
5	Georgia.....	3	185		12	7	8	158	Aug 109	Jan 105	193	177	16			1,127,573
6	Illinois.....	20	795	5	49	52	39	650	July 752	Jan 532	750	581	165	3	1	2,790,374
7	Indiana.....	15	3,730	1	174	440	180	2,917	Nov 3,137	Jan 2,620	2,808	2,441	424		3	25,182,334
8	Iowa.....	9	977	1	40	59	38	839	Oct 905	Jan 540	1,008	940	68			9,028,488
9	Massachusetts.....	47	12,185	7	530	1,404	838	9,404	Dec 10,804	Jan 7,728	10,904	9,336	1,520	62	4	64,948,481
10	Michigan.....	7	7,053	4	173	1,481	351	5,044	Dec 5,968	Jan 4,184	5,881	5,439	438	4		57,418,022
11	Missouri.....	7	715	1	35	31	27	621	Feb 670	May 539	620	391	234	3	1	2,580,742
12	Nebraska.....	3	173		14	23	12	124	Aug 168	Jan 80	119	119				1,815,281
13	New Jersey.....	65	15,263	8	468	1,610	824	12,353	Dec 13,398	Jan 11,321	13,328	11,518	1,601	110	36	57,638,272
14	New York.....	40	6,213	15	180	382	200	5,370	Dec 6,233	Mar 4,774	6,238	4,476	1,751	19	22	28,043,157
15	Ohio.....	90	89,774	15	1,240	17,808	7,068	63,637	Oct 74,720	Jan 53,904	75,300	68,550	6,705	45		398,125,426
16	Oklahoma.....	8	67		9	25	7	26	Oct 71	Jan 8	65	36	29			619,444
17	Pennsylvania.....	31	5,879	8	259	450	282	4,880	Dec 5,595	Jan 4,385	5,549	4,068	740	90	51	37,000,301
18	Rhode Island.....	6	2,816		173	351	175	2,117	Jan 2,685	Feb 1,920	2,216	1,280	815	25	90	20,076,684
19	Texas.....	6	99	8	14	13	7	57	Sep 90	Feb 19	68	64	4			505,139
20	Wisconsin.....	8	5,611		70	579	399	4,557	Nov 4,818	Jan 4,302	4,800	4,189	585	20	15	25,011,541
21	All other states ¹	25	2,100	10	161	180	230	1,519			1,000	1,473	18			8,597,197
22	ROOTS AND SHOES, RUBBER.															
	United States.....	25	37,920	1	864	2,500	1,080	32,875	Feb 35,330	Jun 30,642	34,723	19,849	13,877	411	58	131,513,438
23	Connecticut.....	5	7,390		245	361	345	6,439	Feb 6,000	May 6,200	6,338	3,379	2,689	92	178	29,235,801
24	Massachusetts.....	8	15,195		320	1,078	735	13,062	Dec 14,435	Jun 11,755	14,441	8,314	5,752	186	189	43,582,896
25	All other states ²	12	15,444	1	200	1,070	600	13,374			13,944	8,156	5,436	133	216	58,604,829
26	BELTING AND ROSE, RUBBER.															
27	United States.....	15	7,449		130	1,078	400	5,820	Dec 6,957	Mar 4,570	6,954	6,057	829	3	3	45,919,578
28	Massachusetts.....	3	2,036		35	279	181	2,441	Dec 2,851	Feb 2,020	2,851	2,315	487	22	27	17,654,898
	All other states ³	12	4,613		104	799	225	3,385			4,103	3,742	342	14	5	28,264,670

¹ Includes water wheels and turbines (irrespective of ownership of water supply), and water motors (operated by water from city mains).² Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft-belt or transmitted power from neighboring power plants).³ Same number reported for one or more other months.

THE RUBBER INDUSTRY.

15

BY STATES: 1919.

EXPENSES.								Value of products.	Value added by manufacture.	POWER.							
Salaries and wages.			For contract work.	Rent and taxes.		For materials.				Primary horsepower.						Electric horsepower generated in establishments reporting.	
Officials.	Clerks, etc.	Wage earners.		Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.			Total.	Owned.						
											Steam engines (not turbines).	Steam turbines.	Internal-combustion engines.	Water power. ¹	Rent. ²		
Dollars. 19,563,363	Dollars. 65,665,093	Dollars. 193,703,080	Dollars. 3,676,318	Dollars. 6,549,454	Dollars. 37,896,368	Dollars. 579,474,754	Dollars. 14,868,836	Dollars. 1,138,216,019	Dollars. 543,872,429	429,887	120,458	103,081	3,773	5,614	193,961	162,033	1
16,249,745	58,699,712	156,803,828	3,579,851	6,486,700	33,714,601	513,080,366	12,605,943	967,088,045	461,401,736	354,188	93,133	1016,32	3,267	2,534	153,828	151,153	2
1 3,363	159,893	520,269	2,121	20,550	53,471	1,939,492	58,809	4,940,513	2,942,212	1,770	30	.....	.....	.....	1,740	.....	3
1,114,310	1,335,760	5,405,003	327	37,448	1,155,116	17,647,975	584,542	33,927,913	15,695,396	11,474	5,498	1,100	.....	315	4,591	4,057	4
32,793	34,039	157,314	.....	1,100	4,706	640,624	17,033	931,360	273,700	846	.....	.....	4	.....	842	.....	5
260,824	157,785	678,524	.....	11,073	115,225	1,892,770	90,730	4,134,804	2,151,304	2,490	450	.....	10	.....	2,000	.....	6
535,300	796,785	3,017,677	.....	4,565	475,057	11,600,824	415,952	20,883,668	8,866,892	11,696	3,855	2,125	.....	600	5,116	1,540	7
187,077	105,923	1,003,688	11,550	13,321	283,640	3,598,237	121,493	6,333,253	2,613,520	4,293	250	.....	.....	.....	4,043	.....	8
1,901,290	3,690,645	11,682,183	667	49,266	2,852,417	45,889,938	1,186,045	93,376,505	46,300,522	34,358	9,253	825	57	940	23,283	965	9
803,667	2,449,238	7,181,100	.....	3,780	2,008,780	20,747,228	432,386	50,318,116	29,138,502	8,732	2,025	4,500	.....	.....	2,227	6,435	10
86,018	63,448	541,079	0,000	14,321	10,905	2,423,297	55,496	3,865,296	1,856,533	2,168	250	.....	.....	.....	1,918	.....	11
45,776	37,773	170,093	.....	.....	5,516	541,596	36,222	930,370	352,552	1,375	.....	.....	.....	.....	1,375	.....	12
1,968,540	2,849,995	14,299,930	17,293	21,794	2,893,921	44,753,679	1,582,502	84,129,058	37,792,877	40,097	21,126	4,107	400	350	14,114	11,976	13
997,189	962,323	5,963,127	806,514	118,072	1,267,363	16,351,555	581,798	33,033,202	16,099,849	21,778	5,505	1,817	.....	.....	14,456	4,959	14
6,091,668	42,765,855	90,981,414	2,576,359	6,122,977	18,583,624	293,287,709	6,074,822	551,118,488	251,755,957	170,402	32,043	77,657	1,792	329	58,581	115,096	15
9,915	18,205	26,543	.....	2,503	5,182	100,838	1,427	207,726	105,461	164	125	.....	26	.....	13	.....	16
831,644	820,376	5,864,082	15,160	24,141	1,717,346	19,266,485	506,202	35,792,006	16,019,319	17,414	6,861	1,960	1,078	.....	7,515	3,596	17
500,026	648,756	1,947,067	57,880	24,000	590,322	7,299,161	299,480	15,887,006	8,288,365	5,803	1,735	350	.....	.....	3,718	816	18
30,564	22,020	58,807	.....	3,326	5,150	186,665	5,099	668,181	375,817	411	412	.....	.....	.....	29	.....	19
333,438	1,148,071	5,072,011	25,971	1,710	1,101,569	19,538,870	380,887	36,668,685	16,448,928	12,567	2,895	6,885	.....	.....	2,787	1,800	20
396,343	623,222	1,633,850	.....	15,753	567,291	5,373,423	174,442	10,341,895	4,794,030	6,330	850	.....	.....	.....	5,480	.....	21
2,481,481	4,919,907	30,882,722	96,467	58,134	3,021,931	49,025,640	1,321,240	110,917,434	66,570,554	49,400	21,070	150	.....	2,462	25,718	2,602	22
544,000	739,740	5,741,236	.....	.....	509,145	9,287,388	210,159	22,451,339	12,923,792	10,297	6,125	150	.....	1,212	2,810	1,623	23
912,428	2,207,566	12,762,706	.....	17,584	897,013	17,099,098	552,041	44,307,961	26,688,822	21,609	5,970	.....	.....	.....	15,639	482	24
1,025,053	1,972,001	12,378,780	96,467	40,650	1,015,773	22,669,154	529,040	50,158,134	26,959,940	17,494	8,975	.....	.....	1,250	7,269	497	25
832,137	2,045,474	6,073,539	.....	4,620	1,159,836	17,368,748	941,653	34,210,540	15,900,139	26,299	6,255	4,605	406	618	14,415	8,305	26
259,048	642,415	2,302,529	.....	.....	517,005	7,398,989	383,468	13,859,748	6,077,291	10,035	880	4,355	.....	.....	4,800	6,328	27
573,089	1,403,059	3,771,010	.....	4,620	642,831	9,069,759	558,185	20,350,792	9,822,848	16,204	5,375	250	406	618	9,615	1,960	28

¹ All other states embrace: Colorado, 4 establishments; Delaware, 1; Kansas, 3; Kentucky, 1; Louisiana, 1; Maryland, 2; Minnesota, 3; North Carolina, 2; Oregon, 2; Washington, 4; West Virginia, 2.
² All other states embrace: Indiana, 1 establishment; Maine, 1; Missouri, 1; New Jersey, 2; New York, 1; Pennsylvania, 1; Rhode Island, 4; Wisconsin, 1.
³ All other states embrace: California, 2 establishments; Delaware, 1; Illinois, 1; New Jersey, 5; New York, 2; Ohio, 1.

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

FOURTEENTH CENSUS OF THE UNITED STATES
MANUFACTURES: 1919

SHIPBUILDING
INCLUDING
BOAT BUILDING

Prepared under the supervision of EUGENE F. HARTLEY, Chief Statistician for Manufactures

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or for which products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1919, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city, county, or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city, county, or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Classification by industries.—The establishments were assigned to the several classes of industries according to their products of chief value. The products reported for a given industry may thus, on the one hand, include minor products different from those covered by the class designation, and, on the other hand, may not represent the total product covered by this designation, because some products of this class may be made in establishments in which it is not the product of chief value.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1919 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners.

The number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date did not portray such conditions, an earlier date was requested.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, by sex, without distinction of age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The number of wage earners reported for the representative day, though given in certain tables for each separate industry, is not totaled for all industries combined, because, in view of the variations of date, such a total is not believed to be significant. It would involve more or less duplication of persons working in different industries at different times, would not represent the total number employed in all industries at any one time, and would give an undue weight to seasonal industries as compared with industries in continual operation.

In order to determine as nearly as possible the age distribution of the average number of wage earners for an industry, the per cent distribution by age of the wage earners for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. The percentages thus obtained have been applied to the average number of wage earners for the year to determine the average numbers 16 years and over, and under 16, employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calcu-

late accurately even so simple an average as this, since the number of wage earners fluctuates from month to month in every industry, and in some cases to a very great extent. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month, and while representing the number according to the pay rolls to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital (amount actually invested).—The instructions on the schedule for securing data relating to capital were as follows:

"The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises."

These instructions were identical with those employed at the censuses of 1914 and 1900. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include certain Federal taxes and state, county, and local taxes. Under "Federal taxes" there are included the internal revenue tax on manufactures (tobacco, beverages, etc.), excise taxes when included in values reported for products, corporation capital stock tax, and corporation income tax, but not the income tax for individuals and partners.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not always a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry, from a manufacturing standpoint, is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power equipment of the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, fuel oils, gasoline and other volatile oils, and gas, and represent the quantity used during the year. As only the principal kinds of fuel are shown, comparison as to the total cost of all fuel is impracticable.

SHIPBUILDING, INCLUDING BOAT BUILDING

GENERAL STATISTICS.

General character of the industry.—The statistics for this industry cover establishments engaged in the construction and repair of vessels, ships, and boats of all classes. Data for shipyards operated by the Federal Government were also collected but are shown separately and are not included in the totals for the industry. A number of establishments, not properly classified with the shipbuilding industry, also incidentally built or repaired ships or boats, but the amount contributed to the industry by these establishments was small, and unless so stated the tables do not include statistics relating to them. As generally used in this report the term "ship" or "vessel" refers to craft of 5 gross tons measurement or over, while craft under 5 tons are designated as boats.

In compiling the statistics for the shipbuilding industry the Bureau of the Census distinguishes between establishments in the steel and concrete ship building branch of the industry and those engaged in wooden-ship building and boat building. The first group is divided into (1) establishments doing construction work on steel and concrete vessels of 5 gross tons or over, and (2) establishments doing repair work only on steel and concrete vessels. The second group, wooden-ship building and boat building, is divided into four classes: (1) Establishments engaged in new construction work on wooden vessels of 5 gross tons or over; (2) establishments doing repair work only on wooden vessels; (3) establishments engaged mainly in building or repairing boats of less than 5 gross tons; and (4) establishments making masts, spars, oars, and ship accessories and those engaged in rigging vessels. These divisions and groups are used for purposes of comparison, as they are as nearly as possible the same for all censuses.

Summary of the industry, by classes.—A marked feature of the industry, as shown by Table 1, is the large amount of capital invested, which increased from \$156,059,938 in 1914 to \$1,389,447,820 in 1919, or an average per establishment of \$1,292,510 in 1919 as compared with \$136,059 in 1914. By far the larger proportion of this increased capital was invested in establishments engaged in the construction of steel vessels. This vast sum was mostly contributed by the Federal Government for the purposes of facilitating rapid shipbuilding to provide for military exigencies growing out of the World War. The value of work done in 1919 exceeded the amount of capital invested by \$232,913,441, a condition which has not existed since 1889. In 1919 about 90 per cent

of the total value of products was contributed by plants engaged in the construction and repair of steel vessels, as compared with 77.8 per cent in 1916 and 74.7 per cent in 1914. The large increases in wages, cost of materials, and the value of products, as presented in this table, are largely due to the World War, and therefore can not properly be used to measure the growth of the shipbuilding industry during the census period 1914 to 1919. A truer index of the condition is found in the average number of wage earners and primary horsepower. The addition of the Federal income tax since 1914 will account for the increase in "Rent and taxes."

Comparative summary.—Table 2 summarizes the statistics for each census since 1904, and gives percentages of increase for each period. While there was a decrease in the number of establishments at each census since 1909, all of the principal items show decided increases for this period. During the 15 years covered by the table the average number of wage earners increased 336,692, or 663.4 per cent.

Comparative summary, Government shipyards.—From 1916 to 1919, as shown by Table 3, the number of shipbuilding plants owned and operated by the Federal Government decreased from 30 to 22. This decrease resulted from the fact that certain of the plants which were operated by the Government in 1916 were abandoned prior to 1919. They were located in the Middle West and operated for the purpose of building and repairing unrigged craft to be used in Government work on the Ohio, Mississippi, and other rivers. In 1919, 13 of the Government plants were operated by the Office of Chief of Engineers of the War Department, and 9 by the Bureau of Yards and Docks of the Navy Department.

This table brings out the fact that between 1916 and 1919 there was a great increase in the construction of steel vessels propelled by steam, and wooden motor and unrigged vessels, and a decrease in wooden steam vessels. It also shows that the Government did not construct any steel unrigged vessels in 1919.

The work performed at the several Government shipyards consisted of the repair of naval vessels, the construction of ships, boats, signal apparatus, and buoy lanterns, the building and repair of machinery, etc. It was impossible to make a separate presentation of each kind of work done and the figures presented in Table 3 include, therefore, statistics that do not properly pertain to shipbuilding or repairing. The value of "All other products, including repair

work," amounted to \$187,819,607 in 1919 and represented 78.4 per cent of the total value of work done during the year. The corresponding percentages for 1909, 1914, and 1916, were 91.8, 83.6, and 76.3, respectively.

The Government shipyards did a large amount of construction work in 1919 on vessels not launched during the year. The value of such work amounted to \$26,005,758, nearly all of which was done on steel vessels consisting of battleships, destroyers, and submarines.

Principal states, ranked by value of products.—The rank of the several states by value of products, as shown in Table 4, has changed materially since 1914. New Jersey advanced from second to first position, reporting 14.7 per cent of the total value of products, while New York, first in 1914, dropped to fifth position. The Pacific Coast states, California and Washington, ranking fifth and ninth in 1914, advanced to third and fourth, respectively, in 1919. It should be noted that a number of states for which data can not be shown without disclosing individual operations ranked much higher than some named in this table. The first eight states, which include two that can not be shown, employed 71.9 per cent of the total number of wage earners, and reported 72.5 per cent of the total value of products.

Persons engaged in the industry.—The age classification of the average number of wage earners in Table 5 is an estimate obtained by the method described in the "Explanation of terms," page 2. The classification by sex for 1919 was reported separately, but for 1916, 1914, and 1909, was obtained in the same manner as the distribution by age. Figures in detail will be found in Table 32.

Wage earners, by months, for selected states.—As shown by Table 6, the number of wage earners employed in the industry month by month in 1919 ranged from a maximum of 444,683 in January to a minimum of 301,172 in November, the minimum number being equivalent to 67.7 per cent of the maximum. Figures are given for all states reporting an average of over 5,000 wage earners, that can be shown without disclosing individual operations, while for the United States the number of males and females is also shown.

Average number of wage earners, by prevailing hours of labor per week, for selected states.—Table 7 indicates a marked shortening of the working day for the shipbuilding industry since 1914. In that year only 33.1 per cent of the wage earners were reported as employed 48 hours and under as compared with 98.3 per cent in 1919.

Size of establishments, by average number of wage earners, for selected states.—Analysis of Table 8 brings out the fact that in 1919, 376,152 wage earners, or

97.1 per cent of the total number, were reported by establishments which employed more than 100 wage earners, illustrating the concentration of the industry in a few large establishments. In wooden shipbuilding, the predominance of small establishments is shown by the fact that 498, or 54.5 per cent of the total establishments employed fewer than six wage earners each and reported only 1.7 per cent of the total number of wage earners.

Size of establishments, by value of products.—At the censuses of 1916 and 1914 establishments with products valued at "\$100,000 to \$1,000,000" constituted one group, but at the census of 1919 this group was subdivided into "\$100,000 to \$500,000" and "\$500,000 to \$1,000,000." Separate figures for the number of establishments and value of products have been compiled, however, from the returns of 1914. The table, therefore, gives combined figures for these two groups in the case of all items for 1916, and in the case of average number of wage earners and value added by manufacture for 1914. The statistics in Table 9 show the degree of concentration of production in large establishments. In 1919 the group "\$1,000,000 and over" included 143 establishments, or 13.3 per cent of the total for the industry, employed 360,993 wage earners, or 93.2 per cent of the total average number; and reported products to the value of \$1,529,837,920, or 94.3 per cent of the total value of products.

Character of ownership, by states.—The preponderance of corporate ownership in "shipbuilding, steel," is clearly brought out in Table 10. Corporations owned 91.4 per cent of the number of establishments in this branch of the industry in 1919, and reported 99.9 per cent of both the average number of wage earners and total value of products. From 1916 to 1919 the average number of wage earners in corporations in the industry as a whole, increased 313,991, or 472.6 per cent, and the value of products \$1,426,409,136, or 832.4 per cent.

Number and horsepower of types of prime movers.—From 1914 to 1919, as shown by Table 11, there was an increase in the total horsepower for the industry of 438,378 horsepower, or 380.1 per cent, the greater part of which was due to an increase of 394,896 horsepower, or 1,312.6 per cent, in rented electric power, as compared with an increase of 43,261, or 50.9 per cent, in power owned. Of the total primary horsepower reported in 1919, 476,135 horsepower, or 86 per cent, was utilized in the form of electric energy.

Fuel consumed, by states.—Table 12 shows the principal kinds of fuel used for the industry in 1919 and 1914, and also gives separately the amounts consumed in states requiring considerable quantities of fuel for manufacturing purposes.

SHIPBUILDING, INCLUDING BOAT BUILDING.

5

TABLE 1.—SUMMARY OF THE INDUSTRY, BY CLASSES: 1919, 1916, AND 1914.

	Census year.	SHIPBUILDING, INCLUDING BOAT BUILDING.								
		Aggregate.	Steel vessels.			Wooden, including boat building.				
			Total.	New construction of vessels of 5 tons and over.	Repair work only.	Total.	Vessels.		Boats under 5 tons construction and repair.	Masts, spars, oars, and rigging of vessels.
							New construction of vessels of 5 tons and over.	Repair work only.		
Number of establishments.....	1919	1,075	162	117	45	913	315	277	294	27
	1916	1,137	109	72	37	1,028	339	248	416	25
	1914	1,147	79	46	33	1,068	273	179	688	28
Persons engaged.....	1919	413,236	365,875	344,909	20,966	47,361	36,672	8,554	1,951	184
	1916	78,333	59,802	51,230	8,572	18,531	10,395	4,932	2,949	255
	1914	48,667	35,664	29,848	5,816	13,003	5,472	4,571	2,749	211
Proprietors and firm members.....	1919	816	21	10	11	795	210	245	313	27
	1916	1,103	85	15	20	1,068	364	216	461	27
	1914	1,192	21	7	17	1,168	332	152	657	27
Salaried employees.....	1919	24,974	21,810	20,621	1,219	3,134	2,340	579	188	27
	1916	4,733	3,530	3,073	457	1,203	667	311	213	12
	1914	2,986	2,132	1,699	433	854	338	310	197	9
Wage earners (average number)....	1919	387,446	344,014	324,278	19,736	43,432	31,122	7,730	1,460	130
	1916	72,497	56,287	48,142	8,095	16,260	9,364	4,405	2,275	216
	1914	44,489	33,508	28,142	5,366	10,981	4,802	4,109	1,895	175
Primary horsepower ²	1919	553,711	475,567	443,384	32,183	78,144	59,593	14,675	3,370	506
	1914	115,333	83,708	63,888	19,818	31,627	14,148	11,180	5,770	529
Capital.....	1919	\$1,389,447,820	\$1,268,640,254	\$1,216,322,883	\$52,317,371	\$120,807,566	\$93,372,019	\$22,084,471	\$4,792,460	\$558,586
	1916	243,217,869	209,517,898	190,391,607	19,126,291	33,099,971	17,394,882	10,204,049	5,403,418	697,622
	1914	160,059,938	132,712,414	112,630,389	20,082,025	23,347,524	9,579,832	8,946,660	4,614,178	206,854
Salaries and wages.....	1919	662,561,142	595,684,083	557,452,512	38,181,571	66,927,059	51,854,108	12,735,307	2,112,438	225,206
	1916	67,526,623	53,367,771	43,816,888	9,550,883	14,158,852	8,253,659	3,830,740	1,891,039	183,414
	1914	37,089,965	28,762,404	23,520,313	5,232,091	8,937,561	3,940,934	3,360,143	1,502,905	133,579
Salaries.....	1919	65,114,404	57,261,507	54,014,657	3,246,850	7,852,987	5,981,120	1,448,902	362,200	60,759
	1916	6,950,722	5,347,648	4,672,207	675,441	1,603,074	915,618	437,173	234,205	16,078
	1914	4,758,809	3,586,612	2,801,588	785,024	1,172,197	525,032	414,155	223,061	9,949
Wages.....	1919	597,446,648	538,372,576	503,437,855	34,934,721	59,074,072	45,872,982	11,286,405	1,750,238	164,447
	1916	60,575,901	48,020,123	39,144,681	8,875,442	12,555,778	7,338,041	3,393,567	1,656,834	167,336
	1914	32,931,166	25,165,792	20,718,725	4,447,067	7,765,364	3,415,902	2,945,988	1,279,844	123,630
Paid for contract work.....	1919	10,107,520	8,205,806	7,460,870	754,936	1,901,723	1,660,723	226,290	12,908	1,802
	1916	4,092,789	3,911,332	3,268,575	642,757	181,457	118,012	55,193	8,147	105
	1914	531,779	442,135	206,194	235,941	89,644	34,094	39,257	15,717	576
Rent and taxes ³	1919	51,201,986	47,499,861	41,231,912	6,267,949	3,702,125	2,621,708	907,832	146,020	26,565
	1914	1,123,144	668,965	419,286	249,679	454,179	151,623	189,218	104,474	8,864
Cost of materials.....	1919	710,522,676	643,752,814	622,462,097	21,290,717	66,769,882	56,898,161	7,293,565	2,187,418	390,718
	1916	80,268,830	69,061,072	61,957,923	8,003,149	19,307,758	11,700,716	3,160,413	4,241,368	205,261
	1914	38,596,970	29,269,727	25,825,634	3,444,093	9,327,243	4,691,331	2,517,787	1,956,374	161,751
Value of products.....	1919	1,022,361,261	1,456,489,516	1,372,064,851	84,424,665	165,871,745	133,303,335	26,549,156	5,197,682	821,572
	1916	185,852,192	144,619,111	119,155,601	25,463,510	41,233,081	24,902,116	8,763,825	7,059,017	508,123
	1914	88,682,071	66,216,692	54,339,778	11,876,914	22,465,379	10,427,681	7,255,951	4,413,767	367,990
Value added by manufacture ⁴	1919	911,838,585	812,736,702	749,602,754	63,133,948	99,101,833	76,405,174	10,255,591	3,010,264	430,854
	1916	90,583,362	74,658,039	57,197,678	17,460,361	21,925,323	13,201,406	5,603,412	2,817,649	302,862
	1914	60,085,101	36,946,965	28,514,144	8,432,821	13,138,136	5,736,350	4,738,164	2,457,383	206,239

¹ Includes 4 establishments making boats under 5 tons, and 1 making masts, spars, oars, and the rigging of vessels.² Not reported in 1916.³ Value of products less cost of materials.

TABLE 2.—COMPARATIVE SUMMARY: 1919, 1916, 1914, 1909, AND 1904.

	1919	1916	1914	1909	1904	PER CENT OF INCREASE. ¹			
						1916-1919	1914-1916	1909-1914	1904-1909
Number of establishments.....	1,075	1,137	1,147	1,353	1,097	-5.5	-0.9	-15.2	23.3
Persons engaged.....	413,236	78,333	48,667	44,949	54,424	427.5	61.0	8.3	-17.4
Proprietors and firm members.....	816	1,103	1,192	1,463	1,190	-26.0	-7.5	-18.5	22.9
Salaried employees.....	24,074	4,733	2,986	2,980	2,480	427.7	58.5	0.2	20.2
Wage earners (average number).....	387,446	72,497	44,489	40,506	50,754	434.4	63.0	9.8	-20.2
Primary horsepower.....	553,711	(²)	115,333	88,063	78,127	-----	-----	31.0	12.7
Capital.....	\$1,389,447,820	\$243,217,869	\$156,059,938	\$126,118,489	\$121,623,700	471.3	55.8	23.7	3.7
Salaries and wages.....	662,561,142	67,526,623	37,689,965	29,303,132	32,580,828	881.2	79.2	28.6	-10.1
Salaries.....	65,114,404	6,950,722	4,758,809	4,035,446	3,339,741	836.8	46.1	17.9	20.8
Wages.....	597,446,648	60,575,901	32,931,166	25,267,686	29,241,087	886.3	83.9	30.3	-13.6
Paid for contract work.....	10,107,520	4,092,789	531,770	1,185,579	674,418	147.0	669.6	-55.1	75.8
Rent and taxes.....	51,201,986	(²)	1,123,144	835,656	640,519	-----	-----	34.4	-----
Cost of materials.....	710,522,676	80,268,830	38,596,970	31,214,358	37,463,179	695.9	131.3	23.7	-16.7
Value of products.....	1,022,361,261	185,852,192	88,682,071	73,360,315	82,769,239	772.9	109.6	20.9	-11.4
Value added by manufacture ⁴	911,838,585	90,583,362	50,085,101	42,145,957	45,306,060	844.1	92.8	18.8	-7.0

¹ A minus sign (-) denotes decrease.² Not reported.³ Exclusive of internal revenue.⁴ Value of products less cost of materials.

MANUFACTURES.

TABLE 3.—COMPARATIVE SUMMARY, GOVERNMENT SHIPYARDS: 1919, 1916, 1914, AND 1909.

	1919	1916	1914	1909
Number of establishments.....	22	30	13	12
Persons engaged.....	71,186	23,528	18,328	16,425
Salaried employees.....	11,244	3,464	2,643	1,888
Wage earners (av. number)....	59,942	20,064	15,785	14,537
Primary horsepower.....	84,824	(1)	82,408	32,525
Salaries and wages.....	\$105,434,091	\$22,232,313	\$16,428,497	\$15,817,330
Salaries.....	19,405,416	4,451,210	3,336,839	2,640,800
Wages.....	86,028,675	17,781,103	13,091,657	12,076,524
Cost of materials.....	95,539,667	14,077,767	11,103,113	9,526,109
Value of work done during year..	239,603,243	38,674,491	29,217,265	25,872,033
New vessels (5 gross tons and over).....	40,633,747	8,811,863	4,612,311	1,977,977
Vessels launched.....	23,927,989	3,376,710	1,385,131	150,141
Steel vessels.....	23,097,401	3,021,045	1,208,511	34,106
Steam.....	21,162,512	2,922,566	969,502	.....
Motor.....	1,934,889	(1)	(1)	(1)
Unrigged.....	.....	99,079	332,009	31,106
Wooden vessels.....	830,588	355,065	86,620	122,035
Steam.....	45,693	127,702	31,346	68,104
Motor.....	257,526	138,012	30,097	.....
Unrigged.....	527,030	88,451	25,177	53,931
Vessels building but not launched.....	26,005,758	5,435,153	3,227,180	1,821,830
Steel.....	25,851,893	5,361,448	3,101,014	1,821,830
Wooden.....	153,865	73,705	126,166	.....
Boats (less than 5 gross tons)....	1,849,889	351,339	175,730	153,346
All other products, including repair work.....	187,819,607	29,511,280	24,420,224	23,740,710

(1) Not reported.

TABLE 4.—PRINCIPAL STATES, RANKED BY VALUE OF PRODUCTS: 1919.

STATE.	Number of establishments.	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
		Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.
United States.....	1,075	387,446	100.0	...	\$1,022,361	100.0	...	\$911,839	100.0	...
New Jersey.....	93	52,397	13.5	2	238,015	14.7	1	112,461	12.3	2
California.....	67	47,530	12.3	3	185,882	11.5	3	109,254	12.0	3
Washington.....	70	34,070	8.9	4	160,520	10.3	4	92,474	10.1	4
New York.....	161	33,295	8.6	5	132,012	8.1	5	90,457	9.9	5
Michigan.....	33	16,511	4.3	8	85,155	5.2	6	49,034	5.4	6
Maryland.....	42	19,084	4.9	6	67,310	4.2	7	36,310	4.0	8
Ohio.....	28	11,412	2.9	10	57,483	3.5	9	33,581	3.7	10
Wisconsin.....	35	7,855	2.0	13	44,164	2.7	12	23,797	2.6	12
Florida.....	73	11,199	2.9	11	32,012	2.0	13	18,745	2.1	13
Maine.....	82	7,000	1.8	14	24,682	1.5	14	14,839	1.6	14
Georgia.....	10	4,447	1.2	20	20,944	1.3	16	12,283	1.3	18
Louisiana.....	22	5,346	1.4	19	17,598	1.1	20	10,602	1.2	20
North Carolina.....	18	117	(1)	31	374	(1)	30	224	(1)	32
Kentucky.....	7	185	(1)	29	330	(1)	32	277	(1)	30
Indiana.....	7	107	(1)	32	315	(1)	33	233	(1)	31
All other states.....	321	136,355	35.2	...	548,915	33.8	...	307,268	33.7	...

(1) Less than one-tenth of 1 per cent.

TABLE 5.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1916, 1914, AND 1909.

INDUSTRY AND CLASS.	Cen- sus year.	PERSONS ENGAGED.					INDUSTRY AND CLASS.	Cen- sus year.	PERSONS ENGAGED.				
		Total.	Male.	Fe- male.	Per cent of total.				Total.	Male.	Fe- male.	Per cent of total.	
					Male.	Fe- male.						Male.	Fe- male.
SHIPBUILDING, INCLUDING BOAT BUILDING.	1919	413,236	407,139	6,097	98.5	1.5	SHIPBUILDING, STEEL.....	1919	365,875	360,416	5,459	98.5	1.5
	1916	78,833	77,802	531	99.3	0.7		1916	59,802	59,476	326	99.5	0.5
	1914	48,667	48,314	353	99.3	0.7		1914	35,664	35,470	194	99.5	0.5
	1909	44,940	44,597	352	99.2	0.8		1909	30,041	29,890	151	99.5	0.5
Proprietors and officials.....	1919	8,195	8,158	37	99.5	0.5	Proprietors and officials.....	1919	5,916	5,903	13	99.8	0.2
	1916	2,653	2,605	48	98.2	1.8		1916	1,007	1,003	4	99.6	0.4
	1914	2,187	2,154	33	98.5	1.5		1914	585	582	3	99.5	0.5
	1909	2,471	2,447	24	99.0	1.0		1909	491	491	.....	100.0	.....
Proprietors and firm members....	1919	816	804	12	98.5	1.5	Proprietors and firm members....	1919	21	20	1	95.2	4.8
	1916	1,103	1,062	41	96.3	3.7		1916	35	33	2	94.3	5.7
	1914	1,192	1,163	29	97.6	2.4		1914	24	22	2	91.7	8.3
	1909	1,463	1,440	23	98.4	1.6		1909	21	21	.....	100.0	.....
Salaried officers of corporations...	1919	875	861	14	98.4	1.6	Salaried officers of corporations...	1919	442	439	3	99.3	0.7
	1916	399	394	5	98.7	1.3		1916	194	193	1	99.5	0.5
	1914	323	320	3	99.1	0.9		1914	106	105	1	99.4	0.6
	1909	367	366	1	99.7	0.3		1909	122	122	.....	100.0	.....
Superintendents and managers...	1919	6,504	6,493	11	99.8	0.2	Superintendents and managers...	1919	5,453	5,444	9	99.8	0.2
	1916	1,151	1,149	2	99.8	0.2		1916	778	777	1	99.9	0.1
	1914	672	671	1	99.9	0.1		1914	395	395	.....	100.0	.....
	1909	641	641	.....	100.0	.....		1909	348	348	.....	100.0	.....
Clerks and other subordinate salaried employees.	1919	17,595	12,756	4,839	72.5	27.5	Clerks and other subordinate salaried employees.	1919	15,945	11,610	4,335	72.8	27.2
	1916	3,183	2,818	365	88.5	11.5		1916	2,558	2,335	223	91.3	8.7
	1914	1,991	1,765	226	88.6	11.4		1914	1,571	1,447	124	92.1	7.9
	1909	1,972	1,706	266	86.5	13.5		1909	1,407	1,302	105	92.5	7.5
Wage earners (average number).....	1919	387,446	386,225	1,221	99.7	0.3	Wage earners (average number).....	1919	344,014	342,903	1,111	99.7	0.3
	1916	72,497	72,379	118	99.8	0.2		1916	59,237	59,138	99	99.8	0.2
	1914	44,489	44,395	94	99.8	0.2		1914	33,608	33,441	67	99.8	0.2
	1909	40,506	40,444	62	99.8	0.2		1909	28,143	28,097	46	99.8	0.2
16 years of age and over.....	1919	387,193	385,972	1,221	99.7	0.3	16 years of age and over.....	1919	343,774	342,663	1,111	99.7	0.3
	1916	72,097	71,979	118	99.8	0.2		1916	55,859	55,760	99	99.8	0.2
	1914	44,288	44,195	93	99.8	0.2		1914	33,323	33,257	66	99.8	0.2
	1909	40,135	40,073	62	99.8	0.2		1909	27,794	27,748	46	99.8	0.2
Under 16 years of age.....	1919	253	253	.....	100.0	.....	Under 16 years of age.....	1919	240	240	.....	100.0	.....
	1916	400	400	.....	100.0	.....		1916	378	378	.....	100.0	.....
	1914	201	200	1	99.5	0.5		1914	185	184	1	99.5	0.5
	1909	371	371	100.0		1909	349	349	100.0

SHIPBUILDING, INCLUDING BOAT BUILDING.

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TABLE 5.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1916, 1914 AND 1909—Continued.

INDUSTRY AND CLASS.	Cen- sus year.	PERSONS ENGAGED.					INDUSTRY AND CLASS.	Cen- sus year.	PERSONS ENGAGED.				
		Total.	Male.	Fe- male.	Per cent of total.				Total.	Male.	Fe- male.	Per cent of total.	
					Male.	Fe- male.						Male.	Fe- male.
SHIPBUILDING, WOODEN, IN- CLUDING BOAT BUILDING.	1919	47,361	46,723	638	98.7	1.3	SHIPBUILDING, WOODEN, IN- CLUDING BOAT BUILDING—con.						
	1916	18,531	18,326	205	98.9	1.1							
	1914	13,003	12,844	159	98.8	1.2							
	1909	14,908	14,707	201	98.7	1.3							
Proprietors and officials.....	1919	2,279	2,255	24	98.9	1.1	Clerks and other subordinate salaried employees.	1919	1,650	1,146	504	69.5	30.5
	1916	1,646	1,602	44	97.3	2.7		1916	625	483	142	77.3	22.7
	1914	1,602	1,572	30	98.1	1.9		1914	420	318	102	75.7	24.3
	1909	1,980	1,956	24	98.8	1.2		1909	565	404	161	71.5	28.5
Proprietors and firm members....	1919	795	784	11	98.6	1.4	Wage earners (average number).....	1919	43,432	43,322	110	99.7	0.3
	1916	1,068	1,029	39	96.3	3.7		1916	16,260	16,241	19	99.9	0.1
	1914	1,168	1,141	27	97.7	2.3		1914	10,981	10,954	27	99.8	0.2
	1909	1,442	1,419	23	98.4	1.6		1909	12,363	12,347	16	99.9	0.1
Salaried officers of corporations...	1919	433	422	11	97.5	2.5	16 years of age and over.....	1919	43,419	43,399	110	99.7	0.3
	1916	205	201	4	98.0	2.0		1916	16,236	16,217	19	99.9	0.1
	1914	157	155	2	98.7	1.3		1914	10,965	10,938	27	99.8	0.2
	1909	245	244	1	99.6	0.4		1909	12,341	12,325	16	99.9	0.1
Superintendents and managers...	1919	1,051	1,049	2	99.8	0.2	Under 16 years of age.....	1919	13	13	.....	100.0	.....
	1916	373	372	1	99.7	0.3		1916	24	24	.....	100.0	.....
	1914	277	270	7	99.6	0.4		1914	16	16	.....	100.0	.....
	1909	293	293	.....	100.0	.....		1909	22	22	.....	100.0	.....

TABLE 6.—WAGE EARNERS, BY MONTHS, FOR SELECTED STATES: 1919.

[The month of maximum employment is indicated by bold-faced figures and that of minimum employment by italic figures.]

STATE.	Aver- age num- ber em- ployed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent mini- mum is of maxi- mum.
		Janu- ary.	Febru- ary.	March.	April.	May.	June.	July.	August.	Septem- ber.	Octo- ber.	Novem- ber.	Decem- ber.	
United States:														
1919.....	387,446	444,633	406,553	432,454	429,218	427,614	418,438	403,539	390,825	369,255	323,395	<i>301,172</i>	302,206	67.7
Males.....	386,225	442,939	404,955	430,990	427,844	426,409	417,262	402,416	389,739	368,252	322,449	<i>300,860</i>	301,185	67.8
Females.....	1,221	1,744	1,598	1,464	1,374	1,205	1,176	1,123	1,086	1,003	946	<i>912</i>	1,021	52.3
1916.....	72,497	59,435	61,615	64,782	67,801	70,167	73,251	72,788	74,259	77,069	79,281	83,600	85,928	69.2
1914.....	44,489	47,038	45,776	48,534	48,941	49,567	48,610	46,164	43,606	39,870	39,162	<i>37,843</i>	38,757	76.3
Shipbuilding, steel—														
1919.....	344,014	378,842	345,596	376,102	378,623	380,799	375,018	362,726	353,849	335,164	293,784	<i>273,550</i>	274,315	71.8
1916.....	50,237	47,087	48,674	51,370	52,633	53,809	55,944	55,659	57,257	59,565	61,756	64,685	66,399	70.9
1914.....	33,508	36,262	35,435	36,788	36,630	36,773	36,222	34,822	32,987	29,808	28,743	<i>28,107</i>	29,533	76.4
Shipbuilding, wooden, in- cluding boat building—														
1919.....	43,432	65,841	60,957	56,352	50,595	46,815	43,420	40,813	36,976	34,091	29,611	<i>27,322</i>	27,891	42.3
1916.....	16,260	12,546	12,941	13,406	15,168	16,348	17,307	17,129	17,002	17,504	17,525	18,915	19,529	63.2
1914.....	10,981	10,776	10,341	11,746	12,305	12,794	12,388	11,342	10,639	10,062	10,419	9,736	<i>9,224</i>	72.1
California.....	47,530	60,917	55,019	50,537	58,582	62,138	59,437	53,934	51,314	49,141	22,177	13,554	23,910	21.5
Florida.....	11,199	14,300	13,389	12,170	11,385	10,914	10,542	10,983	10,925	10,219	9,882	9,987	<i>9,692</i>	67.8
Louisiana.....	5,346	5,086	5,375	4,927	4,994	4,368	4,308	5,354	5,214	5,500	6,662	6,358	6,006	64.7
Maine.....	7,000	7,701	8,425	8,419	7,760	7,559	7,355	7,019	6,643	5,879	5,605	5,692	5,943	66.5
Maryland.....	19,084	19,410	19,913	20,432	20,051	19,496	19,227	19,678	17,626	17,932	18,265	18,876	18,101	86.3
Michigan.....	10,541	17,724	19,262	20,692	19,563	19,375	20,351	16,646	17,051	14,642	12,406	10,900	9,880	47.7
New Jersey.....	52,307	53,210	53,509	54,393	53,523	53,333	52,633	53,392	53,266	50,632	49,639	49,716	51,468	91.4
New York.....	33,205	39,842	38,707	38,385	37,302	35,543	34,507	34,038	32,095	23,951	24,432	26,682	29,056	61.3
Ohio.....	11,412	10,939	11,754	12,370	12,216	12,385	12,347	11,358	11,896	11,185	11,086	10,027	9,373	75.7
Washington.....	34,576	48,392	11,286	35,287	43,830	43,646	41,820	39,965	37,883	35,759	29,739	24,821	22,578	23.3
Wisconsin.....	7,855	6,970	7,437	7,555	8,171	8,186	8,181	8,279	8,484	8,574	8,544	7,506	6,373	74.3

MANUFACTURES.

TABLE 7.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED STATES: 1919 AND 1914.

STATE.	Census year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
			44 and under.	Between 44 and 48.	49 ¹ .	Between 48 and 54.	54.	Between 54 and 60.	60.	Over 60.
United States.....	1919	387,446	250,809	4,700	116,123	2,038	2,156	477	1,964	120
	1914	44,489	(²)	(²)	14,730	7,638	12,320	1,524	7,771	506
	1900	40,506	(²)	(²)	3,865	2,074	9,883	10,045	14,038	1
Shipbuilding, steel.....	1919	344,014	246,866	4,085	89,901	583	541	138	1,300	498
	1914	33,508	(²)	(²)	11,928	6,861	0,900	928	6,393	1
Shipbuilding, wooden, including boat building.	1919	43,432	12,943	75	26,221	1,455	1,615	330	664	120
	1914	10,981	(²)	(²)	2,802	777	5,420	506	1,378	8
California.....	1919	47,530	40,979	(²)	550	1	61			361
	1914	3,457	(²)	(²)	3,035					
Florida ³	1910	11,199	2		10,806	11	242		78	
Louisiana.....	1910	5,346	50		5,218		45		33	
	1914	666	(²)	(²)	6		326	110	87	137
Maine.....	1910	7,000	581	4,317	1,294	233	392	183		
	1914	1,122	(²)	(²)	640	30	190	60		175
Maryland.....	1910	19,084	18,615		251	80	84	10	44	
	1914	2,468	(²)	(²)	185	1,378	678	91	136	
Michigan.....	1910	16,541	234		16,087	51	181	5	3	
	1914	1,261	(²)	(²)	98	30	730	14	389	
New Jersey.....	1919	52,397	41,555	312	9,977	151	176	22	200	4
	1914	6,324	(²)	(²)	5,095	652	569	1	35	2
New York.....	1919	33,205	6,070	76	26,258	404	207	68	113	
	1914	6,076	(²)	(²)	877	1,000	3,725	173	287	5
Ohio.....	1919	11,412	2,410	3	8,750	146	67		36	
	1914	2,879	(²)	(²)	9	11	327	794	1,738	
Washington.....	1910	34,570	33,203		1,373					
	1914	1,444	(²)	(²)	351		1,085		8	
Wisconsin.....	1919	7,855	210		7,554		18	25	48	
	1914	695	(²)	(²)	45	7	554	15	73	1

¹ Includes 48 and under for 1914 and 1909.² Corresponding figures not available.³ Figures not available for 1914.

TABLE 8.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED STATES: 1919.

STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING—																	
	Establishments.	Wage earners (average number).	No wage earners.		1 to 5 wage earners, inclusive.		6 to 20 wage earners, inclusive.		21 to 50 wage earners, inclusive.		51 to 100 wage earners, inclusive.		101 to 250 wage earners, inclusive.		251 to 500 wage earners, inclusive.		501 to 1,000 wage earners, inclusive.		Over 1,000 wage earners.	
			Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States:																				
1919.....	1,075	387,446	126	379	757	167	1,926	102	3,390	73	5,221	87	14,377	40	13,500	24	17,111	77	331,155	
1916.....	1,137	72,497	146	486	1,024	230	2,371	113	3,515	69	5,095	50	7,730	21	7,690	8	6,562	15	38,570	
1914.....	1,147	44,489	170	602	1,334	194	2,157	81	2,644	40	2,966	32	4,593	13	4,138	7	5,337	8	21,320	
Shipbuilding, steel—																				
1919.....	162	344,014	1	6	13	12	120	11	356	17	1,222	14	2,355	17	6,005	7	7,231	74	325,712	
1916.....	109	56,236	1	4	16	12	151	16	568	16	1,182	20	3,198	18	0,614	7	5,937	15	38,570	
1914.....	79	33,508		4	9	11	137	10	369	10	703	20	2,928	10	3,235	6	4,747	8	21,320	
Shipbuilding, wooden, including boat building—																				
1919.....	913	43,432	125	373	744	155	1,806	91	3,034	50	3,999	73	12,022	23	7,504	14	9,880	3	4,443	
1916.....	1,028	16,261	145	481	1,008	218	2,220	87	2,947	53	3,913	30	4,532	3	1,076	1	555			
1914.....	1,068	10,981	170	598	1,325	183	2,020	71	2,275	30	2,203	12	1,665	3	903	1	590			
California.....	67	47,530	3	15	38	23	248	7	214	2	139	5	908	1	382	1	709	10	44,892	
Florida.....	73	11,199	3	33	66	16	146	5	164	3	227	5	805	2	663	3	2,128	3	9,940	
Louisiana.....	22	5,346	1	5	9	5	67	3	104			1	114	3	977	2	1,516	2	2,559	
Maine.....	82	7,000	14	31	45	7	94	10	345	0	748	7	933	2	519			2	4,316	
Maryland.....	42	19,084	4	12	22	5	53	9	332	1	98	5	836	3	799	1	885	2	16,699	
Michigan.....	33	16,541	5	10	16	7	83	2	80	3	244	1	208					5	15,910	
New Jersey.....	93	52,397	10	37	77	10	106	5	189	5	323	8	1,184	4	1,190	1	727	7	48,601	
New York.....	161	33,295	18	49	93	24	292	10	603	20	1,375	13	2,258	8	2,722	1	835	9	25,117	
Ohio.....	28	11,412	7	5	11	3	36	4	112	4	312	1	157					4	10,784	
Washington.....	76	34,576	7	23	39	13	180	6	192	6	434	9	1,512	2	677	5	3,741	5	27,801	
Wisconsin.....	35	7,855	6	14	23	3	46	1	23	2	115	2	415	2	720	2	1,098	3	5,415	

SHIPBUILDING, INCLUDING BOAT BUILDING.

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TABLE 9.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919, 1916, AND 1914.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1919	1916	1914	1919	1916	1914	1919	1916	1914	1919	1916	1914
All classes.....	1,075	1,137	1,147	387,440	72,497	44,489	\$1,622,361,261	\$185,852,192	\$88,682,071	\$911,838,585	\$90,583,362	\$50,085,101
Less than \$5,000.....	287	461	549	145	472	558	629,905	1,019,222	1,199,688	436,474	682,718	822,806
\$5,000 to \$20,000.....	238	300	314	838	1,704	1,689	2,461,121	3,101,970	3,216,529	1,650,356	2,015,011	2,066,431
\$20,000 to \$100,000.....	183	197	182	2,978	4,304	4,162	8,825,152	9,006,099	7,916,358	5,239,140	5,132,024	4,442,517
\$100,000 to \$500,000.....	169	144	76	12,060	16,827	11,581	42,718,353	42,396,123	17,638,417	25,902,899	22,343,535	15,108,403
\$500,000 to \$1,000,000.....	55	11	11	9,832	16,827	11,581	37,888,810	7,592,501	24,051,907	854,560,709	66,410,074	27,644,944
\$1,000,000 and over.....	143	35	15	360,993	49,070	26,519	1,529,837,920	130,328,773	51,118,578			
PER CENT DISTRIBUTION.												
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....	20.7	40.5	47.9	(1)	0.7	1.3	(1)	0.6	1.4	(1)	0.7	1.6
\$5,000 to \$20,000.....	22.1	26.4	27.4	0.2	2.4	3.8	0.2	1.7	3.6	0.2	2.1	4.1
\$20,000 to \$100,000.....	17.0	17.3	15.9	0.8	6.0	9.4	0.5	4.8	8.9	0.6	5.3	8.9
\$100,000 to \$500,000.....	15.7	12.7	6.6	3.3	23.2	26.0	2.6	19.9	2.8	2.8	23.1	30.2
\$500,000 to \$1,000,000.....	5.1	1.0	1.0	2.5	23.2	26.0	2.3	22.8	8.6	2.6	23.1	30.2
\$1,000,000 and over.....	13.3	3.1	1.3	93.2	67.7	59.6	94.3	70.1	57.6	93.7	68.8	55.2

1 Less than one-tenth of 1 per cent.

TABLE 10.—CHARACTER OF OWNERSHIP, BY STATES: 1919, 1916, 1914, AND 1909.

STATE.	Census year.	NUMBER OF ESTABLISHMENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.						VALUE OF PRODUCTS.					
					In establishments owned by—			Per cent of total.			Of establishments owned by—			Per cent of total.		
		Indi-vid-u-als.	Cor-pora-tions.	All oth-ers.	Total.	Indi-vid-u-als.	Cor-pora-tions.	All oth-ers.	Indi-vid-u-als.	Cor-pora-tions.	All oth-ers.	Total.	Indi-vid-u-als.	Cor-pora-tions.	All oth-ers.	Indi-vid-u-als.
United States.....	1919	465	448	162	387,446	2,571	380,433	4,442	0.7	98.2	1.1	\$1,622,361,261	\$10,561,820	\$1,597,770,408	\$14,029,038	0.7
	1916	630	310	197	72,497	3,647	66,412	2,408	5.0	91.6	3.3	185,852,192	8,849,579	171,361,267	5,641,346	4.8
	1914	695	242	210	44,489	2,666	30,967	1,856	6.0	89.8	4.2	88,682,071	5,598,619	79,046,032	4,037,420	6.3
	1909	824	247	282	40,506	3,660	34,475	2,371	9.0	85.1	5.9	73,360,315	6,796,334	61,646,548	4,917,433	9.3
Shipbuilding, steel.	1919	8	148	0	344,014	97	343,035	282	(1)	99.9	0.1	1,456,459,516	401,883	1,454,961,083	1,126,550	(1)
	1916	11	87	11	56,237	618	55,245	374	1.1	98.2	0.7	1,420,661	142,255,944	942,506	942,506	1.0
	1914	7	64	8	33,508	180	33,019	300	0.6	98.5	0.9	66,216,692	434,942	64,973,326	808,424	0.7
Shipbuilding, wood- en, including boat building.	1919	457	300	156	43,432	2,474	36,798	4,160	5.7	84.7	9.6	165,871,745	10,159,937	142,809,320	12,902,488	6.1
	1916	619	223	186	16,260	3,029	11,197	2,034	18.6	68.9	12.5	41,233,081	7,428,918	29,105,323	4,698,840	18.0
	1914	688	178	202	10,981	2,477	6,948	1,556	22.6	63.3	14.2	22,465,379	5,163,677	14,072,706	3,228,996	23.0
California.....	1919	24	27	16	47,530	216	47,054	260	0.5	99.0	0.5	185,852,234	916,667	183,858,817	1,106,750	0.5
	1916	23	17	10	7,113	404	6,623	93.1	1.2	97.7	1.2	19,777,911	1,530,807	18,036,821	210,283	7.7
	1914	28	17	7	3,457	203	3,171	83	5.9	91.7	2.4	8,104,033	550,871	7,350,730	202,432	6.8
Florida ¹	1919	38	26	0	11,199	132	10,474	593	1.2	93.5	5.3	32,662,379	395,979	31,103,378	1,163,022	1.2
Louisiana.....	1919	5	14	3	5,346	57	5,279	10	1.1	98.7	0.2	17,597,888	79,165	17,483,662	35,041	0.4
	1916	14	0	3	1,306	74	1,171	61	5.7	89.7	4.7	2,606,767	127,836	2,395,786	83,145	4.9
	1914	7	0	4	666	45	634	87	6.8	80.2	13.1	1,080,319	31,580	956,732	92,007	2.9
Maine.....	1919	30	30	13	7,000	229	6,715	56	3.3	95.9	0.8	24,682,253	970,594	23,398,053	313,606	3.9
	1916	62	18	20	1,857	163	1,452	242	8.8	78.2	13.0	4,882,131	475,171	3,797,229	600,731	9.7
	1914	75	13	10	1,122	95	893	134	8.5	79.6	11.9	2,482,518	190,833	2,007,196	284,489	7.7
Maryland.....	1919	13	21	8	19,084	142	18,893	49	0.7	99.0	0.3	67,309,914	415,484	66,712,033	182,397	0.6
	1916	29	14	7	6,326	259	4,879	188	4.9	91.6	3.5	483,147	11,268,064	453,726	453,726	4.0
	1914	23	12	7	2,468	168	2,126	174	6.8	86.1	7.1	4,521,169	254,161	3,919,507	347,501	5.6
Michigan.....	1919	16	16	1	16,541	140	16,401	.....	0.8	99.2	.....	85,154,702	1,008,000	84,146,702	.....	1.2
	1916	37	11	7	2,225	381	1,712	132	17.1	76.9	5.9	5,637,103	679,570	4,620,709	336,824	12.1
	1914	42	11	9	1,261	175	940	146	13.9	74.5	11.6	2,822,557	336,488	2,154,864	351,205	11.9
New Jersey.....	1919	49	31	13	52,397	153	51,957	287	0.3	99.2	0.5	238,014,659	496,575	236,391,794	1,126,290	0.2
	1916	41	24	11	7,777	160	7,495	122	2.1	96.4	1.6	20,311,529	322,038	19,751,940	237,551	1.6
	1914	51	23	11	6,324	148	6,095	81	2.3	96.4	1.3	11,860,965	331,988	11,333,679	195,298	2.8
New York.....	1919	72	71	18	33,295	628	32,133	534	1.9	96.5	1.6	132,012,124	3,100,018	126,421,233	2,490,773	2.3
	1916	110	50	34	9,928	830	8,527	571	8.4	85.9	5.7	31,357,645	27,394,616	1,636,851	7.4	37.4
	1914	129	39	39	6,076	697	4,935	444	11.5	81.2	7.3	14,195,298	1,019,349	11,433,607	1,142,342	11.4
Ohio.....	1919	11	13	4	11,412	48	11,341	23	0.4	99.4	0.2	57,482,599	147,801	57,264,711	70,087	0.3
	1916	11	13	8	5,059	35	4,989	35	0.7	98.6	0.7	12,100,007	83,976	12,009,771	66,260	0.7
	1914	12	12	5	2,870	74	2,769	36	2.6	96.2	1.3	4,716,787	105,840	4,537,147	73,800	2.2
Washington.....	1919	23	40	13	34,576	75	33,953	548	0.2	98.2	1.6	166,519,787	292,085	163,895,783	2,331,919	0.8
	1916	21	25	13	3,744	49	3,581	114	1.3	95.6	3.0	10,829,812	118,980	10,406,725	304,107	1.1
	1914	35	11	18	1,444	95	1,234	115	6.6	85.5	8.0	3,101,446	273,265	2,551,020	277,161	8.8
Wisconsin.....	1919	13	17	5	7,855	9	7,813	33	0.1	99.5	0.4	44,163,746	39,355	44,027,194	97,197	0.1
	1916	13	11	6	1,250	22	1,157	71	1.8	92.6	5.6	3,826,847	40,019	3,649,285	137,543	1.0
	1914	17	12	6	695	24	606	65	3.5	87.2	9.4	1,254,088	50,202	1,099,122	104,764	4.0

1 Less than one-tenth of 1 per cent.

2 Figures not available for 1916 and 1914.

3 Includes the group "All others."

TABLE 11.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919, 1914, AND 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
	1919	1914	1909	Amount.			Per cent distribution.		
				1919	1914	1909	1919	1914	1909
Primary power, total.....	22,179	2,999	1,900	553,711	115,333	88,063	100.0	100.0	100.0
Owned.....	1,255	1,338	1,416	128,290	85,029	78,769	23.2	73.7	89.4
Steam.....	789	831	901	121,200	79,599	75,180	21.9	69.0	85.4
Engines.....	750	(2)	(2)	70,104	(2)	(2)	14.3		
Turbines.....	39	(2)	(2)	42,036	(2)	(2)	7.6		
Internal-combustion engines.....	461	502	420	7,019	5,333	3,503	1.3	4.6	4.0
Water wheels, turbines, and motors.....	5	5	5	71	94	80	(3)	0.1	0.1
Rented.....	20,924	1,661	544	425,421	30,304	9,294	76.8	26.3	10.6
Electric.....	20,924	1,661	544	424,081	30,085	9,234	76.7	26.1	10.6
Other.....				440	219	30	0.1	0.2	(3)
Electric.....	23,300	3,989	2,266	470,135	60,275	35,334	100.0	100.0	100.0
Rented.....	20,924	1,661	544	424,081	30,085	9,234	89.3	45.4	28.2
Generated by establishments reporting.....	2,400	2,328	1,722	51,154	30,190	26,070	10.7	54.6	71.8

¹ Figures for horsepower include for 1909 the amount reported under the head of "Other" owned power.

² Not reported separately.

³ Less than one-tenth of 1 per cent.

TABLE 12.—FUEL CONSUMED, BY STATES: 1919 AND 1914.

STATE AND CENSUS YEAR.	COAL.		Coke (tons, 2,000 lbs.).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).	STATE AND CENSUS YEAR.	COAL.		Coke (tons, 2,000 lbs.).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).						Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).				
United States:							Michigan:						
1919.....	50,234	868,713	97,690	1,032,672	101,179	701,461	1919.....	10	80,084	2,691	30,456	1,244	194
1914.....	18,441	251,820	10,548	122,929	(1)	404,785	1914.....	19	22,594	410	2,290	(1)	
Shipbuilding, steel—							New Jersey:						
1919.....	37,392	785,898	96,717	980,144	95,584	694,467	1919.....	21,983	165,259	14,300	109,959	30,399	24,115
Shipbuilding, wooden—							1914.....	6,179	30,101	1,397	7,170	(1)	520
1919.....	12,842	82,815	973	52,528	5,595	6,994	New York:						
California:							1919.....	15,220	66,719	4,019	21,913	6,054	9,049
1919.....	1,725	1,355	13,770	191,795	5,774	2,013	1914.....	4,255	23,347	639	2,657	(1)	5,741
1914.....	15	175		78,690	(1)	30	Ohio:						
Louisiana:							1919.....	750	69,190	4,338	842	33,082	444,224
1919.....	14	9,908	995	14,279	1,895	1,053	1914.....	64	24,434	1,851	4,174	(1)	387,074
1914.....	4	740	34	1,452	(1)		Washington:						
Maine:							1919.....	100	7,044	10,407	154,590	2,702	47,274
1919.....	653	9,044	31	20,069	70	193	1914.....	5	61	100	11,079	(1)	
1914.....	19	4,871	1	254	(1)	140	Wisconsin:						
Maryland:							1919.....	361	28,553	1,312	23,106	255	664
1919.....	5,346	34,810	3,318	10,066	1,244	629	1914.....	49	5,762	30	113	(1)	
1914.....	481	19,077	364	1,205	(1)	370	All other states:						
							1919.....	4,054	395,547	42,500	440,627	18,460	172,247
							1914.....	2,351	114,058	5,623	13,330	(1)	10,716

¹ Included in figures for fuel oils.

SPECIAL STATISTICS.

Statistics covered and terms used.—The schedules used in collecting the statistics of shipbuilding required a detailed statement of the number, kind, and tonnage of vessels launched, and value of the different kinds of work performed.

In explanation of the terms gross and net tons, it should be stated that gross tonnage is the total internal cubic capacity of a vessel, expressed in tons of 100 cubic feet each, while net tonnage is the internal cubic capacity remaining after deductions have been made from gross tonnage for quarters of officers and crew, for boilers, machinery, and coal bunkers, and for navigation and other purposes. Net tonnage, therefore, may be regarded as that portion of the vessel which is available for passengers and cargo. Ton-

nage measurements are not altogether uniform among maritime nations, but vary with the laws of the nation under which registry is made. Displacement tonnage, the term used in stating the size of vessels of the United States Navy, differs from gross and net tonnage as applied to merchant vessels, and is merely the weight of the volume of water displaced, equivalent, of course, to the weight of the vessel. The tonnage of vessels of the United States Navy, as given in the statistics, is always displacement tonnage. While gross tonnage and displacement tonnage are not by any means the same, it is necessary to combine the tonnage of vessels whose capacity is reckoned in one way, with that of vessels whose capacity is reckoned by the other method, in order to obtain a total

which should represent approximately the total tonnage launched during the year.

In the tables which follow, gross tonnage is shown unless otherwise specified, and the statistics do not include the products of Government shipyards nor the subsidiary products of establishments in other industries unless specifically stated.

Number and gross tonnage of vessels launched and number of power boats.—Table 13 shows the number and gross tonnage of all vessels launched during the census years 1919, 1916, 1914, and 1909, and distinguishes three classes of establishments reporting for 1919, 1914, and 1909, and two classes of establishments for 1916. In many cases a large part of the work on vessels launched during the census years was done in prior years, and on the other hand, much work was done during each census year on vessels which were not launched.

In 1919, 1914, and 1909, shipbuilding statistics were collected as a part of the quinquennial census of manufactures for these years, and include data for vessels and boats built by establishments engaged primarily in other lines of manufacture and hence not classed as shipbuilding, whereas the census of 1916 did not cover other manufacturing industries but was limited to the shipbuilding industry proper. The statistics for 1916, therefore, are those of establishments engaged primarily in ship and boat building and repairs, and include Government shipyards, but do not include any ships or boats that may have been built in establishments designated as "Private establishments in other industries." The number, as well as the tonnage, of vessels launched by these private establishments is relatively small, the tonnage amounting to only 1.1 per cent of the total in 1919, 3 per cent in 1914, and 2.6 per cent in 1909.

TABLE 13.—NUMBER AND GROSS TONNAGE OF VESSELS LAUNCHED AND NUMBER OF POWER BOATS: 1919, 1916, 1914, AND 1909.

CLASS.	Census year.	ALL ESTABLISHMENTS.		PRIVATE ESTABLISHMENTS IN THE SHIPBUILDING INDUSTRY.		PRIVATE ESTABLISHMENTS IN OTHER INDUSTRIES.		GOVERNMENT SHIPYARDS.	
		Number.	Gross tonnage.	Number.	Gross tonnage.	Number.	Gross tonnage.	Number.	Displacement tonnage.
Vessels of 5 gross tons and over.....	1919	2,202	4,662,433	2,033	14,489,809	64	51,970	105	120,654
	1916	1,468	772,167	1,377	784,108	.....	.....	88	38,059
	1914	1,255	455,567	1,113	425,060	94	18,654	48	16,853
	1909	1,637	481,815	1,584	467,219	22	12,535	31	2,059
Classified by material:									
Steel.....	1919	1,181	3,882,894	¹ 1,095	3,734,201	59	47,194	27	101,499
	1916	244	518,858	280	485,860	.....	.....	14	32,998
	1914	215	268,870	128	242,959	69	9,792	20	16,119
	1909	169	260,765	158	254,988	8	6,429	3	350
Wooden.....	1919	1,021	779,539	938	755,608	5	4,776	78	19,155
	1916	1,219	253,309	1,147	248,248	.....	.....	72	5,061
	1914	1,040	186,697	987	182,101	25	3,862	28	734
	1909	1,468	221,048	1,426	212,233	14	7,106	28	1,709
Classified by power:									
Steam.....	1919	1,230	4,109,652	1,203	4,010,724	.....	.....	27	98,928
	1916	206	472,597	186	442,354	.....	.....	20	30,243
	1914	148	243,011	139	234,636	.....	.....	9	8,375
	1909	194	235,315	181	234,633	3	429	10	253
Motor.....	1919	254	60,399	241	57,174	.....	.....	13	3,225
	1916	434	30,316	403	29,886	.....	.....	31	450
	1914	382	10,867	370	10,821	4	6	8	40
	1909	447	9,413	445	9,389	2	24	.....	.....
Sail, with auxiliary power.....	1919	28	19,242	27	17,754	1	1,488	.....	.....
	1916	62	30,625	62	30,625	.....	.....	.....	.....
	1914	66	6,575	58	2,799	8	3,776	.....	.....
	1909	68	2,652	68	2,652	.....	.....	.....	.....
Sail, without auxiliary power.....	1919	58	64,579	57	63,091	1	1,488	.....	.....
	1916	62	15,456	52	15,456	.....	.....	.....	.....
	1914	40	2,224	40	2,224	.....	.....	.....	.....
	1909	51	14,807	51	14,807	.....	.....	.....	.....
Unrigged.....	1919	632	408,561	505	341,066	62	48,994	65	18,501
	1916	699	223,173	664	215,807	.....	.....	35	7,366
	1914	619	192,890	506	174,580	82	9,872	31	8,438
	1909	877	219,626	839	206,738	17	12,082	21	1,806
Power boats of less than 5 gross tons.....	1919	1,716	.....	1,159	.....	206	.....	351	.....
	1916	3,710	.....	3,606	.....	.....	.....	104	.....
	1914	4,518	.....	3,706	.....	758	.....	54	.....
	1909	9,042	.....	8,577	.....	412	.....	53	.....

¹ Includes 122,457 tonnage reported as "displacement tonnage" instead of "gross tonnage."

² Includes 14 concrete vessels, 18,034 gross tons.

Number and gross tonnage of vessels launched, by coast divisions and inland waters.—Table 14 gives, for private establishments in the shipbuilding industry, the number and gross tonnage of vessels launched, and the number of power boats built of less than 5 gross tons for 1919, 1916, and 1914. Statistics are presented for coastal areas and inland waters designated as follows:

1. The North Atlantic division which includes establishments located on the Atlantic seaboard and the navigable rivers of the New England states, and of New York, New Jersey, Pennsylvania, and Delaware.

2. The South Atlantic division which includes establishments located in Maryland, the District of Columbia, Virginia, North Carolina, South Carolina, Georgia, and the east coast of Florida.

3. The Gulf division which includes establishments located on the Gulf of Mexico and on waters tributary to the Gulf, other than the Mississippi River, in the states of Florida, Alabama, Mississippi, Louisiana, and Texas.

4. The Pacific division which includes establishments located in the states of California, Oregon, and Washington.

5. The Great Lakes division which includes establishments in the territory bordering on the Great Lakes and the St. Lawrence River.

6. The division designated "Mississippi River and its tributaries" which includes establishments located on these rivers.

7. The division "Other inland waters" which includes establishments, chiefly boat-building plants, located on lakes and rivers other than those mentioned in the preceding groups. This division also includes establishments located on canals and engaged in the building of canal boats.

In 1919, 40.7 per cent of all tonnage launched in the United States, was constructed in the North Atlantic division, 30.2 per cent on the Pacific Coast, 15.6 per cent on the Great Lakes and all other inland waters, and 13.5 per cent in the South Atlantic and Gulf divisions.

TABLE 14.—NUMBER AND GROSS TONNAGE OF VESSELS LAUNCHED, BY COAST DIVISIONS AND INLAND WATERS: 1919, 1916 AND 1914.

CLASS.	Census year.	United States.	COAST DIVISIONS.				INLAND WATERS.		
			North Atlantic.	South Atlantic.	Gulf.	Pacific.	Great Lakes.	Mississippi River and its tributaries.	Other inland waters.
Vessels of 5 gross tons and over:									
Number.....	1919	2,033	781	205	164	419	354	95	15
	1916	1,377	597	138	87	223	89	234	9
	1914	1,113	401	99	126	231	82	153	21
Gross tonnage.....	1919	4,480,809	1,826,365	295,321	313,474	1,356,017	657,810	38,700	2,116
	1916	734,108	280,240	128,614	18,507	134,086	121,134	50,593	925
	1914	425,060	174,032	60,286	23,733	41,112	43,251	71,612	1,434
Steel:									
Number.....	1919	1,095	1,443	269	48	218	307	10	.....
	1916	230	64	27	7	20	57	55	.....
	1914	126	41	21	6	15	21	22	.....
Gross tonnage.....	1919	3,734,201	61,047,627	6,240,063	7,148,200	8,108,441	595,416	12,854	.....
	1916	485,800	130,909	108,920	1,990	102,119	118,000	17,313	.....
	1914	242,950	108,042	60,114	1,931	23,973	39,029	8,970	.....
Wooden:									
Number.....	1919	938	338	130	116	201	47	85	15
	1916	1,147	533	111	80	203	32	179	9
	1914	987	360	78	120	216	61	131	21
Gross tonnage.....	1919	755,008	178,738	54,058	165,274	266,576	62,400	25,846	2,116
	1916	248,248	143,340	10,685	16,517	31,967	2,534	33,280	925
	1914	182,101	66,690	9,172	21,802	17,130	3,322	62,642	1,434
Steam:									
Number.....	1919	1,203	458	90	58	260	324	4	.....
	1916	180	58	22	7	33	46	20	.....
	1914	130	44	18	4	22	20	20	2
Gross tonnage.....	1919	4,010,724	1,072,057	250,364	209,321	1,200,766	600,923	1,393	.....
	1916	442,354	120,310	95,897	2,052	111,404	102,464	3,618	.....
	1914	234,630	104,100	57,544	415	28,800	38,811	4,798	78
Motor:									
Number.....	1919	241	89	38	20	81	9	2	2
	1916	403	170	38	22	123	22	24	4
	1914	370	123	33	28	132	39	8	7
Gross tonnage.....	1919	57,174	17,031	1,143	23,958	13,791	243	50	58
	1916	29,860	7,052	13,960	400	7,315	479	549	45
	1914	10,821	2,221	593	1,009	4,990	972	88	44
Sail with auxiliary power:									
Number.....	1919	27	17	.....	6	4	.....	.....	.....
	1916	62	31	3	12	9	7	.....	.....
	1914	58	35	3	2	15	3	.....	.....
Gross tonnage.....	1919	17,754	1,077	.....	4,651	11,126	.....	.....	.....
	1916	30,625	2,854	1,420	4,595	9,085	11,771	.....	.....
	1914	2,799	1,746	50	72	835	90	.....	.....
Sail without auxiliary power:									
Number.....	1919	57	33	4	8	10	.....	2	.....
	1916	62	33	1	12	15	1	.....	.....
	1914	40	18	2	5	15	.....	.....	.....
Gross tonnage.....	1919	63,091	33,612	4,323	7,748	17,378	.....	30	.....
	1916	15,456	9,395	75	2,208	1,368	2,320	.....	.....
	1914	2,224	1,844	64	104	122	.....	.....	.....
Unrigged:									
Number.....	1919	505	184	73	72	55	21	87	13
	1916	664	305	74	34	43	13	190	5
	1914	506	181	43	87	47	11	125	12
Gross tonnage.....	1919	341,066	99,888	33,491	67,796	43,956	50,650	37,227	2,058
	1916	215,807	134,620	17,202	8,496	4,014	4,100	46,426	880
	1914	174,580	64,721	11,029	21,143	6,269	3,778	60,728	1,312
Power boats of less than 5 gross tons.....	1919	1,150	491	120	25	200	107	31	185
	1916	3,006	1,046	143	152	191	412	462	300
	1914	3,706	1,265	206	127	363	541	427	777

¹ Includes 6 concrete barges.

² Includes 1 composite vessel.

³ Includes 5 composite and 2 concrete vessels.

⁴ Includes 6 concrete and 3 composite vessels.

⁵ Includes 3,000 tons concrete vessels.

⁶ Includes 5,180 gross tons composite vessels.

⁷ Includes 15,086 gross tons composite and 12,574 tons concrete vessels.

⁸ Includes 2,460 tons concrete and 8,772 tons composite vessels.

Steel power vessels launched, by class, by coast divisions and inland waters.—Table 15 shows the class, number, gross tonnage, and place where launched of all steel vessels built in the United States in 1919, exclusive of Government vessels.

The greatest tonnage, 450,574, was launched in Newark, N. J., and the second greatest tonnage, 390,698, in Seattle, Wash. While Newark holds first place in aggregate tonnage, the vessels launched in Seattle were of larger average tonnage, the figures being 4,210 and 6,301, respectively.

TABLE 15.—STEEL POWER VESSELS LAUNCHED, BY CLASS, BY COAST DIVISIONS AND INLAND WATERS: 1919.

DIVISION.	TOTAL.				SCREW.				STERN-WHEEL STEAM.	
	Steam.		Motor.		Steam.		Motor.		Num-ber.	Tonnage.
	Num-ber.	Tonnage.	Num-ber.	Tonnage.	Num-ber.	Tonnage.	Num-ber.	Tonnage.		
United States ¹	990	3,670,617	46	24,780	982	3,599,197	46	24,780	17	71,420
North Atlantic.....	397	1,021,472	29	15,703	396	1,021,072	29	15,703	1	400
South Atlantic.....	67	239,480			66	231,291			1	5,189
Gulf.....	33	137,224	4	627	32	133,624	4	627	1	3,600
Pacific.....	204	1,080,981	13	8,450	194	1,020,321	13	8,450	10	60,660
Great Lakes.....	295	593,266			294	592,889			1	377
Mississippi River and its tributaries.....	3	1,194							3	1,194

¹ Includes 14 concrete vessels, 18,034 gross tons.

Gross tonnage and kind of service of vessels launched.—Table 16 presents, by coast divisions and inland waters, the gross tonnage of vessels launched during 1919, according to the service in which vessels are to be used. In this and the following tables data do not include the products of Government shipyards.

The bulk of the shipbuilding in the United States has been the tonnage for freight service, which em-

braces the foreign, coastwise, and domestic trade, and includes freight tonnage carrying passengers. This class of tonnage represented 81.4 per cent of the entire tonnage launched in 1919.

Tankers for the carriage of oil in bulk show a remarkable increase, the tonnage launched in 1919 being 346,253 as compared with 26,655 in 1916.

TABLE 16.—GROSS TONNAGE AND KIND OF SERVICE OF VESSELS LAUNCHED: 1919.

CHARACTER OF SERVICE.	United States.	COAST DIVISIONS.				INLAND WATERS.		
		North Atlantic.	South Atlantic.	Gulf.	Pacific.	Great Lakes.	Mississippi River and its tributaries.	Other inland waters.
Total tonnage.....	4,480,800	1,826,365	295,321	313,474	1,356,017	657,816	38,700	2,116
Passenger.....	40,895	40,589	306					
Freight.....	3,055,544	1,515,197	150,907	245,135	1,105,254	608,169	29,682	1,200
Towing.....	40,195	16,166	5,402	8,254	1,101	8,649	583	50
Ferry.....	1,063	1,229	13		421			
Tanker.....	346,253	87,310	110,247	20,224	120,997		7,475	
Fishing.....	5,860	3,288	453	7	1,721	394		
Canal.....	13,555	12,575	120		12			848
U. S. Government.....	359,658	144,072	8,513	39,705	126,222	40,246	900	
Foreign government.....	18,960	100	18,860					
Yacht.....	1,431	837	374	149	53	58	10	
All other.....	5,730	5,014	121		236	300	50	18
Steel tonnage.....	3,734,201	1,647,627	240,663	148,200	1,089,441	595,416	12,854	
Passenger.....	40,500	40,500	306					
Freight.....	3,110,484	1,387,332	103,296	128,368	930,159	553,669	7,660	
Towing.....	17,398	11,477	285	1,108		4,234	294	
Ferry.....	1,215							
Tanker.....	329,999	78,031	110,247	16,724	120,997		4,000	
Fishing.....	1,719	1,342				377		
Canal.....	3,000	3,000						
U. S. Government.....	210,854	124,580	7,975	2,000	38,263	37,136	900	
Foreign government.....	18,960	100	18,860					
Yacht.....	72	50			22			
All other.....								
Wooden tonnage.....	755,608	178,733	54,653	165,274	266,576	62,400	25,846	2,116
Passenger.....	395	89	306					
Freight.....	545,090	127,865	47,611	116,767	175,095	54,500	22,022	1,200
Towing.....	22,797	4,079	5,117	7,146	1,101	4,415	289	50
Ferry.....	448	14	13		421			
Tanker.....	10,264	9,279		3,500			3,475	
Fishing.....	4,147	1,944	458	7	1,721	17		
Canal.....	10,555	9,575	120		12			848
U. S. Government.....	148,804	19,492	538	37,705	87,959	3,110		
Foreign government.....	1,406	787	374	149	31	58	10	
Yacht.....	5,739	5,014	121		236	300	50	18
All other.....								

Vessels launched, grouped according to tonnage.—Table 17 shows, by classes, the number and gross tonnage of vessels launched during 1919 and 1916, grouped according to tonnage.

TABLE 17.—VESSELS LAUNCHED, GROUPED ACCORDING TO TONNAGE: 1919 AND 1916.

CLASS.	Census year.	TOTAL.		LESS THAN 100 GROSS TONS.		100 BUT LESS THAN 500 GROSS TONS.		500 BUT LESS THAN 1,000 GROSS TONS.		1,000 BUT LESS THAN 3,000 GROSS TONS.		3,000 GROSS TONS AND OVER.	
		Num-ber.	Tons.	Num-ber.	Tons.	Num-ber.	Tons.	Num-ber.	Tons.	Num-ber.	Tons.	Num-ber.	Tons.
Total.....	1919	2,033	4,489,809	276	8,906	420	115,434	233	151,480	513	1,145,099	591	3,068,890
	1916	1,377	734,108	610	17,878	503	144,501	141	97,797	49	75,920	74	397,932
Steel.....	1919	1,095	3,734,201	12	508	71	24,203	144	93,093	343	812,999	525	2,803,398
	1916	230	485,800	18	890	95	29,493	21	15,099	22	42,426	74	397,932
Steam and motor.....	1919	1,045	3,695,397	9	338	148	18,655	133	86,964	331	790,116	524	2,799,324
	1916	151	442,991	17	810	36	10,277	10	6,689	14	27,263	74	397,932
Sail.....	1919	3	1,924			1	460	2	1,464				
	1916	8	14,191			1	128			7	14,083		
Unrigged.....	1919	47	30,880	3	170	22	5,088	9	1,665	12	22,883	1	4,074
	1916	71	28,678	1	80	58	19,088	11	8,410	1	1,100		
Wooden.....	1919	938	755,008	264	8,398	349	91,231	89	58,387	170	332,100	66	285,492
	1916	1,147	248,248	592	16,988	408	115,008	120	82,098	27	33,494		
Steam and motor.....	1919	399	372,501	189	5,930	85	21,357	8	4,627	74	188,163	43	152,424
	1916	438	29,229	390	9,133	33	6,000	8	6,438	7	7,598		
Sail.....	1919	81	78,921	17	209	10	2,255	13	9,203	37	54,564	4	12,600
	1916	110	31,890	77	1,860	12	2,204	17	11,921	10	15,896		
Unrigged.....	1919	468	304,186	58	2,169	254	67,619	68	14,557	59	80,373	19	100,468
	1916	593	187,129	125	5,980	303	106,804	95	64,339	10	10,000		

¹ Includes 5 concrete vessels, 2,450 gross tons.

² Includes 2 concrete vessels, 12,574 gross tons.

³ Includes 1 concrete vessel, 10 gross tons.

⁴ Includes 6 concrete vessels, 3,000 gross tons.

The group "3,000 tons and over" (3,000 tons being virtually the minimum tonnage for oversea trade), shows, in 1916, 5.4 per cent for number and 54.2 per cent for tonnage, as compared with 29.1 per cent and 68.4 per cent, respectively, in 1919. In the first group mentioned only 12 of the vessels were constructed of steel, while in the group of "3,000 tons and over," out of a total of 591 vessels 525 were of steel construction.

Vessels launched, by states.—Table 18 gives, by states, the total number and gross tonnage of all vessels launched in 1919, 1916, and 1914, by establishments in the shipbuilding industry, exclusive of Government shipyards.

Of the total number of vessels launched, of 5 tons and over, New York built the largest number in 1919, as well as in 1916 and 1914, but in total tonnage launched, New York was outranked by Pennsylvania, Washington, New Jersey, and California, in the order named. The combined tonnage of these four states, in 1919, amounted to 2,417,378, or over one-half of the entire tonnage launched in the United States.

The largest average tonnage per vessel, 3,766, was launched in Pennsylvania, closely followed by Oregon and New Jersey, with 3,512 and 3,382 tons, respectively.

Steam vessels launched.—Table 19 shows, by states, the number and the gross and net tonnage of steam vessels of 5 tons and over, launched in private shipyards in 1919, 1916 and 1914.

In 1919 Pennsylvania, New Jersey, Washington, and California led in the order named, and their combined tonnage represented 2,340,807 gross tons, or 58.4 per cent of the total for steam vessels of 5 tons and over, launched in private yards. In 1916 the leading states in respect to tonnage were California, Virginia, Ohio, and Pennsylvania, in the order named.

TABLE 18.—VESSELS LAUNCHED, BY STATES: 1919, 1916, AND 1914.

STATE.	1919		1916		1914	
	Num-ber.	Tonnage.	Num-ber.	Tonnage.	Num-ber.	Tonnage.
United States.....	2,033	4,489,809	1,377	734,108	1,113	425,060
Alabama.....	43	62,987	(*)		(*)	
California.....	162	503,986	118	89,108	88	31,500
Connecticut.....	31	71,022	18	3,365	19	1,995
Delaware.....	21	42,395	44	25,472	10	6,694
Florida.....	62	109,553	45	6,614	22	1,141
Georgia.....	36	38,528	(*)		(*)	
Indiana.....	13	5,675	(*)		(*)	
Kentucky.....	8	1,990	65	16,163	51	40,000
Louisiana.....	47	70,909	40	11,974	73	17,601
Maine.....	82	87,801	45	15,486	43	3,072
Maryland.....	101	153,795	66	57,767	58	36,961
Michigan.....	131	208,002	29	38,340	21	12,405
New Jersey.....	180	608,843	75	33,762	65	57,866
New York.....	297	292,445	337	111,709	220	49,911
North Carolina.....	3	345	8	2,268	11	730
Ohio.....	92	184,052	51	74,320	35	36,824
Oregon.....	62	217,759	36	11,052	41	2,485
Pennsylvania.....	178	670,277	128	71,830	56	30,533
Rhode Island.....	7	305	(*)		(*)	
Texas.....	37	86,404	12	2,265	29	4,233
Virginia.....	33	70,556	36	63,943	24	31,538
Washington.....	195	634,272	69	33,326	102	7,117
West Virginia.....	2	120	(*)		(*)	
Wisconsin.....	78	105,854	21	13,436	20	3,648
All other states.....	159	200,481	131	51,312	116	49,506

¹ Exclusive of 61 vessels, with an aggregate gross tonnage of 51,970, launched by establishments in other industries.

² Exclusive of 61 vessels, with an aggregate gross tonnage of 13,654, launched by establishments in other industries.

³ Included in "All other states."

TABLE 19.—STEAM VESSELS LAUNCHED, BY STATES: 1919, 1916, AND 1914.

STATE.	1919			1916			1914		
	Num- ber.	Tonnage.		Num- ber.	Tonnage.		Num- ber.	Tonnage.	
		Gross.	Net.		Gross.	Net.		Gross.	Net.
United States.....	1,233	4,010,724	2,366,772	183	442,354	297,724	139	234,636	175,094
Alabama.....	11	39,323	22,917	(?)			(?)		
California.....	108	489,823	305,677	16	82,766	46,622	9	26,420	17,490
Connecticut.....	19	59,735	39,645	(?)			(?)		
Delaware.....	16	38,865	23,517	8	13,965	9,642	8	6,266	3,795
Florida.....	21	92,890	57,930	(?)			(?)		
Georgia.....	33	32,852	7,509	(?)			(?)		
Louisiana.....	19	58,375	12,406	(?)			(?)		
Maine.....	19	40,887	23,436	5	3,417	2,957	5	1,400	1,317
Maryland.....	33	129,000	78,635	13	32,861	20,513	11	27,388	16,794
Michigan.....	126	207,852	121,648	13	35,945	23,303	6	11,512	7,273
New Jersey.....	180	603,543	321,661	6	20,331	12,021	6	41,182	36,137
New York.....	78	107,810	97,648	17	3,281	2,595	10	3,056	1,900
Ohio.....	76	179,246	108,461	17	52,046	41,154	6	26,205	19,778
Oregon.....	47	189,754	115,698	5	4,719	3,209	5	251	171
Pennsylvania.....	123	654,252	417,709	19	49,089	31,407	18	23,547	23,374
Texas.....	14	37,379	22,628	(?)			(?)		
Virginia.....	14	69,595	44,086	8	62,778	47,703	7	30,176	22,896
Washington.....	114	593,180	405,131	12	23,919	16,258	8	2,219	1,453
Wisconsin.....	74	104,654	61,730	12	12,415	7,017	6	362	251
All other states.....	98	226,283	77,700	35	44,822	32,423	25	34,672	22,464

1 Includes 2 concrete vessels, 12,574 gross tons.

2 Included in "All other states."

Motor vessels launched, including sail vessels with auxiliary power, by states.—Table 20 shows, by states, the number and the gross and net tonnage of motor vessels, including sail vessels with auxiliary power, of 5 gross tons and over, launched in private shipyards in 1919, 1916, and 1914.

TABLE 20.—MOTOR VESSELS LAUNCHED, INCLUDING SAIL VESSELS WITH AUXILIARY POWER, BY STATES: 1919, 1916, AND 1914.

STATE.	Census year.	Num- ber.	TONNAGE.	
			Gross.	Net.
United States.....	1919	268	74,028	44,010
	1916	165	60,491	45,251
	1914	428	13,620	9,974
Motor.....	1919	241	57,174	20,565
	1916	403	29,866	19,198
	1914	370	10,821	7,789
Sail with auxiliary power.....	1919	27	17,754	15,354
	1916	62	30,625	26,063
	1914	58	2,799	2,185
California.....	1919	36	17,047	662
	1916	70	3,511	2,003
	1914	70	2,815	1,971
Connecticut.....	1919	7	3,540	25
	1916	10	1,774	1,132
	1914	12	180	127
Florida.....	1919	20	4,203	3,133
	1916	15	194	149
	1914	15	247	177
Louisiana.....	1919	7	712	402
	1916	14	3,017	2,707
	1914	13	1,593	1,301
Maine.....	1919	22	3,179	2,423
	1916	23	1,812	1,469
	1914	34	541	339
Maryland.....	1919	9	160	126
	1916	20	14,997	10,003
	1914	6	194	114
New Jersey.....	1919	10	785	64
	1916	45	1,022	800
	1914	22	1,419	1,256
New York.....	1919	25	3,070	1,827
	1916	72	1,735	1,379
	1914	60	958	663

1 Includes 5,978 displacement tonnage.

2 Includes 3,600 displacement tonnage.

TABLE 20.—MOTOR VESSELS LAUNCHED, INCLUDING SAIL VESSELS WITH AUXILIARY POWER, BY STATES: 1919, 1916 AND 1914—Continued.

STATE.	Census year.	Num- ber.	TONNAGE.	
			Gross.	Net.
North Carolina.....	1919	2	85	55
	1916	2	81	61
	1914	8	175	121
Ohio.....	1919	1	6	4
	1916	12	11,974	9,424
	1914	6	129	89
Oregon.....	1919	2	36	24
	1916	14	6,205	5,875
	1914	7	317	234
Pennsylvania.....	1919	3	373	335
	1916	5	116	111
	1914	8	66	52
Rhode Island.....	1919	6	205	140
	1916	(?)		
	1914	(?)		
Texas.....	1919	9	17,031	15,625
	1916	6	1,925	1,566
	1914	9	198	124
Virginia.....	1919	14	401	240
	1916	12	183	180
	1914	11	118	72
Washington.....	1919	47	17,834	13,071
	1916	42	7,584	5,910
	1914	70	2,099	2,032
Wisconsin.....	1919	1	50	30
	1916	7	221	183
	1914	15	413	331
All other states.....	1919	41	10,205	5,773
	1916	90	4,740	2,239
	1914	52	1,558	981

3 Included in "All other states."

Motor vessels were reported separately for the first time in 1904, at which time they numbered 311, and averaged slightly over 10 gross tons in size. In 1909 their average capacity was 21 tons; in 1914, about 29 tons; in 1916, nearly 75 tons; and in 1919, over 237 tons. The change from 1904 to 1919 in the size of motor craft is due to the building of internal-combus-

tion engines of larger units, of improved reliability and compactness, making them practical for use in larger vessels. A much smaller number of motor vessels were built in 1919 than in 1916, owing to the fact that the energies of the various shipbuilding establishments were directed to the construction of large steam vessels for freight purposes. While there was a decline in number, there was an increase in total tonnage of 27,308 gross tons.

Sail vessels with auxiliary power launched, by states.—Table 21 shows for 1919, by states, the number and tonnage of sail vessels with auxiliary power, included in motor craft in Table 20.

TABLE 21.—SAIL VESSELS WITH AUXILIARY POWER LAUNCHED, BY STATES: 1919.

STATE.	Num-ber.	TONNAGE.	
		Gross.	Net.
Total.....	27	17,754	15,354
Florida.....	3	2,020	1,491
Maine.....	4	1,343	1,213
Texas.....	3	2,631	2,425
Washington.....	4	11,126	9,890
All other states.....	13	634	335

Sail vessels without auxiliary power launched, by states.—Table 22 gives for the United States, for 1919, 1916, and 1914 and for selected states separately for 1919, the number and the gross and net tonnage of sail vessels, without auxiliary power, of 5 gross tons and over, launched in private shipyards.

TABLE 22.—SAIL VESSELS WITHOUT AUXILIARY POWER LAUNCHED, BY STATES: 1919.

STATE.	Num-ber.	TONNAGE.	
		Gross.	Net.
United States.....	57	63,091	54,119
1916.....	62	15,456	14,048
1914.....	40	2,224	1,874
California.....	4	4,173	3,677
Connecticut.....	1	1,517	1,388
Florida.....	4	1,764	1,390
Georgia.....	2	2,176	1,806
Maine.....	26	27,501	25,128
Maryland.....	2	2,147	1,070
New York.....	2	3,424	3,205
Oregon.....	1	1,728	1,554
Texas.....	2	4,450	3,060
Washington.....	5	11,477	8,113
All other states.....	8	2,644	2,012

Unrigged vessels launched, by states.—Table 23 gives for the United States the number and gross and net tonnage of unrigged vessels launched by private shipyards in 1919, 1916, and 1914. Comparative statistics are shown for states where available.

Floating dry docks, floating coal docks, and scows constructed for a single trip are not included in this table. There are, however, a considerable number of sand and mud scows, coal boats and lighters, dredges, and pile drivers included in the statistics.

There were constructed in 1919 about the same number of unrigged vessels as in 1914, but 159 fewer than in 1916. The gross tonnage increased from 174,580 in 1914 to 341,066 in 1919, and the average tonnage per vessel from about 345 to a little over 675.

The principal state in the construction of unrigged craft in 1919, as well as in 1916 and 1914, was New York. Oregon ranked second in 1919 in gross tonnage and Texas third. The states showing increases over 1916, in both number and tonnage, are Louisiana, Maryland, Oregon, and Washington.

TABLE 23.—UNRIGGED VESSELS LAUNCHED, BY STATES: 1919, 1916, AND 1914.

STATE.	Census year.	Num-ber.	TONNAGE.	
			Gross.	Net.
United States.....	1919	1 505	341,066	322,294
	1916	664	215,807	197,018
	1914	2 500	174,580	156,397
Alabama.....	1919	32	23,039	21,660
California.....	1919	14	2,943	2,873
	1916	26	2,831	2,811
	1914	8	2,255	1,910
Connecticut.....	1919	4	7,100	3,740
Delaware.....	1919	5	3,500	1,750
Florida.....	1919	17	10,690	10,529
Indiana.....	1919	13	5,075	5,675
Kentucky.....	1919	7	1,970	1,970
	1916	59	15,880	15,843
	1914	47	39,068	24,063
Louisiana.....	1919	21	13,822	13,563
	1916	19	6,422	6,237
	1914	58	15,848	15,748
Maine.....	1919	15	16,677	15,822
Maryland.....	1919	60	21,582	20,088
	1916	32	9,834	9,834
	1914	39	9,335	9,365
Michigan.....	1919	5	750	750
New Jersey.....	1919	4	4,515	4,515
	1916	20	10,911	10,911
	1914	35	15,225	14,956
New York.....	1919	2 162	118,135	117,497
	1916	246	106,667	105,186
	1914	136	45,859	45,106
Ohio.....	1919	15	4,800	4,800
	1916	24	7,980	7,626
	1914	23	10,490	9,490
Oregon.....	1919	12	29,241	23,262
	1916	3	500	500
	1914	15	1,815	1,665
Pennsylvania.....	1919	52	15,652	15,622
	1916	103	22,616	7,463
	1914	30	6,920	6,920
Texas.....	1919	12	27,544	26,584
Virginia.....	1919	5	500	500
	1916	16	982	950
	1914	60	1,244	1,244
Washington.....	1919	29	11,772	11,772
	1916	14	623	503
	1914	21	2,199	2,199
Wisconsin.....	1919	3	1,150	1,150
All other states.....	1919	18	19,349	18,082
	1916	102	30,501	29,094
	1914	85	23,422	22,571

¹ Exclusive of 62 vessels with an aggregate gross tonnage of 48,994, launched by establishments in other industries.

² Exclusive of 82 vessels with an aggregate gross tonnage of 9,872 tons, launched by establishments in other industries.

³ Includes 6 concrete vessels, 3,000 gross tons.

⁴ Includes 1 concrete vessel, 10 gross tons.

SHIPBUILDING, INCLUDING BOAT BUILDING.

17

Power boats, less than 5 gross tons, by states.—Table 24 shows, for the United States and for states separately, for 1919 and 1916, the number of power boats built of less than 5 gross tons.

Pennsylvania, New Jersey, and California were the leading states, in the order named, in 1919, in the manufacture of small power boats.

TABLE 24.—POWER BOATS (LESS THAN 5 GROSS TONS), BY STATES: 1919 AND 1916.

STATE.	NUMBER.		STATE.	NUMBER.	
	1919	1916		1919	1916
United States...	1,159	3,608	New York.....	97	337
California.....	108	66	Ohio.....	4	308
Connecticut.....	18	100	Oregon.....	49	(¹)
Florida.....	90	157	Pennsylvania.....	164	28
Indiana.....	5	(¹)	Rhode Island.....	2	13
Maine.....	57	198	Texas.....	7	(¹)
Maryland.....	28	51	Virginia.....	15	21
Michigan.....	50	172	Washington.....	43	52
New Jersey.....	130	187	Wisconsin.....	45	109
			All other states.....	247	1,807

¹ Included in "All other states."

Value of work done.—The construction of a vessel frequently takes more than a year; therefore, many vessels launched during the census year were started in previous years, and some upon which work was started during the census year were not finished during that year. For this reason the Census Bureau did not require the shipbuilders to report the value of the vessels launched, but only the value of the work done during the census year and the amount received for repair work. For the smaller vessels, those of less than 5 gross tons, the value of work done during the year corresponds very closely with the value of the craft launched.

Table 25 shows the value of the construction work done, the amount received for repair work, and the value of all other work done by shipbuilding establishments, both private and Government, in 1919, 1916, 1914, and 1909, and in private establishments in other industries for 1919, 1914, and 1909,

The value of work done during the year on new vessels and boats in all shipyards increased from \$114,434,137 in 1916 to \$1,446,789,596 in 1919. These figures indicate the impetus given the shipbuilding industry by the World War. The value of work done on new vessels of 5 gross tons and over in private establishments amounted to \$105,270,935 in 1916 and \$1,391,688,655 in 1919, an increase of \$1,286,417,720. Repair work amounted to \$183,721,737 in 1919, which was \$120,213,223 in excess of that reported in 1916. All other work done, which includes work on engines and the making of masts, oars, spars, etc., increased from \$17,072,743 in 1916 to \$46,950,869 in 1919. The value of all kinds of work done in Government shipyards shows large increases between 1916 and 1919.

TABLE 25.—VALUE OF WORK DONE: 1919, 1916, 1914, AND 1909.

KIND OF WORK.	Census year.	VALUE.			
		All establishments.	Private establishments in the shipbuilding industry.	Private establishments in other industries.	Government shipyards.
Total.....	1919	\$1,865,728,609	\$1,622,361,261	\$3,764,105	\$239,603,243
	1916	224,526,653	185,852,192	(¹)	38,674,461
	1914	119,423,028	88,682,071	1,623,032	29,217,265
	1909	100,009,054	73,360,315	776,706	25,872,033
Work on new vessels and boats, all kinds.	1919	1,446,789,596	1,391,688,655	3,317,305	51,783,636
	1916	114,434,137	105,270,935	(¹)	9,163,202
	1914	52,401,805	46,334,134	1,279,630	4,788,041
	1909	45,036,492	42,310,925	594,244	2,131,323
Vessels of 5 gross tons and over.	1919	1,439,443,338	1,386,839,158	2,670,433	49,933,747
	1916	110,343,073	101,531,210	(¹)	8,811,863
	1914	48,105,561	42,545,445	947,805	4,612,311
	1909	40,145,084	37,718,018	449,089	1,977,977
Boats of less than 5 gross tons.	1919	7,345,258	4,849,497	646,872	1,849,889
	1916	4,091,064	3,739,725	(¹)	351,339
	1914	4,206,244	3,788,689	231,825	175,730
	1909	4,891,408	4,592,907	145,155	153,346
Repair work.....	1919	272,358,656	183,721,737	200,400	88,436,519
	1916	71,225,308	63,508,514	(¹)	7,716,854
	1914	36,966,676	32,835,212	185,777	3,945,687
	1909	38,304,658	26,678,643	80,461	11,545,554
All other work done.....	1919	146,580,357	46,950,869	246,400	99,383,088
	1916	38,867,178	17,072,743	(¹)	21,794,435
	1914	30,054,547	9,512,725	58,285	20,483,537
	1909	16,667,904	4,370,747	102,001	12,195,156

¹ Not reported in 1916.

² Includes work on concrete vessels to the value of \$7,018,955.

³ Includes work on engines to the value of \$20,447,019.

⁴ Includes work on engines to the value of \$3,335,055.

⁵ Includes work on engines to the value of \$4,498,703.

⁶ Includes work on engines to the value of \$299,270.

⁷ Includes work on engines to the value of \$169,141.

Value of work done by private establishments in the shipbuilding industry.—Table 26 shows the total value of the work done in the privately operated shipbuilding establishments in 1919, 1916, 1914, and 1909; the total being subdivided so as to show the value of work on new vessels, the amount received for repair work, and the value of all other work done during the year. Government shipyards and establishments in other industries doing incidental work on ships and boats are not included.

TABLE 26.—VALUE OF WORK DONE BY PRIVATE ESTABLISHMENTS IN THE SHIPBUILDING INDUSTRY: 1919, 1916, 1914, AND 1909.

KIND OF WORK.	VALUE.			
	1919	1916	1914	1909
Total.....	\$1,622,361,261	\$185,852,192	\$88,682,071	\$73,360,315
Work done during the year on new vessels and boats.	1,391,688,655	105,270,935	46,334,134	42,310,925
Vessels of 5 gross tons and over.	1,386,839,158	101,531,210	42,545,445	37,718,018
Steel construction.....	1,269,590,346	85,418,006	36,295,458	30,038,672
Wooden construction.....	110,259,857	16,113,204	6,249,887	7,679,346
Concrete construction.....	7,018,955			
Boats of less than 5 gross tons.	4,849,497	3,739,725	3,788,689	4,592,907
Steam.....		6,644	30,522	20,800
Motor (gasoline, electric, others)	1,797,748	1,988,862	2,001,284	3,155,375
Sailboats, rowboats, canoes, etc.	3,051,749	1,744,319	1,756,883	1,416,732
Repair work.....	183,721,737	63,508,514	32,835,212	26,678,643
Steel.....	136,227,508	44,821,223	20,537,928	15,862,659
Wooden.....	47,494,229	18,687,291	12,297,284	10,815,984
All other work done.....	46,950,869	17,072,743	9,512,725	4,370,747

Repair work by private establishments, by states.—Table 27 shows, by states, the value of repair work done in the private establishments in the shipbuilding industry for 1919, 1916, 1914, and 1909.

Since 1909, New York has led in the value of repair work, in 1919 the amount done being nearly one-half of the total for the United States. Fifteen of the states shown separately reported repair work in excess of a million dollars in 1919.

TABLE 27.—REPAIR WORK BY PRIVATE ESTABLISHMENTS, BY STATES: 1919, 1916, 1914, AND 1909.

STATE.	AMOUNT RECEIVED.			
	1919	1916	1914	1909
United States.....	\$183,721,737	\$63,508,514	\$32,835,212	\$26,678,643
Alabama.....	2,245,966	(1)	(1)	(1)
California.....	12,559,965	3,594,445	3,348,852	2,520,188
Connecticut.....	803,105	927,570	342,972	319,591
Delaware.....	873,704	110,151	177,318	348,530
Florida.....	2,777,261	913,678	516,011	536,584
Georgia.....	444,009	(1)	(1)	(1)
Indiana.....	83,740	60,074	83,006	70,003
Kentucky.....	302,042	125,246	127,773	85,002
Louisiana.....	2,200,136	1,406,794	433,555	364,738
Maine.....	1,080,220	380,474	434,191	340,635
Maryland.....	12,270,775	3,046,777	1,374,515	985,112
Michigan.....	1,567,132	1,455,258	1,081,206	1,129,544
New Jersey.....	33,033,634	8,313,981	4,206,315	3,123,032
New York.....	72,612,037	23,884,480	10,081,332	6,031,117
North Carolina.....	272,774	92,508	52,000	30,509
Ohio.....	4,463,943	2,125,580	2,058,521	1,324,186
Oregon.....	243,291	152,017	98,201	100,788
Pennsylvania.....	5,004,053	4,249,199	1,512,126	2,531,364
Rhode Island.....	2,002,520	1,197,501	927,833	647,064
Texas.....	793,585	(1)	(1)	(1)
Virginia.....	13,371,745	3,307,501	1,507,320	1,321,045
Washington.....	5,320,346	1,606,617	1,447,385	880,618
West Virginia.....	221,110	200,854	124,933	136,156
Wisconsin.....	2,136,990	905,834	745,890	1,172,543
All other states.....	6,332,276	5,298,806	2,152,757	1,757,085

¹ Included in "All other states."

Equipment of steam and motor vessels launched.—Over one-half of the steam vessels launched in 1919, as shown by Table 28, were equipped with reciprocating steam engines, and all but 47 of the 241 motor vessels were propelled by gasoline engines. Of the 1,203 steam engines, 300 were fitted for burning oil as fuel.

TABLE 28.—EQUIPMENT OF STEAM AND MOTOR VESSELS LAUNCHED: 1919.

TYPE.	Num-ber.	TYPE.	Num-ber.
Total.....	1,444	Internal-combustion.....	241
Steam engines.....	1,203	Diesel.....	44
Reciprocating.....	731	Gasoline.....	194
Turbine.....	472	All other.....	3
		Oil burners.....	300

Dry docks.—Table 29 shows the number and kind of dry docks in private and Government shipyards, classified according to dimensions, for 1919, 1914, and 1909. Figures for 1916 were not obtained.

TABLE 29.—DRY DOCKS: 1919, 1914, AND 1909.

CLASS.	NUMBER.		
	1919	1914	1909
Total number.....	242	250	216
Stationary:			
Wooden.....	30	62	57
Masonry, concrete, or steel.....	31	21	23
Floating.....	172	167	136
With floor length of—			
Over 300 feet.....	80	67	53
201 to 300 feet.....	23	27	20
101 to 200 feet.....	60	58	70
100 feet or less.....	70	98	73
With entrance width of—			
Over 75 feet.....	61	47	37
51 to 75 feet.....	75	57	54
26 to 50 feet.....	68	109	89
25 feet or less.....	38	37	26
With sill depth of—			
Over 20 feet.....	61	45	30
10 to 20 feet.....	107	108	98
Less than 10 feet.....	74	97	88

Marine railways.—Table 30 shows the number, dimensions, and lifting capacity of marine railways in operation in 1919, 1914, and 1909. Figures for 1916 were not obtained.

Of the 582 marine railways reported in the United States for 1919, 156 had a cradle length of more than 101 feet, 190 had a cradle breadth exceeding 25 feet, and 83 had a lifting capacity of over 500 tons.

TABLE 30.—MARINE RAILWAYS: 1919, 1914, AND 1909.

	NUMBER.		
	1919	1914	1909
Total lifting capacity in tons.....	173,235	129,994	147,061
Total number.....	582	678	696
With cradle length of—			
Over 200 feet.....	46	32	38
101 to 200 feet.....	110	123	110
50 to 100 feet.....	131	185	178
Less than 50 feet.....	295	338	370
With cradle breadth of—			
Over 50 feet.....	23	12	5
25 to 50 feet.....	167	133	126
Less than 25 feet.....	392	533	565
With maximum cradle draft submerged of—			
Over 15 feet.....	53	45	47
11 to 15 feet.....	103	96	86
5 to 10 feet.....	306	411	410
Less than 5 feet.....	115	126	153
With lifting capacity of—			
Over 1,000 tons.....	40	25	22
501 to 1,000 tons.....	43	34	56
100 to 500 tons.....	140	180	172
Less than 100 tons.....	359	439	446

SHIPBUILDING, INCLUDING BOAT BUILDING.

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GENERAL TABLES.

Comparative summary, by states.—Table 31 gives for 1919, 1916, 1914, and 1909, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products for the shipbuilding industry.

Detailed statement, by states.—Table 32 presents for 1919 statistics in detail for the industry as a whole, for "shipbuilding, steel," and for "shipbuilding, wooden, including boat building," and for each state that can be shown separately without the possibility of disclosing the operations of individual establishments.

TABLE 31.—COMPARATIVE SUMMARY, BY STATES: 1919, 1916, 1914, AND 1909.

STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Primary horse- power.	Wages.	Cost of mate- rials.	Value of prod- ucts.	STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Primary horse- power.	Wages.	Cost of mate- rials.	Value of prod- ucts.
					Expressed in thousands.								Expressed in thousands.		
United States....	1919	1,075	387,446	553,711	\$597,447	\$710,523	\$1,022,361	Michigan.....	1919	33	16,541	31,153	\$28,921	\$36,120	\$85,155
	1916	1,137	72,497	(1)	80,576	89,269	185,852		1916	55	2,225	(1)	1,857	3,120	5,637
	1914	1,147	44,489	115,333	32,931	38,597	88,682		1914	62	1,261	7,565	1,040	1,259	2,823
	1909	1,353	40,506	88,003	25,208	31,214	73,360		1909	91	2,344	6,435	1,380	2,490	5,034
California.....	1919	67	47,530	64,631	66,882	76,629	185,882	New Jersey.....	1919	93	52,397	52,712	79,963	125,553	238,015
	1916	50	7,113	(1)	7,109	10,245	19,778		1916	76	7,777	(1)	6,576	9,904	20,312
	1914	52	3,457	4,697	3,196	3,487	8,104		1914	85	6,324	11,944	4,657	5,636	11,861
	1909	43	1,844	3,129	1,592	1,237	4,132		1909	97	4,869	9,904	3,300	4,249	8,841
Florida.....	1919	73	11,199	14,097	15,442	13,917	32,662	New York.....	1919	161	33,295	52,767	53,061	41,555	132,012
	1916	57	1,172	(1)	598	909	1,796		1916	200	9,928	(1)	9,887	11,530	31,358
Georgia.....	1919	10	4,447	7,855	6,412	8,660	20,944		1914	207	6,076	17,664	4,971	5,173	14,195
	1916	7	216	(1)	153	218	454		1909	255	5,644	13,835	3,780	3,925	11,417
	1914	4	14	26	8	4	16	North Carolina.....	1919	18	117	211	97	150	374
Indiana.....	1919	7	107	354	104	82	315		1916	12	141	(1)	54	44	189
	1916	10	184	(1)	108	291	463	Ohio.....	1919	28	11,412	14,219	19,668	23,902	57,483
	1914	9	225	549	134	267	506		1916	32	5,059	(1)	3,908	6,077	12,160
	1909	15	253	785	106	243	375		1914	29	2,879	9,661	1,939	1,909	4,717
Kentucky.....	1919	7	185	340	201	53	330		1909	39	3,200	8,125	1,705	2,462	5,676
	1916	17	168	(1)	112	140	279	Washington.....	1919	76	34,576	50,696	56,053	74,046	166,520
	1914	11	90	164	52	135	222		1916	57	3,744	(1)	3,455	6,506	10,830
	1909	10	157	524	97	155	271		1914	64	1,444	5,866	1,152	987	3,101
Louisiana.....	1919	22	5,346	8,558	7,187	6,996	17,598		1909	60	744	2,105	643	562	1,550
	1916	26	1,300	(1)	784	1,035	2,607	Wisconsin.....	1919	35	7,855	10,591	12,441	20,367	44,164
Maine.....	1919	82	7,000	8,396	9,800	9,843	24,682		1916	30	1,250	(1)	822	1,612	3,827
	1916	100	1,857	(1)	1,354	2,576	4,882		1914	34	695	3,875	421	451	1,254
Maryland.....	1919	42	19,084	26,539	28,887	31,000	67,310		1909	62	906	3,506	540	819	1,900
	1916	50	5,320	(1)	3,773	5,845	12,208	All other states.....	1919	321	136,355	210,592	212,328	241,650	548,915
	1914	42	2,468	5,979	1,573	2,102	4,521		1916	368	25,031	(1)	19,936	29,217	59,074
	1909	40	1,793	6,795	1,098	1,849	3,535		1914	548	19,556	47,343	13,788	17,187	37,362
									1909	645	18,752	32,870	11,027	13,223	30,629

¹ Not reported.

MANUFACTURES.

TABLE 32.—DETAILED STATEMENT.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.				Capital.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.		
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.		Female.
								Maximum month.	Minimum month.						

SHIPBUILDING, INCLUDING BOAT BUILDING.

															Dollars.
1	United States.....	1,075	413,236	816	7,379	12,766	4,839	387,446	Ja 444,683	No 301,172	355,176	353,881	1,000	235	1,389,447,820
2	California.....	87	49,714	58	457	1,160	500	47,530	My 62,138	No 13,351	44,467	44,426	41		113,040,683
3	Florida.....	73	11,860	56	217	280	108	11,199	Ja 14,300	Do 9,662	10,524	10,493	29	2	46,755,409
4	Georgia.....	10	4,080	1	255	217	60	4,447	Ja 6,170	Do 2,302	5,669	5,669	30		8,849,876
5	Indiana.....	7	133	4	12	4	6	107	Do 201	Mh 26	190	198	1		505,531
6	Kentucky.....	7	193	4	3	1		185	Ap 251	An 113	219	219			110,166
7	Louisiana.....	22	5,803	13	90	281	61	5,346	Oc 6,662	Jo 4,308	6,003	6,003		5	22,312,186
8	Maine.....	82	7,646	66	240	133	107	7,000	Fe 8,425	Oc 5,605	7,141	7,097	28	10	15,807,613
9	Maryland.....	42	20,180	31	222	672	177	10,084	Mh 20,432	An 17,620	18,122	18,119	1	2	35,858,077
10	Michigan.....	33	17,674	18	453	511	121	16,541	Mh 20,602	Do 9,880	20,630	10,977	61	1	24,096,612
11	New Jersey.....	93	55,653	70	946	1,054	580	52,397	Mh 54,393	Oc 49,689	50,492	50,095	397		245,268,134
12	New York.....	161	35,685	111	742	1,213	324	33,295	Ja 39,812	Oc 24,432	29,102	20,048	37	17	88,604,493
13	North Carolina.....	18	153	22	10	2	2	117	Se 151	Ja 91	125	125			93,594
14	Ohio.....	28	11,835	20	82	207	114	11,412	My 12,385	Do 9,373	10,657	10,636	21		51,822,627
15	Washington.....	76	36,424	56	616	803	343	34,576	Ja 48,392	Fe 11,286	23,958	23,894	37	27	120,722,892
16	Wisconsin.....	35	8,443	24	123	342	99	7,855	Se 8,574	Do 6,373	6,567	6,565	2		17,741,814
17	All other states.....	321	146,954	250	2,872	5,234	2,237	130,355			121,857	121,317	375	165	594,837,693

SHIPBUILDING, STEEL.

1	United States.....	102	365,875	21	5,895	11,010	4,335	344,014	My 380,799	No 273,350	309,273	308,078	972	223	1,268,640,254
2	Alabama.....	4	5,801		110	349	90	5,254	Do 5,752	Fe 4,531	5,752	5,720	23		39,286,855
3	California.....	18	48,098	3	421	1,133	483	46,052	My 60,447	No 12,751	42,995	42,925	40		108,798,811
4	Florida.....	5	8,211		100	202	71	7,838	Ja 8,533	Jo 7,322	7,813	7,793	20		38,599,892
5	Georgia.....	3	3,950		229	181	59	3,481	Ap 4,213	Oc 2,155	4,153	4,123	30		5,747,785
6	Louisiana.....	6	3,700		66	255	50	3,329	No 4,925	Ja 1,671	4,578	4,575		3	19,284,637
7	Maine.....	6	4,804	5	141	101	72	4,485	Mh 5,125	Oc 3,916	4,490	4,404	20	15	9,270,448
8	Maryland.....	4	18,142		160	605	165	17,212	Ap 18,178	An 16,127	16,357	16,356	1		32,778,735
9	Michigan.....	7	17,061	1	428	526	110	15,990	Mh 20,269	Do 9,460	19,133	19,073	59	1	21,826,060
10	New Jersey.....	13	53,273	3	861	1,001	567	50,251	Mh 52,467	No 47,402	48,313	47,926	387		242,523,813
11	New York.....	28	27,631	2	345	1,033	264	25,987	Ja 31,875	Oc 18,244	21,755	21,719	19	17	62,491,297
12	Ohio.....	9	11,566		62	205	107	11,102	Mh 12,081	Do 9,270	10,407	10,388	19		51,777,363
13	Washington.....	9	30,860		545	681	270	29,391	Ja 39,105	Fe 4,714	16,938	16,879	32	27	103,019,540
14	Wisconsin.....	7	7,105		70	295	72	6,658	Oc 7,473	Do 5,498	5,498	5,496	2		11,620,463
15	All other states.....	43	125,637	0	2,348	4,436	1,959	116,888			101,112	100,632	320	100	622,215,666

SHIPBUILDING, WOODEN, INCLUDING BOAT BUILDING.

1	United States.....	913	47,361	795	1,484	1,146	504	43,432	Ja 65,841	No 27,822	45,903	45,803	88	12	120,807,566
2	California.....	40	1,610	55	36	30	17	1,478	Ja 2,017	No 600	1,502	1,501	1		4,242,372
3	Connecticut.....	36	1,302	22	92	37	20	1,112	Ja 2,486	Do 332	1,503	1,501	2		7,106,815
4	Florida.....	68	3,640	56	117	78	37	3,301	Ja 5,767	Do 1,879	2,711	2,700	9	2	8,155,457
5	Georgia.....	7	1,030	1	20	33	4	960	Ja 2,078	No 199	1,546	1,546			3,192,121
6	Illinois.....	9	139	8	5	3	1	122	Jo 181	An 96	141	141			479,365
7	Iowa.....	5	11	0				5	Se 9	Oc 3	6	6			33,680
8	Kentucky.....	7	103	4	3			185	Ap 254	An 113	219	219			110,166
9	Louisiana.....	10	2,103	13	33	26	11	2,017	Ja 3,412	Do 1,428	1,430	1,428		2	3,028,129
10	Maine.....	78	2,742	61	99	32	35	2,616	Fe 3,432	Do 1,430	2,642	2,633	8	1	6,537,165
11	Maryland.....	38	2,044	31	62	67	12	1,872	Ja 2,610	An 1,499	1,705	1,703		2	3,079,942
12	Massachusetts.....	55	1,073	50	41	31	23	928	Ja 1,338	Se 543	582	581	1		2,573,693
13	Michigan.....	26	613	17	25	15	11	546	Oc 814	Ja 391	904	904	2		2,270,552
14	Minnesota.....	21	126	23	7		5	91	Jy 115	No 67	109	107	2		311,701
15	Mississippi.....	9	308	6	20	29	5	248	Ja 590	Se 65	270	270			393,765
16	New Jersey.....	80	2,380	73	85	53	23	2,146	Fe 2,302	Mh 1,920	2,170	2,169	10		5,744,321
17	New York.....	133	8,054	109	397	180	60	7,308	Ap 8,418	No 6,077	7,347	7,329	18		26,113,106
18	North Carolina.....	18	153	22	10	2	2	117	Se 151	Ja 91	125	125			95,594
19	Ohio.....	10	269	20	20	2	7	220	Fe 335	No 90	250	248	2		645,264
20	Oregon.....	30	3,255	23	70	120	52	2,900	Ja 7,300	Oc 674	4,300	4,380	10		9,667,360
21	Rhode Island.....	14	291	12	16	7	3	253	Do 318	An 174	325	325			897,609
22	Texas.....	21	6,375	19	73	170	45	6,068	Fe 9,640	Do 3,687	4,900	4,880	15	5	4,781,442
23	Virginia.....	30	1,278	32	44	30	13	1,159	Fe 1,707	No 803	1,603	1,602	1		4,087,110
24	Washington.....	67	5,528	59	101	122	64	5,185	Ja 9,287	Do 1,628	7,020	7,015	5		17,793,292
25	West Virginia.....	6	113	1	9	1	1	101	Ap 122	Do 67	109	109			221,543
26	Wisconsin.....	28	1,338	23	44	47	27	1,197	My 1,545	Do 875	1,099	1,060			6,121,351
27	All other states.....	45	1,378	42	40	27	17	1,243			1,152	1,150	2		3,305,651

¹ Includes water wheels and turbines (irrespective of ownership of water supply), and water motors (operated by water from city mains).

² Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft-belt or transmitted power from neighboring power plants).

³ Same number reported for one or more other months.

⁴ All other states embrace: Alabama, 8 establishments; Connecticut, 38; Delaware, 6; District of Columbia, 2; Idaho, 2; Illinois, 11; Iowa, 6; Massachusetts, 56; Minnesota, 22; Mississippi, 10; Missouri, 4; Montana, 1; New Hampshire, 2; Oregon, 33; Pennsylvania, 28; Rhode Island, 16; South Carolina, 3; South Dakota, 1; Tennessee, 3; Texas, 22; Vermont, 1; Virginia, 35; and West Virginia, 8.

SHIPBUILDING, INCLUDING BOAT BUILDING.

21

BY STATES: 1919.

[illegible]

SHIPBUILDING, INCLUDING BOAT BUILDING.

[illegible]

SHIPBUILDING, STEEL.

27,159,274	30,102,233	538,372,576	8,205,800	2,858,731	44,641,130	629,800,673	13,943,141	1,456,489,516	812,736,702	475,567	53,868	41,166	2,671	-----	377,862	49,792	1
474,421	660,053	6,904,417	.....	17,456	216,814	6,084,983	222,109	15,909,618	9,602,526	19,609	5,309	10,660	164	-----	3,476	4,616	2
2,093,210	2,993,902	64,526,418	129,916	251,905	5,309,432	73,203,232	1,438,343	179,161,695	104,690,120	61,264	1,025	.....	68	-----	60,171	.....	3
528,569	400,079	11,556,678	.....	50,600	41,316	10,443,412	257,550	24,234,126	13,533,164	10,185	3,745	.....	253	-----	6,107	1,035	4
712,500	680,006	4,783,588	.....	28,040	5,039	7,319,326	120,269	17,722,812	10,283,217	6,727	845	.....	12	-----	5,870	.....	5
326,080	392,113	5,013,577	0,717	15,478	124,757	4,972,055	117,723	12,432,094	7,342,316	5,717	2,950	30	165	-----	2,572	60	6
477,953	245,651	6,402,134	30,489	7,657	219,256	4,734,651	188,561	14,003,706	9,080,494	4,326	50	.....	.....	-----	4,276	.....	7
1,226,952	1,258,710	20,141,571	.....	100	1,182,455	27,518,283	771,570	80,844,131	32,554,278	22,354	175	.....	.....	-----	22,179	.....	8
1,006,431	609,223	28,183,830	.....	10,120	3,744,890	34,391,460	655,177	88,124,336	48,077,699	30,047	2,835	1,200	328	-----	25,684	2,838	9
2,963,168	4,423,024	76,845,243	311,058	1,042,401	5,568,794	120,475,063	1,992,178	229,825,670	107,358,429	50,067	5,920	17,883	117	-----	26,147	25,920	10
1,835,078	2,126,914	42,312,280	758,440	98,350	6,216,390	30,271,130	1,023,110	120,861,267	72,167,027	39,396	6,060	150	550	-----	32,636	882	11
762,639	614,044	10,424,220	.....	13,732	1,092,770	22,630,130	723,456	56,481,966	33,128,380	13,717	6,425	.....	15	-----	7,277	3,983	12
2,903,400	1,547,386	48,728,066	223,520	402,869	7,634,062	62,417,992	931,028	140,980,461	77,631,401	9,642	2,215	.....	.....	-----	34,477	.....	13
555,603	584,775	11,085,302	15,000	200,421	2,296,125	17,102,303	333,627	36,628,337	19,192,407	9,395	3,266	.....	.....	-----	6,079	474	14
10,783,231	13,445,454	186,405,108	0,721,660	233,417	10,199,110	208,426,653	5,168,400	481,689,297	268,095,244	166,201	13,048	11,243	999	-----	140,911	9,984	15

SHIPBUILDING, WOODEN, INCLUDING BOAT BUILDING.

5,474,326	2,378,661	50,074,072	1,901,723	047,701	3,054,424	05,108,011	1,660,951	165,871,745	99,101,883	78,144	25,296	870	4,348	71	47,559	1,302	1
140,126	64,405	2,350,032	3,800	31,070	20,806	2,138,282	28,842	6,730,539	4,563,415	3,367	755		271		2,341		2
142,551	64,528	1,254,371	4,469	9,352	94,973	938,020	48,731	2,924,031	1,930,080	2,624	1,018	10	233	12	1,351		3
282,004	140,003	3,885,284	9,315	28,568	35,012	3,154,384	61,891	8,428,253	5,212,068	3,992	1,162		388	16	2,426	11	4
118,692	34,800	1,628,890		2,780	4,075	1,203,016	17,862	3,220,693	1,999,825	1,128	870				2,258		5
18,871	10,237	119,573		4,832	1,326	209,189	5,956	461,226	246,080	355	166		9		180		6
		4,530	30		120	530	15,756	36,936	20,889	26	4		16		6		7
8,784	1,500	200,525			970	1,456	50,863	291	330,242	277,398	340				35		8
107,933	129,119	2,173,408	68	11,248	102,055	1,784,495	121,525	5,165,774	3,259,754	2,841	1,221		157		1,463	60	9
424,532	77,001	3,397,889	20,103	13,712	155,890	8,842,748	76,880	10,678,547	5,758,919	4,070	870		96	8	3,107		10
217,558	85,715	2,745,529		55,302	61,917	2,657,933	52,468	6,465,783	3,765,382	4,185	480	150	119		3,436		11
127,831	48,752	1,401,073	4,057	24,166	64,160	1,954,938	22,783	4,191,573	2,213,852	2,074	653		251		1,170		12
73,079	33,739	737,381		5,510	14,498	1,040,933	26,778	2,030,366	956,755	1,106	385		53		668		13
9,600	5,487	105,358		688	7,509	100,859	5,764	341,567	234,944	196	70		33		93		14
66,733	50,294	350,597		731	896	393,356	24,806	1,028,361	610,199	635	437		11		187	1	15
451,506	112,079	3,117,714	27,808	61,784	199,512	3,019,961	66,062	8,188,989	5,102,966	2,645	1,522		429		694	513	16
1,263,084	349,084	10,740,034	249,804	194,097	818,822	9,848,552	411,944	28,550,857	18,290,261	13,371	6,124		783	35	6,429	7	17
23,900	5,800	90,863	6,065	2,024	1,401	146,431	3,291	373,723	224,001	211	35		35		141		18
38,021	10,810	243,952	27,412	1,895	4,700	538,970	9,000	1,000,633	452,567	502	192	10	82		218		19
289,216	276,739	4,609,100	57,534	74,072	585,641	6,754,145	99,417	13,777,615	6,924,053	7,282	1,544		140		5,598		20
68,700	13,192	3,350,510		6,193	8,418	265,310	30,398	863,971	568,263	562	370		34		158	175	21
264,598	370,087	7,665,895	1,064	27,031	66,652	8,129,896	193,351	10,246,231	10,922,994	6,026	2,962	690	547		2,727		22
254,141	55,742	1,530,577		690	233,542	904,956	25,557	4,582,130	3,561,617	2,090	495		184		1,411	272	23
756,246	301,529	7,325,227	1,479,638	69,835	345,879	10,558,057	189,100	25,539,326	14,842,169	14,004	1,634		131		12,239	300	24
19,740	1,885	100,000		888	1,778	62,885	2,779	213,051	147,357	246	246						25
243,068	92,449	1,355,373		12,453	22,834	2,887,907	42,888	7,535,409	4,604,616	1,246	525		70		651		26
103,302	30,995	1,553,356	350	7,000	133,982	1,410,363	140,718	3,965,920	2,414,839	3,020	2,162	10	276		572		27

¹ All other states, such as: Connecticut, 3 establishments; Delaware, 2; Illinois, 2; Indiana, 2; Iowa, 1; Massachusetts, 4; Minnesota, 1; Mississippi, 1; Missouri, 1;

* All other states embrace: Alabama, 4 establishments; Delaware, 4; District of Columbia, 2; Idaho, 2; Indiana, 5; Missouri, 3; Montana, 1; New Hampshire, 1; Pennsylvania, 18; South Carolina, 1; South Dakota, 1; Tennessee, 2; and Vermont, 1.

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

FOURTEENTH CENSUS OF THE UNITED STATES
MANUFACTURES: 1919

SILK MANUFACTURES

Prepared under the supervision of EUGENE F. HARTLEY, Chief Statistician for Manufactures

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or for which products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1919, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city, county, or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city, county, or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Classification by industries.—The establishments were assigned to the several classes of industries according to their products of chief value. The products reported for a given industry may thus, on the one hand, include minor products different from those covered by the class designation, and, on the other hand, may not represent the total product covered by this designation, because some products of this class may be made in establishments in which it is not the product of chief value.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1919 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners.

The number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date did not portray such conditions, an earlier date was requested.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, by sex, without distinction of age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The number of wage earners reported for the representative day, though given in certain tables for each separate industry, is not totaled for all industries combined, because, in view of the variations of date, such a total is not believed to be significant. It would involve more or less duplication of persons working in different industries at different times, would not represent the total number employed in all industries at any one time, and would give an undue weight to seasonal industries as compared with industries in continual operation.

In order to determine as nearly as possible the age distribution of the average number of wage earners for an industry, the per cent distribution by age of the wage earners for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. The percentages thus obtained have been applied to the average number of wage earners for the year to determine the average numbers 16 years and over, and under 16, employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calcu-

late accurately even so simple an average as this, since the number of wage earners fluctuates from month to month in every industry, and in some cases to a very great extent. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month, and while representing the number according to the pay rolls to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital (amount actually invested).—The instructions on the schedule for securing data relating to capital were as follows:

"The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises."

These instructions were identical with those employed at the censuses of 1914 and 1909. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include certain Federal taxes and state, county, and local taxes. Under "Federal taxes" there are included the internal revenue tax on manufactures (tobacco, beverages, etc.), excise taxes when included in values reported for products, corporation capital stock tax, and corporation income tax, but not the income tax for individuals and partners.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not always a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry, from a manufacturing standpoint, is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power equipment of the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, fuel oils, gasoline and other volatile oils, and gas, and represent the quantity used during the year. As only the principal kinds of fuel are shown, comparison as to the total cost of all fuel is impracticable.

SILK MANUFACTURES.

By ARTHUR J. LECK.

GENERAL STATISTICS.

General character of the industry.—The silk-manufactures industry includes mills engaged primarily in throwing and weaving, either as separate establishments or combined in one as a complete mill. Other products of silk, like braids, nets and veiling, thread, spun silk, etc., of less importance in value, are also included under the silk-manufactures industry. Silk knit goods, fish lines, and electrical supplies, however, are not a part of this industry, but are grouped under other industry classifications.

Comparative summary.—The progress of the silk-manufactures industry is shown in Table 1 for each census from 1899 to 1919, inclusive, also the percentages of increase.

Summary for the silk-manufactures industry.—Table 2 summarizes the statistics of the industry for 1919 and 1914, and gives per cent of total and of increase for each of the various items shown.

Principal states, ranked by value of products.—Table 3 presents the more important statistics of the industry, by states, the states being arranged according to value of products reported for 1919. The states shown in the table are given their actual ranking among all states, the rank of certain states for which figures can not be presented being higher than some of those enumerated.

Persons engaged in the industry.—Statistics relating to the number of male and female employees, distributed according to class of employment, are shown in Table 4 for 1919, 1914, and 1909, together with the per cent that each sex forms of the total for each class.

Wage earners, by months, for selected states.—Table 5 gives the total average number of wage earners employed in the silk-manufactures industry, together with the number employed on the 15th (or the nearest representative day) of each month during the year 1919 for each state for which figures can be shown separately, also the percentage in each state which the smallest number forms of the largest number reported for any month. States showing a large proportion of females are also shown, with the per cent the average number of females forms of the total average number of employees for the state.

Wage earners, per cent distribution, by states.—In Table 6 the average number of wage earners is shown, by states, for 1919 and 1914, with per cent of total, for age and sex.

Number of spinners and weavers, by age, sex, and states.—The number of spinners, weavers, and other wage earners is given in Table 7 for the industry, and for five selected states, in 1919 and 1914. The figures shown are for those reported as employed on December 15 or the nearest representative day.

Prevailing hours of labor.—In Table 8 the average number of wage earners employed in the industry during 1919 and 1914 has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed.

Size of establishments, by average number of wage earners.—Table 9 shows the size of establishments in 1919 and 1914, as measured by the number of wage earners employed, for the industry as a whole and for the leading states.

Size of establishments, by value of products.—The size of establishments based on value of products is given in Table 10 for 1919, 1914, and 1909. While establishments manufacturing products valued at \$1,000,000 or over represented a comparatively small proportion of the total number at the three censuses, they reported 61.7 per cent of the total value of products in 1919, 46.6 per cent in 1914, and 34.8 per cent in 1909, which shows the tendency of the industry to become concentrated in large establishments. In comparing the figures for 1919 and 1914, consideration must be given to the inflation of values on account of war, which resulted in a shift to higher groups of establishments without a material change in status.

Character of ownership.—Table 11 presents statistics with respect to the character of ownership, or legal organization, of establishments in the industry according to states in 1919 and 1914.

Number and horsepower of types of prime movers.—The various types of prime movers, both owned and rented, used in the industry during 1919, 1914, and 1909 are shown in Table 12, with figures for the number and horsepower for each type.

Fuel consumed, by states.—Table 13 gives the quantity of various kinds of fuel used in silk mills, by states.

MANUFACTURES.

TABLE 1.—COMPARATIVE SUMMARY: 1919, 1914, 1909, 1904, AND 1899.

	1919	1914	1909	1904	1899	PER CENT OF INCREASE. ¹			
						1914-1919	1909-1914	1904-1909	1899-1904
Number of establishments.....	1,369	902	852	624	483	51.8	5.9	36.5	29.2
Persons engaged.....	136,775	115,571	105,238	84,153	68,550	18.3	9.8	25.1	22.8
Proprietors and firm members.....	1,011	807	591	525	477	71.1	-11.0	26.5	10.1
Salaried employees.....	8,982	6,810	5,537	4,027	2,657	31.0	23.0	37.5	51.6
Wage earners (average number).....	126,782	108,170	99,037	79,601	65,116	17.2	9.2	24.4	21.7
Primary horsepower.....	176,825	116,924	97,947	71,760	57,397	51.2	19.4	36.5	25.0
Capital.....	\$532,732,163	\$210,071,679	\$152,158,002	\$109,556,621	\$81,082,201	153.6	38.1	38.9	35.1
Salaries and wages.....	134,597,292	57,615,374	49,097,364	31,510,213	24,116,546	133.6	25.0	46.3	30.7
Salaries.....	20,370,962	10,500,005	7,527,279	4,742,270	3,134,352	151.0	39.6	58.7	51.3
Wages.....	108,226,330	47,108,469	38,570,085	26,767,943	20,982,194	129.7	22.1	44.1	27.6
Paid for contract work.....	43,146,201	14,550,762	12,008,744	6,859,586	6,570,299	190.5	21.2	75.1	4.4
Rent and taxes.....	20,594,520	2,031,897	1,570,381	\$1,040,334	\$829,923	913.6	20.4	.....	25.4
Cost of materials.....	388,469,022	144,442,321	107,799,916	75,801,168	62,406,665	168.9	34.0	42.1	24.0
Value of products.....	688,469,523	254,011,257	196,911,687	133,288,072	107,256,358	171.0	29.0	47.7	24.3
Value added by manufacture ²	300,000,501	100,568,936	80,144,751	57,428,884	44,840,593	173.8	22.9	55.2	28.0

¹ A minus sign (-) denotes decrease.² Exclusive of internal revenue.³ Value of products less cost of materials.

TABLE 2.—SUMMARY FOR THE TWO BRANCHES OF SILK-MANUFACTURES INDUSTRY: 1919 AND 1914.

	1919			1914			PER CENT OF TOTAL.				PER CENT OF INCREASE, 1914-1919.		
	Total.	Establishments engaged in—		Total.	Establishments engaged in—		1919		1914		Total.	Finished silk products.	Throwsters.
		Manufacturing finished silk products, primarily.	Throwing, winding, etc., only (throwsters).		Manufacturing finished silk products, primarily.	Throwing, winding, etc., only (throwsters).	Finished silk products.	Throwsters.	Finished silk products.	Throwsters.			
Number of establishments.....	1,369	1,040	329	902	695	207	70.0	24.0	77.1	22.9	51.8	49.6	38.9
Persons engaged.....	136,775	105,660	31,115	115,571	96,551	19,020	77.3	22.7	83.5	16.5	18.3	9.4	63.6
Proprietors and firm members.....	1,011	807	204	591	480	111	79.8	20.2	81.2	18.8	71.1	68.1	83.8
Salaried employees.....	8,982	7,511	1,471	6,810	6,104	706	83.6	16.4	89.6	10.4	31.9	23.1	108.4
Wage earners (average number).....	126,782	97,342	29,440	108,170	89,907	18,263	76.8	23.2	83.2	16.8	17.2	8.2	61.7
Primary horsepower.....	176,825	115,700	61,125	116,924	83,534	33,390	65.4	34.6	71.4	28.6	51.2	38.5	83.1
Capital.....	\$532,732,163	\$447,960,397	\$84,765,766	\$210,071,679	\$173,401,035	\$36,610,644	84.1	15.9	82.6	17.4	153.6	158.3	131.5
Salaries and wages.....	134,597,292	111,299,001	23,297,091	57,615,374	51,500,670	6,024,704	82.7	17.3	89.5	10.5	133.6	115.7	286.7
Salaries.....	20,370,962	22,727,897	3,643,065	10,500,005	9,474,209	1,025,796	86.2	13.8	90.2	9.8	151.0	139.9	232.8
Wages.....	108,226,330	88,571,734	19,654,596	47,108,469	42,110,461	4,992,068	81.8	18.2	80.4	10.6	129.7	110.3	293.7
Paid for contract work.....	43,146,201	40,197,415	2,948,786	14,550,762	14,037,432	513,330	93.2	6.8	90.5	3.5	196.5	186.4	474.4
Rent and taxes (including internal revenue).....	20,594,520	17,394,020	3,200,500	2,031,897	1,800,810	225,078	84.5	15.5	88.9	11.1	913.6	862.7	1,322.0
Cost of materials.....	388,469,022	333,435,945	55,033,077	144,442,321	131,797,946	12,644,375	85.8	14.2	91.2	8.8	168.9	153.0	335.2
Value of products.....	688,469,523	590,237,835	98,231,688	254,011,257	232,092,381	21,918,876	85.7	14.3	91.6	8.4	171.0	153.7	366.8
Value added by manufacture ¹	300,000,501	256,801,890	43,198,611	100,568,936	100,894,435	8,674,501	85.6	14.4	92.1	7.0	173.8	154.5	398.0

¹ Value of products less cost of materials.

TABLE 3.—PRINCIPAL STATES, RANKED BY VALUE OF PRODUCTS: 1919.

STATE.	Number of establishments.	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
		Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.
United States.....	1,369	126,782	100.0	.....	\$688,470	100.0	.....	\$300,001	100.0	.....
Pennsylvania.....	373	53,052	41.8	1	231,711	33.7	1	105,424	35.1	1
New Jersey.....	686	32,326	25.5	2	215,051	31.2	2	91,609	30.5	2
New York.....	181	13,342	10.5	3	81,683	11.9	3	35,292	11.8	3
Connecticut.....	41	11,264	8.9	4	68,053	9.9	4	30,528	10.2	4
Massachusetts.....	21	5,697	4.5	5	34,194	5.0	5	14,950	5.0	5
Rhode Island.....	30	4,150	3.3	6	27,219	4.0	6	10,404	3.5	6
Virginia.....	10	601	0.5	12	1,551	0.2	12	942	0.3	12
Maryland.....	6	839	0.7	11	1,534	0.2	13	826	0.3	13
All other states.....	21	5,461	4.3	27,474	4.0	10,026	3.3

SILK MANUFACTURES

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TABLE 4.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1914, AND 1909.

CLASS.	Cen- sus year.	Total.	Male.	Fe- male.	PER CENT OF TOTAL.		CLASS.	Cen- sus year.	Total.	Male.	Fe- male.	PER CENT OF TOTAL.	
					Male.	Fe- male.						Male.	Fe- male.
All classes.....	1919	136,775	57,893	78,882	42.3	57.7	Clerks and other subordinate sal- aried employees.....	1919	5,331	3,027	2,304	56.8	43.2
	1914	115,571	49,948	65,623	43.2	56.8		1914	5,086	3,625	1,461	71.3	28.7
	1909	105,238	42,216	63,022	40.1	59.9		1909	3,965	3,060	905	77.2	22.8
Proprietors and officials.....	1919	4,662	4,442	220	95.3	4.7	Wage earners (average number).....	1919	126,782	50,424	76,358	39.8	60.2
	1914	2,315	2,225	90	96.1	3.9		1914	108,170	44,098	64,072	40.8	59.2
	1909	2,236	2,134	102	95.4	4.6		1909	99,637	37,022	62,615	37.4	62.6
Proprietors and firm members.....	1919	1,011	983	28	97.2	2.8	16 years of age and over.....	1919	120,198	48,244	71,954	40.1	59.9
	1914	591	569	22	96.3	3.7		1914	100,362	41,599	58,763	41.4	58.6
	1909	604	638	26	96.1	3.9		1909	91,159	34,620	56,539	38.0	62.0
Salariéd officers of corporations.....	1919	1,163	1,125	38	96.7	3.3	Under 16 years of age.....	1919	6,584	2,180	4,404	33.1	66.9
	1914	559	549	10	98.2	1.8		1914	7,808	2,499	5,309	32.0	68.0
	1909	480	469	11	97.7	2.3		1909	7,878	2,402	5,476	30.5	69.5
Superintendents and managers.....	1919	2,488	2,334	154	93.8	6.2							
	1914	1,105	1,107	58	95.0	5.0							
	1909	1,092	1,027	65	94.0	6.0							

TABLE 5.—WAGE EARNERS, BY MONTHS, FOR SELECTED STATES: 1919.

[The month of maximum employment is indicated by **bold-faced** figures and that of minimum employment by *italic* figures.]

STATE.	Average num- ber em- ployed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent min- imum is of maxi- mum.
		Janu- ary.	Febru- ary.	March.	April.	May.	June.	July.	August.	Septem- ber.	Octo- ber.	Novem- ber.	Decem- ber.	
United States:														
1919.....	126,782	118,907	118,201	120,803	123,114	125,317	125,601	127,671	128,936	129,999	130,019	135,517	137,239	86.1
Males.....	49,010	45,177	44,644	46,223	47,356	48,395	49,166	50,139	50,668	51,798	52,815	54,141	54,808	81.5
Females.....	77,172	73,730	73,557	74,640	75,758	76,922	76,435	77,532	78,268	78,201	77,204	81,376	82,431	89.2
1914.....	108,170	107,769	109,712	110,879	111,706	112,761	111,779	111,141	109,700	107,193	105,213	100,142	<i>100,045</i>	88.7
1909.....	99,037	97,170	99,473	100,753	100,314	99,212	97,782	<i>96,634</i>	98,351	99,528	99,629	99,409	100,294	95.8
Connecticut.....	11,254	<i>10,147</i>	10,310	10,617	10,932	11,263	11,487	11,596	11,697	11,721	11,772	11,813	11,688	85.9
Maryland.....	830	773	768	816	792	798	822	839	818	807	783	871	981	78.3
Massachusetts.....	5,097	4,665	<i>4,618</i>	4,760	5,083	5,388	5,482	5,900	6,140	6,410	6,512	6,629	6,777	68.1
New Jersey.....	32,326	30,541	28,628	30,628	31,270	31,698	32,169	32,700	32,689	33,521	34,268	34,736	35,064	81.6
New York.....	13,342	12,675	12,781	<i>12,652</i>	12,793	13,115	13,237	13,453	13,559	13,326	13,789	14,190	14,534	87.1
Pennsylvania.....	53,052	51,008	51,227	52,072	52,792	52,806	52,362	53,015	53,618	53,717	52,567	56,762	57,342	87.4
Rhode Island.....	4,150	4,046	4,038	4,074	4,098	4,171	4,199	4,238	4,099	4,221	3,908	4,288	4,330	93.3
Virginia.....	661	629	663	670	650	634	591	597	681	690	689	697	732	80.7
States showing large proportion of females.....														Per ct. av. is of state.
Connecticut.....	4,893	<i>4,574</i>	4,025	4,695	4,775	4,864	4,928	5,007	5,001	5,017	5,070	5,084	5,076	43.5
Maryland.....	522	505	463	491	472	485	505	577	563	521	495	562	625	62.2
Massachusetts.....	3,068	3,037	3,040	3,124	3,344	3,570	3,710	3,882	3,995	4,053	4,038	4,074	4,149	64.4
New Jersey.....	17,252	16,460	<i>15,462</i>	16,359	16,827	17,040	17,336	17,477	17,382	17,786	18,016	18,349	18,540	53.4
New York.....	7,970	7,627	7,733	<i>7,586</i>	7,621	7,827	7,875	8,106	8,160	7,904	8,104	8,415	8,673	59.7
Pennsylvania.....	36,580	35,609	36,047	36,149	36,481	36,781	35,911	36,354	36,835	36,561	35,165	38,481	38,686	69.0
Rhode Island.....	2,291	2,102	2,232	2,252	2,259	2,344	2,357	2,346	2,281	2,300	2,176	2,348	2,405	55.2
Virginia.....	433	409	439	435	418	409	395	407	454	459	445	452	474	65.5

TABLE 6.—PER CENT DISTRIBUTION OF WAGE EARNERS, FOR SELECTED STATES: 1919 AND 1914.

STATE.	Cen- sus year.	Wage earners (average number).	PER CENT OF TOTAL.			STATE.	Cen- sus year.	Wage earners (average number).	PER CENT OF TOTAL.		
			16 years of age and over.		Under 16 years of age.				16 years of age and over.		Under 16 years of age.
			Male.	Female.					Male.	Female.	
United States.....	1919	126,782	37.4	57.4	5.2	New York.....	1919	13,342	39.8	58.7	1.5
	1914	108,170	38.5	54.3	7.2		1914	11,659	44.6	52.4	3.0
	1909	99,037	35.0	57.1	8.0	Pennsylvania.....	1919	53,052	28.6	63.5	7.9
Connecticut.....	1919	11,254	55.4	41.3	3.2		1914	44,755	29.6	57.9	12.5
	1914	10,068	52.8	43.8	3.4	Rhode Island.....	1919	4,150	43.3	51.3	5.4
Maryland.....	1919	830	33.8	60.0	6.2		1914	2,325	40.1	56.1	3.8
	1914	874	30.5	41.4	22.1	Virginia.....	1919	661	31.8	61.4	6.8
Massachusetts.....	1919	5,697	33.9	60.0	6.1		1914	691	30.8	51.6	17.6
	1914	4,495	30.9	66.6	2.5						
New Jersey.....	1919	32,326	45.8	51.4	2.8						
	1914	28,263	46.7	51.2	2.1						

MANUFACTURES.

TABLE 7.—WAGE EARNERS, DISTRIBUTED BY OCCUPATION, AGE, AND SEX, FOR SELECTED STATES: 1919 AND 1914.

[Number employed Dec. 15, or nearest representative day.]

OCCUPATION, AGE, AND SEX.	UNITED STATES.		CONNECTICUT.		MASSACHUSETTS.		NEW JERSEY.		NEW YORK.		PENNSYLVANIA.	
	1919	1914	1919	1914	1919	1914	1919	1914	1919	1914	1919	1914
Wage earners, total.....	137,716	106,508	11,687	10,248	6,813	4,533	35,074	27,706	14,404	11,495	57,949	44,051
16 years and over.....	130,564	98,820	11,294	9,901	6,398	4,420	34,097	27,179	14,187	11,161	53,006	38,532
Male.....	52,404	40,960	6,495	5,412	2,518	1,401	16,177	12,957	5,661	5,126	17,200	13,030
Female.....	78,160	57,860	4,799	4,489	3,880	3,019	17,920	14,222	8,526	6,035	36,406	25,502
Under 16 years.....	7,152	7,688	393	347	415	113	977	587	217	344	4,343	5,519
Male.....	2,368	2,461	146	120	131	49	312	186	70	153	1,487	1,733
Female.....	4,784	5,227	247	218	284	64	665	401	147	191	2,856	3,786
Spinners, winders, etc.....	54,235	52,702	2,849	2,957	3,070	2,097	8,814	12,463	6,348	6,069	27,586	24,888
16 years and over.....	49,425	46,579	2,658	2,798	2,863	2,012	8,230	11,979	6,197	5,926	24,512	20,345
Male.....	13,012	13,070	566	573	1,143	435	1,924	3,691	2,186	2,325	5,963	5,305
Female.....	36,413	33,509	2,092	2,225	1,720	1,577	6,306	8,388	4,011	3,601	18,549	15,039
Under 16 years.....	4,810	6,123	191	159	207	85	584	184	151	143	3,074	4,543
Male.....	1,282	1,740	80	14	33	37	153	144	30	31	817	1,318
Female.....	3,528	4,383	111	145	174	48	431	340	112	112	2,257	3,225
Weavers.....	46,528	38,736	2,555	2,934	1,498	1,393	18,772	13,327	3,163	3,257	17,313	13,362
16 years and over.....	45,292	37,965	2,555	2,934	1,498	1,392	18,634	13,282	3,141	3,243	16,263	14,681
Male.....	22,183	20,150	1,757	2,048	462	523	10,586	8,265	1,582	1,840	6,112	6,315
Female.....	23,109	17,815	798	886	1,036	869	8,048	5,017	1,559	1,394	10,151	8,366
Under 16 years.....	1,236	771	.....	.....	.....	1	138	45	22	14	1,050	681
Male.....	735	308	.....	.....	.....	.....	118	23	15	13	597	321
Female.....	501	463	.....	.....	.....	1	20	22	7	1	453	360
On broad silk looms.....	37,460	28,425	1,090	1,234	1,485	1,385	15,418	9,481	2,108	1,873	14,363	12,066
16 years and over.....	36,492	27,726	1,090	1,234	1,485	1,384	15,203	9,452	2,104	1,872	13,550	11,418
Male.....	16,423	13,285	578	684	452	521	8,528	5,917	1,012	877	4,446	4,175
Female.....	20,069	14,441	518	550	1,033	863	6,705	3,535	1,102	995	9,104	7,243
Under 16 years.....	968	699	.....	.....	.....	1	125	30	.....	.....	813	648
Male.....	651	332	.....	.....	.....	.....	100	10	1	1	536	312
Female.....	317	367	.....	.....	.....	1	16	19	3	.....	277	336
On ribbon looms.....	6,833	7,887	147	201	.....	7	3,145	3,545	701	999	2,694	2,926
16 years and over.....	6,565	7,827	147	201	.....	7	3,132	3,520	683	988	2,467	2,893
Male.....	3,960	5,071	59	105	.....	2	1,810	2,062	471	755	1,486	1,963
Female.....	2,605	2,756	88	96	.....	5	1,323	1,457	212	233	971	930
Under 16 years.....	268	60	.....	.....	.....	.....	13	16	18	11	237	33
Male.....	84	33	.....	.....	.....	.....	0	13	14	11	61	9
Female.....	184	27	.....	.....	.....	.....	4	3	4	.....	176	24
On velvet and plush looms.....	1,826	1,804	1,801	1,493	.....	.....	135	150	174	137	216	154
16 years and over.....	1,826	1,804	1,801	1,493	.....	.....	135	150	174	137	216	154
Male.....	1,476	1,431	1,100	1,253	.....	.....	135	150	84	60	148	109
Female.....	350	373	102	240	.....	.....	.....	.....	90	88	68	45
On all other looms.....	409	620	11	6	13	1	74	151	180	228	40	216
16 years and over.....	409	608	11	6	13	1	74	151	180	228	40	216
Male.....	324	363	11	6	10	.....	74	136	115	148	32	68
Female.....	85	245	.....	.....	3	1	.....	15	65	78	8	148
Under 16 years.....	.....	12	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Male.....	3	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Female.....	.....	9	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
All other.....	30,953	15,070	6,283	4,357	2,245	1,043	7,488	1,976	4,893	2,100	13,050	3,801
16 years and over.....	35,847	14,276	6,081	4,100	2,037	1,016	7,233	1,918	4,849	1,982	12,831	3,556
Male.....	17,209	7,740	4,172	2,791	913	443	3,067	1,101	1,893	952	5,125	1,410
Female.....	18,638	6,536	1,909	1,378	1,124	573	3,500	817	2,956	1,030	7,706	2,036
Under 16 years.....	1,106	794	202	188	208	27	255	58	44	187	219	235
Male.....	351	353	66	115	98	12	41	10	10	109	73	94
Female.....	755	441	136	73	110	15	214	39	28	78	146	201

TABLE 8.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR SELECTED STATES: 1919 AND 1914.

STATE.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—								STATE.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
			44 and under.	Be- tween 44 and 48.	48. ¹	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Over 60.				44 and under.	Be- tween 44 and 48.	48. ¹	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Over 60.
United States.	1919	126,782	31,610	2,009	26,154	47,286	14,241	3,322	774	477	New York.....	1919	13,342	4,218	688	1,777	3,883	2,718	58	.....
	1914	108,170	(²)	(²)	1,169	4,016	56,632	43,243	2,190	20		1914	11,659	(²)	(²)	123	2,381	7,544	1,594	17
	1909	99,037	(²)	(²)	106	2,320	2,323	81,407	12,881		1919	53,052	1,732	178	7,941	31,993	9,515	1,125	568
Connecticut.....	1919	11,254	214	.....	6,911	3,839	209	581	.....	Pennsylvania.....	1919	53,052	1,732	178	7,941	31,993	9,515	1,125	568	.....
	1914	10,668	(²)	(²)	10	763	9,669	230		1914	44,755	(²)	(²)	104	772	30,864	3,701	324
	1909	.....	.....	.....	.....	.....	.....	.....	.....		.....	1919	4,150	.....	.....	2,794	379	977	.....	.....
Maryland.....	1919	839	.....	.....	.....	645	.....	204	.....	Rhode Island.....	1919	4,150	.....	.....	2,794	379	977	.....	.....
	1914	874	.....	.....	.....	.....	170	118	580		.....	1914	2,325	(²)	(²)	.....	2,247	78	.....	.....
	1909	.....	.....	.....	.....	.....	.....	.....	.....		.....	1919	661	90	.....	104	194	61	203	.....
Massachusetts.....	1919	5,697	.....	205	2,915	2,667	.....	10	.....	Virginia.....	1919	661	90	.....	104	194	61	203	.....	
	1914	4,405	(²)	(²)	330	22	4,123	.....	20		.....	1914	691	.....	.....	.....	.....	396	295	.....
	1909	.....	.....	.....	.....	.....	.....	.....	.....		.....	1919	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey.....	1919	32,326	24,332	1,744	2,333	3,109	118	161	52	477	New York.....	1919	13,342	4,218	688	1,777	3,883	2,718	58	.....
	1914	28,263	(²)	(²)	33	1,532	534	26,148	10		1914	11,659	(²)	(²)	123	2,381	7,544	1,594	17
	1909		1919	53,052	1,732	178	7,941	31,993	9,515	1,125	568

¹ Includes 48 and under for 1914 and 1909.² Corresponding figures not available.

SILK MANUFACTURES.

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TABLE 9.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED STATES: 1919.

STATE.		TOTAL.		ESTABLISHMENTS EMPLOYING--																
		Establishments.	Wage earners (average number).	No wage earn- ers.	1 to 5 wage earn- ers, inclusive.	6 to 20 wage earn- ers, inclusive.	21 to 50 wage earn- ers, inclusive.	51 to 100 wage earn- ers, inclusive.	101 to 250 wage earn- ers, inclusive.	251 to 500 wage earn- ers, inclusive.	501 to 1,000 wage earn- ers, inclusive.	Over 1,000 wage earn- ers.								
				Estab- lish- ments.	Estab- lish- ments.	Wage earn- ers.	Estab- lish- ments.	Wage earn- ers.	Estab- lish- ments.	Wage earn- ers.	Estab- lish- ments.	Wage earn- ers.	Estab- lish- ments.	Wage earn- ers.	Estab- lish- ments.	Wage earn- ers.				
United States.....	1919.....	1,369	126,782	9	141	396	327	4,192	340	11,797	232	17,097	218	33,339	69	24,487	19	13,458	14	22,016
	1914.....	902	108,170	2	63	186	170	2,227	213	7,332	179	13,578	164	25,545	77	26,514	23	15,551	11	17,237
Connecticut.....	1919.....	41	11,254	.....	1	5	7	76	10	328	5	362	11	1,763	2	546	2	1,081	3	7,053
Maryland.....	1919.....	6	830	.....	.....	.....	1	14	1	24	.....	.....	3	507	1	294	.....	.....	.....	.....
Massachusetts.....	1919.....	21	5,697	.....	.....	.....	3	34	5	164	4	281	5	805	1	473	1	817	2	3,063
New Jersey.....	1919.....	686	32,326	9	100	304	227	2,857	171	5,697	89	6,666	65	9,385	14	5,583	1	734	1	1,040
New York.....	1919.....	181	13,342	.....	21	58	49	643	47	1,692	27	1,999	22	3,355	12	3,807	3	1,788	.....	.....
Pennsylvania.....	1919.....	373	53,052	.....	4	17	35	493	93	3,420	93	6,715	100	15,679	34	11,985	8	5,963	6	8,790
Rhode Island.....	1919.....	30	4,150	.....	4	8	4	55	8	250	4	231	5	841	3	1,014	2	1,742	.....	.....
Virginia.....	1919.....	10	661	.....	.....	.....	.....	.....	4	181	5	376	1	104	.....	.....	.....	.....	.....	.....

TABLE 10.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919, 1914, AND 1909.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
All classes.....	1,369	902	852	126,782	108,170	99,037	\$688,469,523	\$254,011,257	\$196,911,667	\$300,000,501	\$109,568,936	\$89,144,751
Less than \$5,000.....	52	40	45	67	107	242	130,468	133,454	113,378	110,473	103,894	99,038
\$5,000 to \$20,000.....	140	122	130	955	2,073	1,930	1,650,448	1,627,286	1,511,784	1,385,591	1,131,234	1,018,282
\$20,000 to \$100,000.....	341	305	298	8,977	13,527	14,713	18,033,508	15,739,554	15,328,061	11,715,839	8,140,471	8,838,024
\$100,000 to \$500,000.....	483	298	.....	28,474	51,131	53,582	118,925,677	70,572,465	111,378,638	53,199,553	52,077,901	51,051,501
\$500,000 to \$1,000,000.....	175	70	.....	20,871	.....	.....	125,274,169	47,638,346	.....	54,903,392	.....	.....
\$1,000,000 and over.....	178	61	37	67,438	41,272	28,570	424,455,253	118,300,152	68,579,806	178,725,653	48,109,136	27,567,906
PER CENT DISTRIBUTION.												
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....	3.8	5.1	5.3	0.1	0.2	0.2	(1)	0.1	0.1	(1)	0.1	0.1
\$5,000 to \$20,000.....	10.2	13.5	15.3	0.8	1.9	1.9	0.2	0.6	0.8	0.5	1.0	1.1
\$20,000 to \$100,000.....	24.9	33.8	35.0	7.1	12.5	14.9	2.6	6.2	7.8	3.9	7.4	9.9
\$100,000 to \$500,000.....	35.3	33.0	.....	22.4	47.3	54.1	17.3	27.8	56.6	17.7	47.5	57.9
\$500,000 to \$1,000,000.....	12.8	7.8	.....	16.5	.....	.....	18.2	18.8	.....	18.3	.....	.....
\$1,000,000 and over.....	13.0	6.8	4.3	53.2	38.2	28.8	61.7	40.6	34.8	59.6	43.9	30.9

¹ Less than one-tenth of 1 per cent.

TABLE 11.—CHARACTER OF OWNERSHIP, BY STATES: 1919 AND 1914.

STATE.	Cen- sus year.	NUMBER OF ESTABLISH- MENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.							VALUE OF PRODUCTS.						
					Total.	In establishments owned by—			Per cent of total.			Total.	Of establishments owned by—			Per cent of total.		
		Indi- vid- uals.	Cor- pora- tions.	All oth- ers.		Indi- vid- uals.	Cor- pora- tions.	All oth- ers.	Indi- vid- uals.	Cor- pora- tions.	All oth- ers.		Indi- vid- uals.	Corpora- tions.	All others.	Indi- vid- uals.	Corpora- tions.	All oth- ers.
United States....	1919	250	811	308	126,782	6,498	108,531	11,753	5.1	85.6	9.3	\$688,469,523	\$38,561,197	\$581,413,071	\$98,495,255	5.6	84.5	9.9
	1914	180	543	170	108,170	8,117	89,033	14,020	7.5	79.5	13.0	254,011,257	16,407,605	199,073,261	38,530,391	6.5	78.4	15.2
	1909	180	468	204	99,037	9,746	67,387	21,604	9.8	68.1	22.1	199,911,067	19,081,800	134,495,867	43,334,000	9.7	68.3	22.0
Connecticut.....	1919	6	30	5	11,254	598	10,586	100	5.0	94.1	0.9	68,053,429	3,256,528	64,654,251	142,650	4.8	95.0	0.2
	1914	8	30	6	10,608	605	9,855	208	5.7	92.4	1.9	30,591,825	1,633,023	28,637,731	321,071	5.3	93.6	1.0
Maryland ¹	1919	2	4	.....	830	.....	830	.....	100.0	.....	.....	1,534,218	.....	2 1,534,218	.....	.....	100.0	.....
Massachusetts ¹	1919	2	16	3	5,697	.....	5,136	2 561	.....	90.2	9.8	34,193,951	.....	30,909,691	2 3,284,260	.....	90.4	9.6
New Jersey.....	1919	107	310	200	32,326	3,596	22,933	5,797	11.1	70.9	17.9	215,050,560	24,525,311	154,408,889	36,116,360	11.4	71.8	16.8
	1914	96	183	80	28,263	2,447	20,017	5,799	8.7	70.8	20.5	75,706,449	4,973,964	53,986,999	16,745,486	6.6	71.3	22.1
New York.....	1919	39	98	44	13,342	565	10,482	2,295	4.2	78.6	17.2	81,682,572	5,197,046	62,828,610	13,656,916	6.4	76.0	16.7
	1914	39	75	29	11,650	860	8,702	2,097	7.4	74.6	18.0	29,260,763	1,126,468	8,469,176	7.3	63.8	28.9	
Pennsylvania.....	1919	31	300	42	53,052	1,330	48,572	3,150	2.5	91.6	5.9	231,711,352	3,588,141	212,131,125	15,992,086	1.5	91.5	6.9
	1914	26	207	51	44,755	3,598	35,487	5,670	8.0	79.3	12.7	86,938,554	5,975,213	68,326,411	12,636,930	6.9	78.6	14.5
Rhode Island.....	1919	2	24	4	4,150	.....	4,051	2 99	.....	97.6	2.4	27,219,283	.....	26,395,282	2 823,956	.....	97.0	3.6
	1914	4	8	.....	2,825	53	2,272	.....	2.3	97.7	.....	7,664,478	136,160	7,528,312	.....	1.8	98.2	.....
Virginia.....	1919	.....	9	1	661	.....	661	.....	100.0	.....	.....	1,550,712	.....	2 1,550,712	.....	.....	100.0	.....
	1914	.....	9	.....	691	.....	691	.....	100.0	.....	.....	1,772,931	.....	1,772,931	.....	.....	100.0	.....

¹ Figures for 1914 not available.

² Includes the group "Individuals."

³ Includes the group "All others."

MANUFACTURES.

TABLE 12.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919, 1914, AND 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
	1919	1914	1909	Amount.			Per cent distribution.		
				1919	1914	1909	1919	1914	1909
Primary power, total.....	22,203	6,036	2,836	176,825	116,921	97,947	100.0	100.0	100.0
Owned.....	624	653	700	98,514	87,669	81,719	55.7	75.0	83.4
Steam.....	504	627	535	88,221	78,302	72,050	49.9	67.0	73.6
Engines.....	489	(²)	(²)	75,595	(²)	(²)	42.8	(²)	(²)
Turbines.....	35	(²)	(²)	12,626	(²)	(²)	7.1	(²)	(²)
Internal-combustion engines.....	51	53	64	1,006	1,702	1,277	1.1	1.5	1.3
Water wheels, turbines, and motors.....	69	73	101	8,327	7,005	8,383	4.7	6.5	8.5
Rented.....	22,579	5,383	2,136	78,311	29,255	16,228	44.3	25.0	16.6
Electric.....	22,579	5,383	2,136	75,234	23,748	10,354	42.5	20.3	10.6
Other.....				3,077	5,507	6,874	1.7	4.7	6.0
Electric.....	35,310	13,054	5,714	107,982	47,401	23,758	100.0	100.0	100.0
Rented.....	22,579	5,383	2,136	75,234	23,748	10,354	69.7	50.1	43.6
Generated by establishments reporting.....	12,731	8,571	3,578	32,748	23,653	13,404	30.3	49.9	56.4

¹ Figures for horsepower include for 1909 the amount reported under the head of "Other" owned power.² Not reported separately.

TABLE 13.—FUEL CONSUMED, BY STATES: 1919 AND 1914.

STATE.	Cen- sus year.	COAL.		Coke (tons, 2,000 pounds)	Fuel oils (bar- rels).	Gasoline and other volatile oils (bar- rels).	Gas (1,000 cubic feet).	STATE.	Cen- sus year.	COAL.		Coke (tons, 2,000 pounds)	Fuel oils (bar- rels).	Gasoline and other volatile oils (bar- rels).	Gas (1,000 cubic feet).
		Anthra- cite (tons, 2,210 pounds).	Bitumi- nous (tons, 2,000 pounds).							Anthra- cite (tons, 2,210 pounds).	Bitumi- nous (tons, 2,000 pounds).				
United States.....	1919	306,165	289,717	1,002	45,195	1,311	44,724	New York.....	1919	30,024	30,020	.....	4	166	10,675
	1914	307,607	202,514	.....	2,962	(¹)	148,252		1914	26,831	21,943	.....	167	(¹)	20,209
Connecticut.....	1919	4,290	81,050	.....	.....	225	8,011	Pennsylvania.....	1919	202,083	74,034	.....	530	225	17,653
	1914	3,973	61,604	.....	508	(¹)	1,925		1914	190,516	52,910	.....	52	(¹)	109,856
Maryland.....	1919	.....	4,622	.....	.....	.....	.....	Rhode Island.....	1919	2,663	7,809	.....	41,092	1	.....
	1914	402	7,334	.....	3	(¹)	.....		1914	815	9,512	.....	.....	.....	.....
Massachusetts.....	1919	2,000	17,488	.....	.....	.....	38	Virginia.....	1919	179	1,710	619	.....	.....	.....
	1914	2,778	9,171	.....	310	(¹)	1,469		1914	140	3,622	.....	65	(¹)	.....
New Jersey.....	1919	62,853	22,131	383	562	694	2,947	All other states.....	1919	1,173	24,853	.....	2,407	.....	.....
	1914	76,149	14,374	.....	60	(¹)	7,031		1914	3	22,044	.....	1,797	(¹)	7,772

¹ Included in figures for fuel oils.

SILK MANUFACTURES.

9

SPECIAL STATISTICS.

Summary of materials and products.—The quantity and cost of materials and the quantity and value of products are summarized in Table 14 for the industry as a whole and separately for each of the two branches.

TABLE 14.—SUMMARY OF MATERIALS AND PRODUCTS FOR THE TWO BRANCHES OF THE INDUSTRY: 1919 AND 1914.

MATERIAL AND PRODUCT.	1919			1914			PER CENT DISTRIBUTION.				PER CENT OF INCREASE, ¹ 1914-1919.		
	Total.	Establishments engaged in—		Total.	Establishments engaged in—		1919		1914		Total.	Fin- ished prod- ucts.	Throw- ing, wind- ing, etc.
		Manufactur- ing finished silk products, primarily.	Throwing, winding, etc., only (throw- sters).		Manufactur- ing finished silk products, primarily.	Throwing, winding, etc., only (throw- sters).	Fin- ished prod- ucts.	Throw- ing, wind- ing, etc.	Fin- ished prod- ucts.	Throw- ing, wind- ing, etc.			
Materials, total cost....	\$388,460,022	\$333,435,945	\$55,033,077	\$144,442,321	\$131,797,946	\$12,644,375	85.8	14.2	91.2	8.8	168.9	153.0	335.2
Raw silk:													
Pounds.....	25,890,728	21,628,919	4,261,809	22,374,700	19,633,018	2,741,682	83.5	16.5	87.7	12.3	15.7	10.2	55.4
Cost.....	\$206,222,609	\$175,653,432	\$30,569,177	\$86,416,857	\$77,038,819	\$9,378,038	85.2	14.8	89.1	10.9	138.6	128.0	226.0
Prisons, pierced cocoons, nolls, and other waste:													
Pounds.....	11,461,588	2,620,516	8,841,072	4,328,536	1,827,116	2,501,420	22.9	77.1	42.2	57.8	164.8	43.4	253.4
Cost.....	\$16,136,213	\$3,892,513	\$12,243,700	\$3,066,297	\$1,518,982	\$1,547,315	24.1	75.9	49.5	50.5	426.2	156.3	691.3
All other materials, cost.....	\$166,110,200	\$153,890,000	\$12,220,200	\$54,950,167	\$53,240,145	\$1,710,022	92.6	7.4	96.9	3.1	202.2	189.0	610.9
Products, total value..	\$688,469,523	\$590,237,835	\$98,231,688	\$254,011,257	\$232,692,381	\$21,318,876	85.7	14.3	91.6	8.4	171.1	153.7	360.9
Thrown silk:													
Pounds.....	5,568,700	1,349,723	4,219,037	4,070,401	1,196,370	2,874,031	24.2	75.8	20.4	70.6	36.8	12.8	46.8
Value.....	\$52,028,129	\$13,433,861	\$38,594,268	\$16,023,028	\$4,067,363	\$11,956,665	25.5	74.5	31.0	69.0	228.4	170.4	254.5
Organzine—													
Pounds.....	880,014	437,497	448,517	1,492,999	491,742	1,001,257	49.4	50.6	32.9	67.1	(²)	(²)	(²)
Value.....	\$9,122,457	\$4,249,054	\$4,872,803	\$9,325,291	\$2,079,454	\$4,245,837	46.6	53.4	32.9	67.1	(²)	(²)	(²)
Tram—													
Pounds.....	3,011,001	634,724	2,377,177	2,577,402	704,628	1,872,774	17.6	82.4	27.3	72.7	(²)	(²)	(²)
Value.....	\$31,494,535	\$6,128,220	\$25,366,315	\$9,098,037	\$2,887,909	\$6,810,728	19.5	80.5	29.8	70.2	(²)	(²)	(²)
Hard crepe twist—													
Pounds.....	1,070,845	277,502	793,343	(³)	(³)	(³)	25.9	74.1	(³)	(³)	(³)	(³)	(³)
Value.....	\$12,011,137	\$3,055,987	\$8,955,150	(³)	(³)	(³)	25.4	74.6	(³)	(³)	(³)	(³)	(³)
Spun silk:													
Pounds.....	3,950,637	801,091	3,155,546	1,907,416	690,821	1,216,595	20.2	79.8	43.0	57.0	146.1	16.0	244.3
Value.....	\$23,807,338	\$4,594,624	\$19,222,714	\$4,577,058	\$2,189,915	\$2,387,143	19.3	80.7	47.8	52.2	420.1	109.4	705.3
Machine twist, sewing and embroidery silk, fringe and floss:													
Pounds.....	1,327,172	1,106,357	160,815	1,562,039	1,508,181	53,858	87.9	12.1	96.6	3.4	-15.0	-22.7	198.6
Value.....	\$18,234,479	\$16,756,978	\$1,477,501	\$9,681,013	\$9,520,797	\$160,816	91.9	8.1	98.3	1.7	88.3	76.0	818.8
All other products, value....	\$555,464,552	\$545,858,441	\$9,606,111	\$215,328,051	\$214,560,235	\$767,816	98.3	1.7	99.6	0.4	158.0	154.4	1,151.1
Received for contract work..	\$38,335,025	\$9,603,931	\$28,731,094	\$8,400,607	\$1,454,071	\$6,946,536	25.1	74.9	17.3	82.7	356.3	580.5	313.6
Raw silk thrown on commis- sion, pounds.....	18,475,714	1,436,275	17,039,439	13,809,239	1,023,138	12,846,101	7.8	92.2	7.4	92.6	33.2	40.4	32.6
Organzine, pounds.....	6,280,728	751,612	5,535,116	7,088,229	524,368	6,563,861	12.0	88.0	7.4	92.6	(²)	(²)	(²)
Tram, pounds.....	7,393,872	450,930	6,942,942	6,781,010	498,770	6,282,240	6.1	93.9	7.4	92.6	(²)	(²)	(²)
Hard crepe twist, pounds	4,795,114	233,733	4,561,381	(³)	(³)	(³)	4.9	95.1	(³)	(³)	(³)	(³)	(³)

¹ A minus sign (—) denotes decrease.

² Figures not comparable.

³ Not reported separately.

Comparative summary of materials.—An itemized account of the materials used in the silk-manufactures industry is given in Table 15 for 1919 as compared with 1914, 1909, and 1904.

TABLE 15.—COMPARATIVE SUMMARY OF MATERIALS FOR SILK MANUFACTURES: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904		1919	1914	1909	1904
Total cost.....	\$388,460,022	\$144,442,321	\$107,766,910	\$75,861,188	Silk—Continued.				
Silk:					Spun silk, bought as such and used in manufacture—				
Raw—					Pounds.....	4,767,679	3,209,309	2,112,972	1,951,201
Pounds.....	25,890,728	22,374,700	17,472,204	11,572,783	Cost.....	\$26,874,715	\$8,094,427	\$4,848,789	\$4,210,061
Cost.....	\$206,222,609	\$86,416,857	\$67,787,037	\$45,818,410	Singles—				
Bought as such and used in manufacture, unthrown—					Pounds.....	1,868,510	(¹)	(¹)	(¹)
Pounds.....	10,272,040	(¹)	(¹)	(¹)	Cost.....	\$10,732,794	(¹)	(¹)	(¹)
Cost.....	\$78,853,441	(¹)	(¹)	(¹)	Two or more ply—				
Bought and thrown in this mill for consumption, not for sale—					Pounds.....	2,899,169	(¹)	(¹)	(¹)
Pounds.....	4,809,188	(¹)	(¹)	(¹)	Cost.....	\$15,141,921	(¹)	(¹)	(¹)
Cost.....	\$38,337,980	(¹)	(¹)	(¹)	Artificial silk—				
Bought and given out for commission throwing—					Pounds.....	3,039,257	1,902,974	914,494	466,151
Pounds.....	10,809,500	(¹)	(¹)	(¹)	Cost.....	\$15,885,564	\$3,440,154	\$1,926,894	\$1,623,473
Cost.....	\$89,031,189	(¹)	(¹)	(¹)	Singles—				
Thrown, bought as such and used in manufacture—					Pounds.....	2,667,934	(¹)	(¹)	(¹)
Pounds.....	6,125,400	3,855,890	3,377,972	3,236,744	Cost.....	\$13,844,697	(¹)	(¹)	(¹)
Cost.....	\$62,487,930	\$16,703,090	\$14,679,719	\$14,552,425	Two or more ply—				
Organzine—					Pounds.....	371,323	(¹)	(¹)	(¹)
Pounds.....	2,240,671	(¹)	(¹)	(¹)	Cost.....	\$2,040,867	(¹)	(¹)	(¹)
Cost.....	\$24,204,190	(¹)	(¹)	(¹)	Yarns, other than silk:				
Tram—					Cotton (not mercerized)—				
Pounds.....	1,793,048	(¹)	(¹)	(¹)	Pounds.....	15,131,047	16,869,511	12,617,292	8,387,048
Cost.....	\$17,082,057	(¹)	(¹)	(¹)	Cost.....	\$14,151,863	\$6,163,240	\$4,687,173	\$2,586,954
Hard crepe twist—					Cotton, mercerized—				
Pounds.....	2,091,771	(¹)	(¹)	(¹)	Pounds.....	2,826,965	1,464,299	1,494,586	631,247
Cost.....	\$21,201,692	(¹)	(¹)	(¹)	Cost.....	\$4,266,593	\$1,078,337	\$1,124,409	\$471,035
Prisons, pierced cocoons, nolls, and other waste, bought as such and used in manufac- ture—					Woolen and worsted—				
Pounds.....	11,461,588	4,328,536	2,402,900	2,49,811	Pounds.....	638,334	1,987,918	610,588	443,155
Cost.....	\$16,136,213	\$3,066,297	\$1,637,187	\$187,159	Cost.....	\$2,157,743	\$2,087,804	\$765,989	\$409,867
					Mohair—				
					Pounds.....	572,054	2,645,055	710,108	138,389
					Cost.....	\$875,746	\$1,604,362	\$640,529	\$137,097
					Other—				
					Pounds.....	470,736	291,672	353,780	130,930
					Cost.....	\$1,338,838	\$438,944	\$456,597	\$108,841
					All other materials, cost.....	\$39,071,199	\$15,348,803	\$9,212,593	\$6,155,860

¹ Not reported separately.

² Does not include waste, nolls, etc., which were included with "All other materials" in 1904.

The materials of the industry are well defined and completely accounted for except possibly in respect to the quantity and value of raw silk used. This is due to the fact that a considerable quantity of raw silk owned by importers, merchants, and dealers is sent to commission throwsters to be made into yarn on a contract basis. The yarn is returned to the owners of the raw silk and later sold by them as organzine, tram, or hard crêpe twist to establishments within the silk-manufactures industry and does not figure in the statistics of materials as raw silk, but as organzine, tram, and hard crêpe twist only. A close approxi-

mation of the quantity of raw silk handled in this way in 1919 may be arrived at by obtaining the difference between the quantity of raw silk thrown on commission, shown in Table 14 as 18,475,714 pounds, and the quantity bought by the industry and given out for commission throwing, shown in Table 15 as 10,809,500 pounds, which is equal to 7,666,214 pounds.

Principal materials used in the industry, by states.—A distribution, by states, of the kind, quantity, and cost of materials used in the industry are shown in Table 16 for the census years 1904 to 1919, inclusive.

TABLE 16.—PRINCIPAL MATERIALS USED IN THE INDUSTRY, BY STATES: 1919, 1914, 1909, AND 1904.

MATERIAL AND STATE.	QUANTITY (POUNDS).				COST.				PER CENT OF INCREASE, ¹ 1909-1919.	
	1919	1914	1909	1904	1919	1914	1909	1904	Quantity.	Cost.
Raw silk.	25,890,728	22,374,700	17,172,204	11,572,783	\$200,222,009	\$86,416,857	\$67,787,037	\$45,318,416	48.2	204.2
Connecticut.	1,777,775	1,875,922	1,624,701	1,320,509	13,544,611	7,263,562	6,069,260	5,067,381	9.4	122.1
Massachusetts.	1,109,943	1,121,697	920,308	739,004	9,219,540	4,141,624	3,753,207	2,944,270	20.6	145.6
New Jersey.	7,006,034	6,891,603	6,112,647	3,553,080	64,080,504	26,613,777	23,705,000	13,920,194	30.3	172.8
New York.	2,274,130	2,339,776	1,817,329	1,066,793	19,228,029	9,033,199	7,092,171	3,954,433	25.1	171.1
Pennsylvania.	10,007,598	8,073,266	5,532,973	3,970,044	80,527,565	31,573,509	21,206,672	15,419,221	80.9	279.7
Rhode Island.	808,948	535,613	483,330	262,112	6,501,401	1,850,707	2,173,458	1,179,447	67.4	201.9
All other states.	1,946,294	1,536,823	980,916	721,231	12,100,329	5,940,470	3,756,411	2,853,461	98.4	231.7
Organzine, tram, and hard crêpe twist.	6,125,490	3,855,899	3,377,972	3,236,744	62,487,930	16,703,006	14,670,719	14,552,425	81.3	323.7
Connecticut.	240,420	41,121	54,619	28,844	1,914,645	206,051	238,785	144,358	340.2	701.8
Massachusetts.	42,143				404,404					
New Jersey.	3,504,001	1,471,504	1,143,754	1,343,081	37,804,340	6,154,447	4,899,843	5,832,154	206.4	662.6
New York.	718,018	337,164	335,003	603,623	7,019,320	1,467,062	1,471,824	2,919,456	114.3	376.9
Pennsylvania.	1,425,402	1,700,594	1,719,952	1,202,805	13,882,065	7,934,419	7,531,045	5,390,466	-17.1	84.3
All other states.	104,837	246,426	124,644	58,391	1,003,105	951,117	538,222	266,991	56.3	253.6
Spun silk.	4,767,679	3,200,309	2,112,972	1,951,201	26,874,715	8,094,427	4,848,789	4,310,061	125.6	433.6
Connecticut.	1,696,472	1,244,745	506,379	716,607	8,192,611	3,340,302	1,425,657	1,609,152	184.5	474.7
New Jersey.	724,068	501,912	244,617	154,201	4,149,000	1,108,206	628,027	341,298	196.0	560.6
New York.	505,280	372,718	315,622	249,890	2,510,857	664,480	759,710	734,099	80.1	231.3
Pennsylvania.	1,118,068	723,170	606,067	454,074	6,830,327	1,845,513	1,600,914	876,485	61.0	335.9
Rhode Island.	521,040	130,342	73,810	62,145	3,117,160	363,934	175,113	139,909	605.9	1,080.1
All other states.	201,952	280,410	187,471	324,278	1,068,301	681,902	203,368	609,118	7.7	204.2
Frises, plorced cocoons, nolls, and other waste.	11,461,588	4,328,530	2,402,900	2,49,811	16,136,213	3,006,207	1,637,187	2,187,150	377.0	885.6
Artificial silk.	3,030,257	1,002,974	914,494	460,151	15,885,504	3,440,154	1,926,804	1,623,473	232.3	724.4
Connecticut.	202,879	404,087	18,192		907,321	718,026	39,062		1,015.2	2,222.8
Massachusetts.	64,183				335,551					
New Jersey.	555,728	487,887	103,148	3,006	2,035,303	923,675	197,208	35,074	438.8	1,388.5
New York.	1,510,900	709,611	610,439	289,282	8,398,375	1,234,255	1,300,400	1,039,783	145.1	541.4
Pennsylvania.	481,273	176,682	127,480	127,192	2,260,013	334,022	273,046	394,126	277.5	726.2
All other states.	224,285	124,707	40,220	41,611	1,039,941	230,170	107,578	154,400	355.6	866.7
Cotton yarns (not mercerized).	15,131,047	10,800,511	12,017,292	8,387,048	14,151,863	6,163,240	4,687,173	2,586,954	19.9	201.9
Connecticut.	4,488,146	4,837,406	2,410,095	1,359,021	3,597,015	1,727,259	850,437	439,025	86.2	323.0
Massachusetts.	762,062	1,040,919	1,225,380	724,594	749,405	530,121	535,889	264,580	-38.0	39.8
New Jersey.	1,877,056	2,975,046	1,889,158	1,054,973	1,824,310	1,087,780	781,061	402,480	-0.6	133.6
New York.	2,131,044	1,594,878	2,018,612	1,197,943	2,336,396	655,489	757,470	401,841	5.6	208.4
Pennsylvania.	4,183,116	3,590,419	2,890,000	2,591,135	4,059,169	1,328,708	1,077,167	665,015	45.8	276.8
Rhode Island.	710,190	1,830,922	1,421,229	909,420	720,722	500,348	404,141	290,214	-40.6	78.3
All other states.	982,833	963,831	783,812	489,950	864,846	333,535	281,018	122,899	25.4	207.8
Mercerized cotton yarns.	2,826,965	1,404,290	1,494,586	631,247	4,266,593	1,078,337	1,124,409	471,035	89.1	279.5
Connecticut.	93,711	109,219	20,810	21,560	127,159	93,307	20,270	7,337	219.7	527.3
Massachusetts.	708,018	221,020	158,399	5,348	1,091,554	181,501	113,253	4,470	384.9	863.8
New Jersey.	761,122	352,340	490,307	261,905	1,123,817	313,104	300,108	208,204	65.2	188.0
New York.	465,545	400,224	483,027	101,043	681,227	232,057	359,315	74,770	-3.7	86.6
Pennsylvania.	255,398	336,904	309,068	227,944	470,497	217,198	224,020	168,025	-17.4	112.7
All other states.	483,171	43,683	23,880	12,547	706,339	40,270	17,344	8,229	1,923.3	4,318.5
Woolen and worsted yarns.	638,334	1,987,918	610,588	443,155	2,157,743	2,087,804	765,980	409,867	4.5	181.7
New Jersey.	52,782	306,383	69,169	25,725	170,042	150,763	106,333	27,963	-23.7	68.4
New York.	73,702	203,671	94,622	184,340	184,735	241,485	114,829	191,816	-22.1	60.9
Pennsylvania.	324,621	454,807	83,075	48,870	1,319,634	569,877	98,340	47,969	200.8	1,272.4
All other states.	187,220	933,657	303,722	184,220	444,332	825,679	446,487	142,120	-48.5	-0.5
Mohair and other yarns.	1,042,790	2,936,727	1,068,888	269,319	2,214,584	2,043,306	1,097,126	245,938	-2.0	101.9
Connecticut.	364,109	1,191,116	550,102	97,435	715,863	1,201,778	500,545	97,144	-34.9	43.0
New Jersey.	129,749	139,767	122,303	14,801	340,901	139,822	170,009	10,622	6.1	105.8
New York.	138,827	1,486,741	166,376	85,907	380,240	606,331	217,890	46,223	-16.6	77.3
Pennsylvania.	218,048	59,485	186,170	53,453	478,040	72,616	157,214	74,292	17.6	204.5
All other states.	191,167	20,618	20,937	17,543	283,865	29,359	61,459	17,657	538.6	451.6

¹ A minus sign (-) denotes decrease.

² Not including waste and nolls.

SILK MANUFACTURES.

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Silk consumed in all textile mills.—There is a certain quantity of silk consumed in other textile mills besides those in the silk-manufactures industry.

Table 17 shows the total amount of silk consumed in all classes of textile mills, by industries, for 1919, 1914, 1909, and 1904.

TABLE 17.—SILK CONSUMED IN ALL TEXTILE MILLS (POUNDS): 1919, 1914, 1909, AND 1904.

MATERIAL AND INDUSTRY.	1919	1914	1909	1904	MATERIAL AND INDUSTRY.	1919	1914	1909	1904
Raw silk.....	27,580,946	25,021,945	17,729,306	11,572,783	Frisons, pierced cocoons, noils, and other waste.....	13,609,561	(2)	(2)	(2)
Silk goods.....	25,890,728	22,374,700	17,472,204	11,572,783	Silk goods.....	11,461,588	4,328,536	2,402,960	1,499,811
Cotton manufactures.....	593,982	1,057,083	257,102		Cotton goods.....	2,000	(2)	(2)	(2)
Knit goods.....	1,064,824	1,500,162			Knit goods.....	200,744	(2)	(2)	(2)
Hats, fur-felt.....	30,512				Wool manufactures.....	1,945,229	(2)	(2)	(2)
Thrown and spun silk yarn.....	18,657,008	10,628,502	9,015,079	6,400,531	Woolen goods.....	11,690,186	(2)	(2)	(2)
Silk goods.....	10,893,169	7,065,208	5,490,944	5,187,945	Worsted goods.....	118,832	(2)	(2)	(2)
Cordage and twine.....	32,810				Wool shoddy.....	136,211	(2)	(2)	(2)
Cotton manufactures.....	1,489,387	855,123	2,082,006	412,589	Artificial silk.....	8,004,798	(2)	(2)	(2)
Cotton goods.....	1,413,876	714,093	1,923,727	369,575	Silk goods.....	3,039,257	1,902,974	914,494	466,161
Cotton small wares.....	58,463	86,943	138,279	43,014	Cotton manufactures.....	772,005	450,427	(2)	(2)
Cotton lace.....	17,048	54,087			Knit goods.....	4,153,546	1,257,243	(2)	(2)
Knit goods.....	5,711,110	1,913,478	982,753	320,671	Wool manufactures.....	39,990	(2)	(2)	(2)
Wool manufactures.....	530,532	794,093	470,376	488,326	Woolen goods.....	7,256	(2)	(2)	(2)
Woolen goods.....	185,456	117,291	70,959	1107,396	Worsted goods.....	21,558	(2)	(2)	(2)
Worsted goods.....	319,517	404,370	211,577	304,930	Carpets and rugs.....	11,176	(2)	(2)	(2)
Carpets and rugs.....	125,559	273,032	196,840	76,000					

¹ Includes a small quantity used in felt-goods mills.

² Figures not available.

³ Not including waste and noils.

Raw silk furnished for contract throwing.—Table 18 gives the number of pounds of raw silk owned by mills in the industry and sent out to commission throwsters or other mills to be made into yarn. The table gives an account of the raw silk by states for a number of census years according to the quantity thrown into organzine, tram, and hard crêpe twist, as well as the

total amount of raw silk reported as used in the industry which includes mills doing their own throwing for further manufacture into cloth, etc. Cognizance should be taken of the facts explained in connection with Table 15 with respect to the quantity of raw silk furnished by importers, merchants, and dealers, which also applies to Table 18.

TABLE 18.—RAW SILK FURNISHED FOR CONTRACT THROWING (POUNDS): 1919, 1914, 1909, AND 1904.

STATE.	Total amount used in the industry.	THROWN UNDER CONTRACT—				STATE.	Total amount used in the industry.	THROWN UNDER CONTRACT—			
		Total.	Into organzine.	Into tram.	Into hard crêpe twist.			Total.	Into organzine.	Into tram.	Into hard crêpe twist.
United States:						New York:					
1919.....	25,890,728	18,475,714	6,286,728	7,393,872	4,795,114	1919.....	2,274,136	2,080,124	1,142,982	759,346	177,796
1914.....	22,374,700	13,869,239	7,088,229	6,781,010	(1)	1914.....	2,339,776	1,060,699	563,801	496,898	(1)
1909.....	17,472,204	12,753,002	6,114,209	6,638,793	(1)	1909.....	1,817,329	936,754	496,053	441,701	(1)
1904.....	11,572,783	7,101,851	3,635,384	3,466,467	(1)	1904.....	1,006,793	705,078	359,248	345,830	(1)
Connecticut:						Pennsylvania:					
1919.....	1,777,775	202,181	23,080	15,000	164,101	1919.....	10,007,598	12,409,711	4,177,655	4,493,723	3,738,333
1914.....	1,876,022	122,187	60,483	61,704	(1)	1914.....	8,073,266	9,754,295	5,201,159	4,553,136	(1)
1909.....	1,624,701	290,253	150,332	139,021	(1)	1909.....	5,532,973	7,733,016	4,150,688	3,582,328	(1)
1904.....	1,320,509	216,454	131,038	85,416	(1)	1904.....	3,970,044	4,116,299	2,288,174	1,828,125	(1)
Massachusetts:						Rhode Island:					
1919.....	1,109,943	1,550		1,550		1919.....	808,948	25,224	6,903		18,321
1914.....	1,121,697	5,377		5,377	(1)	1914.....	535,613	3,560	2,070	890	(1)
1909.....	920,308	116,543	59,670	59,873	(1)	1909.....	483,330				
1904.....	739,004					1904.....	262,112	88,000	68,000	20,000	(1)
New Jersey:						All other states:					
1919.....	7,096,034	2,252,631	693,900	1,063,788	494,943	1919.....	1,946,294	1,504,293	242,208	1,060,465	201,620
1914.....	6,891,003	1,790,594	693,593	1,097,001	(1)	1914.....	1,536,823	1,132,527	566,523	566,004	(1)
1909.....	6,112,647	2,661,205	813,906	1,847,299	(1)	1909.....	980,916	1,015,231	447,560	567,671	(1)
1904.....	3,553,090	1,689,088	702,055	987,033	(1)	1904.....	721,231	286,932	86,869	200,063	(1)

¹ Not reported separately.

Summary of products for the industry.—An itemization of the statistics relating to the quantity and value of products for the silk-manufactures industry is presented for 1919, 1914, 1909, and 1904 in Table 19.

TABLE 19.—SUMMARY OF PRODUCTS FOR SILK MANUFACTURES IN THE UNITED STATES: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904	Per cent of increase, 1909-1919.		1919	1914	1909	1904	Per cent of increase, 1909-1919.
Total value.....	\$688,469,523	\$254,011,257	\$196,911,667	\$133,288,072	249.6	Ribbons, value.....	\$66,186,609	\$38,201,293	\$32,744,873	\$21,800,604	102.1
Broad silks:						All silk, value.....	\$52,047,330	(*)	(*)	(*)	.....
Yards.....	310,132,060	216,033,066	185,707,310	124,871,215	67.0	Silk and other materials, value.....	\$14,139,279	(*)	(*)	(*)	.....
Value.....	\$391,735,902	\$137,719,504	\$107,881,146	\$60,917,702	263.1	Laces, nets, veils, veiling, etc., value.....	\$5,825,359	\$1,328,933	\$1,350,850	\$745,489	331.2
All-silk:						Embroideries, value.....	\$127,522	\$43,500	\$485,322	\$112,362	-73.7
Yards.....	245,860,918	142,713,359	114,876,641	97,870,717	114.0	Frings and gimps, value.....	\$3,026,500	\$1,025,188	\$24,527	\$1,016,954	267.1
Value.....	\$322,502,765	\$90,649,801	\$74,471,201	\$53,914,988	333.1	Brads and binding, value.....	\$13,218,284	\$3,073,648	\$4,483,248	\$3,403,977	194.8
In the gray—						Tailors' trimmings, value.....	\$634,058	\$210,741	\$41,040	\$700	1,445.0
Yards.....	86,919,172	(*)	(*)	(*)	.....	Military trimmings, value.....	\$982,009	\$431,422	\$340,903	\$170,231	96.8
Value.....	\$101,976,095	(*)	(*)	(*)	.....	Machine twist:					
Piece-dyed—						Pounds.....	773,843	650,540	1,088,780	932,908	-28.9
Yards.....	64,771,760	59,304,041	10,093,303	21,334,584	.....	Value.....	\$10,644,005	\$4,036,807	\$0,341,719	\$5,521,055	67.8
Value.....	\$89,458,930	\$38,819,874	\$11,353,242	\$9,276,445	.....	Sewing and embroidery silks:					
Printed—						Pounds.....	515,222				
Yards.....	8,275,585	4,528,453	.....	.....	.....	Value.....	\$7,080,813	902,499	747,246	811,711	.....
Value.....	\$11,021,575	\$2,637,231	.....	.....	.....	Fringe and loss silks:					
Yarn-dyed—						Pounds.....	38,107	\$5,644,806	\$1,179,355	\$4,025,016	.....
Yards.....	55,414,154	78,880,805	95,183,248	70,536,133	.....	Value.....	\$500,571				
Value.....	\$118,199,470	\$55,232,600	\$63,118,040	\$40,068,543	.....	Organzine, for sale:					
Warp-printed—						Pounds.....	886,014	1,492,099	1,077,931		17.8
Yards.....	480,247	.....	.....	.....	.....	Value.....	\$9,122,457	\$6,325,291	\$5,330,528	2,025,645	71.1
Value.....	\$946,680	.....	.....	.....	.....	Tram, for sale:					
Mixed goods—						Pounds.....	3,611,901	2,577,402	1,062,388	\$9,190,650	117.3
Yards.....	64,271,142	73,320,337	70,830,675	27,000,408	-9.3	Value.....	\$31,494,535	\$0,698,637	\$7,219,982		336.2
Value.....	\$80,233,137	\$41,029,793	\$33,409,855	\$10,972,774	107.2	Hard crepe twist, for sale:					
In the gray—						Pounds.....	1,070,845	(*)	(*)	(*)	.....
Yards.....	41,869,419	(*)	(*)	(*)	.....	Value.....	\$12,011,137	(*)	(*)	(*)	.....
Value.....	\$35,722,740	(*)	(*)	(*)	.....	Spun silk, for sale:					
Piece-dyed—						Pounds.....	3,956,637	1,607,416	779,462	670,529	407.6
Yards.....	8,933,396	39,559,303	440,044,433	15,063,353	.....	Value.....	\$23,807,338	\$4,577,058	\$2,104,066	\$1,660,647	1,061.5
Value.....	\$12,710,941	\$21,843,055	\$16,728,195	\$4,309,054	.....	Singles—					
Printed—						Pounds.....	1,764,028	(*)	(*)	(*)	.....
Yards.....	1,248,244	310,731	.....	.....	.....	Value.....	\$11,733,463	(*)	(*)	(*)	.....
Value.....	\$1,138,154	\$203,848	.....	.....	.....	Two or more ply—					
Yarn-dyed—						Pounds.....	2,192,600	(*)	(*)	(*)	.....
Yards.....	12,034,102	33,450,303	30,786,242	11,397,145	.....	Value.....	\$12,073,875	(*)	(*)	(*)	.....
Value.....	\$19,420,163	\$18,982,860	\$17,681,600	\$0,573,120	.....	Artificial silk:					
Warp-printed—						Pounds.....	820,083	(*)	(*)	(*)	.....
Yards.....	185,981	.....	.....	.....	.....	Value.....	\$5,423,242	(*)	(*)	(*)	.....
Value.....	\$232,139	.....	.....	.....	.....	All other products, value.....	\$23,895,971	\$13,757,772	\$7,058,120	\$8,164,569	200.3
Velvets:						Received for contract work.....	\$38,335,025	\$8,400,607	\$8,364,350	\$3,716,056	358.3
Yards.....	10,150,089	10,318,135	10,093,583	7,262,315	60.0						
Value.....	\$20,950,239	\$8,570,022	\$4,707,000	\$3,161,206	339.4						
Plushes:											
Yards.....	5,800,427	9,114,992	2,750,411	2,547,307	112.4						
Value.....	\$21,001,280	\$10,135,842	\$2,104,708	\$1,340,816	928.3						
Upholstery and tapes:											
Yards.....	510,281	477,699	226,717	1,766,210	127.7						
Value.....	\$2,156,617	\$840,120	\$382,820	\$1,550,982	463.4						

* A minus sign (—) denotes decrease.

* In addition, in 1919, similar classes of silk goods to the value of \$658,030; in 1914, to the value of \$1,770,000; and in 1909, to the value of \$1,218,101, were reported by establishments engaged primarily in other industries.

* Not reported separately.

* Included in "All other products."

Articles included in "All other products."—Certain products of the silk industry were reported and name specified under "All other products" by establishments

reporting in 1919, a total for which is shown in Table 19, but given in detail with values in Table 20.

TABLE 20.—ARTICLES INCLUDED IN "ALL OTHER PRODUCTS": 1919.

ITEM.	Value.	ITEM.	Value.
Total value.....	\$23,895,971	Labels.....	\$2,186,533
Trimming, cords, tassels, ornaments, etc., other than military and tailors' trimmings.....	3,489,688	Miscellaneous products, other than silk (cotton and woolen yarn, cotton fabrics, etc.).....	11,238,916
Mufflers and belts.....	87,101	Silk hosiery and knitted fabrics.....	1,286,969
Cravats and tubular neckties.....	147,240	Miscellaneous unclassified silk fabrics.....	5,509,518

Principal products of silk manufactures, by states.—A selection of the principal products reported by the industry has been made, statistics for which are shown, by states, for 1919, 1914, 1909, and 1904 in Table 21.

Table 22 gives, for 1919, 1914, 1909, and 1904, the per cent distribution, by states, of the quantity and Table 23 of the value of all products for which figures are shown in Table 21.

SILK MANUFACTURES.

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TABLE 21.—PRINCIPAL PRODUCTS OF SILK MANUFACTURES, BY STATES: 1919, 1914, 1909, AND 1904.

PRODUCT AND STATE.	QUANTITY.				VALUE.			
	1919	1914	1909	1904	1919	1914	1909	1904
Broad silks.	<i>Yards.</i>	<i>Yards.</i>	<i>Yards.</i>	<i>Yards.</i>				
Connecticut.....	310,132,060	216,033,096	185,707,316	124,871,215	\$391,735,902	\$137,719,564	\$107,881,146	\$66,817,762
Massachusetts.....	11,696,309	9,177,620	11,454,011	7,562,160	16,664,633	5,884,845	5,890,233	4,037,599
New Jersey.....	9,545,064	8,618,524	9,668,788	4,235,637	17,672,808	6,954,245	5,898,231	3,067,123
New York.....	108,547,532	99,163,010	64,788,189	46,700,737	147,569,327	48,020,187	43,167,205	28,188,608
Pennsylvania.....	18,512,031	15,454,751	15,217,298	10,896,809	25,104,956	9,102,192	9,042,488	6,382,758
Rhode Island.....	124,747,755	90,727,907	65,569,386	43,552,924	152,574,138	57,451,134	35,772,192	20,822,530
All other states.....	24,073,376	11,301,106	11,649,145	6,497,837	20,485,693	4,572,591	4,415,641	2,331,436
	13,009,993	11,590,778	7,350,489	5,425,005	11,664,347	5,734,370	3,695,156	2,097,708
All-silk.	<i>Yards.</i>	<i>Yards.</i>	<i>Yards.</i>	<i>Yards.</i>				
Connecticut.....	245,860,918	142,713,359	114,876,641	97,870,717	322,502,765	96,689,801	74,471,291	55,944,988
Massachusetts.....	8,830,203	5,691,366	7,724,079	6,812,551	12,362,837	3,817,321	4,146,923	3,656,747
New Jersey.....	5,099,475	(1)	(1)	(1)	10,763,763	(1)	(1)	(1)
New York.....	99,483,146	52,049,169	52,403,047	42,327,218	133,227,850	36,905,379	35,553,705	26,594,661
Pennsylvania.....	14,056,105	12,778,048	8,707,603	10,002,610	19,883,732	7,149,555	5,940,921	5,836,840
Rhode Island.....	99,272,085	64,052,216	41,600,680	33,624,110	120,211,810	42,833,353	25,873,332	18,205,786
All other states.....	12,404,078	522,010	836,305	643,979	13,471,763	382,471	403,522	211,979
	6,115,736	7,619,950	3,604,921	4,460,243	6,681,010	5,601,692	2,540,888	2,438,975
In the gray.								
Connecticut.....	88,919,172	(2)	(2)	(2)	101,978,095	(2)	(2)	(2)
New Jersey.....	38,000,437	(2)	(2)	(2)	43,882,733	(2)	(2)	(2)
New York.....	3,681,272	(2)	(2)	(2)	4,933,499	(2)	(2)	(2)
Pennsylvania.....	27,527,413	(2)	(2)	(2)	35,070,780	(2)	(2)	(2)
All other states.....	17,650,050	(2)	(2)	(2)	18,389,103	(2)	(2)	(2)
Piece-dyed and printed.								
Connecticut.....	73,047,345	63,832,494	19,693,393	21,334,584	101,380,505	41,457,105	11,353,242	9,276,445
New Jersey.....	36,980,499	21,243,602	4,763,872	3,874,771	50,970,277	14,648,890	3,200,166	2,175,034
New York.....	6,442,217	7,428,781	2,396,169	4,272,422	9,572,602	3,490,354	1,147,251	1,906,468
Pennsylvania.....	20,848,704	26,320,088	4,976,128	7,325,103	28,709,858	18,058,376	2,920,664	2,709,666
All other states.....	8,775,925	8,840,023	7,987,224	5,862,288	12,127,768	5,253,455	4,085,161	2,485,277
Yarn-dyed, including warp-printed.								
Connecticut.....	85,894,401	78,880,865	95,183,248	70,536,133	119,146,165	55,232,696	63,118,049	46,668,543
Massachusetts.....	913,725	1,290,783	920,819	1,852,590	1,957,390	1,224,013	823,104	1,447,795
New Jersey.....	4,872,983	3,053,167	1,717,102	1,149,292	9,309,006	2,809,121	1,253,922	1,043,576
New York.....	24,442,210	30,805,567	47,639,175	38,452,447	38,674,840	22,256,489	32,353,539	23,419,027
Pennsylvania.....	3,932,706	5,349,807	6,241,494	5,730,188	5,377,631	3,653,171	4,799,670	3,930,372
All other states.....	50,895,968	37,732,128	37,624,553	26,299,013	62,431,192	24,775,007	22,952,668	15,496,120
	836,809	644,363	1,634,160	3,052,633	1,396,116	514,895	935,146	1,331,053
Silk-mixed.								
Connecticut.....	64,271,142	73,320,337	70,830,675	27,000,498	69,233,137	41,029,763	33,409,855	10,972,774
Massachusetts.....	2,800,106	3,456,264	3,729,932	749,015	4,301,796	2,067,524	1,743,310	580,862
New Jersey.....	3,845,689	(1)	(1)	(1)	6,909,045	(1)	(1)	(1)
New York.....	9,004,386	17,113,841	12,385,152	4,373,519	14,341,477	11,114,808	7,613,500	2,593,947
Pennsylvania.....	4,455,836	2,676,103	6,509,695	894,199	5,221,224	1,952,637	3,095,567	545,918
Rhode Island.....	25,476,670	26,676,691	23,968,700	9,928,808	26,362,328	14,017,751	9,898,860	2,616,744
All other states.....	11,669,298	10,779,096	10,812,840	5,853,958	7,013,930	4,190,120	4,012,119	2,119,457
	6,804,287	12,589,352	13,424,356	5,200,399	5,083,337	7,086,923	7,046,499	2,715,856
In the gray.								
Connecticut.....	41,869,419	(2)	(2)	(2)	35,722,740	(2)	(2)	(2)
New Jersey.....	1,538,937	(2)	(2)	(2)	2,563,933	(2)	(2)	(2)
New York.....	434,043	(2)	(2)	(2)	738,285	(2)	(2)	(2)
Pennsylvania.....	20,019,703	(2)	(2)	(2)	19,920,144	(2)	(2)	(2)
Rhode Island.....	11,345,016	(2)	(2)	(2)	6,646,769	(2)	(2)	(2)
All other states.....	7,630,220	(2)	(2)	(2)	5,823,612	(2)	(2)	(2)
Piece-dyed and printed.								
Connecticut.....	10,181,040	39,870,034	40,044,433	15,603,353	13,849,095	22,046,903	15,728,195	4,399,654
New Jersey.....	3,916,893	8,269,269	3,584,329	1,331,233	6,103,987	5,171,512	1,834,553	439,935
New York.....	2,929,574	1,847,722	4,618,084	3,247	3,211,950	1,444,496	1,646,309	4,921
Pennsylvania.....	742,803	18,235,694	15,588,924	8,461,557	1,245,063	9,835,242	6,360,206	1,718,129
All other states.....	2,692,310	11,517,449	16,358,090	5,807,316	3,288,105	5,595,650	6,587,127	2,237,269
Yarn-dyed, including warp-printed.								
Connecticut.....	12,220,083	33,450,303	30,780,242	11,397,145	19,661,302	18,982,860	17,681,600	6,573,120
New Jersey.....	4,712,860	8,844,572	8,800,823	3,042,286	7,499,205	5,943,296	5,778,947	2,154,012
New York.....	660,547	828,381	1,091,611	890,952	965,405	508,138	1,149,258	541,597
Pennsylvania.....	3,813,104	8,440,097	8,384,776	1,467,251	5,197,131	4,782,509	4,538,654	808,615
All other states.....	3,043,582	15,337,253	11,609,032	5,996,656	6,001,561	7,748,917	6,214,801	2,978,806
Velvets.								
Connecticut.....	16,150,689	16,318,135	10,063,583	7,262,315	20,950,239	8,570,022	4,767,990	3,161,206
New Jersey.....	15,077,299	15,385,563	9,741,329	7,154,387	19,197,396	8,060,314	4,519,238	3,096,449
All other states.....	932,572	352,572	362,254	107,928	1,752,843	509,708	248,752	64,757
Plushes.								
Connecticut.....	5,860,527	9,114,992	2,759,411	2,547,367	21,601,280	10,135,842	2,104,768	1,340,815
All other states.....								
Upholstery and tapestries.								
Connecticut.....	516,281	477,690	226,717	1,766,210	2,156,617	840,126	382,820	1,559,982
All other states.....								
Organzine, tram, and hard cr6pe twist.	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>				
Connecticut.....	5,568,760	4,070,401	2,740,319	2,025,645	52,828,129	16,023,928	12,550,510	9,190,650
Massachusetts.....	83,630	79,871	14,562	65,482	830,277	375,021	64,706	293,465
New Jersey.....	1,813,315	874,053	266,458	171,187	15,912,324	3,058,454	1,240,406	777,250
New York.....	845,796	1,004,506	330,026	99,896	10,889,269	4,058,804	1,354,540	420,718
Pennsylvania.....	1,667,264	1,306,686	1,642,604	1,396,424	16,181,230	5,163,732	7,475,327	6,124,717
All other states.....	1,168,755	805,285	487,239	292,686	8,516,029	3,367,917	2,415,531	1,574,500
Spun silk.								
Connecticut.....	3,956,637	1,607,416	779,462	570,529	23,807,338	4,577,058	2,104,066	1,660,647
All other states.....								
Machine twist.								
Connecticut.....	773,843	659,540	1,088,780	932,098	10,644,095	4,036,807	6,341,719	3,521,055
New Jersey.....	563,046	434,893	573,031	614,729	7,539,931	2,621,887	3,524,361	3,618,824
All other states.....	210,797	224,647	515,749	318,269	3,104,104	1,414,920	2,817,358	1,902,231
Sewing and embroidery silks.								
Connecticut.....	515,222	744,708	660,507	606,357	7,089,813	5,046,452	3,778,306	3,927,954
New Jersey.....	131,041	268,800	255,322	167,435	2,005,511	1,816,758	1,581,544	953,636
All other states.....	394,181	475,908	405,185	438,872	4,904,302	3,229,694	2,196,762	2,974,318
Fringe and floss silks.								
Connecticut.....	38,107	157,791	80,739	205,354	500,571	508,354	401,040	607,062
All other states.....								
Artificial silk yarn.								
Connecticut.....	829,083	(3)	(3)	(3)	5,423,242	(3)	(3)	(3)
New Jersey.....	128,186	(3)	(3)	(3)	832,034	(3)	(3)	(3)
New York.....	509,286	(3)	(3)	(3)	4,261,923	(3)	(3)	(3)
All other states.....	101,611	(3)	(3)	(3)	179,285	(3)	(3)	(3)

1 Included in "All other states."

2 Included in piece-dyed and yarn-dyed.

3 Included with "All other products."

TABLE 21.—PRINCIPAL PRODUCTS OF SILK MANUFACTURES, BY STATES: 1919, 1914, 1909, AND 1904—Continued.

PRODUCT AND STATE.	VALUE.				PRODUCT AND STATE.	VALUE.			
	1919	1914	1909	1904		1919	1914	1909	1904
Ribbons.....	\$66,186,609	\$38,201,203	\$32,744,873	\$21,890,004	Braids and bindings—Continued.				
Connecticut.....	956,930	517,155	1,125,697	1,153,983	New York.....	\$8,018,345	\$1,958,162	\$2,568,881	\$2,042,365
New Jersey.....	30,812,220	17,924,186	14,971,005	10,036,331	Pennsylvania.....	2,543,885	476,743	539,732	424,277
New York.....	10,391,416	5,188,368	6,261,289	4,983,712	All other states.....	644,001	195,141	190,337	212,928
Pennsylvania.....	23,350,039	13,667,159	10,008,146	5,773,700	All other products.....	25,340,460	14,433,435	8,831,445	8,447,859
All other states.....	1,153,004	874,425	378,736	142,779	Connecticut.....	1,020,845	8,130,067	778,031	75,220
Laces, nets, veils, veillings, etc.....	5,825,359	1,328,933	1,350,850	745,489	Massachusetts.....	2,469,357	324,662	79,807	402,111
New Jersey.....	2,031,122	650,631	531,923	414,891	New Jersey.....	4,909,575	2,456,731	1,659,748	891,520
New York.....	2,416,329	652,189	794,640	291,460	New York.....	6,546,207	2,888,643	3,600,554	4,370,530
All other states.....	1,377,908	20,110	24,287	30,198	Pennsylvania.....	4,434,433	2,027,782	2,478,784	2,418,679
Fringes and gimps.....	3,026,560	1,025,188	824,527	1,016,054	Rhode Island.....	1,448,954	1,853,620	17,475	54,282
New York.....	1,973,967	605,894	500,027	544,544	All other states.....	3,602,490	1,142,030	157,046	205,116
All other states.....	1,052,593	359,294	264,500	472,410	Amount received for contract work	38,335,025	8,400,607	8,364,350	3,716,056
Braids and bindings.....	13,218,284	3,073,648	4,483,248	3,403,977	Connecticut.....	732,897	135,603	293,332	230,614
Connecticut.....	161,032	22,048	134,427	72,571	New Jersey.....	8,508,654	1,601,628	2,436,573	998,890
Massachusetts.....	1,025,660	180,620	280,308	337,380	New York.....	3,803,066	745,744	606,010	268,232
New Jersey.....	822,355	231,934	750,503	404,456	Pennsylvania.....	22,380,062	5,208,322	4,416,978	1,994,319
					All other states.....	2,842,546	640,310	611,457	223,981

TABLE 22.—PER CENT DISTRIBUTION OF THE QUANTITY OF PRODUCTS, BY STATES: 1919, 1914, 1909, AND 1904.

PRODUCT AND STATE.	1919	1914	1909	1904	PRODUCT AND STATE.	1919	1914	1909	1904
Broad silks.....	100.0	100.0	100.0	100.0	Broad silks—Continued.				
Pennsylvania.....	40.2	42.0	35.3	34.9	Silk-mixed—Continued.				
New Jersey.....	35.0	32.0	34.9	37.4	In the gray.....	100.0	(1)	(1)	(1)
Rhode Island.....	7.8	5.2	6.3	5.2	Pennsylvania.....	59.0	(1)	(1)	(1)
New York.....	6.0	7.2	8.2	6.7	Rhode Island.....	27.1	(1)	(1)	(1)
Connecticut.....	3.8	4.2	6.2	6.1	Connecticut.....	3.7	(1)	(1)	(1)
Massachusetts.....	3.0	4.0	5.2	3.4	New Jersey.....	1.0	(1)	(1)	(1)
All other states.....	4.2	5.4	4.0	4.3	All other states.....	18.2	(1)	(1)	(1)
All-silk.....	100.0	100.0	100.0	100.0	Piece-dyed and printed.....	100.0	100.0	100.0	100.0
Pennsylvania.....	40.4	44.9	36.2	34.4	New Jersey.....	38.5	20.7	9.0	8.5
New Jersey.....	40.5	36.5	45.6	43.2	New York.....	28.8	4.6	11.3	.....
New York.....	5.7	8.9	7.6	10.2	Pennsylvania.....	7.3	45.7	33.9	54.2
Rhode Island.....	5.0	.....	.....	.....	All other states.....	25.4	28.9	40.8	37.2
Connecticut.....	3.6	4.0	6.7	7.0	Yarn - dyed, including warp-				
Massachusetts.....	2.3	.....	.....	.....	printed.....	100.0	100.0	100.0	100.0
All other states.....	2.5	5.7	3.9	5.2	New Jersey.....	38.6	26.4	28.6	26.7
In the gray.....	100.0	(1)	(1)	(1)	Pennsylvania.....	31.2	25.2	27.2	12.9
New Jersey.....	43.8	(1)	(1)	(1)	New York.....	5.3	2.5	6.5	7.8
Pennsylvania.....	31.7	(1)	(1)	(1)	All other states.....	24.9	45.0	37.6	52.6
New York.....	4.2	(1)	(1)	(1)	Velvets.....	100.0	100.0	100.0	100.0
All other states.....	20.3	(1)	(1)	(1)	Connecticut.....	63.4	94.3	96.5	98.5
Piece-dyed and printed.....	100.0	100.0	100.0	100.0	All other states.....	6.6	5.7	3.5	1.5
New Jersey.....	50.6	33.3	24.2	18.2	Organizing, tram, and hard cr6pe twist.....	100.0	100.0	100.0	100.0
Pennsylvania.....	28.6	41.2	23.2	34.3	New Jersey.....	32.6	21.5	9.7	8.5
New York.....	8.8	11.6	12.0	20.0	Pennsylvania.....	29.7	32.1	59.9	68.9
All other states.....	12.0	13.9	40.5	27.4	New York.....	15.2	24.7	12.0	4.9
Yarn - dyed, including warp-					Massachusetts.....	1.5	2.0	0.5	3.2
printed.....	100.0	100.0	100.0	100.0	All other states.....	21.0	19.8	17.8	14.4
Pennsylvania.....	59.2	47.8	38.9	34.4	Machine twist.....	100.0	100.0	100.0	100.0
New Jersey.....	28.4	39.1	50.0	50.2	Connecticut.....	72.8	65.9	52.6	65.9
Massachusetts.....	5.7	3.9	1.8	1.5	All other states.....	27.2	34.1	47.4	34.1
New York.....	4.6	6.8	6.7	7.5	Sewing and embroidery silks.....	100.0	100.0	100.0	100.0
Connecticut.....	1.1	1.6	1.0	2.4	Connecticut.....	25.4	35.1	38.7	27.6
All other states.....	1.0	0.8	1.6	4.0	All other states.....	74.6	63.9	61.3	72.4
Silk-mixed.....	100.0	100.0	100.0	100.0	Artificial silk yarn.....	100.0	(1)	(1)	(1)
Pennsylvania.....	39.6	36.4	33.8	36.8	New York.....	72.3	(1)	(1)	(1)
Rhode Island.....	18.2	14.7	15.3	21.7	New Jersey.....	15.5	(1)	(1)	(1)
New Jersey.....	14.1	23.3	17.5	16.2	All other states.....	12.2	(1)	(1)	(1)
New York.....	6.0	3.6	9.2	3.3					
Massachusetts.....	6.0	.....	.....	.....		
Connecticut.....	4.5	4.8	5.3	2.8					
All other states.....	10.7	17.2	18.9	10.3					

1 Not reported separately.

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TABLE 23.—PER CENT DISTRIBUTION OF THE VALUE OF PRODUCTS, BY STATES: 1919, 1914, 1909, AND 1904.

STATE.	Total.	Broad silks.	Velvets and plushes.	Ribbons.	Sewing and embroidery silks. ¹	Organzine, tram, and hard crepe twist.	Fringes and gimps, braids, and bindings.	All other products.	Contract work.
United States.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Connecticut:									
1919.....	9.9	4.3	76.1	1.5	54.3	(2)	1.0	10.4	1.9
1914.....	12.0	4.3	72.6	1.4	46.2	(2)	0.5	25.8	1.6
1909.....	10.7	5.5	86.7	3.4	48.6	(2)	2.5	14.6	3.5
1904.....	11.7	6.0	87.4	5.3	45.1	(2)	1.8	10.3	6.2
Massachusetts:									
1919.....	5.0	4.5	.....	(2)	(2)	1.6	6.6	17.8	(2)
1914.....	4.2	5.0	.....	(2)	(2)	2.3	4.6	4.8	(2)
1909.....	4.5	5.5	.....	(2)	(2)	0.5	5.5	3.6	(2)
1904.....	5.3	4.6	.....	(2)	(2)	3.2	7.5	5.7	(2)
New Jersey:									
1919.....	31.2	37.7	.....	45.8	(2)	30.2	5.4	12.9	22.2
1914.....	29.8	34.9	(2)	46.9	(2)	19.1	6.3	15.3	19.8
1909.....	33.2	40.0	(2)	45.7	(2)	9.9	14.8	18.3	29.1
1904.....	32.2	42.1	(2)	45.8	(2)	8.5	9.6	11.8	26.9
New York:									
1919.....	11.9	6.4	.....	15.7	(2)	20.7	61.5	27.6	10.1
1914.....	11.5	6.6	(2)	13.6	(2)	25.3	64.0	20.8	8.9
New York—Con.									
1909.....	13.5	8.4	(2)	19.1	(2)	10.8	58.9	39.9	7.2
1904.....	15.1	9.5	(2)	22.8	(2)	4.6	57.3	46.2	7.2
Pennsylvania:									
1919.....	33.6	38.9	.....	35.3	(2)	31.3	16.6	15.0	58.4
1914.....	34.2	41.7	(2)	35.8	8.3	32.2	14.9	13.4	62.0
1909.....	31.5	33.2	(2)	30.6	7.8	59.6	13.4	20.7	52.8
1904.....	29.5	31.1	(2)	25.5	8.3	66.6	17.2	22.6	53.7
Rhode Island:									
1919.....	4.0	5.2	.....	.....	.....	(2)	10.5	(2)	
1914.....	3.0	3.3	.....	.....	.....	(2)	14.5	(2)	
1909.....	2.3	4.1	.....	.....	.....	(2)	0.8	(2)	
1904.....	1.9	3.5	.....	.....	.....	(2)	0.9	(2)	
All other states:									
1919.....	4.4	3.0	23.9	1.7	45.7	16.2	8.9	5.8	7.4
1914.....	5.2	4.2	27.4	2.3	45.5	21.0	9.6	5.4	7.7
1909.....	4.2	3.4	13.3	1.2	43.6	19.2	4.8	2.1	7.3
1904.....	4.3	3.1	12.6	0.7	46.7	17.1	6.6	2.5	6.0

¹ Includes machine twist, fringe, and floss silks.

² Included in "All other states."

Contract work.—Table 24 shows, by states, the distribution of establishments in the silk-manufactures industry reporting contract work. Of the 1,369 establishments in the industry in 1919, 138 dyed, finished,

or printed their own goods; 7 did dyeing, finishing, or printing for others; 146 did their own throwing; and 500 did custom weaving, warping, quilling, or throwing.

TABLE 24.—CONTRACT WORK.

STATE.	ESTABLISHMENTS ENGAGED IN.			
	Silk manufactures.	Dyeing, finishing, or printing.		Doing custom weaving, warping, quilling, or throwing.
		Their own goods.	For others.	
United States.....	1,369	138	7	146
California.....	1	1	.....	1
Connecticut.....	41	10	2	18
Delaware.....	1	.....	.....	.....
Georgia.....	1	.....	.....	1
Illinois.....	4	.....	.....	1
Maine.....	3	1	.....	1
Maryland.....	6	1	.....	3
Massachusetts.....	21	6	.....	2
Michigan.....	2	2	.....	2
New Hampshire.....	2	1	.....	1
New Jersey.....	686	50	2	269
New York.....	181	27	3	28
North Carolina.....	3	.....	.....	3
Ohio.....	1	.....	.....	.....
Pennsylvania.....	373	25	.....	49
Rhode Island.....	30	2	.....	4
Tennessee.....	2	.....	.....	1
Virginia.....	10	.....	.....	1
West Virginia.....	1	.....	.....	.....

• Active silk spindles in the industry.—The progress of the industry is to some extent reflected by the increase or decrease in the number of machines com-

mon to the silk industry. Table 25 gives the number of active spindles reported by establishments engaged in the industry for 1919, 1914, and 1909.

TABLE 25.—ACTIVE SILK SPINDLES IN THE INDUSTRY: 1919, 1914, AND 1909.

	1919	1914	1909	PER CENT OF INCREASE. ¹				1919	1914	1909	PER CENT OF INCREASE. ¹		
				1909-1919	1914-1919	1909-1914					1909-1919	1914-1919	1909-1914
Producing spindles.....	2,660,459	2,159,271	1,761,758	51.5	23.6	22.6	Winding spindles.....	896,888	710,102	624,711	43.6	26.0	13.7
In plants doing throwing, winding, and spinning, only.....	1,742,465	1,289,163	1,080,110	60.0	35.2	18.4	In plants doing throwing, winding, and spinning, only.....	580,798	407,616	318,792	75.0	37.6	27.9
In other silk mills.....	926,094	870,108	672,648	37.8	6.5	29.4	In other silk mills.....	336,090	302,486	305,919	9.9	11.1	—1.1

¹ A minus sign (—) denotes decrease.

Active silk spindles, by states.—Table 26 gives the number of active producing and winding spindles for

the industry, distributed by states, and character of plant, in 1919 and 1914.

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TABLE 26.—ACTIVE SILK SPINDLES IN THE INDUSTRY, BY STATES: 1919 AND 1914.

STATE.	Census year.	PRODUCING SPINDLES.									WINDING SPINDLES.		
		Aggregate.			In plants doing throwing, winding, etc., only.			In other silk mills.			Total.	In plants doing throwing, winding, etc., only.	In other silk mills.
		Total.	Spinning and twisting.	Spinning only (spun silk).	Total.	Spinning and twisting.	Spinning only (spun silk).	Total.	Spinning and twisting.	Spinning only (spun silk).			
United States.....	1919 1914	2,669,450 2,159,271	2,482,153 2,057,889	187,306 101,382	1,742,465 1,289,163	1,637,646 1,247,967	104,810 41,190	926,994 870,108	844,567 809,922	82,487 60,180	896,888 710,102	560,798 407,616	336,090 302,486
California.....	1910 1914	2,168 2,168	2,168 2,168	.....	.....	.....	.....	2,168 2,168	2,168 2,168	.....	1,176 1,176	.....	1,176 1,176
Connecticut.....	1919 1914	138,180 141,712	111,014 95,804	26,275 45,848	20,048 28,930	20,048 28,930	.....	118,141 112,776	91,806 60,928	26,275 45,848	33,835 30,564	4,882 9,858	28,953 29,706
Georgia.....	1910 1914	23,528 17,136	23,528 17,136	.....	23,528 17,136	23,528 17,136	.....	.....	.....	.....	5,754 1,766	5,754 1,766	.....
Illinois.....	1919 1914	21,416 7,500	21,416 7,500	.....	21,416 7,500	21,416 7,500	.....	.....	.....	.....	41,762 25,000	40,762 25,000	1,000
Maine.....	1910 1914	4,136 4,970	4,136 4,970	.....	400	400 .....	.....	3,736 4,970	3,736 4,970	.....	736 310	200	536 310
Maryland.....	1910 1914	30,346 19,060	30,346 19,060	.....	26,786 17,340	26,786 17,340	.....	3,560 1,720	3,560 1,720	.....	11,644 9,660	9,720 8,520	1,924 1,140
Massachusetts.....	1910 1914	152,658 122,156	111,038 110,356	40,720 11,800	34,296 11,404	5,312 6,182	28,984 5,272	118,362 110,752	106,026 104,224	11,736 6,528	19,826 17,530	2,864 2,540	16,962 14,990
Michigan.....	1910 1914	16,262 17,204	16,262 17,204	.....	.....	.....	.....	16,262 17,204	16,262 17,204	.....	5,936 10,696	.....	5,936 10,696
New Hampshire.....	1910 1914	3,700 3,700	3,700 3,700	.....	3,700 3,700	3,700 3,700	.....	.....	.....	.....	928 928	928	.....
New Jersey.....	1919 1914	284,121 218,327	272,121 218,327	12,000	182,673 128,608	182,673 128,608	.....	101,448 84,719	80,448 84,719	12,000	108,290 156,968	99,234 63,514	69,065 92,454
New York.....	1919 1914	268,040 104,020	244,377 141,066	18,672 23,554	210,679 141,518	192,367 125,064	18,672 16,464	52,070 23,102	52,070 16,012	7,090	88,199 52,367	63,878 39,497	24,321 12,870
North Carolina.....	1910 1914	46,318 39,842	46,318 39,842	.....	2,776 2,600	2,776 2,600	.....	46,542 37,242	46,542 37,242	.....	18,168 20,748	7,092 13,660	11,076 7,088
Ohio.....	1910 1914	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,960 2,960	.....	2,960 2,960
Pennsylvania.....	1910 1914	1,610,086 1,350,079	1,541,210 1,348,679	68,876 1,400	1,159,781 876,344	1,123,381 873,944	36,400 1,400	450,305 474,735	417,829 474,735	32,476	472,883 362,455	306,902 234,139	165,981 128,316
Rhode Island.....	1910 1914	40,303 18,780	19,540	20,763 18,780	25,903	5,140	20,763 18,060	14,400 720	14,400	720	6,160 1,260	..... 480	6,160 780
Tennessee.....	1910 1914	4,000	4,000 .....	.....	4,000	4,000 .....	.....	.....	.....	.....	3,580	3,580	.....
Virginia.....	1919 1914	21,179 36,567	21,179 36,567	.....	21,179 36,567	21,179 36,567	.....	.....	.....	.....	10,042 6,754	10,002 6,754	40
West Virginia.....	1910 1914	5,000 450	5,000 450	.....	5,000 450	5,000 450	.....	.....	.....	.....	5,000 900	5,000 960	.....

Idle silk spindles in the industry, by states.—The number of idle spindles for the silk-manufactures industry is shown for the year 1919 in Table 27, distributed according to states.

TABLE 27.—IDLE SILK SPINDLES IN THE INDUSTRY, BY STATES: 1919.

	PRODUCING SPINDLES.									WINDING SPINDLES.		
STATE.	Aggregate.			In plants doing throwing, winding, etc., only.			In other silk mills.			Total.	In plants doing throwing, winding, etc., only.	In other silk mills.
	Total.	Spinning and twisting.	Spinning only (spun silk).	Total.	Spinning and twisting.	Spinning only (spun silk).	Total.	Spinning and twisting.	Spinning only (spun silk).			
United States.....	68,363	50,714	17,649	37,803	30,663	1,140	30,560	14,051	16,509	26,554	15,293	11,261
Connecticut.....	13,455	2,354	11,101	916	916		12,639	1,438	11,101	1,692	400	1,292
Illinois.....	210	216		216	216					412	412	
Massachusetts.....	1,814	1,814		90	90		1,724	1,724		840		840
Michigan.....	1,954	1,954					1,954	1,954		3,640		3,640
New Jersey.....	9,032	4,932	5,000	2,468	2,468		7,464	2,464	5,000	6,347	3,489	2,858
New York.....	4,074	4,134	840	1,054	214	840	3,920	3,920		2,355	561	1,794
Pennsylvania.....	25,708	24,995	708	22,744	22,444	300	2,959	2,551	408	10,608	9,771	837
Tennessee.....										660	660	
Virginia.....	10,315	10,315		10,315	10,315							

Establishments engaged in throwing silk, by states.—
Table 28 shows, by states, the number of establishments engaged in the throwing of silk, classified ac-

ording to the number of spinning and twisting spindles reported, for 1919 and 1914.

TABLE 28.—ESTABLISHMENTS ENGAGED IN THROWING SILK, CLASSIFIED ACCORDING TO NUMBER OF SPINDLES: 1919 AND 1914.

STATE.	Cen- sus year.	NUMBER OF ESTABLISHMENTS.						Total number of spindles. ¹	STATE.	Cen- sus year.	NUMBER OF ESTABLISHMENTS.						Total number of spindles. ¹
		Total.	Having—								Total.	Having—					
			Less than 2,500 spin- dles.	2,500 spin- dles but less than 5,000.	5,000 spin- dles but less than 10,000.	10,000 spin- dles but less than 15,000.	15,000 spin- dles or over.					Less than 2,500 spin- dles.	2,500 spin- dles but less than 5,000.	5,000 spin- dles but less than 10,000.	10,000 spin- dles but less than 15,000.	15,000 spin- dles or over.	
United States.....	1919 1914	347 243	130 88	67 41	67 47	33 26	50 41	2,532,867 2,057,889	New Hampshire.....	1919 1914	1 1	..... .....	1 1	..... .....	..... .....	..... .....	3,700 3,700
California.....	1919 1914	1 1	1 1	..... .....	..... .....	..... .....	..... .....	2,168 2,168	New Jersey.....	1919 1914	68 52	36 30	14 7	10 10	3 2	5 3	277,053 213,327
Connecticut.....	1919 1914	26 24	15 13	4 4	4 5	2 1	1 1	114,268 95,864	New York.....	1919 1914	49 25	28 11	2 6	9 2	3 3	7 3	248,511 141,066
Georgia.....	1919 1914	1 1	..... .....	..... .....	..... .....	..... .....	1 1	23,528 17,136	North Carolina.....	1919 1914	3 3	..... .....	1 1	..... .....	..... .....	2 2	49,318 39,842
Illinois.....	1919 1914	1 1	..... .....	..... .....	..... 1	..... .....	1	21,632 7,500	Pennsylvania.....	1919 1914	169 115	40 23	38 19	40 28	22 17	29 28	1,566,205 1,348,679
Maine.....	1919 1914	2 1	1	1 1	..... .....	..... .....	..... .....	4,136 4,970	Rhode Island.....	1919 1914	3 .....	..... .....	1 1	1 1	..... .....	..... .....	19,540
Maryland.....	1919 1914	5 4	2 3	2 .....	..... .....	..... .....	1 1	30,346 19,060	Tennessee.....	1919 1914	1 .....	..... .....	1 .....	..... .....	..... .....	..... .....	4,000
Massachusetts.....	1919 1914	9 8	4 4	1 1	1	1 2	2 1	113,752 110,356	Virginia.....	1919 1914	5 4	3 2	..... .....	1 1	..... .....	1 1	31,494 36,567
Michigan.....	1919 1914	2 2	..... .....	1 1	..... .....	1 1	..... .....	18,216 17,204	West Virginia.....	1919 1914	1 1	..... 1	..... .....	1 .....	..... .....	..... .....	5,000 450

¹ Does not include the 204,955 spindles in 1919 and 101,382 in 1914 used in connection with the manufacture of spun-silk yarn.

Active looms in the industry.—Statistics for 1919 relating to the number of active looms in each state connected with the silk-manufactures industry are

presented in Table 29 for the census years from 1904 to 1919 inclusive, with percentage of increase from census to census.

TABLE 29.—ACTIVE LOOMS IN THE INDUSTRY: 1919.

STATE AND CLASS.	1919	1914	1909	1904	PER CENT OF INCREASE. ¹			STATE AND CLASS.	1919	1914	1909	1904	PER CENT OF INCREASE. ¹		
					1914-1919	1909-1914	1904-1909						1914-1919	1909-1914	1904-1909
United States.....	96,438	85,058	75,406	60,058	13.4	12.8	25.6	New York.....	7,392	7,862	7,575	6,989	- 6.0	3.8	8.4
On broad silks (in- cluding velvets)...	87,215	73,504	64,836	50,449	18.7	13.4	28.5	On broad silks.....	6,144	5,981	5,375	4,781	2.7	11.3	12.9
On ribbons.....	9,223	11,554	10,570	9,609	-20.2	9.3	10.0	On ribbons.....	1,248	1,881	2,200	2,228	-33.7	-14.5	-1.3
Connecticut.....	5,141	5,536	5,006	4,260	-7.1	10.6	17.5	Pennsylvania.....	37,482	33,694	26,249	19,336	11.2	28.4	35.8
On broad silks.....	4,974	5,213	4,477	3,500	-4.6	16.4	27.9	On broad silks.....	33,853	29,302	23,031	16,999	15.5	27.2	35.5
On ribbons.....	167	323	529	760	-48.3	-38.9	-30.4	On ribbons.....	3,629	4,392	3,218	2,337	-17.4	36.5	37.7
Massachusetts.....	3,218	3,279	2,717	1,610	-1.9	20.7	68.8	Rhode Island.....	5,240	3,045	2,511	1,706	72.1	21.3	47.2
On broad silks.....	3,218	3,267	2,708	1,466	-1.5	20.6	84.7	On broad silks.....	5,240	3,045	2,511	1,706	72.1	21.3	47.2
On ribbons.....		12	9	144			-93.8	All other states.....	3,284	3,861	2,433	2,222	-14.0	58.7	9.5
New Jersey.....	34,681	27,781	28,915	23,935	24.8	-3.9	20.8	On broad silks.....	3,103	3,647	2,311	2,100	-14.9	57.8	10.0
On broad silks.....	30,683	23,049	24,423	19,917	33.1	-5.6	22.6	On ribbons.....	181	214	122	122	-15.4	75.4	
On ribbons.....	3,998	4,732	4,492	4,018	-15.5	5.3	11.8								

¹ A minus sign (-) denotes decrease; percentages are omitted where base is less than 100.

Active looms in the industry, by states.—Table 30 | which were in operation during 1919 and 1914 for the
gives the number of looms and Jacquard attachments | principal states in the industry.

TABLE 30.—ACTIVE LOOMS IN THE INDUSTRY, BY STATES: 1919 AND 1914.

STATE.	Cen- sus year.	LOOMS. ¹						Jac- quard ma- chines.	STATE.	Cen- sus year.	LOOMS. ¹						Jac- quard ma- chines.
		Total.	Other than velvet and ribbon.			Vel- vet.	Rib- bon.				Total.	Other than velvet and ribbon.			Vel- vet.	Rib- bon.	
			Total.	Over 40-inch reed space.	40-inch or un- der reed space.							Total.	Over 40-inch reed space.	40-inch or un- der reed space.			
United States.	1919	99,438	85,071	69,600	15,471	2,144	9,223	7,324	New Jersey.....	1919	34,681	30,643	24,953	5,090	40	3,998	4,285
	1914	85,058	70,980	44,649	20,431	2,624	11,554	6,826		1914	27,781	22,873	13,953	8,020	178	4,732	4,563
Connecticut.....	1919	5,141	3,082	2,393	680	1,892	167	155	New York.....	1919	7,392	6,114	4,748	1,366	30	1,248	1,240
	1914	5,538	3,137	2,473	694	2,076	323	308		1914	7,802	5,919	3,335	2,584	62	1,581	1,240
Delaware.....	1919	106	87	87	.....	.....	19	.....	North Carolina...	1919	287	287	205	82	.....	.....	.....
	1914	138	102	102	.....	.....	36	.....		1914	516	516	205	311	.....	.....	.....
Illinois.....	1919	56	56	6	50	.....	.....	.....	Ohio.....	1919	449	449	293	156	.....	.....	.....
	1914	.....	.....	.....	.....	.....	.....	.....		1914	449	449	293	156	.....	.....	.....
Maine.....	1919	117	117	86	31	.....	.....	.....	Pennsylvania.....	1919	37,482	33,671	27,408	6,263	182	3,629	1,124
	1914	126	126	56	70	.....	.....	.....		1914	33,694	29,092	17,541	11,551	210	4,392	939
Maryland.....	1919	162	.....	.....	.....	.....	162	.....	Rhode Island.....	1919	5,240	5,240	4,679	561	.....	.....	240
	1914	124	.....	.....	.....	.....	124	.....		1914	3,045	3,045	2,800	176	.....	.....	2
Massachusetts.....	1919	3,218	3,218	2,700	452	.....	.....	190	Virginia.....	1919	538	538	465	73	.....	.....	50
	1914	3,279	3,267	1,945	1,322	.....	12	152		1914	652	598	190	408	.....	54	125
Michigan.....	1919	577	577	577	.....	.....	.....	.....					
	1914	706	706	756	10	.....	.....	.....						
New Hampshire....	1919	992	992	934	58	.....	.....	40									
	1914	1,090	1,090	831	259	.....	.....	40									

¹ With or without Jacquard attachments.

Idle looms in the industry, by states.—Table 31 is | this industry were not reported prior to the census of
the complement of the preceding table, except for the | 1919.

TABLE 31.—IDLE LOOMS IN THE INDUSTRY, BY STATES: 1919.

STATE.	LOOMS. ¹						Jac- quard ma- chines.	STATE.	LOOMS. ¹						Jac- quard ma- chines.
	Total.	Other than velvet and ribbon.			Vel- vet.	Rib- bon.			Total.	Other than velvet and ribbon.			Vel- vet.	Rib- bon.	
		Total.	Over 40-inch reed space.	40-inch or under reed space.						Total.	Over 40-inch reed space.	40-inch or under reed space.			
United States.....	10,388	7,829	5,668	2,161	61	2,498	1,522	Michigan.....	170	170	170	.....	.....	.....
Connecticut.....	319	189	89	100	27	103	45	New Jersey.....	3,054	2,837	2,019	818	32	817	684
Delaware.....	32	15	15	.....	.....	17	.....	New York.....	1,331	836	527	309	.....	463	64
Maine.....	25	25	.....	25	.....	.....	.....	North Carolina.....	229	229	.....	229	.....	.....	.....
Maryland.....	14	.....	.....	.....	.....	14	.....	Pennsylvania.....	3,248	2,162	1,675	487	2	1,084	397
Massachusetts.....	185	185	163	22	2	Rhode Island.....	880	880	880
								Virginia.....	292	292	121	171	150

¹ With or without Jacquard attachments.

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Comparative summary, by states.—Table 32 gives by states, for 1919, 1914, and 1909, the number of establishments, average number of wage earners, pri-

mary horsepower, wages, cost of materials, and value of products. Table 33 presents for 1919, statistics in detail for the industry as a whole, by states.

TABLE 32.—COMPARATIVE SUMMARY, BY STATES: 1919, 1914, AND 1909.

STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Primary horse- power.	Expressed in thousands.			STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Primary horse- power.	Expressed in thousands.		
					Wages.	Cost of mate- rials.	Value of prod- ucts.						Wages.	Cost of mate- rials.	Value of prod- ucts.
United States....	1919	1,309	120,782	176,825	\$108,226	\$388,469	\$688,470	New York.....	1919	181	13,342	25,232	\$11,758	\$46,391	\$81,683
	1914	902	108,170	116,924	47,108	144,442	254,011		1914	143	11,659	14,707	4,967	16,736	29,261
	1909	852	99,037	97,947	38,570	107,767	196,912		1909	170	12,903	11,110	5,385	13,949	26,519
Connecticut.....	1919	41	11,254	18,357	11,523	37,526	68,053	Pennsylvania.....	1919	373	53,052	73,826	38,129	126,287	231,711
	1914	44	10,668	11,180	5,606	18,406	30,592		1914	284	44,755	48,915	16,312	48,795	86,939
	1909	47	8,703	8,564	3,749	11,834	21,063		1909	226	36,469	41,962	11,443	35,166	62,061
Maryland.....	1919	0	839	1,505	450	708	1,534	Rhode Island.....	1919	30	4,150	7,224	4,161	16,815	27,219
	1914	5	874	1,012	283	424	911		1914	12	2,325	3,509	1,192	5,327	7,664
	1909	4	655	915	160	237	512		1909	13	1,685	2,818	788	3,188	4,584
Massachusetts.....	1919	21	5,697	9,811	5,040	19,243	34,194	Virginia.....	1919	10	661	1,811	367	609	1,551
	1914	10	4,495	6,635	2,092	5,961	10,677		1914	9	691	1,798	210	1,094	1,773
	1909	19	4,109	5,305	1,840	5,430	8,942		1909	7	819	1,858	261	1,011	1,544
New Jersey.....	1919	686	32,826	29,095	32,832	123,441	215,051	All other states.....	1919	21	5,461	9,964	3,960	17,449	27,474
	1914	368	28,263	12,218	14,800	40,883	75,706		1914	18	4,440	7,970	1,646	6,816	10,488
	1909	348	30,285	22,376	13,917	33,265	65,430		1909	18	3,409	3,539	1,027	3,687	6,257

TABLE 33.—DETAILED STATEMENT, BY STATES: 1919.

STATE.	Number of establishments	PERSONS ENGAGED IN THE INDUSTRY.										WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.				EXPENSES.		
		Total.	Proprietors and firm members.	Salaried officers, superintendents and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.		Capital.	Salaries and wages.		
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female.		Officials.	Clerks, etc.	
								Maximum month.	Minimum month.									
United States..	1,369	136,775	1,011	3,651	3,027	2,301	120,782	De 137,239	Fe 118,201	137,710	52,404	78,160	2,368	4,784	<i>Dollars.</i> 532,732,163	<i>Dollars.</i> 16,790,489	<i>Dollars.</i> 9,580,473	
Connecticut.....	41	12,109	10	345	303	251	11,254	No 11,813	Ja 10,147	11,687	6,495	4,799	146	247	57,837,589	1,706,403	1,527,293	
Maryland.....	0	889	2	21	303	7	839	De 981	Fe 768	978	310	602	37	23	1,145,185	72,702	5,655	
Massachusetts.....	21	6,141	14	139	178	113	5,697	De 6,777	Fe 4,618	6,813	2,518	3,880	131	284	26,614,191	571,927	500,575	
New Jersey.....	686	35,453	682	1,106	742	597	32,326	De 35,064	Fe 28,628	35,074	16,177	17,920	312	665	101,180,821	5,299,282	2,247,563	
New York.....	181	14,693	140	433	493	285	13,342	De 14,634	Mh 12,652	14,404	5,661	8,526	70	147	62,550,489	1,989,416	1,374,709	
Pennsylvania.....	373	50,578	142	1,363	1,118	908	53,052	De 57,342	Ja 50,128	57,949	17,200	36,406	1,487	2,856	237,628,505	5,988,210	3,283,338	
Rhode Island.....	30	4,346	11	84	42	59	4,150	De 4,330	Oc 3,998	4,348	1,913	2,201	66	168	20,200,627	496,034	196,197	
Virginia.....	10	717	3	34	7	12	661	De 732	Je 591	713	237	428	20	28	869,111	65,001	28,023	
All other states 1	21	5,809	1	126	144	77	5,461			5,750	1,887	3,398	99	366	24,705,645	598,484	357,120	

STATE.	EXPENSES—continued.							Value of products.	Value added by manufacture.	POWER.							Electric horse-power generated in establishments reporting.
	Salaries and wages—Con.		Rent and taxes.		For materials.					Primary horsepower.							
	Wage earners.	For contract work.	Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.	Total.			Owned.				Rented. ¹			
										Steam engines (not turbines).	Steam turbines.	Internal-combustion engines.	Water power. ²				
United States..	Dollars. 108,226,330	Dollars. 43,146,201	Dollars. 2,982,226	Dollars. 17,612,294	Dollars. 382,267,575	Dollars. 6,201,447	Dollars. 688,469,523	Dollars. 300,000,501	176,825	75,595	12,626	1,966	8,327	78,311	32,748		
Connecticut.....	11,523,017	1,144,105	39,877	2,871,315	36,641,924	883,945	68,053,429	30,527,580	18,357	5,406	4,792	4	1,844	6,311	4,923		
Maryland.....	456,115	5,544	455	24,316	665,294	42,507	1,531,218	826,417	1,505	535	.....	.....	.....	970	.....	
Massachusetts.....	5,039,601	1,370,674	15,689	797,824	19,000,721	242,762	34,193,951	14,950,468	9,811	2,469	.....	660	1,749	4,933	1,559	
New Jersey.....	32,832,211	17,988,470	1,483,815	3,726,895	122,356,778	1,084,470	215,050,560	91,609,312	29,095	11,869	1,120	290	417	15,899	3,738		
New York.....	11,757,847	4,980,390	596,620	2,309,123	45,667,918	722,832	81,682,572	35,291,822	25,232	7,884	1,465	530	1,085	14,268	6,386		
Pennsylvania.....	38,129,477	15,608,271	782,728	4,826,395	123,623,779	2,663,464	231,711,352	105,424,109	73,826	39,506	2,122	482	875	30,841	9,005		
Rhode Island.....	4,160,940	1,170,794	31,310	1,721,123	16,532,722	282,151	27,219,238	10,404,365	7,224	2,040	2,650	.....	400	2,134	4,464	
Virginia.....	367,354	46,274	6,200	20,875	577,290	31,447	1,550,712	941,975	1,811	810	.....	.....	525	476	2,348
All other states 1	3,959,738	881,670	26,032	1,314,398	17,201,149	247,869	27,473,491	10,024,473	9,964	5,076	477	.....	1,432	2,979	.....	

¹ All other states embrace: California, 1 establishment; Delaware, 1; Georgia, 1; Illinois, 4; Maine, 3; Michigan, 2; New Hampshire, 2; North Carolina, 3; Ohio, 1; Tennessee, 2; and West Virginia, 1.
² Includes water wheels, turbines, and motors (irrespective of ownership of water supply).
³ Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft-belt or transmitted power from neighboring power plants).

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

FOURTEENTH CENSUS OF THE UNITED STATES
MANUFACTURES: 1919

SLAUGHTERING AND
MEAT PACKING

Prepared under the supervision of EUGENE F. HARTLEY, Chief Statistician for Manufactures

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or for which products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1919, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city, county, or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city, county, or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Classification by industries.—The establishments were assigned to the several classes of industries according to their products of chief value. The products reported for a given industry may thus, on the one hand, include minor products different from those covered by the class designation, and, on the other hand, may not represent the total product covered by this designation, because some products of this class may be made in establishments in which it is not the product of chief value.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1919 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners.

The number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date did not portray such conditions, an earlier date was requested.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, by sex, without distinction of age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The number of wage earners reported for the representative day, though given in certain tables for each separate industry, is not totaled for all industries combined, because, in view of the variations of date, such a total is not believed to be significant. It would involve more or less duplication of persons working in different industries at different times, would not represent the total number employed in all industries at any one time, and would give an undue weight to seasonal industries as compared with industries in continual operation.

In order to determine as nearly as possible the age distribution of the average number of wage earners for an industry, the per cent distribution by age of the wage earners for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. The percentages thus obtained have been applied to the average number of wage earners for the year to determine the average numbers 16 years and over, and under 16, employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calcu-

late accurately even so simple an average as this, since the number of wage earners fluctuates from month to month in every industry, and in some cases to a very great extent. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month, and while representing the number according to the pay rolls to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital (amount actually invested).—The instructions on the schedule for securing data relating to capital were as follows:

"The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises."

These instructions were identical with those employed at the censuses of 1914 and 1909. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include certain Federal taxes and state, county, and local taxes. Under "Federal taxes" there are included the internal revenue tax on manufactures (tobacco, beverages, etc.), excise taxes when included in values reported for products, corporation capital stock tax, and corporation income tax, but not the income tax for individuals and partners.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not always a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry, from a manufacturing standpoint, is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power equipment of the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, fuel oils, gasoline and other volatile oils, and gas, and represent the quantity used during the year. As only the principal kinds of fuel are shown, comparison as to the total cost of all fuel is impracticable.

SLAUGHTERING AND MEAT PACKING.¹

GENERAL STATISTICS.

General character of the industry.—This report presents statistics for establishments engaged in slaughtering and meat packing, wholesale. It does not include retail establishments, nor those engaged exclusively in the manufacture of sausage, lard, and the killing and dressing of poultry. Plants that slaughtered for the retail trade, but disposed of large quantities of meats at wholesale, were included, and the reports for these establishments generally covered both branches of the trade. Establishments included in the industry at one census may, on account of changes in the character of their business, be omitted at another. The statistics, however, represent practically all important establishments engaged wholly or chiefly in slaughtering and meat packing for the wholesale trade. Of the 1,304 establishments in this industry in 1919, only 460 reported Federal inspection.

Statistics were collected for two classes of establishments: (1) Those whose principal products were fresh and cured meats, and (2) those whose principal products were fresh meats. The first group also includes establishments that cure meat only and do not slaughter, and the second group includes abattoirs that slaughter for custom only.

So many establishments engaged in both branches of the industry that the overlapping of classification makes it advisable to present the combined figures in all tables, except Tables 2 and 3.

Comparative summary.—Table 1 summarizes the statistics of each census since 1899 and gives percentages of increase for each period. Except in a few instances, increases are shown for each successive census. The large increases, however, from 1914 to 1919, for salaries and wages, cost of materials, and value of products are due largely to general price increases following the World War, and do not, therefore, fairly measure the growth of the industry for that period. The increases in average number of wage earners and primary horsepower are a truer index of conditions. The addition of the Federal income tax since 1914 will account for the large increase in "Rent and taxes."

There is some duplication in the figures for cost of materials and value of products. Those establishments which cure meat only, use as material the fresh meat produced by establishments which slaughter.

Establishments engaged in curing only.—Table 2 presents data for establishments engaged in curing

meat but which did no slaughtering, for 1919, 1914, and 1909. Data for this class of plants were first collected in 1909.

There were 142 establishments in 1919 engaged primarily in curing meat, which also rendered lard, manufactured lard compounds and numerous other products, including canned meat and meat products. These plants were in operation in 24 states and the District of Columbia. The most important among these states were Illinois with 13 establishments and a product of \$40,272,330, and New York with 49 establishments and a product of \$23,644,595. Other states in which the value of products was over a million dollars were Massachusetts, Wisconsin, Pennsylvania, New Jersey, Texas, Rhode Island, Maryland, Missouri, and Ohio, enumerated in the order of the value of their products.

Establishments engaged in custom slaughtering only.—Table 3 shows for custom abattoirs for 1919, 1914, and 1909 the same class of statistics as those presented for curing establishments in the preceding table. The 1909 census was the first at which these data were secured. The establishments included in Table 3 are those whose chief business is slaughtering animals for food. The animals which they slaughter are owned by other establishments.

In addition to custom slaughtering, however, some establishments do a certain amount of rendering and further processing of products. The materials used are those received for the service rendered or purchased from establishments for which the slaughtering is done. The large increase in cost of materials in the last two census periods was due largely to this growing characteristic of this class of plants. It is possible that the statistics do not include all establishments of this class in operation in 1919, as the special agents in different parts of the country may have treated plants of this character differently.

Thirty-three establishments engaged in custom slaughtering were distributed through the following states and the District of Columbia in 1919: Alabama, 3; Colorado, 1; District of Columbia, 1; Georgia, 2; Illinois, 1; Iowa, 1; Louisiana, 2; Maine, 1; Maryland, 1; Massachusetts, 1; Michigan, 1; Minnesota, 1; Missouri, 1; New Jersey, 2; Ohio, 1; Rhode Island, 2; South Carolina, 3; Tennessee, 3; Texas, 2; Utah, 1; Virginia, 1; and West Virginia, 1.

These custom abattoirs are largely under corporate ownership, but operate along cooperative lines. There were 23 operating under corporate ownership, 1 municipal, 1 partnership, and 8 individual in 1919.

¹The figures presented in this bulletin are for continental United States. In addition to these, there are two establishments in Hawaii, the data for which can not be published without disclosing individual operations.

Principal states, ranked by value of products.—Table 4 shows the number of wage earners, value of products, and value added by manufacture, by states for 1919, ranked according to value of products. The industry is well distributed throughout the United States, as there were one or more establishments in all states except New Hampshire and New Mexico. In value of products, however, the industry is largely centered in a few states. Illinois is the most important of these, and reported in 1919, 30.2 per cent of the total value of products for the United States. The first five states, Illinois, Kansas, Nebraska, New York, and Missouri, reported products valued at \$2,518,263,652, or 59.3 per cent of the total for the country in 1919, and represented about the same proportion in 1914.

There was an increase in value of products in each state in the industry except Vermont, and a great many changes in per cent distribution. Most noticeable was Nebraska, whose production was third in 1919, taking the place occupied by New York in 1914, and Ohio, which advanced to seventh place, the one held by Pennsylvania in 1914. The greatest relative growth, however, was in Minnesota, which occupied eighth place in 1919 and thirteenth in 1914. In fact the only states retaining the same per cent distribution at each of these census periods were Illinois, Kansas, Missouri, Iowa, South Dakota, Montana, and Vermont. The states of North Dakota, Oklahoma, and South Dakota, had larger value of products than some of those shown in the table, but the figures could not be published separately without disclosing the operations of individual establishments.

Value of products, for six leading cities.—Table 5 shows the value of products of the industry for Chicago, Kansas City, Omaha, New York, Indianapolis, and St. Louis in 1919 and 1914.

Persons engaged in the industry.—The age classification of the average number of wage earners in Table 6 is an estimate obtained by the method described in the "Explanation of terms," page 2. The classification by sex for 1919 was reported separately, but for 1914 and 1909 was obtained in the same manner as the distribution by age. Figures for states will be found in Table 25.

Wage earners, by months, for selected states.—In Table 7 the number of wage earners employed in the industry, month by month, is shown. Figures are given separately for all states reporting more than 1,000 wage earners, while for the United States the number of males and females is shown. The table also gives several states which employed a large proportion of females.

Average number of wage earners, by prevailing hours of labor per week, for selected states.—Table 8 indicates a marked shortening of the working day for the industry since 1914. In that year only 8.1 per

cent were reported as employed fewer than 54 hours per week, as compared with 87.8 per cent in 1919. In 1914 the "60" and "Over 60" groups constituted 69.7 per cent of the total number of wage earners, while in 1919 the proportion was only 6.6 per cent.

Size of establishments, by average number of wage earners, for selected states.—Table 9 establishes the fact that most of the wage earners employed in the industry were reported by the large establishments. In 1919, 64 establishments having more than 500 wage earners each, employed 121,788 wage earners, or 75.6 per cent of the total average number. In 1914 this class of establishments employed 65.5 per cent of the total average number of wage earners.

Size of establishments, by value of products.—At the censuses of 1909 and 1914 establishments with products valued at "\$100,000 to \$1,000,000" constituted one group, but at the census of 1919 this group was subdivided into "\$100,000 to \$500,000," and "\$500,000 to \$1,000,000." Separate figures for the number of establishments and value of products have been compiled, however, from the returns of 1914. The table, therefore, gives combined figures for these two groups in the case of all items for 1909, and in the case of average number of wage earners and value added by manufacture for 1914. The statistics in Table 10 show the degree of concentration of production in large establishments. In 1919, 431 establishments, or 33.1 per cent of the total number for the industry, employed 155,502 wage earners, or 96.6 per cent of the total average number, and reported products to the value of \$4,122,077,719, or 97.1 per cent of the total value of products.

Character of ownership, by states.—Table 11 shows the predominance of the corporate form of ownership. Though corporations owned less than half of the total number of slaughtering and meat-packing establishments in 1919, they reported more than nine-tenths of the total average number of wage earners and total value of products.

Number and horsepower of types of prime movers.—From 1914 to 1919 there was an increase in the total horsepower for the industry of 106,146 horsepower, or 41.9 per cent. This was due principally to the increase of 78,797 horsepower, or 201.4 per cent, in rented electric power as indicated by Table 12.

Fuel consumed, by states.—Table 13 shows the principal kinds of fuel used for the industry in 1919 and 1914. In 1914 gasoline and other volatile oils were included in the total for fuel oils.

Bituminous coal was the principal fuel used in 1919, and there was an increase of over 1,000,000 tons over that used in 1914. There was also a very large increase in the use of fuel oils in this period, but a decrease in gas. This decrease was largely in states where natural gas was used.

SLAUGHTERING AND MEAT PACKING.

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TABLE 1.—COMPARATIVE SUMMARY: 1919, 1914, 1909, 1904, AND 1899.

	1919	1914	1909	1904	1899	PER CENT OF INCREASE. ¹			
						1914-1919	1909-1914	1904-1909	1899-1904
Number of establishments.....	1,304	1,279	1,221	929	882	2.0	4.8	31.4	5.3
Persons engaged.....	197,892	121,729	105,971	87,077	(²)	62.2	14.9	21.7	.....
Proprietors and firm members.....	1,071	1,157	1,170	969	(²)	-7.4	-1.1	20.7	.....
Salaried employees.....	35,325	21,740	16,988	11,974	10,199	62.5	28.0	41.9	17.4
Wage earners (average number).....	100,990	98,832	87,813	74,134	68,386	62.9	12.5	18.5	8.4
Primary horsepower.....	359,212	253,066	202,432	115,956	85,008	41.9	25.0	74.6	36.4
Capital.....	\$1,176,483,643	\$534,273,503	\$378,319,045	\$237,714,690	\$188,800,181	120.2	41.2	59.1	25.9
Salaries and wages.....	269,174,628	89,696,745	70,122,766	53,670,874	43,493,900	200.1	27.9	30.7	23.4
Salaries.....	59,685,365	27,561,023	19,718,312	13,343,902	10,101,647	116.6	39.8	47.8	32.1
Wages.....	209,489,263	62,135,722	50,404,454	40,326,972	33,392,253	237.1	23.3	25.0	20.8
Paid for contract work.....	1,078,648	278,421	414,520	101,343	(²)	610.7	-32.8	309.0	.....
Rent and taxes.....	19,654,846	4,411,135	3,121,767	\$ 1,586,808	(²)	345.0	41.3	.....	.....
Cost of materials.....	3,782,929,533	1,441,662,658	1,191,438,076	805,856,969	682,096,839	162.4	21.0	47.8	18.1
Value of products.....	4,246,290,614	1,651,965,424	1,355,544,431	913,914,624	783,779,191	157.0	21.9	48.3	16.6
Value added by manufacture ⁴	403,361,081	210,302,706	164,106,355	108,057,655	101,682,352	120.3	28.2	51.9	6.3

¹ A minus sign (-) denotes decrease.

² Figures not available.

³ Exclusive of internal revenue.

⁴ Value of products less cost of materials.

TABLE 2.—ESTABLISHMENTS ENGAGED IN CURING ONLY: 1919, 1914, AND 1909.

	1919	1914	1909 ¹	Per cent of increase, ² 1909-1919.		1919	1914	1909 ¹	Per cent of increase, ² 1909-1919.
Number of establishments.....	142	181	159	-10.7	Salaries and wages.....	\$9,833,728	\$4,944,178	\$4,123,834	138.5
Persons engaged.....	7,676	6,659	6,081	26.2	Salaries.....	2,263,004	1,705,691	1,299,610	73.4
Proprietors and firm members.....	127	167	159	-20.1	Wages.....	7,580,724	3,238,487	2,824,224	168.4
Salaried employees.....	1,183	1,387	1,164	1.6	Cost of materials.....	74,493,632	53,098,330	45,094,837	65.2
Wage earners (average number).....	6,366	5,105	4,768	33.8	Value of products.....	92,840,868	65,164,466	56,212,973	65.2
Capital.....	\$32,111,780	\$23,210,909	\$18,230,059	76.1	Value added by manufacture.....	18,346,736	12,060,136	11,118,136	65.0

¹ Includes 1 establishment engaged in custom curing.

² A minus sign (-) denotes decrease.

TABLE 3.—ESTABLISHMENTS ENGAGED IN CUSTOM SLAUGHTERING ONLY: 1919, 1914, AND 1909.

	1919	1914	1909	Per cent of increase, 1909-1919.		1919	1914	1909	Per cent of increase, 1909-1919.
Number of establishments.....	33	33	31	6.5	Salaries and wages.....	\$991,225	\$387,368	\$275,887	259.3
Persons engaged.....	917	623	488	87.9	Salaries.....	117,250	61,487	53,477	119.3
Proprietors and firm members.....	82	15	55	48.1	Wages.....	873,975	325,881	222,410	293.0
Salaried employees.....	825	553	433	90.5	Cost of materials.....	868,999	452,326	136,538	536.5
Wage earners (average number).....	825	553	433	90.5	Value of products.....	2,375,034	1,157,698	653,042	263.7
Capital.....	\$2,471,339	\$1,540,013	\$1,196,346	106.6	Value added by manufacture.....	1,506,035	705,372	516,504	191.6

TABLE 4.—PRINCIPAL STATES, RANKED BY VALUE OF PRODUCTS: 1919.

STATE.	Number of establishments.	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.	STATE.	Number of establishments.	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.
		Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.				Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.	
United States.....	1,304	160,996	100.0	.....	\$4,246,291	100.0	.....	\$403,361	Oregon.....	21	772	0.5	22	\$15,868	0.4	23	\$2,119
Illinois.....	72	54,179	33.7	1	1,284,103	30.2	1	141,153	Kentucky.....	26	450	0.3	27	12,954	0.3	24	2,295
Kansas.....	28	17,805	11.1	2	427,603	10.1	2	39,804	Utah.....	11	446	0.3	28	11,124	0.3	25	1,092
Nebraska.....	16	10,122	6.3	3	303,849	7.2	3	32,387	Georgia.....	7	869	0.5	21	8,142	0.2	27	1,378
New York.....	130	6,046	4.1	6	280,038	6.0	4	25,990	Virginia.....	25	502	0.3	26	7,589	0.2	28	1,262
Missouri.....	49	8,290	5.1	4	240,010	5.8	5	18,601	Montana.....	12	210	0.1	34	6,859	0.2	29	1,035
Iowa.....	21	7,184	4.4	5	226,362	5.3	6	21,941	Rhode Island.....	22	264	0.2	32	6,807	0.2	30	839
Ohio.....	141	5,330	3.3	8	170,338	4.0	7	19,739	Alabama.....	9	549	0.3	25	6,125	0.1	31	1,237
Minnesota.....	13	5,281	3.2	9	140,361	3.4	8	17,855	Tennessee.....	16	331	0.2	31	5,706	0.1	32	740
Indiana.....	57	5,691	3.5	7	134,029	3.2	9	12,339	Florida.....	8	348	0.2	30	5,316	0.1	33	500
Texas.....	19	5,072	3.2	10	125,192	2.9	10	18,440	Dist. of Columbia.....	6	203	0.1	35	5,012	0.1	34	784
Pennsylvania.....	170	4,438	2.8	11	122,802	2.9	11	15,581	Delaware.....	15	117	0.1	39	3,285	0.1	35	426
Massachusetts.....	40	4,307	2.7	12	110,238	2.6	12	9,003	Nevada.....	4	118	0.1	38	2,939	0.1	36	215
New Jersey.....	46	3,596	2.2	13	110,221	2.6	13	9,817	Maine.....	17	123	0.1	37	2,043	(¹)	37	395
New York.....	21	3,218	2.0	15	102,182	2.4	14	12,278	Idaho.....	12	89	0.1	40	1,791	(¹)	39	350
Wisconsin.....	21	3,218	2.0	15	102,182	2.4	14	15,138	Arizona.....	4	57	(¹)	42	1,406	(¹)	40	226
California.....	91	3,405	2.1	14	92,554	2.2	15	15,138	Arkansas.....	7	59	(¹)	41	1,218	(¹)	41	243
Michigan.....	24	1,712	1.1	18	59,585	1.4	16	9,810	Louisiana.....	3	248	0.2	33	849	(¹)	42	403
Maryland.....	47	1,563	1.0	19	41,439	1.0	18	7,919	North Carolina.....	4	45	(¹)	43	457	(¹)	43	134
Colorado.....	21	1,848	1.1	17	41,008	1.0	19	5,222	All other states.....	24	3,772	2.3	.....	86,734	2.0	.....	7,062
Washington.....	29	1,222	0.8	20	34,889	0.8	20	5,264									
West Virginia.....	10	639	0.4	24	10,044	0.4	21	2,245									

¹ Less than one-tenth of 1 per cent.

MANUFACTURES.

TABLE 5.—VALUE OF PRODUCTS, FOR SIX LEADING CITIES: 1919 AND 1914.

CITY.	VALUE OF PRODUCTS.		PER CENT OF TOTAL FOR THE UNITED STATES.		CITY.	VALUE OF PRODUCTS.		PER CENT OF TOTAL FOR THE UNITED STATES.	
	1919	1914	1919	1914		1919	1914	1919	1914
United States.....	\$4,246,200,614	\$1,651,965,424	100.0	100.0	Omaha.....	\$288,002,054	(1)	6.8	.....
Total for six leading cities.....	2,138,971,585	710,820,350	50.4	43.0	New York.....	185,244,898	\$107,959,229	4.4	.....
Chicago.....	1,083,090,049	394,748,592	25.5	23.9	Indianapolis.....	104,805,746	37,780,039	2.5	6.5
Kansas City.....	381,094,618	133,820,338	9.0	8.1	St. Louis.....	96,044,220	36,500,152	2.3	2.2
					All other.....	2,107,319,029	941,145,074	49.8	87.0

(1) Not available.

TABLE 6.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1914, AND 1909.

CLASS.	Census year.	Total.	Male.	Female.	PER CENT OF TOTAL.		CLASS.	Census year.	Total.	Male.	Female.	PER CENT OF TOTAL.	
					Male.	Female.						Male.	Female.
All classes.....	1919	197,392	174,190	23,196	88.2	11.8	Clarks and other subordinate salaried employees.	1919	20,657	23,390	6,267	73.9	21.1
	1914	121,729	112,717	9,012	92.6	7.4		1914	10,080	17,182	2,507	57.3	12.7
	1909	105,071	98,723	7,248	93.2	6.8		1909	15,213	13,614	1,599	89.5	10.5
Proprietors and officials.....	1919	6,739	6,005	74	88.9	1.1	Wage earners (average number)...	1919	180,996	144,141	18,855	89.5	10.5
	1914	3,208	3,167	51	98.4	1.6		1914	93,832	92,378	6,454	93.5	6.5
	1909	2,945	2,907	38	98.7	1.3		1909	87,813	82,202	5,611	93.6	6.4
Proprietors and firm members....	1919	1,071	1,055	16	98.5	1.5	16 years of age and over.....	1919	180,789	143,061	10,828	88.5	10.5
	1914	1,157	1,129	28	97.0	2.4		1914	98,539	92,187	6,402	93.5	6.5
	1909	1,170	1,151	19	98.4	1.6		1909	87,817	81,747	5,670	93.6	6.4
Salaried officers of corporations....	1919	1,048	1,019	29	97.2	2.8	Under 16 years of age.....	1919	207	180	27	87.0	13.0
	1914	736	715	21	97.1	2.9		1914	243	191	52	78.6	21.4
	1909	606	677	19	97.3	2.7		1909	496	455	41	91.7	8.3
Superintendents and managers....	1919	4,620	4,501	29	99.4	0.6							
	1914	1,315	1,313	2	99.9	0.2							
	1909	1,079	1,079	.....	100.0	.....						

TABLE 7.—WAGE EARNERS, BY MONTHS, FOR SELECTED STATES: 1919.

(The month of maximum employment is indicated by bold-faced figures and that of minimum employment by *italic* figures.)

STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States:														
1919.....	160,996	187,609	171,452	163,025	<i>160,800</i>	151,262	157,358	157,938	156,304	154,147	155,398	158,859	167,804	80.4
Male.....	144,141	165,028	151,902	145,954	<i>138,909</i>	136,320	142,224	142,895	140,957	138,670	139,110	140,480	150,237	82.4
Female.....	16,855	22,581	19,550	17,071	<i>14,897</i>	14,932	15,134	15,043	15,347	15,471	16,288	18,379	17,567	66.0
1914.....	98,832	108,613	103,062	99,633	<i>94,090</i>	91,973	95,108	94,848	<i>91,892</i>	96,128	101,938	103,859	108,440	84.2
1909.....	87,813	92,804	90,332	86,032	<i>82,708</i>	82,862	84,980	84,800	84,602	87,525	90,517	92,447	94,162	87.8
California.....	3,405	3,520	3,433	3,545	3,341	3,312	3,320	3,271	3,353	3,324	3,441	3,470	3,518	92.3
Colorado.....	1,848	1,991	1,070	1,823	1,823	1,820	1,812	1,752	1,798	1,850	1,878	1,779	1,859	89.0
Illinois.....	54,179	65,114	50,804	55,397	50,427	<i>50,048</i>	51,711	52,207	52,435	52,671	52,946	53,729	53,509	79.9
Indiana.....	5,601	6,604	6,072	5,738	5,359	5,034	5,064	5,509	<i>5,891</i>	5,396	5,500	5,489	5,916	79.4
Iowa.....	7,134	8,170	7,767	7,499	6,706	6,715	7,104	7,151	6,487	<i>6,032</i>	6,641	7,292	8,054	73.8
Kansas.....	17,805	21,617	18,156	17,240	<i>15,650</i>	16,056	17,075	16,988	17,081	16,801	17,007	20,000	19,974	72.4
Maryland.....	1,503	1,497	<i>1,462</i>	1,475	1,485	1,507	1,518	1,545	1,575	1,584	1,670	1,703	1,735	84.3
Massachusetts.....	4,307	5,354	5,319	5,105	4,608	4,453	4,624	4,741	4,523	4,232	3,655	<i>1,501</i>	3,509	80.0
Michigan.....	1,712	1,942	1,774	1,706	1,480	<i>1,405</i>	1,081	1,594	1,610	1,643	1,644	1,923	2,073	70.7
Minnesota.....	5,231	5,843	5,379	5,389	4,989	<i>4,865</i>	4,870	5,001	5,022	4,858	4,963	5,505	6,018	80.7
Missouri.....	8,290	9,805	9,012	8,415	7,802	7,909	8,170	8,063	8,205	7,981	<i>7,654</i>	7,875	8,589	75.1
Nebraska.....	10,122	11,158	10,675	10,535	9,988	9,553	10,252	10,134	10,024	9,806	<i>9,543</i>	9,590	10,200	85.5
New Jersey.....	3,566	3,914	3,825	3,687	3,594	3,601	3,666	3,577	3,580	3,546	3,514	<i>2,699</i>	3,009	66.4
New York.....	6,646	6,866	6,735	6,901	6,505	6,404	6,706	6,701	6,747	6,714	6,716	6,784	6,823	83.8
Ohio.....	5,336	5,844	5,348	5,148	4,909	<i>4,905</i>	5,366	5,310	5,033	5,063	5,198	5,738	5,984	88.5
Pennsylvania.....	4,438	4,538	4,385	4,318	<i>4,237</i>	4,248	4,312	4,339	4,254	4,409	4,671	4,610	4,890	86.6
Texas.....	5,072	6,645	4,825	4,460	4,531	4,944	4,867	5,331	5,424	4,904	4,769	4,918	5,130	67.1
Washington.....	1,222	1,357	1,175	1,105	<i>1,102</i>	1,117	1,200	1,189	1,204	1,207	1,334	1,303	1,371	80.4
Wisconsin.....	3,218	4,197	3,639	3,220	2,752	3,001	3,473	3,320	2,543	<i>2,093</i>	2,560	3,683	4,120	49.9
States showing large proportion of females.														Per cent av. is of state.
Illinois.....	7,048	9,622	8,611	7,304	6,233	6,172	<i>6,105</i>	6,117	6,565	6,739	7,005	7,394	6,619	13.0
Kansas.....	2,238	3,337	2,819	2,235	1,831	1,831	1,871	1,830	1,727	<i>1,672</i>	1,828	3,100	2,769	12.6
Nebraska.....	1,047	1,303	1,243	1,061	942	897	956	1,014	1,038	1,053	953	1,077	1,027	10.3

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TABLE 8.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR
SELECTED STATES: 1919 AND 1914.

STATE.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							Total.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							Total.	Cen- sus year.	Total.
			44 and under.	Be- tween 44and 48.	48.1	Be- tween 48and 54.	54.	Be- tween 54and 60.	60.				Over 60.	44 and under.	Be- tween 44and 48.	48.1	Be- tween 48and 54.	54.	Be- tween 54and 60.				60.	Over 60.
United States..	1910	160,996	4,791	1,859	128,795	5,856	5,017	4,041	10,364	273	1910	5,231	5,059	103	45	3	21					
	1914	98,832	(²)	(²)	4,728	3,263	13,188	8,734	68,019	900	1914	2,565	15	4	10	2,538	---					
	1909	87,813	(²)	(²)	4,787	4,068	10,267	4,113	63,572	1,006												
California.....	1910	3,405	211	71	2,789	35	224	16	31	28	1910	8,290	142	8,060	28	18	10					
	1914	2,172	(²)	(²)	200	32	425	229	1,243	43	1914	5,152	(²)	(²)	625	84	785					
Colorado.....	1910	1,848	2	---	1,804	8	14	---	20	---	1910	10,122	20	7,536	2	17	43					
	1914	777	(²)	(²)	1	281	13	---	479	3	1914	5,713	(²)	(²)	6	3	2,504					
Illinois.....	1910	54,179	1,222	76	49,017	3,504	245	22	93	---	1910	3,566	180	3,233	40	42	23					
	1914	31,815	(²)	(²)	1,007	442	1,096	2,700	26,027	43	1914	2,033	(²)	(²)	459	15	23					
Indiana.....	1910	5,691	5	671	4,062	44	311	133	382	83	1910	6,646	321	3,815	667	331	134					
	1914	4,481	(²)	(²)	37	14	137	373	3,877	43	1914	6,245	(²)	(²)	541	1,332	952					
Iowa.....	1910	7,134	136	---	5,190	---	26	41	1,741	---	1910	5,336	915	137	1,469	547	1,174					
	1914	4,413	(²)	(²)	7	---	207	---	4,194	5	1914	3,480	(²)	(²)	110	6	635					
Kansas.....	1910	17,805	---	---	17,366	343	22	---	74	---	1910	4,438	634	453	781	141	618					
	1914	9,884	(²)	(²)	739	---	3,384	2	5,769	---	1914	3,616	(²)	(²)	47	117	122					
Maryland.....	1910	1,563	203	---	559	7	101	266	417	10	1910	5,072	247	4,422	287	45	42					
	1914	1,221	(²)	(²)	11	6	98	224	879	3	1914	3,486	(²)	(²)	21	57	2,696					
Massachusetts..	1910	4,307	409	---	3,832	36	27	---	3	---	1910	1,222	4	785	5	422	---					
	1914	3,233	(²)	(²)	42	28	995	967	1,201	---	1914	864	---	---	---	100	764					
Michigan.....	1910	1,712	13	---	55	2	365	608	669	---	1910	3,218	9	74	2,561	69	449					
	1914	1,112	(²)	(²)	9	---	30	3	1,070	---	1914	2,011	(²)	(²)	5	866	102					
Minnesota.....	1910	5,231	---	---	5,059	---	103	45	3	21	1910	5,231	---	5,059	---	103	45					
	1914	2,565	---	---	15	---	4	10	2,538	---	1914	2,565	---	15	---	4	10					
Missouri.....	1910	8,290	142	---	8,060	28	18	10	32	102	1910	8,290	142	8,060	28	18	10					
	1914	5,152	(²)	(²)	625	84	785	1,827	1,729	102	1914	5,152	(²)	(²)	625	84	785					
Nebraska.....	1910	10,122	20	---	7,536	2	17	43	2,504	---	1910	10,122	20	7,536	2	17	43					
	1914	5,713	(²)	(²)	6	---	3	---	5,702	2	1914	5,713	(²)	(²)	6	---	3					
New Jersey.....	1910	3,566	180	---	3,233	40	42	23	40	---	1910	3,566	180	3,233	40	42	23					
	1914	2,033	(²)	(²)	459	15	23	240	1,225	71	1914	2,033	(²)	(²)	459	15	23					
New York.....	1910	6,646	321	---	3,815	667	331	134	1,377	---	1910	6,646	321	3,815	667	331	134					
	1914	6,245	(²)	(²)	541	1,332	952	588	2,791	41	1914	6,245	(²)	(²)	541	1,332	952					
Ohio.....	1910	5,336	915	137	1,469	547	1,174	385	693	16	1910	5,336	915	137	1,469	547	1,174					
	1914	3,480	(²)	(²)	110	6	635	2,269	1	---	1914	3,480	(²)	(²)	110	6	635					
Pennsylvania....	1910	4,438	634	453	781	141	618	1,062	735	14	1910	4,438	634	453	781	141	618					
	1914	3,616	(²)	(²)	47	117	122	507	2,356	437	1914	3,616	(²)	(²)	47	117	122					
Texas.....	1910	5,072	247	---	4,422	287	45	42	29	---	1910	5,072	247	4,422	287	45	42					
	1914	3,486	(²)	(²)	21	57	2,696	712	712	---	1914	3,486	(²)	(²)	21	57	2,696					
Washington.....	1910	1,222	4	---	785	5	422	---	8	---	1910	1,222	4	785	5	422	---					
	1914	864	---	---	---	---	---	100	764	---	1914	864	---	---	---	---	---					
Wisconsin.....	1910	3,218	9	74	2,561	69	449	56	1,038	---	1910	3,218	9	74	2,561	69	449					
	1914	2,011	(²)	(²)	5	866	102	1,038	---	---	1914	2,011	(²)	(²)	5	866	102					

² Corresponding figures not available.

TABLE 9.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS, FOR SELECTED STATES: 1919.

STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING—																	
	Establishments.	Wage earners (average number).	No wage earners.	1 to 5 wage earners, inclusive.		6 to 20 wage earners, inclusive.		21 to 50 wage earners, inclusive.		51 to 100 wage earners, inclusive.		101 to 250 wage earners, inclusive.		251 to 500 wage earners, inclusive.		501 to 1,000 wage earners, inclusive.		Over 1,000 wage earners.		
				Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	
United States. 1910.	1,304	160,000	02	515	1,235	303	3,512	136	4,476	92	6,648	63	10,065	39	13,272	26	18,379	38	103,409	
1914.	1,279	98,832	65	555	1,317	307	3,503	145	4,789	82	5,868	51	8,174	30	10,426	22	16,428	22	48,327	
California.	01	3,405	5	40	81	27	318	10	289	2	155	3	534	2	654	2	1,374	—	—	
Colorado.	21	1,848	2	11	41	2	21	2	63	—	—	2	253	2	1,470	2	1,470	—	—	
Illinois.	72	54,170	1	7	18	12	171	11	384	15	1,043	6	1,081	9	3,255	2	1,676	9	46,551	
Indiana.	57	5,091	1	21	65	16	179	8	267	3	225	6	946	2	—	1	660	1	3,349	
Iowa.	21	7,134	—	8	7	6	04	2	92	1	59	2	311	2	730	1	585	4	5,286	
Kansas.	28	17,805	1	5	18	6	56	5	171	1	76	1	164	2	716	2	1,702	5	14,902	
Maryland.	47	1,563	2	25	60	7	81	4	139	2	138	6	855	1	290	—	—	—	—	
Massachusetts.	40	4,307	2	19	37	8	88	3	108	1	74	1	153	3	1,008	—	—	2	2,899	
Michigan.	24	1,712	2	9	26	8	103	1	31	1	83	—	—	1	27	2	1,198	—	—	
Minnesota.	13	5,231	—	3	8	2	23	3	90	1	92	1	144	1	362	—	—	2	4,512	
Missouri.	49	8,290	6	19	33	7	72	7	258	3	222	1	114	1	467	2	1,807	3	5,317	
Nebraska.	16	10,122	—	6	23	4	38	1	40	—	—	—	—	—	—	1	501	4	9,520	
New Jersey.	46	3,666	1	15	36	18	206	3	126	2	157	2	325	3	979	1	615	1	1,122	
New York.	130	6,646	17	44	98	84	384	9	280	16	1,158	4	725	1	310	4	2,463	1	1,219	
Ohio.	141	5,836	14	54	147	31	368	21	635	12	883	6	758	—	—	3	2,545	—	—	
Pennsylvania.	176	4,438	18	91	185	33	392	13	386	9	575	7	1,111	4	1,281	1	508	—	—	
Texas.	19	5,072	—	3	13	5	76	4	140	2	181	2	493	1	287	—	—	2	3,882	
Washington.	20	1,222	3	13	39	5	42	1	28	3	198	2	307	2	608	—	—	—	—	
Wisconsin.	21	3,218	2	6	14	5	42	2	61	3	212	—	—	1	434	—	—	2	2,455	

TABLE 10.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919, 1914, AND 1909.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
United States.....	1,304	1,270	1,221	100,906	98,832	87,813	\$4,246,200,014	\$1,651,905,424	\$1,355,544,431	\$438,361,081	\$210,302,766	\$164,106,355
Less than \$5,000.....	21	25	16	7	25	21	92,774	82,330	45,909	22,002	421,011	25,529
\$5,000 to \$20,000.....	129	182	134	149	322	268	1,570,512	2,170,103	1,757,909	3,412,419	30,378	459,286
\$20,000 to \$100,000.....	338	427	438	878	1,815	1,900	18,426,088	21,031,130	22,239,416	3,412,419	584,890	4,098,769
\$100,000 to \$500,000.....	385	357	407	4,360	8,379	9,207	104,143,921	91,527,816	155,039,724	15,518,672	19,337,068	21,348,085
\$500,000 to \$1,000,000.....	121	82	165	2,942	88,201	76,412	84,607,300	58,345,904	1,170,461,413	11,355,429	186,361,654	138,177,674
\$1,000,000 and over.....	310	206	186	152,500	88,201	76,412	4,037,470,323	1,478,208,045	1,170,461,413	432,030,968	186,361,654	138,177,674
PER CENT DISTRIBUTION.												
United States.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....	1.6	2.0	1.3	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
\$5,000 to \$20,000.....	9.9	14.2	11.0	0.1	0.3	0.3	4.1	0.1	0.1	0.1	0.3	0.3
\$20,000 to \$100,000.....	25.9	33.4	35.9	0.6	1.8	2.2	0.4	1.3	1.6	0.7	1.9	2.5
\$100,000 to \$500,000.....	29.5	27.9	38.2	2.7	8.5	10.5	2.5	5.5	5.5	3.3	9.2	13.0
\$500,000 to \$1,000,000.....	9.3	6.4	13.6	1.8	89.3	87.0	2.0	3.5	11.4	2.5	9.2	13.0
\$1,000,000 and over.....	23.8	16.1	13.6	94.8	89.3	87.0	95.1	89.5	86.8	93.4	88.6	84.2

1 Less than one-tenth of 1 per cent.

TABLE 11.—CHARACTER OF OWNERSHIP, BY STATES: 1919 AND 1914.

STATE.	Cen- sus year.	NUMBER OF ESTABLISH- MENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.									VALUE OF PRODUCTS.								
		Indi- vid- uals.	Cor- pora- tions.	All oth- ers.	Total.	In establishments owned by—			Per cent of total.			Total.	Of establishments owned by—			Per cent of total.						
						Indi- vid- uals.	Cor- pora- tions.	All oth- ers.	Indi- vid- uals.	Cor- pora- tions.	All oth- ers.		Indi- vid- uals.	Corpora- tions.	All others.	Indi- vid- uals.	Corpora- tions.	All oth- ers.				
United States....	1919	481	582	241	100,996	3,207	155,379	2,350	2.0	96.5	1.5	\$4,246,200,014	\$110,822,752	\$4,049,077,511	\$86,390,351	2.6	95.4	2.0				
	1914	504	494	281	98,832	3,769	91,056	4,007	3.8	92.1	4.1	1,651,905,424	60,133,795	1,505,177,165	77,054,404	4.2	91.1	4.7				
	1909	404	450	277	87,813	3,925	79,831	4,057	4.5	90.9	4.6	1,355,544,431	68,025,250	1,211,015,811	75,903,304	5.1	89.3	5.6				
California.....	1919	34	43	14	3,405	208	2,088	119	8.8	87.8	3.5	92,554,164	9,170,740	75,384,790	7,989,619	9.9	81.4	8.8				
	1914	35	38	35	2,220	222	1,811	187	10.0	81.0	8.4	50,011,820	6,318,512	37,701,080	6,902,228	12.6	75.6	11.8				
Illinois.....	1919	7	57	8	54,179	454	53,530	195	0.8	98.8	0.4	1,284,103,010	20,049,930	1,250,948,360	6,204,726	1.6	97.9	0.5				
	1914	28	55	15	31,627	671	30,790	247	2.1	97.1	0.8	489,230,324	11,840,275	474,026,280	3,357,703	2.4	96.9	0.7				
Indiana.....	1919	14	26	17	5,601	72	5,463	156	1.3	96.0	2.7	134,028,720	1,835,043	127,988,923	4,204,100	1.4	95.4	3.1				
	1914	21	23	24	4,484	111	4,228	145	2.5	94.3	3.2	51,005,774	1,321,420	47,375,495	2,368,850	2.6	92.8	1.6				
Iowa.....	1919	2	15	4	7,134	176	6,958	.....	2.5	97.5	.....	226,301,098	4,227,569	222,134,129	.....	1.9	98.1	.....			
	1914	11	15	7	4,430	.....	3,240	41,184	73.3	26.7	.....	74,280,387	.....	51,374,518	217,014,869	75.9	.....	24.1
Kansas.....	1919	5	17	6	17,805	39	17,729	37	0.2	99.6	0.2	427,003,145	688,064	425,083,369	1,291,112	0.2	99.5	0.3				
	1914	6	15	5	9,884	28	9,808	48	0.3	99.2	0.5	151,647,123	331,031	150,606,933	700,159	0.2	99.3	0.5				
Maryland.....	1919	24	13	10	1,503	241	1,237	85	15.4	79.1	5.4	41,439,448	6,394,183	32,205,912	2,749,383	15.4	77.9	6.6				
	1914	36	12	12	1,202	444	753	90	34.4	58.7	7.0	17,090,908	6,200,162	9,034,854	1,774,962	36.8	52.8	10.4				
Massachusetts.....	1919	22	13	5	4,307	83	4,178	40	1.9	97.0	1.1	110,238,038	3,030,961	106,246,040	960,428	2.7	96.4	0.9				
	1914	65	20	10	3,582	242	3,224	116	0.8	99.0	3.2	54,446,087	2,292,794	50,597,928	1,555,965	4.2	92.0	2.9				
Michigan.....	1919	11	10	3	1,712	150	1,053	.....	3.4	96.6	.....	50,584,740	2,157,017	57,427,123	.....	3.6	96.4	.....			
	1914	20	8	8	1,181	43	1,092	46	3.0	92.5	3.0	21,206,915	650,577	20,116,793	499,605	3.1	94.6	2.3				
Minnesota.....	1919	3	7	3	5,231	189	5,142	.....	1.7	98.3	.....	146,361,046	3,844,320	142,516,720	.....	2.6	97.4	.....			
	1914	11	9	9	2,587	47	2,459	81	1.8	95.1	3.1	47,710,059	614,397	45,042,481	1,453,181	1.3	95.7	3.0				
Missouri.....	1919	21	25	3	8,200	149	8,241	.....	0.0	99.4	.....	240,610,105	1,710,239	244,890,956	.....	0.7	99.3	.....			
	1914	10	24	6	5,200	28	5,139	33	0.5	98.8	0.6	92,000,499	392,938	91,192,177	475,384	0.4	99.1	0.5				
Nebraska.....	1919	3	8	5	10,122	135	10,087	.....	0.3	99.7	.....	303,848,003	1,229,528	302,019,375	.....	0.4	99.6	.....			
	1914	3	6	1	5,713	17	5,699	.....	0.3	99.7	.....	104,503,333	511,591	103,991,742	.....	0.5	99.5	.....			
New Jersey.....	1919	17	22	7	3,500	104	3,292	170	2.9	92.3	4.8	110,221,328	5,247,614	95,315,110	9,658,698	4.8	86.5	8.8				
	1914	52	22	10	2,197	171	1,799	227	7.8	81.0	10.3	40,108,471	3,080,998	30,500,824	6,520,649	7.7	78.1	16.3				
New York.....	1919	58	46	26	6,046	272	6,047	327	4.1	91.0	4.0	250,038,393	12,536,841	228,233,892	15,207,060	4.9	89.1	6.0				
	1914	214	55	68	6,041	983	5,023	635	14.8	75.6	9.6	148,105,650	18,241,291	113,530,019	10,333,449	12.3	76.7	11.0				
Ohio.....	1919	54	54	33	5,330	319	4,835	182	6.0	90.0	3.4	170,337,892	12,481,013	147,893,255	9,093,024	7.3	86.8	5.9				
	1914	84	51	34	3,019	350	3,108	101	9.7	85.0	4.4	60,074,379	6,768,730	54,032,018	5,283,625	10.1	81.9	7.9				
Pennsylvania.....	1919	98	47	31	4,438	723	3,534	181	16.3	79.0	4.1	122,802,240	19,024,444	96,076,071	7,190,825	16.0	78.2	5.8				
	1914	84	43	30	3,087	747	2,608	272	20.3	72.4	7.4	65,081,384	11,009,207	46,737,815	4,243,802	16.7	76.9	6.4				
Wisconsin.....	1919	6	8	7	3,218	11	3,101	106	0.3	96.4	3.3	102,182,171	458,297	99,199,208	2,524,066	0.4	97.1	2.5				
	1914	21	13	12	2,236	149	2,019	68	0.7	90.8	3.0	34,007,955	1,875,208	32,005,258	817,489	5.4	92.2	2.4				

1 Includes the group "All others."

2 Includes the group "Individuals."

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TABLE 12.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919, 1914, AND 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
	1919	1914	1909	Amount.			Per cent distribution.		
				1919	1914	1909	1919	1914	1909
Primary power, total.....	10,766	5,095	2,766	359,212	253,066	202,432	100.0	100.0	100.0
Owned.....	1,812	1,655	1,667	240,609	212,963	189,109	67.0	84.2	93.4
Steam.....	1,711	1,556	1,506	238,017	210,536	187,321	66.3	83.2	92.5
Engines.....	1,563	(²)	(²)	210,348	(²)	(²)	58.6		
Turbines.....	148	(²)	(²)	27,669	(²)	(²)	7.7		
Internal-combustion engines.....	92	96	67	2,018	2,412	1,744	0.6	1.0	0.9
Water wheels, turbines, and motors.....	9	3	4	574	15	41	0.2	(³)	(³)
Rented.....	8,954	3,440	1,099	118,603	40,103	13,323	33.0	15.8	6.6
Electric.....	8,954	3,440	1,099	117,913	39,116	12,588	32.8	15.5	6.2
Other.....				690	987	735	0.2	0.4	0.4
Electric.....	16,491	9,843	5,498	213,548	117,810	76,124	100.0	100.0	100.0
Rented.....	8,954	3,440	1,099	117,913	39,116	12,588	55.2	33.2	16.5
Generated by establishments reporting.....	7,537	6,403	4,399	95,635	78,694	63,536	44.8	66.8	83.5

¹ Figures for horsepower include for 1909 the amount reported under the head of "Other" owned power. ² Not reported separately. ³ Less than one-tenth of 1 per cent.

TABLE 13.—FUEL CONSUMED, BY STATES: 1919 AND 1914.

STATE.	Cen- sus year.	COAL.		Coke (tons, 2,000 pounds).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
		Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).				
United States.....	1919	222,891	3,802,849	32,170	1,890,794	21,725	1,291,318
	1914	222,975	2,786,196	13,859	1,201,456	(¹)	2,014,965
California.....	1919	42	92		214,197	1,595	55,768
	1914	30	135	10	204,169	(¹)	4,513
Colorado.....	1919		68,433	4,427	20	1	470
	1914		43,542				161
Illinois.....	1919		1,550,216	935	48,440	1,035	186,009
	1914	5,151	1,024,711	9,410	1,267	(¹)	197,411
Indiana.....	1919		178,222			128	21,542
	1914		149,793		148	(¹)	632
Iowa.....	1919	500	219,072	100		317	28,666
	1914		222,726	60	80	(¹)	1,821
Kansas.....	1919		325,831		562,089	1,432	33,266
	1914	289	235,496	932	484,806	(¹)	17,995
Maryland.....	1919	3,772	48,461		12	21	299
	1914		45,858	1,446	172	(¹)	270
Massachusetts.....	1919	66,313	12,567	120		110	2,024
	1914	52,300	4,525		17	(¹)	189
Michigan.....	1919	39	32,576		101		3,772
	1914	28	27,887		4	(¹)	
Minnesota.....	1919	221	103,863	12		220	9,818
	1914		70,676		62	(¹)	3,306
Missouri.....	1919		266,986	530	170,100	2	24,512
	1914		223,102		73,416	(¹)	195,771
Nebraska.....	1919		277,825	5	48,410	1,493	
	1914		245,354				9,143
New Jersey.....	1919	52,474	41,685	3,087	200	300	2,448
	1914	62,001	11,439		79	(¹)	3,351
New York.....	1919	64,632	115,434	4,327	49	1,966	36,938
	1914	68,689	84,633	1,642	632	(¹)	24,389
Ohio.....	1919		148,512	201	1,051	2,397	71,483
	1914	5	91,169	200	75	(¹)	368,360
Pennsylvania.....	1919	31,314	108,778	106	235	9,318	31,356
	1914	33,751	80,935	140	182	(¹)	19,160
Texas.....	1919		23,257	8,018	545,885	742	268,952
	1914		62,715		400,703	(¹)	77,115
Washington.....	1919		12,863	2,100	1	50	
	1914		10,489				100
Wisconsin.....	1919	162	88,605		6	(¹)	250
	1914	137	51,842				
All other states.....	1919	3,422	179,541	8,199	300,001	348	552,229
	1914	594	99,119	19	35,638	(¹)	1,091,278

¹ Included in fuel oils.

SPECIAL STATISTICS.

Certain additional detailed information concerning the number, weight, and cost of animals slaughtered and the quantity and value of fresh and cured meats and other products of the industry was collected by means of supplemental schedules, data for which are presented in the following tables.

Materials—quantity and cost.—The number and cost of animals slaughtered in 1919, 1914, 1909, and 1904 are presented, by classes, in Table 14.

The total number of animals slaughtered in 1919 was 73,256,127, and in 1914, 59,561,819, an increase of 13,694,308, or 23 per cent, in the five-year period. The largest increase, 10,078,813, was that for hogs and there was an actual decrease of 2,446,443 in the number of sheep and lambs.

TABLE 14.—MATERIALS—QUANTITY AND COST: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
Materials, total cost.....	\$3,782,029,533	\$1,441,002,658	\$1,101,438,076	\$805,850,960
Animals slaughtered, cost.....	\$3,050,387,778	\$1,199,642,235	\$900,587,033	\$675,831,771
Beoves—				
Number.....	1 10,818,511	1 7,149,042	8,114,860	7,147,835
Cost.....	\$1,055,739,469	\$490,108,203	\$302,127,010	\$289,040,830
Calves—				
Number.....	1 4,395,075	1 2,019,004	2,504,728	1,568,130
Cost.....	\$90,440,234	\$27,023,448	\$25,030,014	\$12,065,557
Sheep and lambs—				
Number.....	1 13,497,300	1 15,943,743	12,255,501	10,875,339
Cost.....	\$146,775,993	\$84,783,721	\$59,924,931	\$44,359,804
Hogs—				
Number.....	1 44,520,726	1 34,441,013	33,870,016	30,977,639
Cost.....	\$1,787,279,014	\$507,097,518	\$483,383,848	\$329,705,480
Goats and kids—				
Number.....	1 23,015	1 8,117	33,224	(2)
Cost.....	\$144,008	\$20,345	\$121,230	(2)
Poultry, cost.....	\$1,787,936	\$2,178,144	\$138,548	\$61,905
Dressed meat purchased, cost.....	\$209,089,389	\$124,334,798	\$93,409,286	\$53,114,067
All other materials, cost.....	\$425,064,430	\$115,507,481	\$187,303,200	\$76,848,330

¹ In addition, 553,839 beoves, 387,002 calves, 260,128 sheep and lambs and goats and kids, and 2,200,539 hogs were slaughtered for others in 1919, and 377,037 beoves, 243,390 calves, 705,510 sheep and lambs and goats and kids, and 2,808,004 hogs in 1914.

² Not reported separately.

³ Includes cost of animals other than those shown in detail.

The dressed meat purchased for curing was procured largely from slaughtering establishments which are included in this report, and therefore is duplicated in the total value of products. This item includes meat purchased for curing and canning, animal fats for the manufacture of lard, lard compounds and substitutes, oleo oil and stearin. This item increased \$174,754,591, or 140.6 per cent in the last census period. The cost of "All other materials" includes containers, materials for the manufacture of containers, ice, materials for the manufacture of ice, curing materials, cottonseed oil, butter, whole milk, fuel, rent of power, mill supplies, and freight.

As indicated by the table, from 1914 to 1919 the number of beoves slaughtered increased 3,669,469, or 51.3 per cent, and their cost \$565,631,266, or 115.4 per cent; the number of calves, 2,376,671, or 117.7

per cent, and their cost \$68,825,786, or 249.2 per cent; hogs 10,078,813, or 29.3 per cent, and their cost \$1,160,181,496, or 194.3 per cent.

In addition to the animals enumerated in Table 14, there were 3,501,198 slaughtered in 1919 on a custom basis, in establishments included in this report. Of this number 1,305,885 were slaughtered in abattoirs doing custom killing exclusively, both for the wholesale and retail trade. This is a decrease of 902,192 from the number reported in 1914, and leads to the inference that the number of this class of establishments is declining.

The following statement gives the average cost on the hoof per animal and per pound of four classes for the last five censuses:

CLASS.	1919	1914	1909	1904	1899
AVERAGE LIVE COST PER HEAD.					
Beoves.....	\$07.50	\$08.50	\$18.32	\$10.44	\$44.73
Calves.....	21.94	13.08	9.99	8.08	8.21
Sheep and lambs.....	10.87	5.32	4.89	4.08	4.05
Hogs.....	39.47	17.34	14.27	10.64	9.10
AVERAGE LIVE COST PER POUND.					
Beoves.....	\$0.107	\$0.069	\$0.047	\$0.039	\$0.042
Calves.....	0.128	0.082	0.059	0.048	0.038
Sheep and lambs.....	0.139	0.067	0.061	0.047	0.048
Hogs.....	0.180	0.082	0.071	0.050	0.042

Gross and net weights of animals slaughtered.—The gross and net weights, in pounds, on the hoof and dressed, with average weights per head, of four classes of animals slaughtered in 1919, 1914, 1909, and 1904, are shown in Table 15.

TABLE 15.—GROSS AND NET WEIGHTS OF ANIMALS SLAUGHTERED: 1919, 1914, 1909, AND 1904.

CLASS.	1919	1914	1909	1904
BEEVES.				
Number.....	10,818,511	7,149,042	8,114,860	7,147,835
Weight on hoof, pounds.....	9,803,011,033	7,070,145,087	8,205,001,836	7,485,407,944
Average weight on hoof, pounds.....	912	900	1,019	1,047
Weight, dressed, pounds.....	5,118,728,572	3,780,382,167	4,409,718,922	4,066,264,877
Average weight, dressed, pounds.....	473	530	543	569
CALVES.				
Number.....	4,395,075	2,019,004	2,504,728	1,568,130
Weight on hoof, pounds.....	752,372,181	337,565,316	410,604,080	261,683,572
Average weight on hoof, pounds.....	171	167	168	167
Weight, dressed, pounds.....	457,469,062	200,311,127	262,315,076	161,049,581
Average weight, dressed, pounds.....	104	102	105	103
SHEEP AND LAMBS AND GOATS AND KIDS.				
Number.....	13,521,215	15,951,809	12,288,725	10,875,339
Weight on hoof, pounds.....	1,050,530,820	1,259,595,728	987,660,521	930,168,367
Average weight on hoof, pounds.....	78	79	80	86
Weight, dressed, pounds.....	500,010,006	620,723,014	496,640,869	464,872,621
Average weight, dressed, pounds.....	37	39	40	43
HOGS.				
Number.....	44,520,726	34,441,013	33,870,016	30,977,639
Weight on hoof, pounds.....	9,745,921,840	7,277,070,937	8,850,832,417	8,586,349,782
Average weight on hoof, pounds.....	210	211	262	213
Weight, dressed, pounds.....	7,358,010,897	5,470,236,776	5,201,902,778	5,048,832,850
Average weight, dressed, pounds.....	165	159	154	163

¹ Figures for goats and kids not available, probably included here.

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The net or dressed weight does not include edible offal. The net weight of calves and sheep and lambs includes in some cases the weight of skins and pelts, as they are sold on the carcass whenever they are intended for interstate shipment.

The average gross weight of beeves per animal has been decreasing since 1904. This is probably due to

the slaughter of baby beeves. The gross or market weight of this class has been estimated by the Department of Agriculture, for the United States, as 834 pounds.

Gross and net weights, by states.—In Table 16 are presented the gross and net weights, in pounds, of four classes, by states, for 1919, 1914, and 1909.

TABLE 16.—GROSS AND NET WEIGHTS OF ANIMALS SLAUGHTERED, BY STATES: 1919, 1914, AND 1909.

CLASS AND STATE.	1919		1914		1909	
	Gross.	Net.	Gross.	Net.	Gross.	Net.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
Beeves, total.....	9,803,011,033	5,118,728,572	7,076,145,687	3,786,382,167	8,265,991,836	4,400,718,922
California.....	387,360,407	208,040,206	323,293,850	178,023,882	350,435,388	188,090,815
Colorado.....	135,446,019	69,857,508	62,578,982	33,853,114	64,085,177	34,882,622
Illinois.....	2,650,097,072	1,375,560,390	1,884,347,628	1,008,454,049	2,235,784,978	1,212,582,304
Indiana.....	220,632,191	114,703,421	184,243,730	96,571,044	236,639,010	121,258,641
Iowa.....	397,886,543	226,575,983	223,207,766	122,793,052	250,830,861	130,931,601
Kansas.....	1,308,139,952	674,449,623	946,715,060	505,538,585	1,367,945,767	729,291,917
Michigan.....	92,001,097	45,944,903	56,521,917	28,462,575	47,011,300	24,090,494
Minnesota.....	271,807,849	132,045,112	168,451,248	83,735,477	124,498,131	60,982,227
Missouri.....	593,081,374	306,688,837	342,901,498	187,655,121	525,710,468	278,418,625
Nebraska.....	939,241,879	494,186,420	520,098,198	287,010,192	687,973,475	368,610,331
New Jersey.....	127,522,552	69,833,293	43,868,265	24,140,172	63,914,730	35,659,663
New York.....	716,261,632	382,448,568	743,272,656	409,199,580	800,725,860	442,372,661
Ohio.....	341,344,727	171,806,469	252,380,479	130,929,938	248,949,915	128,228,567
Pennsylvania.....	259,505,948	132,199,421	256,490,534	135,082,921	270,612,910	145,127,584
Texas.....	445,013,500	224,330,620	432,897,416	221,521,506	452,881,856	226,871,758
Washington.....	129,087,817	67,497,004	91,201,768	49,507,085	128,278,131	71,147,129
Wisconsin.....	116,171,897	58,290,095	68,429,463	35,279,680	70,200,875	37,773,924
All other states.....	723,347,477	364,204,639	475,236,211	248,624,134	332,932,908	173,907,059
Calves, total.....	752,372,181	457,469,062	337,565,316	206,311,127	419,604,080	262,315,076
California.....	19,467,894	12,118,152	6,752,944	4,068,111	18,389,094	11,782,419
Colorado.....	5,091,156	3,189,188	836,334	535,927	2,272,580	1,383,065
Illinois.....	136,186,990	85,496,568	74,360,172	45,777,646	82,943,030	53,987,041
Indiana.....	10,180,441	5,977,507	8,916,669	5,325,010	9,000,243	5,505,485
Kansas.....	88,715,777	51,292,596	26,890,412	16,064,742	45,227,093	27,709,216
Maryland.....	8,154,052	4,529,054	3,173,175	1,615,635	2,657,387	1,521,661
Massachusetts.....	24,547,495	13,705,694	14,295,842	7,966,636	14,533,142	8,318,362
Michigan.....	11,526,055	7,238,061	4,167,437	2,800,785	3,831,261	2,094,124
Minnesota.....	43,017,042	27,823,427	11,894,252	7,775,268	9,005,834	5,739,553
Missouri.....	33,531,285	20,236,681	7,802,437	4,830,719	14,666,376	9,302,608
Nebraska.....	33,030,126	19,345,619	6,045,910	3,618,952	12,929,856	7,993,153
New Jersey.....	14,598,043	9,266,133	10,227,128	6,658,917	13,606,009	8,702,824
New York.....	89,437,057	56,267,965	59,604,341	37,471,922	57,359,815	36,781,701
Ohio.....	35,079,646	20,335,368	20,383,316	12,101,590	21,424,320	12,968,426
Pennsylvania.....	23,922,001	13,860,275	17,553,952	10,191,849	23,219,799	13,424,881
Texas.....	89,168,798	52,564,617	37,176,694	21,827,297	54,389,464	32,593,921
Wisconsin.....	31,073,599	21,981,530	11,762,528	8,106,515	14,780,228	10,228,760
All other states.....	54,743,534	32,201,227	15,721,773	9,573,606	19,218,549	11,782,476
Sheep and lambs, total.....	1,054,851,683	499,727,042	1,250,595,728	629,723,014	987,596,521	490,640,869
California.....	92,332,195	45,179,846	113,296,370	57,499,522	89,943,570	44,502,009
Colorado.....	17,622,758	8,274,902	7,144,811	3,290,166	4,997,460	2,407,445
Illinois.....	344,552,918	161,779,994	396,079,329	199,144,851	310,824,306	158,420,118
Iowa.....	21,986,780	10,638,388	26,111,904	12,482,980	4,381,486	1,857,387
Kansas.....	93,046,082	43,448,346	119,050,226	59,516,071	87,549,179	43,816,825
Massachusetts.....	16,497,305	8,091,291	32,304,584	14,715,201	25,953,967	13,346,490
Michigan.....	11,834,602	5,351,292	10,130,365	4,782,158	6,966,398	3,508,844
Minnesota.....	16,067,170	7,792,878	17,873,462	8,511,323	11,067,016	6,655,858
Missouri.....	57,443,002	27,062,250	59,453,496	30,410,705	42,965,028	21,820,210
Nebraska.....	125,810,414	59,354,852	146,095,274	72,486,249	94,297,114	45,386,112
New Jersey.....	31,153,792	14,313,472	29,029,686	13,494,823	32,299,592	16,234,014
New York.....	113,228,112	53,080,830	140,521,113	72,958,706	155,884,208	80,668,961
Ohio.....	19,417,513	9,797,926	21,962,827	10,440,357	15,809,887	7,993,744
Pennsylvania.....	21,776,751	10,587,249	33,006,842	16,102,550	35,193,551	17,361,349
Texas.....	13,621,490	6,601,429	22,635,046	11,420,844	6,487,560	2,988,800
Washington.....	20,751,906	9,723,654	33,503,115	15,806,582	26,349,187	13,297,291
All other states.....	36,907,833	17,448,393	50,797,283	24,653,920	35,968,012	17,675,321

TABLE 16.—GROSS AND NET WEIGHTS OF ANIMALS SLAUGHTERED, BY STATES: 1919, AND 1909—Continued.

CLASS AND STATE.	1919		1914		1909	
	Gross.	Net.	Gross.	Net.	Gross.	Net.
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
Hogs, total.....	9,745,921,840	7,358,910,897	7,277,670,937	5,476,236,776	6,856,832,417	5,201,902,778
California.....	80,634,801	64,850,875	70,174,389	52,830,882	62,527,587	40,631,388
Colorado.....	86,400,977	66,169,286	58,081,786	43,716,326	58,950,395	45,953,370
Illinois.....	2,442,064,157	1,849,006,002	1,653,498,581	1,241,381,168	1,535,959,595	1,149,193,064
Indiana.....	436,426,011	351,897,789	370,586,260	289,807,844	364,178,272	287,559,449
Iowa.....	789,960,312	579,452,827	569,387,631	421,324,100	555,200,081	419,735,801
Kansas.....	975,469,217	705,721,410	567,958,750	405,925,867	836,207,868	615,127,325
Maryland.....	86,223,380	62,602,379	85,163,744	63,141,079	73,635,684	54,792,767
Massachusetts.....	344,784,003	257,851,385	314,327,969	246,411,040	348,330,075	271,934,381
Michigan.....	189,958,806	144,555,063	148,693,650	109,897,029	85,862,343	64,950,972
Minnesota.....	505,259,121	390,818,720	353,802,850	273,102,774	210,518,206	159,800,532
Missouri.....	756,019,010	582,117,006	582,365,300	446,152,081	511,926,108	398,239,522
Nebraska.....	720,638,077	532,143,359	505,097,701	360,276,188	483,734,281	355,098,890
New Jersey.....	188,010,605	136,368,733	187,027,738	139,587,280	160,930,257	125,999,812
New York.....	300,811,743	232,113,970	300,593,039	238,806,307	318,470,443	235,964,832
Ohio.....	523,802,338	411,887,018	303,274,069	205,512,065	353,545,643	261,173,211
Pennsylvania.....	200,241,330	218,062,287	283,203,738	217,544,102	214,940,692	167,762,857
Texas.....	128,456,461	95,061,460	108,156,489	78,447,373	178,034,691	139,981,230
Washington.....	61,182,579	42,380,020	75,863,170	51,031,027	50,496,743	39,289,779
West Virginia.....	71,286,801	53,105,517	41,966,080	32,477,026	30,220,860	24,150,880
Wisconsin.....	317,394,471	245,108,588	251,371,423	196,359,730	231,152,827	182,767,219
All other states.....	444,294,640	336,370,432	350,112,008	260,505,086	206,013,716	157,786,937

* Animals slaughtered, by states.—Table 17 presents, by states, the number and cost of the principal kinds of animals slaughtered in 1919, and the number in 1914 and 1909. The states selected are those in which the minimum of 100,000 beeves, 50,000 calves, 100,000 sheep and lambs, and 200,000 hogs were slaughtered in 1919.

TABLE 17.—ANIMALS SLAUGHTERED, BY STATES: 1919, 1914, AND 1909.

CLASS AND STATE.	1919		1914	1909
	Cost.	Number.	Number.	Number.
Beeves, total.....	\$1,055,739,409	10,818,511	7,149,042	8,114,800
California.....	30,570,429	305,524	315,792	341,617
Colorado.....	12,980,062	145,094	62,735	64,308
Illinois.....	292,428,022	2,887,414	1,804,982	2,181,190
Indiana.....	22,844,736	271,004	200,180	252,007
Iowa.....	41,943,020	437,055	210,350	252,821
Kansas.....	135,469,811	1,470,806	990,188	1,302,572
Michigan.....	8,652,030	106,075	62,035	59,157
Minnesota.....	23,580,100	209,462	166,093	125,852
Missouri.....	61,904,149	674,287	350,010	530,350
Nebraska.....	102,233,077	1,006,654	491,632	651,258
New Jersey.....	18,413,023	110,066	37,903	53,234
New York.....	99,271,131	661,518	636,389	608,447
Ohio.....	35,531,201	410,080	260,719	265,191
Pennsylvania.....	31,077,051	257,608	216,949	252,897
Texas.....	39,926,332	550,550	554,479	527,409
Washington.....	12,672,900	132,213	85,774	117,522
Wisconsin.....	10,601,787	123,316	70,900	73,049
All other states.....	96,626,102	808,086	523,243	344,214
Calves, total.....	96,449,234	4,305,075	2,010,004	2,504,728
California.....	2,110,907	80,980	41,834	81,344
Illinois.....	17,310,534	830,604	430,610	513,639
Indiana.....	1,427,508	65,557	61,500	60,578
Kansas.....	9,444,061	380,071	130,102	209,357
Maryland.....	1,305,074	60,530	20,278	23,137
Massachusetts.....	3,060,196	244,394	115,724	120,102
Michigan.....	1,876,206	74,242	24,505	27,284
Minnesota.....	5,055,226	288,623	70,580	55,901
Missouri.....	3,827,762	167,753	45,213	81,551
Nebraska.....	3,386,478	131,806	23,014	58,158
New Jersey.....	2,022,150	101,075	68,492	95,604
New York.....	14,248,013	572,055	378,107	377,121
Ohio.....	5,579,538	249,487	141,368	150,223
Pennsylvania.....	4,196,823	104,415	115,446	152,851
Texas.....	8,815,216	353,417	145,391	234,172
Wisconsin.....	4,994,617	293,248	101,036	126,207
All other states.....	6,497,899	313,628	89,909	125,340

TABLE 17.—ANIMALS SLAUGHTERED, BY STATES, 1919, 1914, AND 1909—Continued.

CLASS AND STATE.	1919		1914	1909
	Cost.	Number.	Number.	Number.
Sheep and lambs, total.....	146,775,993	13,497,300	15,943,743	12,255,501
California.....	12,178,278	1,198,079	1,427,250	1,071,998
Colorado.....	2,349,812	212,702	212,702	55,606
Illinois.....	49,135,520	4,358,564	4,882,940	3,892,142
Iowa.....	2,782,728	264,432	307,419	46,577
Kansas.....	12,583,035	1,200,080	1,559,114	1,136,027
Massachusetts.....	2,509,439	217,146	270,835	342,491
Michigan.....	2,010,375	193,345	125,537	88,285
Minnesota.....	1,079,333	208,946	198,065	183,244
Missouri.....	8,337,496	742,156	776,751	546,649
Nebraska.....	17,430,376	1,575,054	1,797,072	1,127,062
New Jersey.....	4,058,662	425,060	426,063	423,724
New York.....	16,881,438	1,489,649	1,999,134	1,918,721
Ohio.....	2,103,814	258,291	300,337	220,085
Pennsylvania.....	3,180,741	284,307	436,881	445,471
Texas.....	1,524,325	151,285	281,050	77,505
Washington.....	2,488,870	237,140	302,854	290,383
All other states.....	4,338,198	478,875	607,700	425,481
Hogs, total.....	1,757,270,011	41,520,726	34,441,913	38,870,610
California.....	15,080,841	500,123	400,306	344,319
Colorado.....	15,227,544	390,870	259,821	276,618
Illinois.....	437,857,730	9,976,101	7,205,510	7,263,544
Indiana.....	80,666,295	2,104,208	1,840,811	1,761,454
Iowa.....	141,345,862	3,302,333	2,394,061	2,487,251
Kansas.....	177,542,104	4,638,032	2,825,764	4,191,927
Maryland.....	15,080,303	654,438	622,626	554,761
Massachusetts.....	65,510,104	1,422,449	1,263,238	1,501,456
Michigan.....	33,244,535	881,030	761,380	444,796
Minnesota.....	90,002,161	2,197,152	1,559,491	1,065,655
Missouri.....	130,204,440	3,506,211	2,793,439	2,471,658
Nebraska.....	131,744,544	2,995,220	2,105,510	2,103,602
New Jersey.....	34,347,204	1,242,798	1,207,313	1,210,849
New York.....	54,884,809	1,614,479	1,725,688	1,802,699
Ohio.....	92,051,318	2,542,304	1,911,608	1,725,285
Pennsylvania.....	50,592,444	1,063,010	1,573,974	1,222,880
Texas.....	21,018,507	980,265	1,070,182	939,674
Washington.....	11,133,490	301,429	373,321	220,352
West Virginia.....	13,540,075	316,827	171,897	124,944
Wisconsin.....	57,842,080	1,444,115	1,110,449	1,078,361
All other states.....	70,654,544	2,224,286	1,075,524	1,041,631

There was an increase in the number of beeves slaughtered, from 1914 to 1919, in all states except Texas, and the decrease in beeves slaughtered in this state was only 3,929, while the number of calves slaughtered more than doubled. In the number of calves slaughtered, all states increased; in hogs, all

states except New Jersey, New York, and Washington. All states, except Colorado, Michigan, and Minnesota, showed a decrease in the number of sheep and lambs slaughtered.

Animals slaughtered in wholesale slaughtering establishments and on farms and ranges.—Table 18 presents statistics, by states, showing the number of animals killed in wholesale slaughtering and meat-packing es-

tablishments and on farms and ranges. These figures do not include the animals slaughtered in retail establishments and therefore do not represent the total number slaughtered for food in the United States.

This is the first census in which the slaughter of horses was specifically reported. The number was small—only 748. Of this number, 306 were killed under Federal inspection.

TABLE 18.—NUMBER OF ANIMALS SLAUGHTERED IN WHOLESALE SLAUGHTERING AND MEAT-PACKING ESTABLISHMENTS AND ON FARMS AND RANGES, BY STATES: 1919 AND 1909.

STATE.	TOTAL.		IN WHOLESALE SLAUGHTERING AND MEAT-PACKING ESTABLISHMENTS.		ON FARMS AND RANGES.	
	1919	1909	1919	1909	1919	1909
United States.....	92,395,546	75,346,201	73,256,127	56,778,929	19,139,419	18,567,272
Cattle.....	12,723,092	10,655,100	10,818,511	8,114,860	1,904,581	2,540,240
Calves.....	4,395,675	2,604,728	4,395,675	2,504,728		
Sheep and lambs and goats and kids.....	13,955,823	12,818,251	13,521,215	12,288,725	434,608	528,526
Hogs.....	61,320,956	49,249,133	44,520,726	33,870,616	16,800,230	15,878,617
All other.....	(1)	118,989	(1)	(1)	(1)	118,989
Alabama.....	884,354	659,054	148,716	12,985	735,638	646,069
Arizona.....	50,317	29,975	23,573		26,744	29,975
Arkansas.....	988,123	674,021	9,320		673,803	674,021
California.....	2,357,791	2,053,551	2,181,189	1,844,508	176,602	209,043
Colorado.....	927,913	520,803	775,933	406,662	151,980	114,141
Connecticut.....	214,588	198,814	171,264	155,394	43,324	43,420
Delaware.....	79,947	75,859	51,201	47,217	28,746	28,642
District of Columbia.....	97,967	75,803	97,407	75,384	560	419
Florida.....	470,220	365,916	136,073	43,840	334,147	322,076
Georgia.....	1,376,874	965,051	191,864	37,108	1,185,010	927,943
Idaho.....	161,656	98,437	34,434	25,413	127,222	73,024
Illinois.....	18,806,304	14,773,035	18,066,358	13,886,462	799,946	886,573
Indiana.....	3,089,664	2,822,605	2,465,474	2,123,270	624,190	699,335
Iowa.....	4,662,165	3,415,347	4,049,095	2,810,098	613,070	605,249
Kansas.....	8,007,352	7,339,537	7,605,978	6,917,159	401,374	422,378
Kentucky.....	1,045,944	1,077,587	295,194	307,844	750,750	769,743
Louisiana.....	361,278	323,012	9,741		351,537	323,012
Maine.....	138,337	171,360	35,822	54,573	102,515	116,787
Maryland.....	1,045,624	824,673	847,703	633,322	197,821	191,351
Massachusetts.....	1,089,585	2,094,788	1,943,308	2,036,895	46,277	57,893
Michigan.....	1,731,841	1,115,179	1,255,592	610,482	476,249	504,697
Minnesota.....	3,497,402	1,869,450	2,994,183	1,378,742	503,219	490,708
Mississippi.....	689,744	547,464	3,893		685,851	547,454
Missouri.....	5,940,944	4,630,076	5,092,746	3,630,901	848,198	999,175
Montana.....	298,705	170,684	124,769	104,201	173,938	75,483
Nebraska.....	6,022,259	4,251,848	5,709,724	3,940,980	312,535	310,868
Nevada.....	79,049	63,131	4,938	37,572	24,111	25,559
New Hampshire.....	35,165	51,667		3,345	35,165	48,322
New Jersey.....	1,951,546	1,875,980	1,879,902	1,783,823	71,644	92,157
New Mexico.....	94,816	126,779			94,816	126,779
New York.....	4,891,296	5,486,366	4,338,601	4,766,959	552,695	719,407
North Carolina.....	981,810	850,785	6,706	4,840	975,104	845,945
North Dakota.....	309,209	186,579	40,813		268,496	186,579
Ohio.....	4,282,390	3,240,957	3,460,902	2,370,699	821,488	870,258
Oklahoma.....	1,305,452	494,982	826,387	39,444	479,065	455,538
Oregon.....	479,881	413,911	297,641	225,454	182,240	188,447
Pennsylvania.....	3,232,931	2,935,841	2,370,330	2,074,069	862,601	861,742
Rhode Island.....	87,749	69,403	82,588	57,106	5,161	12,297
South Carolina.....	461,856	340,121	11,435	3,100	450,421	337,021
South Dakota.....	511,576	183,358	311,938	22,754	199,638	160,604
Tennessee.....	921,922	886,317	102,746	83,110	819,176	803,207
Texas.....	2,752,609	2,788,675	1,763,751	1,779,120	988,848	1,009,555
Utah.....	346,198	151,188	243,459	87,081	102,739	84,107
Vermont.....	64,640	117,813	750	125	63,890	117,688
Virginia.....	853,389	785,233	168,648	212,939	684,741	572,294
Washington.....	897,360	833,396	688,537	663,405	208,823	169,991
West Virginia.....	626,958	385,444	356,020	146,539	270,338	238,905
Wisconsin.....	2,471,925	1,874,848	1,921,093	1,327,135	550,832	545,713
Wyoming.....	68,841	50,508	8,388	4,830	55,453	45,078

(1) Not reported.

Products—quantity and value.—Table 19 shows the quantity and value of the principal products of the industry as reported at the censuses of 1919, 1914, 1909, and 1904.

All classes of products increased in quantity from 1914 to 1919 except mutton and lamb, poultry, oleo oil, soap stock, glue, and sheep and lamb pelts. The value of each class of products, however, except

dressed poultry and soap stock, increased. This increase was not at all comparable with that in quantity, and was largely attributable to inflated prices caused by the World War. See statement on page 10, showing live costs per pound for 1914 and 1919.

The production of fresh meat in 1919 was 8,364,975,602 pounds, and in 1914 was 6,656,031,002, an increase of 1,708,944,600 pounds. Cured meat in

1919 amounted to 4,276,077,115 pounds, an increase of 1,255,195,621 pounds as compared with 1914. This is exclusive of sausage and canned meat. The canned meat specifically reported as such in 1919 amounted to 228,115,608 pounds. There was a very large quantity, however, included under "other canned goods." The canned sausage reported was 160,908,986 pounds, and all other sausage 643,905,181 pounds, making a total meat production for 1919 of 13,673,982,492 pounds.

The lard reported includes pure, leaf, neutral, kettle rendered, prime steam, and refined. There was an increase in the total production of 253,680,981 pounds of this important product in the last census period, and the value increased \$295,403,205. Lard compounds and substitutes increased 124,723,964 pounds in quantity, and \$90,686,631 in value. The total production of all classes of establishments, of lard, lard compounds and substitutes, glue, oleomargarine, sausage, sausage casings, fertilizers, and soap, is shown in Table 22. In addition to the figures presented in Table 19, edible meat products valued at \$37,125,907 were produced in establishments assigned to other classifications.

TABLE 19.—PRODUCTS—QUANTITY AND VALUE: 1919, 1914, 1909, AND 1904.

PRODUCT.	1919	1914	1909	1904
Total value.....	\$4,246,290,614	\$1,051,095,424	\$1,355,544,431	\$913,914,624
Fresh meat, value.....	\$1,042,401,577	\$709,383,840	\$678,485,088	\$368,102,580
Beef—				
Pounds.....	4,832,001,881	3,058,333,060	4,200,100,008	3,743,065,377
Value.....	\$846,794,386	\$421,200,704	\$327,583,456	\$247,000,724
Veal—				
Pounds.....	422,078,820	104,698,880	252,007,078	154,212,052
Value.....	\$83,912,042	\$26,269,440	\$26,058,880	\$12,856,350
Mutton and lamb—				
Pounds.....	500,360,124	620,232,600	495,457,894	460,754,244
Value.....	\$120,338,355	\$74,075,627	\$50,736,110	\$30,880,455
Pork—				
Pounds.....	2,095,584,557	1,877,099,071	1,547,494,184	1,224,082,910
Value.....	\$532,600,835	\$226,535,734	\$158,714,802	\$91,740,323
Edible offal and other (fresh meat)—				
Pounds.....	506,067,525	280,090,704	257,800,083	124,307,681
Value.....	\$56,120,725	\$17,047,510	\$16,302,708	\$9,570,718
Poultry dressed—				
Pounds.....	7,022,005	10,575,007	121,876,837	(1)
Value.....	\$2,010,334	\$2,928,735	\$15,346,543	\$10,114,605
Cured meat, value.....	\$1,245,949,819	\$408,000,910	\$340,280,451	\$256,945,278
Beef, pickled and other cured—				
Pounds.....	120,960,004	91,571,753	126,477,602	136,860,697
Value.....	\$28,350,802	\$14,395,310	\$12,150,152	\$8,107,952
Pork, pickled and other cured—				
Pounds.....	4,146,117,111	2,020,300,741	2,820,633,003	2,922,901,962
Value.....	\$1,217,589,927	\$303,605,000	\$328,130,299	\$248,837,321
Canned goods:				
Pounds.....	305,955,400	160,798,955	121,876,837	(1)
Value.....	\$96,604,341	\$26,417,624	\$15,346,543	\$10,114,605
Sausage:				
Canned—				
Pounds.....	160,908,986	74,004,380	(2)	(2)
Value.....	\$27,965,155	\$9,845,000	(2)	(2)
All other—				
Pounds.....	643,905,181	435,140,331	452,807,187	324,418,030
Value.....	\$145,622,246	\$58,340,853	\$44,640,912	\$25,050,331

(1) Comparable figures not available.
(2) Not reported separately.

TABLE 19.—PRODUCTS—QUANTITY AND VALUE: 1909, 1914, 1909, AND 1904—Continued.

PRODUCT.	1919	1914	1909	1904
Meat puddings, scrapple, head cheese, etc.:—				
Pounds.....	43,182,235	42,339,926	(3)	(3)
Value.....	\$10,050,494	\$4,488,401	(2)	(2)
Lard:—				
Pounds.....	1,372,800,650	1,119,183,075	1,243,567,604	1,189,080,400
Value.....	\$115,817,212	\$120,414,007	\$134,390,587	\$82,640,964
Lard compounds and substitutes:				
Pounds.....	521,121,014	306,397,050	(2)	(2)
Value.....	\$123,724,008	\$33,037,407	(2)	(2)
Oleo oil:				
Gallons.....	14,910,876	10,501,585	19,662,172	19,454,790
Value.....	\$31,212,708	\$11,925,832	\$16,475,726	\$10,201,911
Other oils:				
Gallons.....	6,720,822	6,715,407	11,343,180	4,863,133
Value.....	\$9,153,123	\$4,000,602	\$9,350,745	\$2,565,931
Tallow:				
Pounds.....	211,188,146	193,615,001	202,844,139	(3)
Value.....	\$28,501,340	\$12,371,200	\$13,499,650	(3)
Oleo stock:				
Pounds.....	29,828,070	15,068,534	(3)	(3)
Value.....	\$7,684,719	\$1,361,550	(3)	(3)
Greases:				
Pounds.....	107,270,780	(2)	(2)	(2)
Value.....	\$13,710,215	(2)	(2)	(2)
Soap stock:				
Pounds.....	39,006,722	70,003,670	(2)	(2)
Value.....	\$2,080,878	\$3,742,747	(2)	(2)
Stearin (lard, oleo, and cottonseed oil):—				
Pounds.....	44,267,107	30,094,004	54,957,997	(3)
Value.....	\$8,900,340	\$2,752,421	\$6,871,935	(2)
Oleomargarine:				
Pounds.....	123,538,860	90,387,881	42,912,466	(3)
Value.....	\$30,777,815	\$5,818,557	\$5,953,931	(3)
Castings:				
Pounds.....	102,281,108	69,453,298	(3)	(3)
Value.....	\$10,779,655	\$9,077,593	(3)	(3)
Hoofs, horns, and horn tips, strips, etc.:—				
Pounds.....	84,040,302	73,125,830	(3)	(3)
Value.....	\$2,180,000	\$944,634	(3)	(3)
Fertilizers and fertilizer materials:				
Tons (2,000 pounds).....	382,132	204,388	302,136	369,074
Value.....	\$18,314,764	\$8,737,009	\$8,726,818	\$7,204,061
Glue:				
Pounds.....	36,630,195	40,844,650	27,936,085	17,526,456
Value.....	\$4,489,774	\$3,088,764	\$1,944,338	\$1,087,719
Hides and pelts:				
Cattle—				
Number.....	10,818,511	7,158,862	9,060,138	8,039,204
Pounds.....	583,972,224	415,800,714	504,603,930	456,443,887
Value.....	\$185,020,300	\$60,058,553	\$68,401,515	\$44,206,007
Calf—				
Number.....	3,322,720	1,404,430	308,401,515	456,443,887
Pounds.....	43,540,073	18,647,701	308,401,515	456,443,887
Value.....	\$24,613,930	\$5,512,610	308,401,515	456,443,887
Sheep and lambs, and goats and kids—				
Number.....	12,188,071	15,016,618	11,724,667	11,344,544
Value.....	\$43,686,165	\$13,024,046	\$11,425,235	\$8,964,643
All other skins—				
Pounds.....	2,214,258	(3)	(3)	(3)
Value.....	\$240,844	\$380,008	(3)	(3)
Hair, hog and cattle:				
Pounds.....	60,343,741	(2)	(2)	(2)
Value.....	\$4,050,000	(2)	(2)	(2)
Wool:				
Pounds.....	20,001,170	20,432,358	21,558,926	16,377,333
Value.....	\$20,071,303	\$7,638,212	\$8,327,095	\$5,223,621
All other products, including custom work, value.	\$50,220,002	\$50,775,137	\$64,490,803	\$55,604,880

(3) Not reported separately.

(4) No cottonseed oil stearin reported in 1914.

(5) Includes a very small amount of gelatine.

(6) Goat and kid skins not included—figures not available. Includes some pelts purchased for wool pulling.

Production of meat in wholesale slaughtering and meat-packing establishments and on farms and ranges.—Table 20 shows the meat production in slaughtering and meat-packing establishments and on farms and ranges, for 1919, by classes and by states.

SLAUGHTERING AND MEAT PACKING.

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TABLE 20.—PRODUCTION OF MEAT IN WHOLESALE SLAUGHTERING AND MEAT-PACKING ESTABLISHMENTS AND ON FARMS AND RANGES, BY CLASSES AND STATES: 1919.

CLASS AND STATE.	Total.	Meat produced in wholesale slaughtering and meat-packing establishments.	Meat and meat products sold on farms and ranges.
	Pounds.	Net pounds.	Pounds.
United States.....	14,110,772,169	13,435,719,137	675,053,032
Beef.....	5,343,508,781	5,118,728,572	224,780,189
Veal.....	457,409,662	457,409,662	
Mutton and lamb and goat and kid meat.....	507,344,778	500,610,006	6,734,772
Pork.....	7,802,445,908	7,358,910,897	443,535,011
Alabama.....	45,274,962	24,911,702	20,363,260
Arizona.....	7,422,319	6,097,908	1,324,411
Arkansas.....	24,010,557	2,275,150	21,741,408
California.....	341,537,968	330,226,932	11,311,036
Colorado.....	154,849,130	147,491,445	7,357,685
Connecticut.....	35,259,714	30,874,785	4,384,929
Delaware.....	9,040,098	8,257,232	1,682,866
District of Columbia.....	30,086	(1)	30,086
Florida.....	35,118,714	19,499,264	15,619,450
Georgia.....	51,454,828	27,201,121	24,253,707
Idaho.....	13,234,539	7,709,104	5,525,375
Illinois.....	3,493,058,465	3,471,965,149	21,093,316
Indiana.....	486,237,500	473,601,503	12,636,087
Iowa.....	827,797,409	821,955,987	5,841,422
Kansas.....	1,483,856,935	1,474,920,241	8,936,694
Kentucky.....	55,593,018	47,003,425	8,589,593
Louisiana.....	8,626,209	(1)	8,626,209
Maine.....	18,256,907	7,212,258	11,044,739
Maryland.....	113,224,326	106,175,839	7,048,487
Massachusetts.....	314,155,074	309,646,572	4,508,502
Michigan.....	241,394,106	203,089,319	38,304,787
Minnesota.....	575,955,907	558,480,137	17,475,770
Mississippi.....	18,070,313	(1)	18,070,313
Missouri.....	954,933,881	936,830,919	18,102,962
Montana.....	37,959,260	27,402,201	10,556,969
Nebraska.....	1,108,783,272	1,105,030,250	3,753,022
Nevada.....	10,394,149	9,567,324	826,825
New Hampshire.....	3,988,656		3,988,656
New Jersey.....	235,212,892	229,781,654	5,431,238
New Mexico.....	2,518,945		2,518,945
New York.....	774,264,466	724,511,392	49,753,074
North Carolina.....	20,636,167	2,050,732	27,585,435
North Dakota.....	6,522,184	(1)	6,522,184
Ohio.....	642,751,100	613,830,471	28,920,719
Oklahoma.....	9,214,018	(1)	9,214,018
Oregon.....	66,857,107	52,337,351	14,519,756
Pennsylvania.....	441,233,901	375,609,232	65,624,669
Rhode Island.....	17,394,965	16,878,527	486,438
South Carolina.....	5,947,690	(1)	5,947,690
South Dakota.....	3,066,014	(1)	3,066,014
Tennessee.....	42,719,364	19,933,804	22,785,560
Texas.....	406,276,816	378,995,231	27,281,585
Utah.....	45,500,424	41,256,624	4,243,800
Vermont.....	7,949,740	(1)	7,949,740
Virginia.....	45,455,294	24,362,303	21,092,991
Washington.....	141,515,645	121,763,315	19,752,330
West Virginia.....	72,384,950	61,886,639	10,498,311
Wisconsin.....	369,668,920	327,827,747	25,836,182
Wyoming.....	2,123,798	(1)	2,123,798
All other states.....	287,268,188	287,268,188	

Meat production, by classes.—Table 21 shows the production of fresh meat in the slaughtering and meat-packing industry, by classes.

TABLE 21.—MEAT PRODUCTION, BY CLASSES: 1919 AND 1914.

KIND.	QUANTITY. (POUNDS).		PER CENT OF TOTAL.	
	1919	1914	1919	1914
Total ¹	12,641,052,717	9,676,912,496	100.0	100.0
Pork, fresh and cured.....	6,242,001,668	4,806,408,812	49.4	49.7
Beef, fresh and cured.....	4,962,021,885	3,749,905,413	39.3	38.8
Mutton and lamb, fresh.....	500,860,124	629,232,690	4.0	6.5
Veal, fresh.....	422,978,820	194,698,880	3.3	2.0
Edible offal and all other, fresh..	513,690,220	296,666,701	4.1	3.1

¹ Sausage and canned meat not included.

Subsidiary products.—Many establishments in the slaughtering and meat-packing industry make large quantities of auxiliary products, some of which form the chief product, and others minor products, of other industries within the scope of the census, and the value for eight selected classes is presented in Table 22.

TABLE 22.—SUBSIDIARY PRODUCTS: 1919.

PRODUCT.	Total value of products.	VALUE OF PRODUCTS IN ESTABLISHMENTS—		
		Engaged primarily in manufac- turing the product specified. ¹	In the slaughtering and meat- packing industry.	Assigned to other classifi- cations.
Fertilizers.....	\$306,523,898	\$281,143,587	\$18,314,754	\$7,065,558
Glue.....	37,663,635	32,134,067	4,489,774	1,039,794
Lard.....	420,077,408	219,660	415,817,212	4,040,536
Lard compounds and substitutes.....	320,888,994	121,249,267	123,724,098	75,915,629
Oleomargarine.....	121,784,125	79,315,580	36,777,815	5,190,730
Sausage ²	221,208,076	47,500,686	173,587,401	119,939
Sausage casings.....	26,355,218	9,109,406	16,779,655	466,157
Soap.....	337,879,913	316,740,115	(4)	\$21,139,798

¹ Includes in some cases products other than those specified.

² Includes a large amount of fertilizer materials.

³ Includes canned sausage.

⁴ Figures can not be shown without disclosing individual operations.

⁵ Includes that manufactured in slaughtering and meat-packing establishments.

Products, by states.—The quantity and value, by states, of certain leading products of the industry in 1919, and the quantity in 1914 and 1909 are presented in Table 23.

Included in "All other states" to avoid disclosing individual operations.

TABLE 23.—PRODUCTS, BY STATES: 1919, 1914, AND 1909.

PRODUCT AND STATE.	1919		1914	1909	PRODUCT AND STATE.	1919		1914	1909
	Value.	Quantity.	Quantity.	Quantity.		Value.	Quantity.	Quantity.	Quantity.
Beef, fresh, total.....					Pork pickled and other cured—Con.				
	\$846,704,380	4,832,001,881	3,058,333,000	4,209,190,608	Ohio.....	\$52,016,363	178,055,163	121,188,242	121,988,353
California.....	32,873,270	192,753,812	178,314,052	186,315,779	Pennsylvania.....	22,250,787	60,309,393	83,007,657	78,569,883
Illinois.....	247,315,420	1,304,421,805	1,000,942,830	1,142,920,916	Texas.....	17,478,772	57,457,320	39,477,022	71,219,957
Indiana.....	18,514,791	101,505,575	91,435,251	119,685,578	Washington.....	6,544,903	21,311,428	22,352,555	17,115,669
Iowa.....	33,190,688	189,351,603	118,507,051	123,780,302	Wisconsin.....	47,901,162	151,041,940	99,776,805	106,390,708
Kansas.....	102,543,726	506,203,758	474,202,677	683,615,803	All other states.....	58,237,302	203,204,182	153,857,662	86,966,743
Massachusetts.....	15,831,153	109,230,489	76,092,124	59,270,609	Sausage, total.....				
Minnesota.....	44,197,067	282,205,654	183,047,055	273,808,501		145,022,246	643,905,181	435,146,931	452,867,187
Missouri.....	70,947,351	462,931,812	272,491,272	354,353,410	California.....	1,519,019	7,678,049	8,604,082	6,195,723
Nebraska.....	15,520,362	60,290,250	24,107,001	35,415,243	Illinois.....	42,431,818	180,615,145	112,639,102	113,631,971
New Jersey.....	74,497,463	368,840,102	402,728,421	429,981,714	Indiana.....	3,655,170	17,602,551	15,895,177	15,764,885
New York.....	27,876,643	164,018,054	118,627,111	119,597,096	Iowa.....	4,347,109	21,252,003	17,820,025	15,941,624
Ohio.....	27,063,601	127,315,710	130,750,804	136,838,202	Kansas.....	7,720,842	39,325,072	17,706,704	31,200,707
Pennsylvania.....	32,708,834	223,076,778	206,037,023	208,080,588	Maryland.....	1,944,920	8,005,159	10,666,851	11,718,817
Texas.....	94,023,030	570,008,480	378,400,498	332,616,348	Massachusetts.....	0,212,114	24,481,233	27,854,557	23,074,968
All other states.....					Michigan.....	2,582,906	10,758,438	8,400,965	8,174,244
Veal, fresh, total.....					Minnesota.....	5,241,525	24,657,904	8,845,380	7,632,686
	83,912,042	422,078,820	194,008,880	252,007,078	Missouri.....	0,630,306	35,010,739	16,183,674	12,022,911
California.....	2,230,552	11,741,785	4,003,441	12,077,330	Nebraska.....	0,406,611	28,457,996	12,267,326	27,535,144
Illinois.....	15,327,876	77,851,254	41,888,494	51,359,103	New Jersey.....	5,386,351	20,668,704	13,525,180	15,344,144
Indiana.....	1,290,709	6,004,165	5,345,353	5,605,181	New York.....	0,058,425	38,830,830	41,572,857	39,582,116
Kansas.....	7,904,733	45,030,726	14,797,191	25,731,826	Ohio.....	7,424,495	34,395,032	31,047,288	24,240,181
Massachusetts.....	1,930,160	13,077,164	7,906,030	8,317,482	Pennsylvania.....	12,763,130	51,474,642	40,060,573	42,669,651
Michigan.....	1,808,048	7,215,770	2,800,785	2,603,074	Texas.....	5,110,508	25,270,930	8,847,610	12,916,425
Minnesota.....	4,620,716	25,542,980	0,987,300	5,705,636	Wisconsin.....	3,070,076	10,178,905	11,068,878	10,737,835
Missouri.....	2,980,052	16,819,260	4,402,875	8,331,469	All other states.....	12,310,707	59,074,950	30,632,702	28,998,144
Nebraska.....	2,520,172	17,304,858	3,410,343	7,006,474	Lard, total.....				
New Jersey.....	2,641,792	9,203,800	0,045,803	8,702,274		415,817,212	1,372,809,656	1,110,188,675	1,243,567,604
New York.....	14,497,250	55,477,838	37,402,344	36,610,300	Illinois.....	140,123,010	407,188,408	335,695,330	403,177,806
Ohio.....	4,708,462	20,548,843	11,157,758	12,921,896	Indiana.....	15,241,920	51,452,324	46,374,440	49,901,294
Pennsylvania.....	3,588,805	13,641,334	0,007,655	13,405,455	Iowa.....	31,003,035	103,502,429	59,038,166	71,084,771
Texas.....	6,595,105	43,726,133	19,089,516	20,308,080	Kansas.....	33,190,687	108,754,230	148,408,222	148,408,222
Wisconsin.....	4,593,413	21,101,904	8,010,982	0,615,384	Massachusetts.....	23,374,020	72,191,184	66,849,628	60,840,711
All other states.....	7,178,500	37,940,998	11,193,254	14,032,612	Michigan.....	2,078,212	26,271,409	15,222,462	18,351,255
Mutton, fresh, total.....					Minnesota.....	13,049,810	49,009,701	40,311,585	21,429,517
	120,338,355	500,300,124	620,232,600	495,457,804	Missouri.....	27,744,105	92,064,888	72,410,760	48,535,133
California.....	10,319,275	45,057,902	50,522,015	44,220,813	Nebraska.....	20,050,520	84,303,218	66,505,695	89,851,080
Illinois.....	41,973,511	102,303,710	197,047,411	157,615,125	New Jersey.....	8,925,431	28,190,520	15,222,462	49,017,209
Iowa.....	2,141,308	9,820,920	12,530,457	1,848,011	New York.....	13,156,805	44,018,065	40,496,413	47,042,820
Kansas.....	0,424,313	43,384,553	58,814,735	43,884,755	Ohio.....	18,053,472	64,513,888	67,135,365	58,518,712
Massachusetts.....	1,088,818	8,091,291	14,715,201	13,340,470	Pennsylvania.....	10,093,049	40,055,520	47,191,604	36,121,023
Michigan.....	1,707,050	6,757,427	4,782,158	3,609,804	Texas.....	4,440,355	18,300,667	16,157,440	10,722,123
Minnesota.....	1,494,971	8,518,336	8,511,031	5,055,124	Washington.....	2,198,685	7,679,580	22,914,041	9,050,799
Missouri.....	6,090,276	27,183,158	30,382,850	21,890,082	Wisconsin.....	9,600,127	31,161,615	37,014,963	19,173,135
Nebraska.....	12,941,190	59,504,428	72,208,015	45,101,857	All other states.....	25,223,390	80,574,917	74,776,286	60,041,065
New Jersey.....	13,873,149	14,294,709	15,600,648	10,228,007	Hides, cattle and calf, total.....				
New York.....	14,711,521	54,534,743	73,819,403	80,774,979		209,034,236	627,521,297	434,538,475	504,563,900
Ohio.....	1,877,852	8,583,313	9,245,870	7,738,777	California.....	6,701,204	24,118,281	19,754,487	21,134,504
Pennsylvania.....	3,007,805	10,840,038	10,142,452	17,310,377	Illinois.....	55,539,018	101,677,467	111,620,099	135,617,679
Texas.....	1,327,333	6,626,305	11,170,234	5,840,112	Indiana.....	4,755,845	13,088,624	11,200,066	14,209,481
Washington.....	1,828,084	9,427,320	15,187,952	13,893,776	Iowa.....	7,391,336	24,087,425	12,390,379	14,727,015
All other states.....	5,570,030	26,426,118	29,033,352	20,080,775	Kansas.....	27,359,708	83,507,564	55,804,920	70,719,102
Pork, fresh, total.....					Massachusetts.....	2,477,175	6,170,291	5,458,472	4,672,435
	532,600,835	2,005,884,557	1,877,000,071	1,547,404,184	Minnesota.....	7,088,900	18,473,528	10,027,859	7,240,777
California.....	8,452,760	33,010,270	40,125,008	32,204,880	Missouri.....	12,326,707	37,017,531	22,446,667	32,406,006
Illinois.....	112,403,050	402,066,806	374,313,938	303,890,802	Nebraska.....	18,817,641	59,013,792	29,510,483	36,975,521
Indiana.....	26,257,082	98,772,828	93,434,549	79,377,563	New York.....	14,703,820	41,448,516	45,355,486	49,577,570
Iowa.....	20,812,210	116,334,618	103,401,540	100,113,209	Ohio.....	8,190,154	24,730,352	17,820,024	16,900,033
Kansas.....	33,291,363	137,022,770	110,002,875	150,199,802	Pennsylvania.....	0,058,784	17,752,416	10,922,098	19,170,659
Massachusetts.....	17,091,609	63,194,030	80,077,005	60,408,331	Texas.....	11,781,302	32,077,200	20,457,278	27,478,391
Michigan.....	19,111,083	74,392,478	30,382,016	10,470,507	Washington.....	2,445,880	8,169,292	5,435,323	7,326,634
Minnesota.....	27,820,010	120,359,452	110,312,690	45,709,115	Wisconsin.....	2,276,271	7,391,080	4,939,085	4,615,282
Missouri.....	39,001,850	150,569,040	104,944,862	138,074,435	All other states.....	21,713,585	66,609,032	30,625,964	29,795,646
Nebraska.....	27,475,271	113,202,633	97,872,530	98,834,001	Sheep pelts, total.....				
New Jersey.....	24,240,210	90,203,835	106,261,343	90,505,328		33,639,090	12,164,020	15,907,899	11,691,308
New York.....	30,757,518	111,497,316	124,190,102	123,540,064	California.....	3,008,331	1,083,297	1,406,831	1,070,801
Ohio.....	39,853,273	157,378,994	101,775,391	60,320,259	Illinois.....	9,885,209	3,300,234	4,880,057	8,619,577
Pennsylvania.....	24,441,891	81,045,097	91,781,688	50,210,202	Iowa.....	7,855,073	203,710	307,048	49,534
Wisconsin.....	13,776,121	52,293,286	41,073,293	48,204,738	Kansas.....	3,328,507	1,190,374	1,559,141	1,117,653
All other states.....	58,870,716	227,311,481	200,280,372	136,304,202	Massachusetts.....	650,033	217,140	370,835	341,956
Pork pickled and other cured, total.....					Michigan.....	109,420	102,008	125,534	88,285
	1,217,589,927	4,146,117,111	2,920,300,741	2,820,633,003	Minnesota.....	492,592	208,982	106,086	132,574
California.....	7,867,223	21,270,818	24,825,588	13,964,304	Missouri.....	2,168,383	742,144	776,765	281,627
Colorado.....	11,378,623	36,837,592	23,106,330	20,530,615	Nebraska.....	4,815,204	1,675,054	1,796,085	1,127,937
Illinois.....	346,808,843	1,181,812,053	854,815,104	720,210,994	New Jersey.....	1,015,362	416,847	426,063	426,063
Indiana.....	49,810,459	103,511,706	124,924,957	148,474,072	New York.....	3,017,090	1,377,693	1,902,520	1,913,895
Iowa.....	90,821,231	335,237,381	233,138,198	210,100,133	Ohio.....	573,312	250,740	300,259	232,775
Kansas.....	132,318,305	442,962,131	209,854,018	364,998,556	Oregon.....	101,073	97,697	141,892	92,038
Maryland.....	11,340,198	33,222,353	30,150,127	28,231,007	Pennsylvania.....	610,414	228,030	436,880	444,480
Massachusetts.....	41,084,061	137,117,461	110,834,341	122,089,181	Texas.....	304,155	150,768	233,471	77,861
Michigan.....	13,762,791	53,300,220	43,017,109	36,145,040	Utah.....	248,079	70,789	115,501	47,763
Minnesota.....	58,548,256	236,784,079	115,033,007	82,480,987	Washington.....	578,270	234,564	362,854	290,236
Missouri.....	90,046,301	313,892,006	200,922,094	222,224,021	All other states.....	1,346,952	476,544	428,577	338,630
Nebraska.....	90,917,158	314,440,569	202,502,434	184,213,423					
New Jersey.....	18,454,074	58,214,045	33,804,116	40,600,550					
New York.....	42,413,455	140,007,402	118,537,294	134,425,208					

GENERAL TABLES.

Comparative summary, by states.—Table 24 presents, for 1919, 1914, and 1909, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products, for the slaughtering and meat-packing industry.

Detailed statement, by states.—Table 25 presents, for 1919, statistics in detail for the industry as a whole and for each state for which figures can be shown without disclosing the operations of individual establishments.

TABLE 24.—COMPARATIVE SUMMARY, BY STATES: 1919, 1914, AND 1909.

STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Pri- mary horse- power.	Wages.	Cost of mate- rials.	Value of prod- ucts.	STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Pri- mary horse- power.	Wages.	Cost of mate- rials.	Value of prod- ucts.
					Expressed in thousands.								Expressed in thousands.		
United States.....	1919	1,304	160,096	359,212	\$209,489	\$3,782,930	\$4,246,291	Missouri.....	1919	49	8,290	19,966	\$10,378	\$228,009	\$246,610
	1914	1,279	98,832	253,066	82,136	1,441,663	1,651,965		1914	31	5,152	15,378	3,423	84,335	91,608
	1909	1,221	87,813	202,432	50,404	1,191,438	1,355,544		1909	37	4,649	11,620	2,649	72,005	79,326
Alabama.....	1919	9	549	1,548	482	4,889	6,125	Montana.....	1919	12	210	1,714	274	5,824	6,859
	1914	7	122	897	48	592	703		1914	8	96	299	101	1,717	2,120
	1909	4	47	795	25	198	320		1909	9	105	316	92	1,781	2,054
Arkansas.....	1919	7	59	337	47	975	1,218	Nebraska.....	1919	16	10,122	20,367	13,914	271,462	303,849
	1914	3	6	.....	3	111	123		1914	10	5,713	15,486	3,697	94,173	104,503
California.....	1919	91	3,405	13,325	4,158	77,416	92,554		1909	15	6,009	11,863	3,369	78,346	92,283
	1914	81	2,172	7,018	1,770	40,931	49,500	Nevada.....	1919	4	118	702	123	2,723	2,939
	1909	74	1,601	3,762	1,276	28,224	33,953		1914	4	91	407	98	1,604	1,833
Colorado.....	1919	21	1,848	4,036	2,149	35,785	41,008	New Jersey.....	1919	46	3,566	9,560	4,647	100,404	110,221
	1914	16	777	2,467	480	10,687	12,726		1914	56	2,033	6,597	1,472	35,310	38,809
	1909	13	659	2,450	389	8,295	9,657		1909	61	1,707	3,134	1,213	32,824	36,446
Delaware.....	1919	15	117	385	128	2,859	3,285	New York.....	1919	130	6,646	18,799	8,968	230,049	256,038
	1914	19	125	504	82	1,499	1,711		1914	184	6,245	16,189	4,610	127,282	144,236
	1909	9	82	212	53	1,231	1,372		1909	150	5,847	12,897	4,192	108,669	125,073
Florida.....	1919	8	348	918	278	4,816	5,316	Ohio.....	1919	141	5,336	19,926	6,689	150,598	170,338
	1914	11	54	144	32	789	925		1914	152	3,480	12,356	1,381	58,297	64,960
	1909	11	32	.....	20	392	467		1909	137	2,974	9,431	1,780	43,640	49,795
Idaho.....	1919	12	89	474	117	1,441	1,791	Oregon.....	1919	21	772	3,048	958	13,749	15,868
	1914	9	81	227	79	714	981		1914	14	442	1,344	309	6,202	7,487
	1909	4	39	115	33	451	532		1909	14	366	752	280	5,015	5,880
Illinois.....	1919	72	54,179	80,636	79,983	1,142,950	1,284,103	Pennsylvania.....	1919	176	4,438	15,325	5,346	107,281	122,862
	1914	70	31,315	60,598	19,280	408,895	485,362		1914	146	3,616	11,883	2,492	57,605	65,191
	1909	75	20,344	55,061	14,356	341,348	380,366		1909	155	2,940	11,741	1,940	44,247	51,107
Indiana.....	1919	57	5,691	11,395	5,470	121,690	134,029	Rhode Island.....	1919	22	264	555	257	5,968	6,807
	1914	65	4,481	9,844	2,497	46,262	51,022		1914	10	190	336	105	4,158	4,497
	1909	58	4,416	5,952	2,156	41,939	47,230		1909	10	180	303	97	2,644	2,877
Iowa.....	1919	21	7,134	15,527	8,738	204,421	226,362	Tennessee.....	1919	16	331	837	279	4,965	5,706
	1914	28	4,413	10,183	2,729	67,774	74,172		1914	18	199	1,213	87	1,561	1,889
	1909	27	4,125	8,255	2,178	53,034	58,913		1909	22	272	1,186	134	1,579	2,011
Kansas.....	1919	28	17,805	34,663	20,863	387,859	427,663	Texas.....	1919	19	5,072	14,055	5,757	106,752	125,192
	1914	26	9,884	24,376	5,908	135,952	151,647		1914	18	3,486	12,276	2,069	44,424	52,945
	1909	35	10,591	24,560	5,862	147,646	165,361		1909	14	3,639	11,330	1,902	37,410	42,530
Kentucky.....	1919	26	450	1,441	437	10,659	12,954	Utah.....	1919	11	446	1,104	470	10,032	11,124
	1914	28	223	834	104	3,671	4,109		1914	14	138	349	115	2,672	3,011
	1909	37	354	853	251	5,746	6,568		1909	12	99	572	77	1,327	1,690
Louisiana.....	1919	3	248	1,391	223	446	849	Virginia.....	1919	25	502	3,073	456	6,228	7,589
	1914	4	219	1,057	95	57	189		1914	21	396	3,084	212	3,725	4,362
Maine.....	1919	17	123	325	133	1,647	2,043		1909	24	342	1,491	118	4,057	4,601
	1914	21	115	139	72	1,037	1,247	Washington.....	1919	29	1,222	3,821	1,526	29,124	34,389
	1909	14	90	167	48	675	815		1914	11	864	2,149	691	15,901	18,444
Maryland.....	1919	47	1,563	5,076	1,973	33,520	41,439		1909	14	828	1,883	575	13,760	15,654
	1914	46	1,221	3,878	749	13,767	16,607	West Virginia.....	1919	10	639	3,076	716	16,798	19,044
	1909	43	999	2,877	584	11,283	13,394		1914	7	214	1,557	140	4,447	4,788
Massachusetts.....	1919	40	4,307	8,050	5,391	101,235	110,238		1909	6	167	1,321	123	3,385	3,764
	1914	46	3,233	5,772	1,894	45,428	51,725	Wisconsin.....	1919	21	3,218	7,712	3,706	89,904	102,182
	1909	45	3,055	4,200	1,666	37,484	42,531		1914	22	2,011	3,759	1,227	28,538	32,181
Michigan.....	1919	24	1,712	4,746	2,277	49,774	59,585		1909	24	1,681	2,713	919	22,249	25,702
	1914	17	1,112	3,056	770	18,814	20,666	All other states.....	1919	45	4,946	14,076	5,729	92,172	101,751
	1909	19	795	3,080	423	11,253	12,842		1914	37	2,348	6,221	1,450	31,141	38,130
Minnesota.....	1919	13	5,231	11,223	6,449	128,506	146,361		1909	27	877	2,412	510	7,258	8,821
	1914	19	2,565	5,189	1,799	41,591	47,536								
	1909	22	1,902	4,528	1,114	22,043	25,609								

MANUFACTURES.

TABLE 25.—DETAILED STATEMENT,

PERSONS ENGAGED IN THE INDUSTRY.										WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.						
STATE.	Number of establishments.	Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.				Total.	16 and over.		Under 16.		Capital.
					Male.	Female.	Average number.	Number, 15th day of—		Male.		Female.	Male.	Female.		
								Maximum month.	Minimum month.							
United States.....	1,304	197,392	1,071	5,608	23,390	6,267	160,990	Ja 187,609	Ap 150,806	163,582	147,127	16,244	184	27	Dollars. 1,176,483,643	
Alabama.....	9	661	1	49	48	14	549	Ja 625	So 487	553	485	68	.....	.....	1,876,429
Arizona.....	4	70	3	6	3	1	57	De 62	Fe 52	62	62	.....	.....	.....	326,382
Arkansas.....	7	83	5	8	10	1	59	So 63	De 55	62	59	3	.....	.....	291,901
California.....	91	4,518	75	131	754	153	3,405	Mh 3,545	Jy 3,271	3,547	3,334	209	4	.....	30,743,107
Colorado.....	21	2,360	17	45	359	91	1,848	Ja 1,991	Jy 1,752	1,950	1,837	111	2	.....	8,984,679
Delaware.....	15	169	15	15	12	10	117	De 139	My 99	140	137	3	.....	.....	784,900
District of Columbia.....	6	272	4	12	42	11	203	De 226	Jy 188	226	216	10	.....	.....	1,847,080
Florida.....	8	425	8	13	44	12	348	Ja 489	So 257	381	318	63	.....	.....	1,675,565
Georgia.....	7	1,060	2	32	118	29	869	De 1,001	Ja 715	982	850	123	.....	.....	4,046,236
Idaho.....	12	126	8	15	10	4	89	De 100	Mh 75	106	105	.....	1	.....	1,160,418
Illinois.....	72	62,990	31	1,614	5,541	1,625	54,179	Ja 65,114	My 50,048	53,973	47,248	6,703	17	5	430,375,561	
Indiana.....	57	6,617	50	132	617	118	5,691	Ja 6,664	Au 5,291	5,550	5,045	446	47	12	28,564,709	
Iowa.....	21	8,965	11	145	1,355	320	7,134	Ja 8,170	So 6,032	8,051	7,210	793	15	3	56,813,152	
Kansas.....	28	22,621	19	684	3,394	719	17,805	Ja 21,617	Ap 15,656	17,323	16,634	1,688	1	.....	96,067,119
Kentucky.....	26	567	20	33	53	2	450	De 402	So 439	465	447	8	.....	.....	1,080,987
Louisiana.....	3	276	.....	13	12	3	248	Ja 299	Ap 228	258	250	2	.....	.....	1,034,884
Maine.....	17	156	17	8	7	1	123	De 134	Mh 116	133	128	5	.....	.....	903,214
Maryland.....	47	2,000	48	86	246	57	1,563	De 1,735	Fe 1,462	1,740	1,528	204	8	.....	12,759,470
Massachusetts.....	40	4,926	33	87	391	108	4,307	Ja 5,354	No 1,501	3,981	3,868	105	8	.....	42,216,147
Michigan.....	24	2,083	18	73	193	87	1,712	De 2,073	My 1,465	2,073	1,773	207	2	1	16,341,187	
Minnesota.....	13	6,636	11	249	855	290	5,231	De 6,018	My 4,855	5,599	5,147	452	.....	.....	24,731,277
Missouri.....	49	10,281	28	386	1,249	328	8,290	Ja 9,805	De 7,654	8,126	7,500	620	6	.....	98,958,685
Montana.....	12	365	3	26	47	10	210	Jy 222	De 193	212	193	14	2	.....	3,371,027
Nebraska.....	16	12,093	14	125	2,197	535	10,122	Ja 11,158	De 9,543	10,179	9,190	979	9	1	57,763,347	
Nevada.....	4	141	.....	5	12	6	118	De 130	De 106	105	103	2	.....	.....	1,471,293
New Jersey.....	46	4,509	32	114	594	203	3,566	Ja 3,914	No 2,599	3,603	3,367	295	1	.....	20,674,400
New York.....	130	8,795	120	266	1,393	370	6,046	Mh 6,901	No 5,784	6,951	6,700	251	.....	.....	69,314,547
North Carolina.....	4	64	4	0	3	3	45	Fe 61	Ja 39	43	41	2	.....	.....	296,812
Ohio.....	141	6,607	136	244	694	197	5,386	De 5,984	My 4,995	5,820	5,350	469	1	.....	32,346,461
Oregon.....	21	1,035	10	29	174	50	772	Ja 927	Jy 698	721	629	90	2	.....	5,255,407
Pennsylvania.....	176	5,752	168	239	710	197	4,438	De 4,890	Ap 4,237	4,851	4,406	434	8	3	27,832,571	
Rhode Island.....	22	331	26	13	19	9	264	De 375	My 165	268	222	46	.....	.....	2,158,979
Tennessee.....	16	430	17	33	37	12	331	De 430	Ap 279	430	328	64	38	.....	1,600,148
Texas.....	19	6,558	2	236	1,012	236	5,072	Ja 6,045	Mh 4,460	5,204	4,594	610	.....	.....	21,325,101
Utah.....	11	603	11	9	110	27	446	Ja 554	So 399	431	392	39	.....	.....	3,976,407
Virginia.....	25	629	24	43	45	15	502	De 588	No 440	599	549	50	.....	.....	3,156,150
Washington.....	29	1,489	17	47	132	71	1,222	De 1,371	Ap 1,102	1,355	1,244	111	.....	.....	12,759,109
West Virginia.....	10	808	4	48	88	29	630	De 785	So 582	785	715	70	.....	.....	4,295,862
Wisconsin.....	21	4,946	23	266	401	138	3,218	Ja 4,197	So 2,093	2,801	2,293	494	12	2	21,646,835	
All other states.....	24	4,445	18	80	409	166	3,772	.....	.....	3,893	3,582	311	.....	.....	21,982,108

¹ Includes water wheels and turbines (irrespective of ownership of water supply), and water motors (operated by water from city mains).

² Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft-belt or transmitted power from neighboring power plants).

SLAUGHTERING AND MEAT PACKING.

19

BY STATES: 1919.

EXPENSES.										POWER.									
Salaries and wages.			For contract work.	Rent and taxes.		For materials.		Value of products.	Value added by manufacture.	Primary horsepower.							Electric horsepower generated in establishments reporting.		
Officials.	Clerks, etc.	Wage earners.		Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.			Total.	Owned.	Owned.	Owned.	Owned.	Owned.	Owned.			
Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
19,081,909	40,603,456	209,489,263	1,078,648	2,054,729	17,600,117	3,758,839,744	24,089,789	4,246,290,614	463,361,081	359,212	210,348	27,669	2,018	574	118,603	95,635	1		
102,414	73,652	481,839	1,030	4,882	17,840	4,801,490	87,057	6,125,251	1,236,704	1,548	1,035	.....	.....	.....	513	273	2		
27,400	7,200	72,484	.....	2,220	13,510	1,169,184	10,329	1,405,808	226,295	88	.....	.....	.....	.....	87	.....	3		
19,050	26,735	47,298	18,000	7,159	5,098	966,579	8,840	1,218,191	242,772	337	.....	.....	.....	.....	312	.....	4		
514,953	1,405,095	4,158,193	515,394	104,603	325,957	76,877,625	538,696	92,554,164	15,137,843	13,325	2,031	.....	.....	.....	11,190	523	5		
163,760	604,570	2,148,745	158,414	8,465	103,280	35,501,638	283,726	41,007,531	5,222,167	4,036	3,147	304	12	.....	573	2,340	6		
43,162	20,564	127,997	9,817	8,850	44,708	2,845,929	13,326	3,285,336	426,081	385	288	.....	.....	.....	97	.....	7		
59,980	69,996	245,725	.....	8,432	19,188	4,165,209	62,630	5,012,294	784,455	917	270	145	.....	.....	502	.....	8		
32,831	77,244	278,499	.....	20,541	13,441	4,746,323	69,907	5,316,186	499,956	918	292	.....	.....	.....	626	.....	9		
103,786	186,835	667,369	15,450	19,492	11,059	6,635,328	128,547	8,142,161	1,378,283	3,291	2,835	.....	.....	.....	456	491	10		
26,360	17,387	117,321	.....	4,810	7,143	1,417,038	24,157	1,791,175	349,980	474	20	.....	.....	.....	443	.....	11		
5,302,107	9,852,654	79,982,535	17,275	201,266	4,094,287	1,136,106,748	6,843,744	1,284,103,016	141,152,524	86,636	51,459	10,193	.....	.....	24,984	33,242	12		
590,882	923,409	5,470,261	8,077	25,208	647,568	121,003,378	686,316	134,028,726	12,339,032	11,395	6,676	2,038	13	.....	2,668	3,780	13		
628,962	2,305,072	8,738,195	211,904	212,158	1,380,394	203,215,931	1,204,755	226,361,698	21,941,012	15,527	10,545	840	.....	.....	4,142	3,284	14		
1,726,093	5,519,005	20,862,627	74,008	7,158	1,223,645	385,173,208	2,685,503	427,663,145	39,804,434	34,663	19,661	2,955	5	.....	12,042	10,955	15		
93,094	86,133	437,072	4,528	3,850	58,405	10,580,189	78,715	12,953,986	2,295,082	1,441	1,217	.....	.....	.....	224	524	16		
25,739	16,636	223,095	.....	300	20,675	375,968	69,916	849,326	403,442	1,391	1,070	190	16	.....	115	.....	17		
32,525	11,226	132,943	1,494	8,540	6,927	1,634,788	12,380	2,042,660	395,492	325	45	.....	.....	.....	276	.....	18		
378,163	456,332	1,972,514	2,376	21,339	287,579	33,171,745	348,488	41,439,448	7,919,215	5,076	3,140	450	.....	.....	1,486	1,159	19		
350,184	686,928	5,391,004	109,110	55,756	542,061	100,653,710	581,630	110,238,038	9,002,698	8,050	3,345	410	14	.....	4,281	268	20		
313,008	348,823	2,277,400	15	4,803	176,749	49,581,119	193,229	59,584,740	9,810,392	4,746	2,735	500	.....	.....	1,511	1,274	21		
624,578	1,502,088	6,448,530	44,768	11,821	476,029	127,856,193	649,784	146,361,046	17,855,069	11,223	5,187	826	.....	.....	4,675	819	22		
1,086,071	2,257,049	10,377,515	45,583	24,785	251,955	226,464,734	1,544,642	246,610,195	18,600,819	19,966	15,109	2,096	92	.....	2,669	5,668	23		
71,234	121,835	273,055	.....	7,470	30,784	5,774,590	49,554	6,858,703	1,034,559	1,714	330	.....	.....	.....	1,369	.....	24		
634,019	3,878,525	13,914,188	148,081	4,725	1,546,581	269,894,945	1,596,899	303,848,903	32,387,059	20,367	11,797	1,060	10	.....	7,500	4,523	25		
22,815	81,717	122,837	.....	1,177	6,344	2,684,881	38,277	2,988,628	215,470	702	140	.....	.....	.....	562	.....	26		
425,336	1,040,515	4,647,499	250,962	115,052	301,670	99,802,566	601,605	110,221,328	9,817,067	9,560	6,721	1,347	4	.....	1,488	2,552	27		
1,371,889	2,459,887	8,968,272	47,629	438,022	618,703	228,842,265	1,206,249	256,038,303	25,989,879	18,799	10,870	783	235	.....	6,911	3,881	28		
23,570	10,174	34,667	.....	.....	2,276	309,150	13,482	456,974	134,342	524	425	.....	.....	.....	84	140	29		
977,566	1,234,204	6,689,371	42,347	76,861	926,334	149,656,670	941,769	170,337,892	19,739,453	19,926	10,760	356	591	.....	8,219	3,220	30		
112,047	314,206	957,074	16,180	24,461	40,760	13,625,004	124,329	15,868,169	2,118,836	3,048	435	100	.....	.....	2,513	.....	31		
1,103,247	1,384,973	5,346,125	186,478	102,291	695,452	106,508,357	772,659	122,982,240	15,581,224	15,325	11,863	245	480	5	2,732	4,882	32		
36,372	32,674	256,806	500	3,260	38,536	5,948,934	19,023	6,807,195	839,238	555	119	.....	.....	.....	434	27	33		
80,237	62,133	279,000	44	6,634	29,243	4,896,685	68,716	5,705,845	740,444	837	545	.....	.....	.....	292	12	34		
668,195	1,682,504	5,757,314	41,581	236,976	522,966	105,874,192	877,425	125,191,873	18,440,256	14,055	9,657	.....	.....	.....	4,398	2,888	35		
36,846	195,021	470,341	.....	1,440	108,485	9,981,802	50,261	11,124,341	1,092,278	1,104	25	.....	.....	.....	1,079	15	36		
86,175	67,338	455,791	.....	23,697	38,794	6,139,374	88,193	7,589,320	1,361,753	3,073	2,162	.....	.....	.....	903	424	37		
195,436	229,988	1,525,702	2,397	7,306	118,354	28,972,511	151,941	34,388,584	5,264,132	3,821	813	.....	.....	.....	2,991	.....	38		
141,494	136,896	716,435	5,200	13,366	157,530	16,721,412	77,079	19,043,629	2,245,138	3,076	930	1,766	18	.....	137	2,461	39		
681,313	557,091	3,705,908	.....	32,273	2,197,267	89,401,380	502,559	102,182,171	12,278,232	7,712	5,324	1,015	.....	.....	1,373	1,130	40		
218,986	709,032	4,708,167	.....	101,411	497,534	78,890,972	733,362	86,732,305	7,057,971	9,256	7,325	50	135	.....	1,746	4,872	41		

* Same number reported for one or more other months.

* All other states embrace: Connecticut, 5 establishments; Mississippi, 1; North Dakota, 1; Oklahoma, 5; South Carolina, 4; South Dakota, 4; Vermont, 2; and Wyoming, 2.

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

FOURTEENTH CENSUS OF THE UNITED STATES
MANUFACTURES: 1919

SMELTING AND REFINING

Prepared under the supervision of EUGENE F. HARTLEY, Chief Statistician for Manufactures

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or for which products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1919, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city, county, or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city, county, or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Classification by industries.—The establishments were assigned to the several classes of industries according to their products of chief value. The products reported for a given industry may thus, on the one hand, include minor products different from those covered by the class designation, and, on the other hand, may not represent the total product covered by this designation, because some products of this class may be made in establishments in which it is not the product of chief value.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1919 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners.

The number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date did not portray such conditions, an earlier date was requested.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, by sex, without distinction of age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The number of wage earners reported for the representative day, though given in certain tables for each separate industry, is not totaled for all industries combined, because, in view of the variations of date, such a total is not believed to be significant. It would involve more or less duplication of persons working in different industries at different times, would not represent the total number employed in all industries at any one time, and would give an undue weight to seasonal industries as compared with industries in continual operation.

In order to determine as nearly as possible the age distribution of the average number of wage earners for an industry, the per cent distribution by age of the wage earners for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. The percentages thus obtained have been applied to the average number of wage earners for the year to determine the average numbers 16 years and over, and under 16, employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calcu-

late accurately even so simple an average as this, since the number of wage earners fluctuates from month to month in every industry, and in some cases to a very great extent. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month, and while representing the number according to the pay rolls to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital (amount actually invested).—The instructions on the schedule for securing data relating to capital were as follows:

"The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises."

These instructions were identical with those employed at the censuses of 1914 and 1909. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include certain Federal taxes and state, county, and local taxes. Under "Federal taxes" there are included the internal revenue tax on manufactures (tobacco, beverages, etc.), excise taxes when included in values reported for products, corporation capital stock tax, and corporation income tax, but not the income tax for individuals and partners.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not always a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry, from a manufacturing standpoint, is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power equipment of the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, fuel oils, gasoline and other volatile oils, and gas, and represent the quantity used during the year. As only the principal kinds of fuel are shown, comparison as to the total cost of all fuel is impracticable.

SMELTING AND REFINING.

(NONFERROUS METALS.)

GENERAL STATISTICS.

General character of the industries.—The statistics presented in this report on the smelting and refining of nonferrous metals cover a group of six industries, as classified by the Fourteenth Census, namely, those comprising establishments engaged primarily in the smelting and refining of (1) copper, (2) lead, (3) zinc, (4) antimony, (5) tin, and (6) "metals not elsewhere specified."

To avoid the disclosure of individual operations, the data relating to antimony, tin, and "metals not elsewhere specified" are combined in all cases in this report. The figures relating to copper, to lead, and to zinc are given separately. Among the "metals not elsewhere specified" reported at this census are cobalt, molybdenum, nickel, platinum, iridium, palladium, quicksilver, selenium, titanium minerals, and tungsten ores.

In brief, this report covers the smelting and refining of the nonferrous metals, gold and silver being important items among the products of copper and lead smelting and refining.

The statistics pertaining to iron smelting will be found in the report on iron and steel, which comprises iron blast furnaces, ferroalloys, and the allied industries, steel works and rolling mills, tin-plate and terne-plate, and wire. The recovery of metals from scrap, waste, etc., is not the subject of a special report, but the statistics for such establishments are included in the industries "gold and silver, reducing and refining, not from ore" for the precious metals; and "smelting and refining, not from the ore" for all others.

This report makes no mention of the metal by-products of other industries, although various establishments engaged primarily in other lines of industry report some products of this nature.

Comparability with previous censuses.—Heretofore the Census Bureau has issued no special report on smelting and refining, except that on lead, copper, and zinc smelting and refining in the census of 1900. The figures given in censuses previous to 1900 are not strictly comparable with those of the present census. In 1870 smelting and refining were reported separately from the mining industry, but in 1890 they were reported as an adjunct thereto.

In the 1900 and succeeding censuses, the crushing and milling of quartz, the separation of gold and silver from the ore in concentrating and separating plants have been considered to be so closely allied with the mining industry that the statistics of these operations constituted a part of the reports on mines and are not included in the reports on manufactures.

Mines, smelters, and refineries.—In several branches of mining the mineral products are subjected to manufacturing processes at the mine, such as crushing, separating, washing, concentrating, burning, or calcining before being regarded as marketable commodities. In such cases the mining schedules cover the entire work of mining the crude material and its preparation for the market. The distinction between mining and manufacturing industries was not clearly made prior to the census of 1899, and the statistics for smelting and refining were included with those for mines in such a manner as to make it impossible to obtain satisfactory comparative figures.

Copper smelting and refining.—This classification includes establishments which smelt or refine copper ore or matte on toll as well as those smelting ores of their own production. The cost of materials and the value of products reported for establishments which treat ore or matte for others includes under cost of materials, the estimated value of the ore or matte treated, and under products, the value of the metals produced. In the smelting and refining of copper and lead, a large part of the value of the products consists of gold and silver content.

The combined figures involve extensive duplications, the value of the blister copper as it comes from the smelters being included in cost of materials for the refineries.

Other smelting and refining industries.—As in the case of copper, separate statistics for 1919, 1914, and 1909 are given, as a rule, in the following tables for the establishments that both smelt lead ores and refine the bullion, and for those that smelt only. In addition to refined lead, lead smelters and refineries produced as subsidiary products chemicals, gold, silver, and copper.

Spelter and sheet zinc are the principal products reported for establishments included under the classification "zinc smelting." The only comparable figures are those for 1919, 1914, 1909, 1904, and 1899. The statistics are segregated for establishments whose product of chief value was pigs, bars, plates, and sheets of zinc, and for those reporting other zinc products.

Summary for the group, 1919.—Table 1 presents the general statistics for the smelting and refining group and the constituent industries. Although copper smelting and refining has less than one-third of the total number of establishments in the combined group, it is to be credited with 67 per cent of the total value of products and with 54.1 per cent of the value added by manufacture.

Comparative summary, copper, lead, and zinc.—Table 2 presents the general statistics for the copper, lead, and zinc smelting and refining industries severally and combined for the census years 1899 to 1919, inclusive.

The group of "Metals not elsewhere specified," is not here included, as statistics therefor for prior census years are not available.

The increases in wages, cost of materials, and value of products are in a great measure due to the change in industrial conditions brought about by the World War, and can not be taken as a true measure of growth. The increases in primary horsepower, however, and in the number of wage earners employed, evidence the growth of the smelting and refining industries.

Principal states, ranked by value of products.—In Table 3 the states are arranged according to the value of products reported for 1919.

Some of the states for which data can not be shown separately without disclosing the operations of individual establishments ranked higher in value of products than some of those named in the table.

Persons engaged in the industries.—The age classification of the average number of wage earners, in Table 4 and other tables, is an estimate obtained by the method described in the "Explanation of terms." Figures for states will be found in Table 12.

Wage earners, by months.—The statistics presented in Table 5 are intended to show the steadiness of employment, or the reverse, in accordance with the industrial conditions existing during the several census years.

Prevailing hours of labor.—Table 6 shows a marked drift toward fewer hours per week, especially in lead smelting and refining. In that industry, in 1914, only 1 per cent of the wage earners were included in the groups "48 and under," as against 15.6 per cent in 1919. On the other hand, in 1914, the "60" and "Over 60" groups constituted 20.5 per cent of the total wage earners, as against 2.1 per cent in 1919.

The smelting and refining of zinc shows the least change, 4.7 per cent of its wage earners being in the group "48 and under" in 1914, and 18.5 in 1919.

Size of establishments, by average number of wage earners.—As indicated in Table 7, the smelting and refining industries are characterized by rather large establishments. In 1919, 76.6 per cent and in 1914, 78.4 per cent of the establishments employed more than 100 wage earners each.

Size of establishments, by value of products (Table 8).—At the census of 1909 the average value of products per establishment was approximately \$6,100,000; in 1914, \$7,600,000; and in 1919, \$8,760,000. At the census of 1914, establishments valued at "\$100,000 to \$1,000,000" constituted a single group, but at the census of 1919 this group was subdivided into "\$100,000 to \$500,000" and "\$500,000 to \$1,000,000."

Character of ownership.—The establishments included in the smelting and refining industries are almost entirely owned by corporations. In 1919 only 2 out of a total of 111 establishments were owned by individuals or firms and in 1914 but 4 of the 88 establishments.

Number and horsepower of types of prime movers.—The power equipment reported in Table 9 is that installed at the end of the year. In the smelting and refining industries an increase is shown at each census in both owned and rented power, particularly in the latter. In 1919 the rated capacity of all electric motors was more than double the capacity reported for 1914, the figures showing an increase of 110 per cent. In 1919, 60.4 per cent of the total primary power, whether owned or rented, were utilized in the form of electric power as compared with 50.7 per cent in 1914 and 36.7 per cent in 1909.

Fuel consumed.—Table 10 shows the consumption of the principal kinds of fuel, by industries and by states. The figures are inclusive of smelting fuel and that used for steam and power purposes. The figures for gas include both natural and manufactured gas, chiefly natural gas.

TABLE 1.—SUMMARY FOR THE SMELTING AND REFINING INDUSTRIES: 1919.

	Total.	Copper.	Lead.	Zinc.	All other. ¹	PER CENT OF TOTAL			
						Copper.	Lead.	Zinc.	All other. ¹
Number of establishments.....	111	34	25	30	13	30.6	22.5	35.1	11.7
Persons engaged.....	44,271	19,054	7,354	14,003	2,360	41.4	16.6	33.7	5.3
Proprietors and firm members.....	2		1		1				
Salaried employees.....	4,040	2,300	915	1,107	318	40.7	19.7	28.8	6.8
Wage earners (average number).....	30,020	17,345	6,438	13,796	2,041	43.8	16.2	34.8	5.2
Primary horsepower.....	450,479	321,610	52,505	73,004	11,700	70.0	11.4	16.0	2.6
Capital.....	\$543,341,935	\$308,680,208	\$115,676,708	\$98,767,355	\$20,227,544	56.8	21.3	18.2	3.7
Salaries and wages.....	67,061,004	31,619,716	11,281,401	20,214,747	3,915,200	47.2	16.8	30.2	5.8
Salaries.....	11,411,052	5,896,345	2,101,786	2,461,419	952,052	51.7	18.4	21.6	8.3
Wages.....	55,649,412	25,723,371	9,179,615	17,753,278	2,963,148	46.2	16.5	32.0	5.3
Paid for contract work.....	472,171	222,170	249,005			47.1	52.9		
Rent and taxes.....	6,955,213	3,411,123	1,036,804	1,777,587	720,699	49.0	14.9	25.6	10.6
Cost of materials.....	848,755,914	584,410,173	179,373,646	70,014,728	14,957,367	68.9	21.1	8.2	1.8
Value of products.....	972,093,552	651,101,591	196,794,519	104,122,938	23,074,504	67.0	20.2	10.7	2.1
Value added by manufacture ²	123,337,638	66,691,418	17,420,873	34,108,210	5,117,137	54.1	14.1	27.7	4.1

¹ Includes "Metals not elsewhere specified."

² Value of products less cost of materials.

SMELTING AND REFINING.

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TABLE 2.—COMPARATIVE SUMMARY FOR COPPER, LEAD, AND ZINC SMELTING AND REFINING: 1919, 1914, 1909, 1904, AND 1899.

	1919	1914	1909	1904	1899	PER CENT OF INCREASE. ¹			
						1914-1919	1909-1914	1904-1909	1899-1904
TOTAL.									
Number of establishments.....	98	88	95	103	117			-7.8	-12.0
Persons engaged.....	41,911	37,957	32,047	28,548	25,648	10.4	18.4	12.3	11.3
Proprietors and firm members.....	1	5	10	8	15				
Salaries and wages.....	4,331	3,219	2,330	1,687	1,121	34.5	38.2	38.1	50.5
Wage earners (average number).....	37,579	34,733	29,707	26,853	24,512	8.2	16.9	10.6	9.6
Primary horsepower.....	447,779	261,419	206,537	141,928	95,740	71.3	26.6	45.5	48.2
Capital.....	\$523,114,391	\$351,057,554	\$271,512,727	\$164,349,036	\$139,354,138	49.0	29.3	65.2	17.9
Salaries and wages.....	63,145,864	35,573,238	27,925,293	23,054,663	18,123,644	77.5	27.4	21.1	27.2
Salaries.....	10,459,600	6,590,093	4,888,581	2,996,463	2,150,018	58.7	34.8	63.1	39.4
Wages.....	52,686,264	28,983,145	23,036,712	20,058,200	15,973,626	81.8	25.8	14.8	25.6
Paid for contract work.....	472,171	226,228	68,882	161,825	45,580	108.7	228.4	-57.4	255.0
Rent and taxes.....	6,225,514	2,003,265	2,339,348	2,902,565	2,391,839	201.7	-11.8	23.0	385.5
Cost of materials.....	833,798,547	572,744,382	510,724,661	382,723,480	279,655,350	45.6	12.1	33.4	36.9
Value of products.....	952,019,048	669,138,943	580,417,518	451,398,354	358,786,472	42.3	15.3	28.6	25.8
Value added by manufacture ²	118,220,501	96,394,561	89,682,857	68,674,874	79,131,122	22.6	38.3	1.5	-13.2
COPPER.									
Number of establishments.....	34	37	38	40	47				
Persons engaged.....	19,654	19,594	16,832	13,562	11,816	0.3	16.4	24.1	14.8
Proprietors and firm members.....	2,309	1,863	1,197	809	488	23.9	55.6	48.0	65.8
Salaries and wages.....	17,345	17,731	15,628	12,752	11,324	-2.2	13.5	22.6	12.0
Wage earners (average number).....	321,610	194,980	158,126	85,828	66,242	64.9	23.3	84.2	29.6
Primary horsepower.....	\$308,680,268	\$171,419,795	\$111,442,654	\$76,824,640	\$53,063,395	80.1	53.8	45.1	44.8
Capital.....	31,619,716	19,767,215	15,814,891	12,354,425	9,483,926	60.0	25.0	28.0	30.3
Salaries and wages.....	5,896,345	3,617,064	2,419,172	1,527,382	954,905	63.0	49.6	58.4	60.0
Salaries.....	25,723,371	16,149,251	13,395,719	10,827,043	8,529,021	59.3	20.6	23.7	26.9
Wages.....	222,176	168,195	34,050	117,401	45,580	31.5	394.0	-71.0	157.6
Paid for contract work.....	3,411,123	1,479,579	2,056,641	2,717,563	2,248,142	130.5	-28.1	19.7	592.2
Rent and taxes.....	584,410,173	379,157,030	333,531,638	196,736,986	122,174,129	54.1	13.7	69.5	61.0
Cost of materials.....	651,101,591	444,021,958	378,805,974	240,780,216	165,131,670	46.6	17.2	57.3	45.8
Value of products.....	60,691,418	64,864,928	45,274,336	44,043,230	42,957,541	2.8	43.3	2.8	2.5
Value added by manufacture ²									
LEAD.									
Number of establishments.....	25	22	28	32	39				
Persons engaged.....	7,354	8,036	8,059	8,102	8,751	-8.5	-0.3	-0.5	-7.4
Proprietors and firm members.....	915	648	635	524	425	41.2	2.0	21.2	23.3
Salaries and wages.....	9,438	7,385	7,424	7,573	8,319	-12.8	-0.5	-2.0	-9.0
Wage earners (average number).....	52,565	29,734	26,954	32,648	16,952	76.8	10.3	-17.4	92.6
Primary horsepower.....	\$115,076,708	\$143,249,321	\$132,310,220	\$63,822,810	\$72,148,933	-19.2	8.3	107.3	-11.5
Capital.....	11,281,401	7,029,555	6,906,566	6,262,283	5,843,597	47.9	10.5	10.3	7.2
Salaries and wages.....	2,101,780	1,495,281	1,475,914	887,602	754,913	40.6	1.3	66.3	17.6
Salaries.....	9,179,615	6,134,274	5,430,652	5,374,891	5,088,684	49.6	13.0	1.0	5.6
Wages.....	249,935	10,258	14,832	37,734	2,337.1	-30.8	-80.9		
Paid for contract work.....	1,036,804	338,994	188,766	211,230	289,016	205.8	79.6	62.4	30.6
Rent and taxes.....	179,373,646	154,014,765	151,963,022	168,958,076	144,195,163	16.5	-1.4	-10.1	17.2
Cost of materials.....	196,794,519	171,578,587	167,405,650	185,826,839	175,466,304	14.7	2.5	-9.9	5.9
Value of products.....	17,420,873	17,663,822	15,442,628	16,868,763	31,271,141	-0.8	13.7	-8.5	-46.1
Value added by manufacture ²									
ZINC.									
Number of establishments.....	39	29	29	31	31				
Persons engaged.....	14,903	10,327	7,156	6,884	5,081	44.3	44.3	4.0	35.5
Proprietors and firm members.....	1,107	708	498	354	208	56.4	42.2	40.7	70.2
Salaries and wages.....	13,796	9,617	6,655	5,528	4,869	43.5	44.5	1.9	34.1
Wage earners (average number).....	73,604	36,705	21,457	23,452	12,546	100.5	71.1	-8.5	86.9
Primary horsepower.....	\$98,757,355	\$36,388,438	\$27,759,863	\$23,701,586	\$14,141,810	171.4	31.1	17.1	87.6
Capital.....	20,244,747	8,176,408	5,203,836	4,437,945	2,706,121	147.6	57.1	17.3	58.7
Salaries and wages.....	2,401,469	1,476,848	993,495	581,479	440,200	66.7	48.7	70.9	32.1
Salaries.....	17,783,278	6,699,620	4,210,341	3,856,466	2,355,921	165.4	59.1	9.2	63.7
Wages.....		47,775	20,000	6,490			138.9	208.2	
Paid for contract work.....		244,692	93,941	268,772	254,681	626.5	160.5	36.6	25.8
Rent and taxes.....	70,014,728	39,572,587	25,230,001	17,028,418	13,286,058	76.9	56.8	48.2	28.2
Cost of materials.....	104,122,938	53,538,398	34,205,894	24,791,299	18,188,498	94.5	56.5	38.0	36.3
Value of products.....	34,108,210	13,965,811	8,975,893	7,762,881	4,902,440	144.2	55.6	15.6	58.3
Value added by manufacture ²									

¹A minus sign (-) denotes decrease; percentages are omitted where base is less than 100. ²Exclusive of internal revenue. ³Value of products less cost of materials.

TABLE 3.—PRINCIPAL STATES, RANKED BY VALUE OF PRODUCTS: 1919.

STATE.	Number of establishments.	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
		Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.
United States.....	111	39,620	100.0		\$972,094	100.0		\$123,338	100.0	
New Jersey.....	9	5,220	13.2	2	256,945	26.4	1	16,673	13.5	2
Arizona.....	10	3,112	7.9	3	94,184	9.7	2	15,515	12.6	3
Pennsylvania.....	5	4,461	11.2	5	42,371	4.4	7	18,069	14.6	1
Illinois.....	10	5,264	13.3	1	39,047	4.0	9	9,493	7.7	5
Colorado.....	11	1,642	4.1	8	18,893	1.9	13	3,693	3.0	11
Indiana.....	4	574	1.4	17	9,620	1.0	17	1,049	1.0	14
Missouri.....	4	1,032	2.6	11	9,218	0.9	18	1,259	1.0	18
Arkansas.....	3	547	1.4	20	4,423	0.5	22	817	0.7	22
All other states.....	55	17,778	44.9		497,393	51.2		55,870	45.3	

TABLE 4.—PERSONS ENGAGED IN THE INDUSTRIES: 1919, 1914, AND 1909.

CLASS.	Cen- sus year.	Total.	Male.	Fe- male.	PER CENT OF TOTAL.		CLASS.	Cen- sus year.	Total.	Male.	Fe- male.	PER CENT OF TOTAL.	
					Male.	Fe- male.						Male.	Fe- male.
All classes.....	1919	44,271	43,338	933	97.9	2.1	Clerks and other subordinate salaried employees.	1919	3,437	2,801	636	81.5	18.5
	1914	37,957	37,761	196	99.5	0.5		1914	2,701	2,520	181	93.3	6.7
	1909	32,047	31,924	123	99.6	0.4		1909	1,801	1,686	115	93.6	6.4
Proprietors and officials.....	1919	1,214	1,205	9	99.3	0.7	Wage earners (average number).....	1919	30,020	30,332	288	99.3	0.7
	1914	523	519	4	.....	.....		1914	34,733	34,722	11	100.0	(¹)
	1909	530	537	2	.....	.....		1909	29,707	29,701	6	100.0	(¹)
Proprietors and firm members....	1919	2	2	.....	.....	.....	16 years of age and over.....	1919	30,618	30,330	288	99.3	0.7
	1914	5	5	.....	100.0	.....		1914	34,689	34,678	11	100.0	(¹)
	1909	10	10	.....	.....	.....		1909	29,668	29,602	6	100.0	(¹)
Salaried officers of corporations...	1919	166	160	6	96.4	3.6	Under 16 years of age.....	1919	2	2	.....	.....	.....
	1914	120	125	4	96.9	3.1		1914	44	44	(²)	.....	.....
	1909	131	120	2	.....	.....		1909	30	30	(²)	.....	.....
Superintendents and managers...	1919	1,046	1,043	3	99.7	0.3							
	1914	380	380	.....	100.0	.....						
	1909	308	308	.....	.....	.....				

¹ Includes only copper, lead, and zinc smelting and refining.² Figures not available; included, if any, with males.³ Less than one-tenth of 1 per cent.

TABLE 5.—WAGE EARNERS, BY MONTHS, FOR STATES: 1919.

[The month of maximum employment is indicated by bold-faced figures and that of minimum employment by italic figures.]

INDUSTRY AND STATE.	Average num- ber em- ployed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent min- imum is of max- imum.
		Janu- ary.	Febru- ary.	March.	April.	May.	June.	July.	August.	Septem- ber.	Octo- ber.	Novem- ber.	Decem- ber.	
United States:														
1919.....	39,620	50,502	45,507	41,252	39,616	38,152	36,110	37,161	36,025	37,203	37,203	37,681	37,948	71.3
Males.....	39,332	50,140	45,242	40,886	39,332	37,859	36,799	36,870	36,685	37,021	37,006	37,436	37,705	71.4
Females.....	288	362	325	366	284	293	314	285	240	242	257	245	243	63.7
1914.....	34,733	38,278	37,004	37,746	38,054	37,900	37,916	37,211	33,087	30,382	30,325	28,658	30,167	74.3
1909.....	29,707	30,366	29,993	29,588	29,840	29,117	29,450	29,012	28,049	30,244	29,092	29,047	30,090	92.1
Copper smelting and refining:														
1919.....	17,345	23,627	20,451	18,052	17,616	16,426	15,742	16,505	15,851	15,754	15,944	16,284	15,788	65.0
Smelting only.....	7,919	10,982	8,927	8,536	8,088	7,180	7,575	7,578	6,743	7,118	7,124	7,627	7,544	61.4
Refining only.....	5,400	7,540	6,700	5,571	5,418	4,785	4,546	5,024	5,176	5,207	5,204	4,853	4,867	66.3
Smelting and refining.....	4,026	5,105	4,815	4,545	4,210	4,066	4,016	3,903	3,432	3,429	3,616	3,804	5,577	66.2
1914.....	17,731	20,778	19,807	20,381	20,811	20,725	20,837	20,502	16,233	13,568	13,455	12,895	13,340	59.0
1909.....	15,028	16,031	15,809	15,585	15,050	15,420	15,307	15,701	14,889	15,943	15,813	15,704	15,480	92.9
Lead smelting and refining:														
1919.....	6,438	8,054	7,551	6,441	6,402	6,353	6,001	5,988	6,011	5,723	6,170	6,255	6,307	71.1
Smelting only.....	4,830	6,101	5,752	4,706	4,746	4,676	4,446	4,476	4,544	4,607	4,593	4,824	4,953	68.3
Smelting and refining.....	1,609	1,953	1,799	1,645	1,656	1,678	1,555	1,512	1,467	1,550	1,577	1,431	1,354	69.3
1914.....	7,385	7,752	7,664	7,541	7,600	7,512	7,040	7,449	7,510	7,147	7,089	6,779	7,077	87.4
1909.....	7,424	7,651	7,785	7,751	7,671	7,100	7,408	7,415	6,947	7,176	7,121	7,200	7,451	89.2
Zinc smelting and refining:														
1919.....	13,796	16,150	15,464	14,339	13,815	13,469	12,850	12,601	13,672	13,807	13,095	13,034	13,857	75.8
Pigs, bars, plates, and sheets..	12,028	15,103	14,401	13,304	12,772	12,443	11,405	11,824	12,631	12,881	12,607	12,439	13,146	75.5
All other.....	868	1,050	973	1,035	1,043	1,026	845	807	841	926	598	595	711	37.7
1914.....	9,617	9,748	9,693	9,824	9,683	9,430	9,390	9,344	9,067	9,801	9,562	9,562	9,750	94.3
1909.....	6,655	6,684	6,339	6,252	6,613	6,507	6,501	6,736	6,213	6,825	6,908	6,983	7,159	86.8
Smelting and refining, metals not else- where specified:														
1919.....	2,041	2,662	2,101	1,820	1,783	1,901	2,117	1,977	1,991	1,979	2,054	2,108	1,996	67.0
Arizona: Copper.....	3,112	3,914	3,601	2,886	2,704	2,602	2,697	3,021	3,162	3,218	3,287	3,178	3,054	68.0
Arkansas: Zinc.....	547	517	522	533	492	530	542	506	580	562	584	579	587	78.7
California: Copper.....	280	602	602	540	430	292	146	139	128	127	143	157	163	21.1
Colorado: Zinc.....	1,642	2,089	2,040	1,684	1,821	1,704	1,517	1,395	1,371	1,341	1,436	1,596	1,620	64.2
Illinois: Zinc.....	5,204	5,774	5,498	5,301	5,183	5,173	5,132	5,208	5,400	5,273	5,304	4,716	5,027	81.7
Indiana.....	574	919	800	578	747	626	380	419	550	551	439	450	429	41.3
Kansas.....	717	723	842	786	722	719	701	714	608	706	637	688	688	75.7
Missouri.....	1,032	1,244	1,142	733	729	852	967	968	1,054	1,092	1,243	1,284	1,106	57.2
New Jersey.....	5,220	6,590	6,095	5,402	5,326	5,007	4,817	5,008	4,845	4,767	4,972	4,913	4,928	72.3
Oklahoma: Zinc.....	2,272	2,956	2,760	2,457	2,057	2,008	2,000	1,972	2,149	2,032	2,021	2,312	2,531	66.7
Pennsylvania.....	4,451	5,069	4,688	4,472	4,502	4,318	4,182	4,608	4,572	4,021	4,011	4,120	4,249	79.1
Utah: Lead.....	1,740	2,253	2,003	1,957	1,813	1,590	1,514	1,530	1,000	1,585	1,085	1,745	1,698	67.2

¹ Not including "Metals not elsewhere specified."² Includes "Refining only."

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TABLE 6.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR STATES: 1919.

INDUSTRY AND STATE.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							INDUSTRY AND STATE.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
		44 and under	Between 44 and 48.	48. ¹	Between 48 and 54.	54.	Between 54 and 60.	60.			Over 60.	44 and under.	Between 44 and 48.	48. ¹	Between 48 and 54.	54.	Between 54 and 60.	60.
United States, smelting and refining (non-ferrous metals):									Metals not elsewhere specified: ²									
1919.....	39,620	161	231	7,229	2,694	1,343	26,569	177	1919.....	2,041	231	340	912	513	38	7
1914.....	34,733	(³)	(³)	855	6,127	1,591	18,291	4,487	Arizona: Copper.....	3,112	.....	.....	193	890	.....	2,029	.....
1909 ²	29,707	(³)	(³)	834	.....	549	16,927	3,908	Arkansas: Zinc.....	547	.....	.....	.....	.....	.....	547	.....
Copper:									California: Copper.....	289	.....	.....	.....	.....	.....	289	.....
1919.....	17,345	(³)	(³)	3,500	990	1,343	11,512	.....	Colorado.....	1,642	.....	.....	35	.....	.....	1,607	.....
1914.....	17,731	(³)	(³)	336	2,225	864	11,170	2,336	Illinois.....	5,264	.....	1,254	397	.....	.....	3,613	.....
1909.....	15,628	(³)	(³)	203	.....	.....	9,975	2,599	Indiana.....	574	.....	.....	.....	.....	.....	303	139
Lead:									Kansas: Zinc.....	717	.....	.....	304	.....	.....	413	132
1919.....	6,438	(³)	(³)	1,002	397	.....	4,900	138	Missouri.....	1,032	.....	.....	591	.....	.....	441	.....
1914.....	7,385	(³)	(³)	72	.....	727	5,073	108	New Jersey.....	5,213	231	1,919	912	.....	2,151	.....	.....
1909.....	7,424	(³)	(³)	25	.....	549	5,481	186	Oklahoma: Zinc.....	2,272	160	.....	677	.....	1,435	.....	.....
Zinc:									Pennsylvania.....	4,451	.....	.....	.....	.....	3,355	25	1,071
1919.....	13,796	160	(³)	2,387	395	.....	9,644	139	Utah: Lead.....	1,749	.....	.....	.....	.....	1,749	.....	.....
1914.....	9,617	(³)	(³)	447	3,902	.....	2,048	2,043									
1909.....	6,655	(³)	(³)	606	.....	.....	1,471	1,123									

¹ Includes 48 and under for 1914 and 1909.

² Not including "Metals not elsewhere specified."

³ Figures not available.

⁴ Includes antimony and tin.

TABLE 7.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS, FOR STATES: 1919.

INDUSTRY AND STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING—																	
	Establishments.	Wage earners (average number).	No wage earners.		1 to 5 wage earners, inclusive.		6 to 20 wage earners, inclusive.		21 to 50 wage earners, inclusive.		51 to 100 wage earners, inclusive.		101 to 250 wage earners, inclusive.		251 to 500 wage earners, inclusive.		501 to 1,000 wage earners, inclusive.		Over 1,000 wage earners.	
			Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States, smelting and refining (nonferrous metals):																				
1919.....	111	39,620	.....	4	14	6	63	9	354	7	525	34	5,697	28	9,778	17	12,401	6	10,788	
1914.....	88	34,733	1	1	1	2	34	4	144	11	819	24	4,006	22	8,406	17	12,511	6	8,812	
Copper smelting and refining:																				
1919.....	34	17,345	.....	.....	.....	1	16	2	79	3	240	9	1,390	6	2,196	8	5,873	5	7,551	
1914.....	37	17,731	.....	.....	.....	1	16	1	40	5	373	11	1,790	6	2,319	8	6,278	5	6,906	
Lead smelting and refining:																				
1919.....	25	6,438	.....	1	1	1	6	1	36	2	153	8	1,232	8	2,695	4	2,315	.....	.....
1914.....	22	7,385	.....	1	1	1	18	.....	.....	3	208	3	414	9	3,591	5	3,153	.....	.....
Zinc smelting and refining:																				
1919.....	39	13,796	.....	1	4	1	14	3	134	2	132	15	2,714	12	4,253	4	3,308	1	3,237	
1914.....	29	9,617	1	.....	.....	.....	.....	3	104	3	238	10	1,793	7	2,496	4	3,080	1	1,906	
Smelting and refining: metals not elsewhere specified, 1919.....	13	2,041	.....	2	9	3	27	3	105	.....	.....	2	361	2	634	1	905	.....	.....
Arizona: Copper.....	10	3,112	.....	.....	.....	.....	.....	1	47	1	63	3	590	4	1,523	1	889	.....	.....
Arkansas: Zinc.....	3	547	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	547	.....	.....	.....	.....	.....	.....
California: Copper.....	3	289	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	273	.....	.....	.....	.....	.....	.....
Colorado.....	11	1,642	.....	1	6	.....	.....	2	72	2	132	4	736	2	696	.....	.....	.....	.....
Illinois.....	10	5,264	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	195	6	2,357	3	2,712	.....	.....
Indiana.....	4	574	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	474	.....	.....	.....	.....	.....	.....
Kansas: Zinc.....	3	717	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	137	2	590	.....	.....	.....	.....
Missouri.....	4	1,032	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	996	.....	.....	.....	.....
New Jersey.....	9	5,220	.....	1	4	2	14	.....	.....	.....	.....	1	231	.....	.....	3	2,404	2	2,567	
Oklahoma: Zinc.....	11	2,272	.....	.....	.....	1	14	.....	.....	.....	.....	6	1,115	4	1,143	.....	.....	.....	.....
Pennsylvania.....	5	4,451	.....	.....	.....	.....	.....	1	25	.....	.....	1	118	1	475	1	596	1	3,237	
Utah: Lead.....	3	1,749	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1,749	.....	.....

¹ Not including "Metals not elsewhere specified."

TABLE 8.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919, 1914, AND 1909.¹

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
All classes.....	111	88	95	39,020	34,733	20,707	\$972,003,552	\$609,138,043	\$580,417,518	\$123,337,638	\$96,304,561	\$69,692,837
Less than \$5,000.....		2	1									
\$5,000 to \$20,000.....	1			6			10,318			2,873		
\$20,000 to \$100,000.....	7	3	5	47	1,770	2,078	351,424	9,807,135	13,528,073	58,618	2,163,265	3,088,511
\$100,000 to \$500,000.....	11	7	24	428			2,719,542			834,516		
\$500,000 to \$1,000,000.....	9	10		1,609			6,085,134			2,463,682		
\$1,000,000 and over.....	83	66	65	37,530	32,963	27,020	902,318,134	659,271,808	566,889,445	110,977,949	94,231,206	66,604,346
PER CENT DISTRIBUTION.												
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....		2.3	1.1									
\$5,000 to \$20,000.....	0.9			(*)			(*)			(*)		
\$20,000 to \$100,000.....	6.3	3.4	5.3	0.1	5.1	9.0	(*)	0.3	2.3	(*)	2.2	4.4
\$100,000 to \$500,000.....	9.9	7.9	25.3	1.1			0.7			0.7		
\$500,000 to \$1,000,000.....	8.1	11.1		4.1			1.2			2.0		
\$1,000,000 and over.....	74.8	75.0	68.4	94.7	94.9	91.0	99.0	98.5	97.7	97.3	97.8	95.6

¹ Figures for 1914 and 1909 include only copper, lead, and zinc smelting and refining.² Less than one-tenth of 1 per cent.TABLE 9.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919, 1914, AND 1909.¹

POWER.	NUMBER OF ENGINES OR MOTORS. ²		HORSEPOWER.					
			Amount.			Per cent distribution.		
	1919	1914	1919	1914	1909	1919	1914	1909
Primary power, total.....	5,224	2,326	459,470	261,410	200,537	100.0	100.0	100.0
Owned.....	680	674	287,083	214,507	173,295	62.7	82.1	83.9
Steam.....	592	621	270,310	201,480	157,023	60.1	77.1	76.5
Engines.....	483	(*)	157,639	(*)	(*)	34.3		
Turbines.....	100	(*)	118,671	(*)	(*)	25.8		
Internal-combustion engines.....	58	34	3,773	2,721	2,455	0.8	1.0	1.2
Water wheels and turbines.....	10	19	7,900	10,300	12,917	1.7	3.9	6.3
Rented.....	4,504	1,652	171,496	46,912	33,242	37.3	17.9	16.1
Electric.....	4,504	1,652	168,590	46,912	33,242	36.7	17.9	16.1
Other.....			2,807			0.6		
Electric.....	9,340	4,088	278,416	132,504	75,843	100.0	100.0	100.0
Rented.....	4,504	1,652	168,590	46,912	33,242	60.6	35.4	43.8
Generated by establishments reporting.....	4,776	3,336	109,817	85,592	42,601	39.4	64.6	56.2

¹ Figures for 1914 and 1909 include only copper, lead, and zinc smelting and refining.² Figures not available for 1909.³ Figures for horsepower include for 1909 the amount reported under the head of "Other" owned power.⁴ Figures not available.

TABLE 10.—FUEL CONSUMED, BY STATES: 1919.

INDUSTRY AND STATE.	COAL.		Coke (tons, 2,000 pounds).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
	Anthracite ¹ (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).				
United States, smelting and refining (nonferrous metals):						
1919.....	1,029,632	2,570,981	906,065	2,897,326	4,468	25,078,602
1914.....	955,240	2,237,205	1,226,677	2,636,122	(*)	22,437,360
Copper smelting and refining:						
1919.....	179,026	1,088,511	397,702	2,539,631	3,490	712,817
Smelting only.....	1,632	460,546	300,058	1,804,748	64	
Refining only.....	69,011	894,010	41,854	107,081	2,972	708,184
Smelting and refining.....	110,483	233,955	40,853	537,802	454	4,633
1914.....	209,480	812,196	744,256	2,305,766	(*)	10,615
Lead smelting and refining:						
1919.....	7,276	202,800	321,442	201,881	207	20,940
Smelting only.....	2,658	215,817	277,577	26,999	127	10,049
Smelting and refining.....	4,618	70,980	43,865	174,882	80	10,891
1914.....		358,484	389,826	186,556	(*)	90,656
Zinc smelting and refining:						
1919.....	835,120	1,123,590	238,432	0,197	449	24,343,653
Pigs, bars, plates, and sheets.....	795,004	1,020,013	236,587	0,197	330	22,788,806
All other.....	39,225	103,577	1,845		110	1,554,847
1914.....	655,706	1,060,525	92,505	145,811	(*)	22,336,989

¹ Includes some semianthracite.² Included in figures for fuel oils.³ Includes "Refining only."

SMELTING AND REFINING.

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TABLE 10.—FUEL CONSUMED, BY STATES: 1919—Continued.

INDUSTRY AND STATE.	COAL.		Coke (tons, 2,000 pounds).	Fuel oils, (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
	Anthracite ¹ (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).				
Smelting and refining, metals not elsewhere specified: ^a						
1919.....	8,201	72,074	38,420	149,617	322	1,092
Arizona: Copper.....	101	19,062	142,257	1,735,118	162	
Arkansas: Zinc.....		24,450	6,266	5,952		3,559,386
California: Copper.....			15,377	50,190		
Colorado:						
Zinc.....	26,636	34,715	1,223			
Other.....	2,658					5,887
Illinois:						
Zinc.....	58,233	591,106	101,208	11	335	
Other.....		27,757	32,753	2,348		
Indiana.....	5,824	80,059	4,729	20,830	80	1,899
Kansas: Zinc.....		19,390	11,209			5,251,309
Missouri.....		39,751	28,173	13,292	179	2,644
New Jersey:						
Copper.....	126,271	291,325	57,879	118,304	248	708,453
Other.....	8,129	32,705	31,217	139,529		847
Oklahoma: Zinc.....	41,228	102,005	31,353		110	15,526,316
Pennsylvania.....	651,029	205,053	81,138			6,962
Utah: Lead.....		91,995	130,477	4,600		
All other states.....	109,523	1,017,602	320,806	807,152	3,354	14,819

¹ Includes some semianthracite.

^a Includes antimony, tin, nickel, molybdenum, etc.

SPECIAL STATISTICS.

Products.—The products of the smelting and refining industries are included in the reports of the United States Geological Survey, which give the production of the various metals and allied products. Because of the duplication in values carried by the census reports, the production data for the various metals can not be coordinated with the products as reported for the smelting and refining industries, either as a group, or for the component industries.

Gold and silver are important factors in the products of the copper smelting and refining industry and the lead smelting and refining industry, and in each case there is extensive duplication in the smelter returns and the reports for the refineries on account of the product of the one becoming material for the other. Moreover, the gold and silver production comes in part from industrial operations not classed as smelting and refining.

GENERAL TABLES.

Comparative summary, by states.—Table 11 gives for 1919, 1914, and 1909 the most significant data for the copper, lead, and zinc smelting and refining industries. Comparative figures for prior census years are not available for other nonferrous metals.

Detail statement for the industries, by states.—Table 12 presents for 1919 the statistics in detail for the smelting and refining (nonferrous) industries for each state for which figures can be shown without the disclosure of individual operations.

TABLE 11.—COMPARATIVE SUMMARY FOR COPPER, LEAD, AND ZINC SMELTING AND REFINING, BY STATES: 1919, 1914, AND 1909.

INDUSTRY AND STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earn- ers (aver- age num- ber).	Primary horse- power.	Expressed in thousands.		
					Wages.	Cost of mate- rials.	Value of prod- ucts.
Total.....	1919	98	37,579	447,779	\$52,686	\$333,799	\$952,020
	1914	88	34,733	261,419	28,983	572,745	669,139
	1909	95	29,707	206,537	23,037	510,725	580,418
Copper smelting and re- fining.	1919	34	17,345	321,610	25,723	584,410	651,102
	1914	37	17,731	104,980	16,149	379,157	444,022
	1909	38	15,928	155,126	13,396	333,632	378,806
Arizona.....	1919	10	3,112	36,253	4,772	78,669	94,184
	1914	9	2,906	41,993	2,969	34,380	53,438
	1909	8	3,129	29,042	2,776	29,242	41,059
New Jersey.....	1919	4	4,066	49,683	5,346	231,413	244,269
	1914	4	3,344	42,735	2,247	153,863	169,199
	1909	4	2,322	22,320	1,335	118,936	125,651
All other states.....	1919	20	10,167	185,674	15,605	274,328	312,649
	1914	24	11,481	110,252	10,933	190,914	231,385
	1909	26	10,177	106,784	9,285	185,354	212,096
Lead smelting and refin- ing.	1919	25	6,438	52,565	9,180	179,374	196,795
	1914	22	7,385	29,734	6,134	154,015	171,579
	1909	28	7,424	26,954	5,431	151,963	167,406
Utah.....	1919	3	1,749	14,110	2,700	23,738	27,518
	1914	3	1,882	12,150	1,795	18,066	21,752
Lead smelting and refin- ing—Continued.	1919	22	4,689	38,455	\$6,480	\$155,636	\$169,277
All other states.....	1919	19	5,603	17,584	4,339	135,949	149,827
Zinc smelting and refin- ing.	1919	39	13,796	73,604	17,783	70,015	104,123
	1914	29	9,617	36,705	6,700	39,573	53,538
	1909	29	6,655	21,457	4,210	25,230	34,206
Illinois.....	1919	7	4,224	19,796	4,994	18,453	24,954
	1914	8	3,573	16,253	2,571	14,200	18,421
	1909	5	1,922	7,485	1,275	6,496	9,004
Kansas.....	1919	3	717	3,523	886	4,864	6,038
	1914	5	811	3,474	633	4,213	5,259
	1909	12	1,821	5,298	1,136	8,877	10,867
Oklahoma.....	1919	11	2,272	6,952	3,174	14,550	19,518
	1914	6	1,641	4,143	1,310	7,879	9,939
	1909	3	566	1,181	343	2,133	3,002
All other states.....	1919	18	6,583	43,333	8,729	32,348	53,613
	1914	10	3,592	12,835	2,186	13,281	19,919
	1909	9	2,346	7,493	1,456	7,724	11,343

TABLE 12.—DETAILED STATEMENT

INDUSTRY AND STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.									WAGE EARNERS DEC. 15 OR NEAREST REPRESENTATIVE DAY.				Capital.
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.		
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.		
								Maximum month.	Minimum month.						

SMELTING AND REFINING, NONFERROUS METALS.

1	United States—Total.....	111	44,271	2	1,212	2,801	636	30,020	Ja	50,502	Je	36,110	39,602	39,414	246	2	Dollars. 513,341,935
2	Copper smelting and refining.....	34	19,651	.....	517	1,518	274	17,345	Ja	23,027	Au	15,351	10,907	10,937	60	.....	308,680,268
3	Lead smelting and refining.....	25	7,354	1	234	509	112	6,438	Ja	8,054	Se	5,723	6,331	6,322	9	.....	115,676,768
4	Zinc smelting and refining.....	39	14,903	.....	292	595	220	13,796	Ja	10,159	Je	12,250	14,147	14,131	14	2	98,757,355
5	Smelting and refining, metals not elsewhere specified.....	13	2,300	1	109	119	30	2,041	Ja	2,662	Ap	1,783	2,187	2,024	163	.....	20,227,544
6	Arizona.....	10	3,620	.....	111	364	33	3,112	Ja	3,914	My	2,662	3,111	3,101	10	.....	83,013,194
7	Arkansas.....	3	568	.....	0	10	2	547	Ja	587	Ap	462	587	587	.....	.....	1,801,151
8	Colorado.....	11	1,781	.....	38	90	11	1,642	Ja	2,089	Se	1,341	1,630	1,628	2	.....	14,122,249
9	Illinois.....	10	5,034	.....	152	186	32	5,264	Ja	5,774	No	4,715	5,080	5,031	49	.....	34,525,295
10	Indiana.....	4	885	.....	36	53	22	574	Ja	919	Ja	380	594	590	4	.....	6,129,943
11	Missouri.....	4	1,230	.....	55	106	43	1,032	No	1,264	Mh	723	1,245	1,245	.....	.....	15,076,240
12	New Jersey.....	9	6,064	1	270	455	118	5,220	Ja	6,590	Se	4,747	4,628	4,771	157	.....	81,707,507
13	Pennsylvania.....	5	4,908	.....	49	209	139	4,451	Ja	5,069	Oc	4,011	4,568	4,557	9	2	42,638,591
14	All other states ^a	55	19,776	1	492	1,268	236	17,778	.....	.....	.....	.....	17,919	17,904	15	.....	264,327,465

COPPER SMELTING AND REFINING.

1	United States.....	34	19,654	.....	517	1,518	274	17,345	Ja	23,027	Au	15,351	10,907	10,937	60	.....	308,680,268
2	Smelting only.....	21	9,029	.....	246	761	103	7,910	Ja	10,982	Au	6,743	7,008	7,079	19	.....	171,825,621
3	Refining only.....	4	8,956	.....	135	334	87	5,400	Ja	7,540	Je	4,546	4,870	4,839	31	.....	72,206,539
4	Smelting and refining.....	9	4,669	.....	136	423	84	4,030	Ja	5,105	De	3,377	4,129	4,119	10	.....	64,047,808
5	Arizona.....	10	3,620	.....	111	364	33	3,112	Ja	3,914	My	2,662	3,111	3,101	10	.....	83,013,194
6	California.....	3	355	.....	27	26	13	280	Ja	602	Se	127	217	217	.....	.....	6,138,439
7	New Jersey.....	4	4,061	.....	137	357	101	4,066	Ja	4,926	De	3,624	3,624	3,584	40	.....	67,664,831
8	All other states ^a	17	11,018	.....	242	771	127	9,878	.....	.....	.....	.....	10,045	10,035	10	.....	151,833,804

LEAD SMELTING AND REFINING.

1	United States.....	25	7,354	1	234	509	112	6,438	Ja	8,054	Se	5,723	6,331	6,322	9	.....	115,676,768
2	Smelting only.....	18	5,487	1	146	419	82	4,839	Ja	6,101	Se	4,167	4,930	4,931	5	.....	57,992,579
3	Smelting and refining ^b	7	1,867	.....	88	150	30	1,599	Ja	1,953	De	1,354	1,395	1,391	4	.....	57,684,189
4	Utah.....	3	1,980	.....	42	170	19	1,740	Ja	2,253	Je	1,514	1,608	1,607	1	.....	18,152,457
5	All other states ^a	22	5,374	1	192	399	93	4,680	.....	.....	.....	.....	4,633	4,625	8	.....	97,524,311

ZINC SMELTING AND REFINING.

1	United States.....	39	14,903	.....	292	595	220	13,796	Ja	10,159	Je	12,250	14,147	14,131	14	2	98,757,355
2	Pigs, bars, plates, and sheets.....	33	13,914	.....	241	538	207	12,928	Ja	15,103	Je	11,405	13,119	13,103	14	2	87,770,508
3	All other.....	6	989	.....	51	57	13	868	Ja	1,056	Oc	398	1,028	1,028	.....	.....	10,986,847
4	Arkansas.....	3	568	.....	0	10	2	547	De	587	Ap	462	587	587	.....	.....	1,801,151
5	Colorado.....	4	444	.....	15	22	2	405	Ja	533	Jy	272	485	484	1	.....	1,495,237
6	Illinois.....	7	4,506	.....	110	148	24	4,224	Ja	4,791	No	3,022	4,085	4,084	1	.....	29,894,439
7	Kansas.....	3	775	.....	29	18	11	717	Ja	842	Oc	637	988	988	.....	.....	4,372,328
8	Oklahoma.....	11	2,410	.....	47	90	25	2,272	Ja	2,050	Jy	1,972	2,440	2,445	1	.....	12,045,470
9	All other states ^a	11	6,200	.....	82	331	156	5,631	.....	.....	.....	.....	5,850	5,843	11	2	49,148,730

SMELTING AND REFINING, METALS NOT ELSEWHERE SPECIFIED.

1	United States ^a	13	2,300	1	109	119	30	2,041	Ja	2,662	Ap	1,783	2,187	2,024	163	20,227,544
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^a Includes water wheels and turbines (irrespective of ownership of water supply).^b Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft belt or transmitted power from neighboring power plants).^c All other states embrace: California, 5 establishments; Connecticut, 1; Idaho, 1; Iowa, 1; Kansas, 4; Maryland, 1; Michigan, 4; Montana, 4; Nebraska, 1; Nevada, 2; New York, 3; Ohio, 1; Oklahoma, 12; Tennessee, 2; Texas, 1; Utah, 5; Virginia, 1; West Virginia, 3; Washington, 2; and Wisconsin, 1.^d All other states embrace: Maryland, 1 establishment; Michigan, 4; Montana, 3; Nevada, 2; New York, 1; Tennessee, 2; Texas, 1; Utah, 1; Virginia, 1; and Washington, 1.

SMELTING AND REFINING.

11

FOR THE INDUSTRIES, BY STATES: 1919.

EXPENSES.										POWER.						
Salaries and wages.			For contract work.	Rent and taxes.		For materials.			Value of products.	Value added by manufacture.	Primary horsepower.					Electric horsepower generated in establishments reporting.
Officials.	Clerks, etc.	Wage earners.		Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.	Total.			Owned.					
												Steam engines (not turbines).	Steam turbines.	Internal-combustion engines.	Water power. ¹	Rent. ²

SMELTING AND REFINING, NONFERROUS METALS.

Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
5,478,048	5,933,604	55,649,412	472,171	49,628	6,908,585	813,802,718	34,933,199	972,693,552	123,337,638	459,479	157,639	118,671	3,773	7,900	171,496	100,817	1
2,545,376	3,350,969	25,723,371	222,176	12,022	3,390,101	565,167,149	19,243,024	651,101,591	66,601,418	321,610	106,520	79,766	425	7,550	127,349	56,906	2
1,026,786	1,075,000	9,179,615	210,995	13,923	1,022,881	173,697,163	5,676,483	199,794,519	17,420,873	52,565	17,880	7,025	84	350	27,226	8,206	3
1,265,631	1,195,838	17,783,278	.....	17,100	1,760,487	60,568,127	9,446,601	104,122,933	34,108,210	73,604	28,802	28,030	3,264	.....	13,508	39,488	4
640,255	311,797	2,963,148	.....	3,583	726,116	14,370,279	587,088	20,074,504	5,117,137	11,700	4,437	3,850	.....	.....	3,413	5,217	5
683,844	972,262	4,771,998	98,454	1,022	1,302,241	71,670,919	6,997,987	94,184,312	15,515,406	86,253	27,545	39,089	225	.....	19,394	19,082	6
28,675	22,685	698,155	.....	.....	7,864	3,319,948	286,919	4,423,398	816,531	1,283	550	.....	.....	.....	733	155	7
141,383	214,807	1,884,005	240,216	600	256,321	14,028,595	1,172,200	18,803,444	3,692,649	12,504	5,000	502	.....	.....	7,002	3,383	8
540,314	399,840	6,442,044	.....	1,000	516,204	26,548,146	3,006,162	39,047,198	9,492,890	23,063	11,547	5,667	140	.....	5,700	7,050	9
148,275	82,257	1,050,528	.....	.....	63,808	7,246,869	424,658	9,620,344	1,948,817	5,382	4,252	298	.....	.....	832	922	10
179,362	175,018	989,333	.....	.....	194,253	7,458,335	501,039	9,217,883	1,258,514	7,319	2,100	3,475	.....	.....	1,744	.....	11
951,244	943,541	7,211,939	.....	3,590	674,501	237,280,832	2,984,920	256,944,808	16,673,058	55,404	35,737	15,498	50	.....	4,200	20,795	12
398,785	527,016	5,882,292	.....	.....	981,962	21,264,335	3,037,403	42,370,748	18,069,010	33,045	6,615	21,333	50	.....	5,047	25,772	13
2,406,166	2,596,169	26,719,118	133,501	40,416	2,908,431	424,978,739	16,541,908	497,391,412	55,870,763	235,226	64,293	32,899	3,308	7,900	126,826	32,658	14

COPPER SMELTING AND REFINING.

2,545,376	3,350,969	25,723,371	222,176	12,022	3,390,101	565,167,149	19,243,024	651,101,591	66,601,418	321,610	106,520	79,766	425	7,550	127,349	56,906	1
1,404,443	1,838,417	12,258,730	222,176	11,022	2,089,065	144,444,887	11,610,241	186,070,898	30,615,730	173,996	57,815	48,775	375	1,400	65,631	28,322	2
541,248	670,460	7,423,290	.....	.....	549,964	255,081,621	3,600,814	278,567,944	50,908	28,590	19,933	.....	.....	.....	2,415	14,445	3
599,085	842,086	6,041,351	.....	1,000	769,472	105,640,641	4,031,929	185,882,749	16,190,179	96,706	20,145	11,058	50	6,150	59,303	14,139	4
683,844	972,262	4,771,998	98,454	1,022	1,302,241	71,670,919	6,997,987	94,184,312	15,515,406	86,253	27,545	39,089	225	.....	19,394	19,082	5
169,295	62,771	428,241	.....	.....	74,164	1,344,798	392,333	704,461	5,843	375	.....	.....	.....	.....	5,468	.....	6
445,715	683,177	5,845,691	.....	.....	280,920	223,060,121	2,753,313	244,268,519	12,855,085	49,683	32,775	12,858	50	.....	4,000	15,822	7
1,256,522	1,642,759	15,177,641	123,722	11,000	1,741,776	263,491,311	9,069,371	310,117,158	37,526,476	179,831	45,825	27,819	150	7,650	98,487	22,002	8

LEAD SMELTING AND REFINING.

1,026,786	1,075,000	9,179,615	249,995	13,923	1,022,881	173,697,163	5,676,483	199,794,519	17,420,873	52,565	17,880	7,025	84	350	27,226	8,206	1
620,684	796,967	6,646,469	240,385	2,340	800,058	58,427,136	4,489,827	74,952,572	12,035,609	42,372	13,300	4,825	84	350	23,813	5,832	2
406,102	276,033	2,535,146	9,610	11,683	222,823	115,270,027	1,180,656	121,841,947	5,385,264	10,193	4,580	2,200	.....	.....	3,413	2,374	3
225,160	294,320	2,700,111	.....	.....	162,679	21,604,498	2,133,231	27,518,050	3,780,321	14,110	8,225	2,150	.....	.....	3,735	4,365	4
801,626	780,680	6,479,504	240,995	13,923	800,202	152,092,665	3,543,252	169,276,469	13,640,552	38,455	9,655	4,875	84	350	23,491	3,841	5

ZINC SMELTING AND REFINING.

1,265,631	1,195,838	17,783,278	.....	17,100	1,760,487	60,568,127	9,446,601	104,122,933	34,108,210	73,604	28,802	28,030	3,264	.....	13,508	39,488	1
1,075,593	1,081,750	16,135,100	.....	15,000	1,699,418	54,667,706	8,937,179	95,662,585	32,057,700	66,540	27,437	28,030	3,264	.....	7,809	39,098	2
190,038	114,088	1,642,178	.....	2,100	61,069	5,900,421	509,422	8,490,353	2,050,510	7,064	1,365	.....	.....	.....	5,690	390	3
28,675	22,685	698,155	.....	.....	7,864	3,319,948	286,919	4,423,398	816,531	1,283	550	.....	.....	.....	733	155	4
47,178	36,126	412,263	.....	600	10,715	706,993	189,281	1,443,347	547,073	2,071	959	2	.....	.....	1,119	1,916	5
417,086	320,831	4,993,890	.....	.....	366,679	15,812,236	2,641,012	24,953,952	6,500,704	19,796	10,747	5,667	140	.....	3,242	7,050	6
83,143	33,821	885,584	.....	15,000	50,652	3,996,232	667,339	6,037,920	1,374,349	3,523	1,190	625	1,190	.....	518	70	7
167,582	133,530	3,174,436	.....	.....	242,191	12,743,825	1,806,153	19,517,566	4,967,588	6,952	3,945	5	1,315	.....	1,687	2,545	8
521,992	640,346	7,618,910	.....	1,500	1,076,386	23,988,803	3,855,897	47,746,755	19,901,965	39,979	11,420	21,731	619	.....	6,299	27,752	9

SMELTING AND REFINING, METALS NOT ELSEWHERE SPECIFIED.

640,255	311,797	2,963,148	3,583	726,116	14,370,279	587,088	20,074,504	5,117,137	11,700	4,437	3,850	3,413	5,217	1
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¹ Includes "Refining only."

² All other states embrace: California, 1 establishment; Colorado, 5; Idaho, 1; Illinois, 2; Indiana, 2; Kansas, 1; Missouri, 3; Montana, 1; Nebraska, 1; Ohio, 1; Oklahoma, 1; Pennsylvania, 1; Washington, 1; and Wisconsin, 1.

³ All other states embrace: Indiana, 2 establishments; Iowa, 1; New Jersey, 1; Pennsylvania, 3; Utah, 1; and West Virginia, 3.

⁴ Distribution of establishments, by states: California, 1; Colorado, 2; Connecticut, 1; Illinois, 1; Missouri, 1; New Jersey, 4; New York, 2; and Pennsylvania, 1.

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

FOURTEENTH CENSUS OF THE UNITED STATES
MANUFACTURES: 1919

THE SOAP INDUSTRY

Prepared under the supervision of EUGENE F. HARTLEY, Chief Statistician for Manufactures

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or for which products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1919, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city, county, or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city, county, or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Classification by industries.—The establishments were assigned to the several classes of industries according to their products of chief value. The products reported for a given industry may thus, on the one hand, include minor products different from those covered by the class designation, and, on the other hand, may not represent the total product covered by this designation, because some products of this class may be made in establishments in which it is not the product of chief value.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1919 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners.

The number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date did not portray such conditions, an earlier date was requested.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, by sex, without distinction of age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The number of wage earners reported for the representative day, though given in certain tables for each separate industry, is not totaled for all industries combined, because, in view of the variations of date, such a total is not believed to be significant. It would involve more or less duplication of persons working in different industries at different times, would not represent the total number employed in all industries at any one time, and would give an undue weight to seasonal industries as compared with industries in continual operation.

In order to determine as nearly as possible the age distribution of the average number of wage earners for an industry, the per cent distribution by age of the wage earners for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. The percentages thus obtained have been applied to the average number of wage earners for the year to determine the average numbers 16 years and over, and under 16, employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calcu-

late accurately even so simple an average as this, since the number of wage earners fluctuates from month to month in every industry, and in some cases to a very great extent. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month, and while representing the number according to the pay rolls to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital (amount actually invested).—The instructions on the schedule for securing data relating to capital were as follows:

"The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises."

These instructions were identical with those employed at the censuses of 1914 and 1909. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include certain Federal taxes and state, county, and local taxes. Under "Federal taxes" there are included the internal revenue tax on manufactures (tobacco, beverages, etc.), excise taxes when included in values reported for products, corporation capital stock tax, and corporation income tax, but not the income tax for individuals and partners.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not always a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry, from a manufacturing standpoint, is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power equipment of the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, fuel oils, gasoline and other volatile oils, and gas, and represent the quantity used during the year. As only the principal kinds of fuel are shown, comparison as to the total cost of all fuel is impracticable.

THE SOAP INDUSTRY.

GENERAL STATISTICS.

General character of the industry.—The establishments under this classification, including the soap departments of slaughtering and meat-packing plants, manufacture hard and soft soaps, liquid soaps, etc. In addition, there is a considerable production of soap by establishments in other lines of manufacture, and the soap products of such establishments are included in the detailed statistics of products.

Comparative summary.—Table 1 presents the statistics for the census years 1904 to 1919, inclusive, with percentages of increase. Prior to 1904 soap and candles were combined, and as a combined industry it runs back to the census of 1859.

Principal states, ranked by value of products.—Table 2 summarizes the more important statistics for the industry, by states, ranked according to value of products. Some of the states which can not be shown separately ranked higher than some of those given in the table, notably Ohio, which was first in value of products; Kansas, fifth; Nebraska, thirteenth; and Texas, seventeenth. Though establishments were reported from 35 states, the industry is largely centralized, the leading states being Ohio, New York, New Jersey, Illinois, Kansas, and Massachusetts—three states of the Middle West and three of the North Atlantic.

Persons engaged in the industry.—The age classification of the average number of wage earners in this table is an estimate obtained by the method described in the "Explanation of terms." Figures for the states will be found in Table 15.

Table 3 shows the proportion of female wage earners increased from 25 per cent of all wage earners in 1914 to 29.1 per cent in 1919, and similar gains are shown for the female employees in the salaried groups.

Wage earners, by months.—The statistics presented in Table 4 are designed to show the steadiness of employment, or the reverse, in accordance with the industrial conditions existing during the year. Females constituted 29.1 per cent of the average number of wage earners in 1919, with a maximum of 45.8 per cent of the total in Wisconsin. The percentage was also high in Missouri, 40 per cent, and in Illinois 37.4 per cent. The statistics show a greater range between minimum and maximum employment for 1919 than for prior censuses. In Missouri the minimum was but 55.7 per cent of the maximum, while in Indiana employment was fairly steady and the minimum was 85.5 per cent of the maximum.

Prevailing hours of labor.—The figures shown in Table 5 emphasize the tendency toward the shortening of the working day. In 1909, 66 per cent, and in

1914, 57.7 per cent of the total average number of wage earners were in establishments where the prevailing hours of labor per week were in excess of 54; whereas in 1919 but 10.3 per cent were in this class. On the other hand, in 1909 only 4.9 per cent were in establishments where the prevailing hours per week were 48 or less; whereas in 1914 this percentage had increased to 7.2 and in 1919 to 63.4 per cent.

Size of establishments, by average number of wage earners.—The figures in Table 6 show the growth in the size of establishments during the period 1914–1919, the average number of wage earners for all plants in 1919 being 59 as compared with 38 in 1914. In 1914 there were 7 establishments each of which employed over 500 wage earners, aggregating 6,159. In 1919 there were 11 establishments of this character, with 12,484 wage earners.

Size of establishments, by value of products.—Measured by value of products, it is apparent that the increase in number of establishments is in the higher groups, though this grouping is materially affected by the high level of values in 1919 as compared with 1914. Table 7 shows the degree of concentration of production in large establishments. The average value of products per establishment increased from \$265,000 in 1909 to \$345,000 in 1914 and to \$910,000 in 1919.

Character of ownership.—Table 8 presents the statistics concerning the character of ownership, or legal organization, of the establishments, for the United States and the principal states. The figures show growth for the corporation group, which in 1919 averaged approximately \$1,390,000 in value of products per establishment as compared with \$467,000 in 1909; whereas the other two groups combined, "Individuals" and "All others," averaged \$64,000 per establishment in 1919 as compared with \$80,000 in 1909.

Number and horsepower of types of prime movers.—Table 9 presents the statistics concerning power. The rated horsepower in 1919 was slightly less than that reported in 1914, the decrease being in steam power. There is shown a material increase in rented electric power and also in electric power generated by the establishments reporting. In 1919 the rated capacity of all electric motors was nearly double the capacity reported for 1914. In 1919, 90.9 per cent of the total primary power, whether owned or rented, was utilized in the form of electric power, as compared with 47.5 per cent in 1914 and 45.3 per cent in 1909.

Fuel consumed.—Table 10 presents the statistics for fuel consumed, by kinds and by states.

MANUFACTURES.

TABLE 1.—COMPARATIVE SUMMARY: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904	PER CENT OF INCREASE. ¹		
					1914-1919	1909-1914	1904-1909
Number of establishments.....	348	371	420	436	-6.2	11.7	-3.7
Persons engaged.....	28,919	19,839	18,393	14,501	45.8	7.9	24.8
Proprietors and firm members.....	183	252	329	399	-27.4	23.4	-17.5
Salaried employees.....	8,300	5,415	5,065	3,058	53.3	6.9	65.6
Wage earners (average number).....	20,436	14,172	12,999	11,044	44.2	9.0	17.7
Primary horsepower.....	33,710	35,737	28,360	20,228	-5.7	26.0	40.2
Capital.....	\$212,416,866	\$92,871,533	\$71,051,109	\$54,816,301	128.7	29.1	31.3
Salaries and wages.....	\$35,399,914	\$14,770,029	\$11,732,431	\$8,265,248	139.5	26.0	41.9
Salaries.....	\$14,171,851	\$6,691,692	\$5,505,519	\$3,502,572	111.8	21.5	57.2
Wages.....	\$21,228,063	\$8,078,337	\$6,226,882	\$4,762,676	162.6	29.9	30.7
Paid for contract work.....	\$639,688	\$18,916	\$119,000	\$28,504	1,207.7	59.1	219.6
Rent and taxes.....	\$6,068,675	\$1,021,534	\$541,003	\$413,430	494.1	38.8	30.9
Cost of materials.....	\$238,518,858	\$88,806,786	\$72,179,418	\$43,025,008	168.4	23.1	65.5
Value of products.....	\$316,740,115	\$127,942,441	\$111,357,777	\$68,274,700	147.6	14.9	61.1
Value added by manufacture ²	\$78,221,257	\$30,075,055	\$39,178,359	\$24,049,092	100.2	-0.3	58.9
Soap production..... pounds.....	2,432,591,000	2,121,230,000	1,854,286,000	1,430,500,000	14.7	14.4	23.6
Hard soap.....	2,321,793,000	2,084,228,000	1,791,249,000	1,380,610,000	12.5	15.0	23.4
Other soap (soft soap, liquid soap, and special soap articles).....	110,798,000	47,002,000	60,037,000	43,890,000	94.4	-5.1	36.8

¹ A minus sign (-) denotes decrease.² Exclusive of internal revenue.³ Value of products less cost of materials.⁴ Reported as soft soap.

TABLE 2.—PRINCIPAL STATES, RANKED BY VALUE OF PRODUCTS: 1919.

STATE.	Number of establishments	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.			STATE.	Number of establishments	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
		Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.			Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.
United States.	348	20,436	100.0	....	\$316,740	100.0	....	\$78,221	100.0	....	Connecticut.....	6	445	2.2	12	\$5,145	1.6	12	\$2,967	3.8	10
New York.....	50	4,159	20.4	1	50,844	16.1	2	13,060	16.7	2	Rhode Island.....	8	117	0.6	14	1,044	0.6	14	688	0.9	14
New Jersey.....	16	2,889	14.1	3	37,382	11.8	3	10,035	12.8	3	Iowa.....	7	82	0.4	15	1,427	0.5	15	434	0.6	15
Illinois.....	29	2,270	11.1	4	25,734	8.1	4	6,250	8.0	5	Minnesota.....	7	46	0.2	17	822	0.3	16	200	0.3	16
Massachusetts....	27	1,008	4.9	7	18,730	5.9	6	7,556	9.7	4	Colorado.....	6	11	0.1	22	135	(1)	21	31	(1)	22
Pennsylvania.....	53	1,214	5.9	6	16,003	5.1	7	5,710	7.3	6	Washington.....	5	10	0.1	23	98	(1)	22	50	0.1	21
California.....	27	608	3.0	10	11,295	3.6	8	2,983	3.8	9	Louisiana.....	6	24	0.1	20	70	(1)	23	31	(1)	23
Wisconsin.....	11	691	3.4	8	8,909	2.8	9	3,189	4.1	8	Utah.....	4	4	(1)	30	14	(1)	30	8	(1)	29
Missouri.....	7	652	3.2	9	8,556	2.7	10	2,888	3.7	11	All other states ..	63	5,666	27.7	....	123,804	39.1	....	19,533	25.0	....
Indiana.....	10	540	2.6	11	5,078	1.8	11	2,608	3.3	12											

¹ Less than one-tenth of 1 per cent.

TABLE 3.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1914, AND 1909.

CLASS.	Census year.	Total.	Male.	Female.	PER CENT OF TOTAL.		CLASS.	Census year.	Total.	Male.	Female.	PER CENT OF TOTAL.	
					Male.	Female.						Male.	Female.
All classes.....	1919	28,919	10,827	9,092	68.6	31.4	Clerks and other subordinate salaried employees.....	1919	6,957	3,911	3,046	56.2	43.8
	1914	19,839	14,071	5,108	74.0	26.0		1914	4,844	3,237	1,607	66.8	33.2
	1909	18,393	13,780	4,613	74.9	25.1		1909	4,431	3,269	1,162	73.8	26.2
Proprietors and officials.....	1919	1,526	1,426	100	93.4	6.6	Wage earners (average number).....	1919	20,436	14,490	5,946	70.9	29.1
	1914	823	799	24	97.1	2.9		1914	14,172	10,635	3,537	75.0	25.0
	1909	663	625	38	94.1	5.9		1909	12,999	9,586	3,413	73.7	26.3
Proprietors and firm members.....	1919	183	171	12	93.4	6.6	16 years of age and over.....	1919	20,197	14,368	5,829	71.1	28.9
	1914	252	236	16	93.7	6.3		1914	13,964	10,532	3,432	75.4	24.6
	1909	329	306	23	93.0	7.0		1909	12,064	9,429	2,635	74.5	25.5
Salaried officers of corporations.....	1919	365	343	22	94.0	6.0	Under 16 years of age.....	1919	239	122	117	51.0	49.0
	1914	280	280	0	97.9	2.1		1914	208	103	105	49.5	50.5
	1909	274	265	9	96.7	3.3		1909	335	157	178	46.9	53.1
Superintendents and managers.....	1919	978	912	66	93.3	6.7							
	1914	285	283	2	99.3	0.7							
	1909	360	354	6	98.3	1.7							

TABLE 4.—WAGE EARNERS, BY MONTHS, FOR STATES: 1919.

[The month of maximum employment is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States:														
1919.....	20,436	20,590	18,789	18,055	<i>17,063</i>	19,223	20,932	21,759	22,567	22,653	22,080	21,229	19,392	79.3
Males.....	14,490	14,578	13,260	12,880	<i>12,774</i>	13,753	14,856	15,434	16,091	16,169	15,541	14,946	13,592	79.0
Females.....	5,946	6,012	5,523	<i>5,175</i>	5,189	5,470	6,076	6,325	6,476	6,484	6,539	6,283	5,800	79.1
1914.....	14,172	14,212	14,325	14,427	14,461	14,418	14,138	13,893	13,927	14,160	14,286	14,106	<i>13,711</i>	94.8
1909.....	12,999	<i>12,337</i>	12,671	12,885	12,843	12,476	12,653	13,001	13,105	13,250	13,475	13,649	13,650	90.4
California.....	608	633	632	693	545	<i>524</i>	622	634	603	608	625	645	632	81.2
Illinois.....	2,270	2,383	2,222	<i>1,969</i>	1,970	2,144	2,236	2,374	2,461	2,507	2,474	2,341	2,179	78.1
Indiana.....	540	531	517	542	525	543	550	553	567	585	555	512	<i>600</i>	85.5
Massachusetts.....	1,008	915	858	855	780	882	896	979	1,052	1,121	1,257	1,274	1,221	61.7
Missouri.....	652	716	513	448	527	637	681	804	785	680	667	681	685	55.7
New Jersey.....	2,880	2,863	2,702	<i>2,002</i>	2,695	2,773	2,909	3,024	3,150	3,111	2,991	2,894	2,893	84.5
New York.....	4,159	4,293	3,847	<i>3,842</i>	3,869	4,052	4,237	4,329	4,497	4,512	4,372	4,203	3,855	85.2
Pennsylvania.....	1,214	1,128	1,072	<i>1,061</i>	1,105	1,137	1,256	1,331	1,383	1,342	1,284	1,249	1,240	77.1
Wisconsin.....	601	672	744	666	584	<i>529</i>	660	676	717	772	767	743	762	68.5
States employing a considerable number of females.														Per ct. av. is of total.
Illinois.....	848	870	788	707	725	780	803	884	918	991	970	893	847	37.4
Massachusetts.....	317	244	241	240	229	277	279	310	339	342	481	411	411	31.4
Missouri.....	201	204	177	<i>153</i>	180	256	264	328	342	275	279	285	299	40.0
New Jersey.....	893	904	894	874	852	882	905	904	893	945	928	898	857	30.9
New York.....	1,181	1,235	1,181	1,159	1,186	1,190	1,228	1,234	1,210	1,161	1,128	1,162	<i>1,089</i>	28.4
Pennsylvania.....	279	235	<i>226</i>	233	262	266	291	283	304	298	315	328	310	23.0
Wisconsin.....	316	354	354	223	196	176	284	289	343	438	425	350	360	45.7

TABLE 5.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR STATES: 1919 AND 1914.

STATE.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—								STATE.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
			44 and un- der.	Be- tween 44 and 48.	48.1	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Over 60.				44 and un- der.	Be- tween 44 and 48.	48.1	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Over 60.
United States.	1919	20,430	2,450	832	9,667	4,474	905	1,802	203	7	Missouri.....	1919	652	1	1	378	254	18			
	1914	14,172	.....	.....	1,027	3,446	1,514	6,371	1,814		1914	521	(²)	(²)	101	389	29	2	
	1909	12,990	.....	.....	635	1,786	1,998	3,840	.....	4,731	New Jersey.....	1919	2,889	2	.....	2,206	543	20	118
California.....	1910	608	318	5	91	58	130	.....	.....	.....	1914	2,057	(²)	(²)	17	1,609	56	355	20
	1914	244	(²)	(²)	0	24	137	.....	74	.....	New York.....	1919	4,159	25	2	3,090	508	138	246
Illinois.....	1919	2,270	134	31	877	231	161	757	79	.....	1914	3,168	(²)	(²)	100	1,265	131	1,380	283	
	1914	2,144	(²)	(²)	5	194	24	1,300	621	.....	Pennsylvania.....	1919	1,214	589	8	319	121	31	142	
Indiana.....	1919	540	7	3	4	487	.....	20	10	.....	1914	1,159	(²)	(²)	637	74	204	137	107
	1914	315	(²)	(²)	3	1	.....	127	184	.....	Wisconsin.....	1919	691	.....	.....	17	660	1	12
Massachusetts.....	1919	1,008	714	.....	156	76	42	20	.....	.....	1914	272	(²)	(²)	11	21	.....	234	6
	1914	460	(²)	(²)	23	199	110	128	.....	.....									

¹ Includes 48 and under for 1914 and 1909.² Corresponding figures not available.

TABLE 6.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS, FOR STATES: 1919.

STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING—																
	Establishments.	Wage earners (average number).	No wage earn- ers.	1 to 5 wage earn- ers, inclusive.	6 to 20 wage earn- ers, inclusive.	21 to 50 wage earn- ers, inclusive.	51 to 100 wage earn- ers, inclusive.	101 to 250 wage earn- ers, inclusive.	251 to 500 wage earn- ers, inclusive.	501 to 1,000 wage earn- ers, inclusive.	Over 1,000 wage earn- ers.								
			Establish- ments.	Establish- ments.	Wage earn- ers.	Establish- ments.	Wage earn- ers.	Establish- ments.	Wage earn- ers.	Establish- ments.	Wage earn- ers.	Establish- ments.	Wage earn- ers.	Establish- ments.	Wage earn- ers.	Establish- ments.	Wage earn- ers.		
United States-1919.... 1914....	348 371	20,436 14,172	49 43	153 166	390 306	70 90	853 1,033	31 29	981 1,017	12 14	957 1,125	14 17	2,187 2,763	8 5	2,584 1,679	7 4	4,750 2,386	4 3	7,728 3,773
California.....	27	608	9	6	26	8	94	2	66	2	162	1	109	1	313	2	1,598		
Illinois.....	29	2,270		12	28	7	71	4	111			2	300						
Indiana.....	10	540		6	18	1	11		24			1	181	1	306				
Massachusetts.....	27	1,008	3	11	19	8	104	2	77	1	96	1	141			1	571		
Missouri.....	7	652		3	7	1	13					2	378	1	254				
New Jersey.....	16	2,889		6	22	2	24	2	77	3	202	1	118	1	306			1	2,140
New York.....	50	4,159	7	27	70	10	142	5	139	2	153	2	305	1	376			2	2,974
Pennsylvania.....	53	1,214	8	30	84	10	123		76			1	119	1	256	1	556		
Wisconsin.....	11	691	3	3	3	4	57									1	631		

MANUFACTURES.

TABLE 7.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919, 1914, AND 1909.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
All classes.....	348	371	420	20,436	14,172	12,000	\$310,740,115	\$127,042,441	\$111,357,777	\$78,221,257	\$39,075,655	\$39,178,359
Less than \$5,000.....	69	82	104	32	60	83	130,132	185,506	253,674	62,374	98,548	130,996
\$5,000 to \$20,000.....	64	82	102	141	200	264	750,872	879,269	1,080,754	334,609	389,719	468,411
\$20,000 to \$100,000.....	78	102	110	432	708	834	3,066,415	4,916,756	5,362,680	1,342,782	1,687,374	1,808,374
\$100,000 to \$500,000.....	80	65	82	1,272	2,711	3,080	17,917,731	14,351,125	27,740,013	6,393,243	8,311,788	10,460,303
\$500,000 to \$1,000,000.....	21	11	22	1,188	10,433	7,838	13,571,081	7,310,314	70,911,647	6,294,596	28,588,226	26,310,273
\$1,000,000 and over.....	36	29	22	17,371	10,433	7,838	280,397,884	100,293,471	70,911,647	64,793,803	28,588,226	26,310,273
PER CENT DISTRIBUTION.												
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....	19.8	22.1	24.8	0.2	0.4	0.6	(1)	0.1	0.2	0.1	0.3	0.3
\$5,000 to \$20,000.....	18.4	22.1	24.3	0.7	1.4	2.0	0.2	0.7	1.0	0.4	1.0	1.2
\$20,000 to \$100,000.....	22.4	27.5	26.2	2.1	5.4	6.4	1.3	3.8	4.8	1.7	4.3	4.6
\$100,000 to \$500,000.....	23.0	17.5	19.5	6.2	19.1	30.6	5.7	11.2	24.9	8.2	21.3	26.7
\$500,000 to \$1,000,000.....	6.0	3.0	3.0	5.8	73.6	60.3	4.3	5.7	69.1	6.8	73.2	67.2
\$1,000,000 and over.....	10.3	78.	5.2	85.0	73.6	60.3	88.5	78.4	69.1	82.8	73.2	67.2

1 Less than one-tenth of 1 per cent.

TABLE 8.—CHARACTER OF OWNERSHIP, BY STATES: 1919 AND 1914.

STATE.	Cen- sus year.	NUMBER OF ESTABLISH- MENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.						VALUE OF PRODUCTS.							
		Indi- vid- uals.	Cor- pora- tions.	All oth- ers.	Total.	In establishments owned by—			Per cent of total.			Total.	Of establishments owned by—			Per cent of total.		
						Indi- vid- uals.	Cor- pora- tions.	All oth- ers.	Indi- vid- uals.	Cor- pora- tions.	All oth- ers.		Indi- vid- uals.	Corpora- tions.	All others.	Indi- vid- uals.	Corpora- tions.	All oth- ers.
United States.....	1919	87	222	39	20,436	299	19,780	357	1.5	96.8	1.7	\$310,740,115	\$4,517,047	\$308,620,905	\$3,601,473	1.4	97.4	1.1
	1914	106	200	65	14,172	484	13,039	649	3.4	92.0	4.6	127,942,441	3,829,844	120,009,032	4,103,565	3.0	93.8	3.2
	1909	142	201	77	12,007	801	10,007	1,591	6.2	81.6	12.2	111,357,777	5,302,283	93,937,697	12,117,797	4.8	84.4	10.9
California.....	1919	7	15	5	608	591	17	.....	97.2	2.8	.....	11,295,294	.....	11,048,199	1,247,095	.....	97.8	2.2
Illinois.....	1919	1	24	44	2,270	.....	2,220	150	.....	97.8	2.2	.....	.....	25,337,590	1,396,242	.....	98.5	1.5
	1914	7	18	2	2,144	39	2,105	.....	1.8	98.2	.....	21,420,035	247,769	21,172,266	.....	1.2	98.8	.....
Indiana.....	1919	1	9	.....	540	.....	540	.....	100.0	.....	.....	5,678,183	.....	5,678,183	.....	100.0	.....	.....
Massachusetts.....	1919	7	15	5	1,008	9	980	10	0.9	98.1	1.0	18,729,572	126,236	18,520,896	82,440	0.7	98.9	0.4
Missouri.....	1919	1	6	.....	652	.....	652	.....	100.0	.....	.....	8,555,927	.....	8,555,927	.....	100.0	.....	.....
	1914	2	5	2	521	.....	521	.....	100.0	.....	.....	4,910,685	.....	4,910,685	.....	100.0	.....	.....
New Jersey.....	1919	2	12	2	2,880	.....	2,880	.....	100.0	.....	.....	37,381,759	.....	37,381,759	.....	100.0	.....	.....
	1914	2	12	2	2,057	.....	2,057	.....	100.0	.....	.....	16,692,406	.....	16,692,406	.....	100.0	.....	.....
New York.....	1919	10	44	2	4,159	114	4,045	.....	2.7	97.3	.....	50,843,837	2,186,705	48,657,132	.....	4.3	95.7	.....
	1914	20	36	0	3,168	140	3,024	4	4.4	95.5	0.1	27,520,199	1,665,793	25,793,857	36,549	6.2	93.7	0.1
Pennsylvania.....	1919	20	15	9	1,214	80	949	179	7.1	78.2	14.7	16,063,270	969,691	13,276,366	1,817,219	6.0	82.7	11.8
	1914	26	11	13	1,159	105	732	322	0.1	63.2	27.8	10,098,393	621,632	7,078,032	1,798,729	6.2	76.0	17.3
Wisconsin.....	1919	4	7	.....	691	13	678	.....	1.9	98.1	.....	8,908,906	102,255	8,806,651	.....	1.1	98.9	.....

1 Includes the group "Individuals."

2 Includes the group "All others."

3 Includes the groups "Individuals" and "All others."

TABLE 9.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919, 1914, AND 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
	1919	1914	1909	Amount.			Per cent distribution.		
				1919	1914	1909	1919	1914	1909
Primary power, total.....	1,350	846	696	33,710	35,737	28,360	100.0	100.0	100.0
Owned.....	253	414	405	25,028	30,091	25,038	74.2	84.2	88.3
Steam.....	240	399	440	24,787	29,805	24,588	73.5	83.4	86.5
Engines.....	220	(3)	(3)	22,352	(3)	(3)	66.3		
Turbines.....	11	(3)	(3)	2,435	(3)	(3)	7.2		
Internal-combustion engines.....	12	10	14	201	120	245	0.6	0.3	0.9
Water wheels and turbines.....	1	5	5	40	166	255	0.1	0.5	0.9
Rented.....	1,097	432	231	8,682	5,640	3,322	25.8	15.8	11.7
Electric.....	1,097	432	231	8,672	4,014	1,974	25.7	11.2	7.0
Other.....				10	1,632	1,348	(3)	4.6	4.8
Electric.....	4,177	1,902	1,196	30,649	16,960	12,830	100.0	100.0	100.0
Rented.....	1,097	432	231	8,672	4,014	1,974	28.3	23.7	15.4
Generated by establishments reporting.....	3,080	1,470	965	21,977	12,946	10,855	71.7	76.3	84.6

1 Figures for horsepower include for 1909 the amount reported under the head of "Other" owned power. 2 Figures not available. 3 Less than one-tenth of 1 per cent.

TABLE 10.—FUEL CONSUMED, BY STATES: 1919.

STATE.	Cen- sus year.	COAL.		Coke (tons, 2,000 pounds).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
		Anthracite ¹ (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).				
United States.....	1919	107,932	606,385	1,082	93,853	3,030	12,023
	1914	83,378	515,356	2,850	36,150	(*)	70,948
California.....	1919		16		79,560	122	188
	1914	11	1,297		34,851		169
Illinois.....	1919	78	99,051	18	4		224
	1914	11	112,409	23	621		3,343
Indiana.....	1919		12,254		4,000		164
	1914		10,091	38			
Massachusetts.....	1919	9,353	8,775	111	355		45
	1914	316	10,456	27			80
Missouri.....	1919		20,616	413			96
	1914		27,189				50
New Jersey.....	1919	77,733	6,651				72
	1914	52,564	9,804				6,190
New York.....	1919	16,343	94,278	497	1,263	2,701	2,229
	1914	27,874	107,922		510		4,009
Pennsylvania.....	1919	1,519	38,055		6,426	96	2,486
	1914	2,446	26,996	2,753			15,925
Wisconsin.....	1919	15	11,013	3			2,740
	1914	2	4,310	1			49
All other states.....	1919	2,891	315,675	40	2,245	111	3,779
	1914	154	204,882	13	168		41,133

¹ Includes some semianthracite.² Included in figures for fuel oils.

SPECIAL STATISTICS.

Material and products.—Table 11 shows the statistics for the principal materials and the products for 1919, 1914, and 1909; also the number of establishments involved. The statistics for materials relate only to establishments manufacturing soap as the chief product, which constitute the classified industry. Establishments in other industries that manufactured soap as a subsidiary product did not report the materials used in soap manufacture. The table gives the statistics for certain intermediates made from purchased materials and consumed in soap manufacture in the same establishment. The statistics for products embrace all soap products, inclusive of those made by subsidiary soap establishments.

The expense for fats and oils, including fish oil and fatty acids, in 1919, constituted 49 per cent of the cost of all materials, as compared with 62 per cent in 1914 and 57.3 in 1909. The item "All other materials" includes materials consumed in the manufacture of products other than soaps, such as cottolene, lard substitutes, edible oils, etc., as well as boxes and containers.

The production of hard soaps as reported in 1919 is an increase of 12.5 per cent in quantity and 117.3 per cent in value over the corresponding figures for 1914, the increase for the period 1909-1914 being 15 per

cent in quantity and 14.7 in value. The soap establishments reported a total production of 49,498,627 pounds of refined glycerin, of which 2,121,476 pounds were consumed in the establishments producing. The total production of refined glycerin by all manufacturing establishments, including those in the chemical and other industries, was approximately 129,000,000 pounds, which, however, includes some refined glycerin from imported stock.

The schedule used called for the quantity and value of the different classes of hard soaps, but some manufacturers could not furnish separate values for the different classes, and there was some confusion due to the fact that the distinction between the different kinds is not clearly marked. The figures for powdered soap, sold as such, include 67,453,534 pounds of scouring soaps and cleaners, valued at \$4,355,345. The returns were tabulated as reported by the manufacturers. The bulk of the item "All other hard soaps"—95 per cent of same—was reported under this head without other indication as to kind or character.

Table 12 shows, by states, for 1919 the quantity and cost of the principal materials and Table 13 the quantity and value of the soap products by states.

TABLE 11.—MATERIALS AND PRODUCTS; DETAILED STATISTICS OF QUANTITY AND COST OR VALUE: 1919, 1914, AND 1909.

	1919	1914	1909		1919	1914	1909
Number of establishments.....	439	513	526	Hard soaps:			
The soap industry.....	348	371	420	Quantity, pounds.....	2,321,793,000	2,064,228,000	1,794,249,000
Establishments manufacturing subsidiary soap products.....	91	142	106	Tallow soap.....	945,414,000	938,447,000	944,409,000
MATERIALS. ¹				Olefin soap.....	110,785,000	42,524,000	33,096,000
Total cost.....	\$238,518,858	\$88,866,786	\$72,170,418	Roots soap.....	16,191,000	111,083,000	73,444,000
Animal fats, tallow, grease, etc.:				Toilet soap.....	179,350,000	169,928,000	111,571,000
Pounds.....	406,411,643			Dye soap.....	21,710,000	(^e)	(^e)
Cost.....	\$54,985,208			Powdered soap, sold as such.....	466,530,000	387,744,000	301,178,000
Red oil (commercial oleic acid):				Soap chips.....	181,837,000	97,740,000	329,953,000
Gallons.....	3,227,386	² 546,280,571	² 413,060,787	All other hard soaps.....	399,970,000	336,778,000	
Cost.....	\$2,598,366	\$32,565,800	\$23,341,005	Value.....	\$227,050,710	\$104,464,542	\$91,064,466
Other, including fish oil, fatty acids, etc.:				Soft soap:			
Gallons.....	4,087,087			Pounds.....	74,463,000	57,002,000	60,037,000
Cost.....	\$3,050,407			Value.....	\$3,925,060	\$1,697,424	\$1,266,187
Vegetable oils:				Liquid soap:			
Coconut oil—				Pounds.....	10,033,000	(^e)	(^e)
Gallons.....	24,349,831			Value.....	\$1,255,213	(^e)	(^e)
Cost.....	\$28,217,738			Special soap articles:			
Palm-kernel oil—				Pounds.....	36,302,000		
Gallons.....	606,807	13,225,330	11,856,337	Value.....	\$3,568,693	\$832,654	\$706,177
Cost.....	\$601,062	\$0,406,583	\$5,875,294	Lye:			
Cottonseed oil—				Pounds.....	16,301,000	23,346,000	
Gallons.....	7,483,977	15,003,601	24,221,712	Value.....	\$1,780,291	\$801,265	
Cost.....	\$8,274,155	\$0,700,688	\$0,718,988	Glycerin: ⁷			
Other vegetable oils:				Crude, for sale—			
Gallons.....	³ 11,320,861			Pounds.....	18,228,447	12,745,336	
Cost.....	\$13,293,075	⁴ 123,032,886	⁴ 04,050,892	Value.....	\$2,482,770	\$1,817,536	
Soap stock:				Refined, pounds.....	40,408,027	34,831,082	
Pounds.....	112,353,079	\$0,456,784	\$2,453,609	For sale—			
Cost.....	\$5,773,182			Pounds.....	47,377,151	32,074,491	\$6,790,282
Rosin:				Value.....	\$11,401,213	\$5,775,887	
Pounds.....	119,520,661	185,310,786	207,200,447	Produced and consumed, pounds.....	2,121,476	2,156,591	5,879,279
Cost.....	\$7,836,738	\$4,067,992	\$4,362,412	Stearin:			
Caustic soda:				Pounds.....	3,130,683		
Tons (2,000 pounds).....	80,279	55,320	52,172	Value.....	\$825,402		
Cost.....	\$5,700,421	\$1,936,575	\$2,212,232	Candle pitch, tar or stearin pitch:			
Soda ash:				Pounds.....	5,211,377		
Tons.....	92,219	140,983	121,016	Value.....	\$91,336	(^e)	
Cost.....	\$3,360,866	\$1,097,575	\$2,281,787	Red oil (commercial oleic acid):			
All other materials.....	⁵ \$104,696,760	\$25,784,600	\$21,933,191	Produced.....	1,985,386		
Produced in works where consumed. ¹				For sale—			
Red oil, gallons.....	1,552,179	3,653,557	3,128,736	Gallons.....	433,207		
Tallow, pounds.....	67,113,763	5,331,000	10,604,000	Value.....	\$470,146		
Cottonseed oil, gallons.....	23,800	241,095	2,300,098	Made and consumed, gallons.....	1,562,179		
Caustic lye, gallons.....	28,552,086	22,777,000	15,804,000	Candles:			
Sodium silicate, pounds.....	98,003,158	43,197,255	37,466,246	Pounds.....	5,483,173	(^e)	
Glycerin, pounds.....	40,472,470	2,156,591	5,879,279	Value.....	\$818,076	\$150,492	\$15,628,076
Framed soap, pounds.....	736,480,448	618,096,000	524,775,000	Glue:			
PRODUCTS.				Pounds.....	35,448		
Total value.....	\$337,879,913	\$135,304,499	\$115,455,100	Value.....	\$2,929		
Soap industry (all products).....	\$316,740,115	\$127,942,441	\$111,357,777	Tankage:			
Subsidiary soap products from other industries.....	\$21,139,798	\$7,362,058	\$4,097,413	Tons.....	14,350		
				Value.....	\$492,083		

¹ Not including those consumed in soap manufacture by establishments making subsidiary soap products.² Reported as "tallow, grease, and other fats."³ Contains the following oils:

	Gallons.	Cost.
Castor.....	302,746	\$463,745
Corn.....	208,118	\$41,087
Linseed.....	38,785	\$5,982
Olive.....	124,644	\$264,896
Palm.....	2,302,493	\$2,415,798
Peanut.....	407,359	\$606,490
Soja-bean.....	7,780,746	\$8,082,380
Other vegetable oils.....		1,163,617

⁴ Reported as "foots."⁵ Includes food products—lard substitutes, edible oils, etc., cottonseed products, and hardened oil—to the value of \$55,705,711; patent medicines and compounds \$2,014,378; cleansing and polishing preparations, \$354,521, and other miscellaneous products, \$12,930,566.⁶ Includes other materials as follows:

	Quantity.	Cost.
Hydrogenated oils, gallons.....	17,316,625	\$1,785,885
Sodium silicate, tons (2,000 pounds).....	106,087	2,041,784
Caustic potash, tons.....	1,543	605,505
Borax, tons.....	930	129,470
Talc, etc., tons.....	42,708	677,215
Other constituent materials.....		564,963

⁷ Figures not available.⁸ Total production of refined glycerin, all industries, in 1919—69,464,296 pounds (includes 2,121,467 pounds made and consumed); Crude glycerin made for sale 21,402,735 pounds. See report on Chemicals.

TABLE 12.—PRINCIPAL MATERIALS, BY STATES: 1919.

MATERIAL AND STATE.	Quantity.	Cost.	MATERIAL AND STATE.	Quantity.	Cost.
Animal fats, tallow, grease, etc.	Pounds. 406,411,643	\$54,985,298	Vegetable oils—Continued.		
California.....	17,990,251	2,098,888	Olive-oil foots—Continued.	Pounds.	
Illinois.....	63,456,414	7,578,897	Pennsylvania.....	711,572	\$136,199
Indiana.....	8,458,414	995,197	Wisconsin.....	1,051,547	244,582
Massachusetts.....	39,413,627	5,677,720	All other states.....	309,086	67,848
Missouri.....	8,897,135	513,138	Gallons.	2,302,463	2,415,798
New Jersey.....	39,861,781	5,947,183	Illinois.....	41,829	54,099
New York.....	75,761,378	10,424,887	Massachusetts.....	255,001	251,759
Pennsylvania.....	27,838,675	3,938,809	New Jersey.....	1,725,532	1,785,712
Rhode Island.....	4,067,950	535,002	New York.....	129,058	140,983
All other states.....	126,696,018	17,275,517	Rhode Island.....	49,021	59,885
Red oil (commercial oleic acid).....	Gallons. 3,227,386	2,598,366	All other states.....	101,022	123,360
Massachusetts.....	142,304	174,555	Palm-kernel oil.....	606,897	691,962
New Jersey.....	2,017,193	1,520,076	New Jersey.....	16,550	25,550
Pennsylvania.....	157,422	183,349	New York.....	9,838	13,299
All other states.....	910,467	740,389	Pennsylvania.....	283,490	322,624
Other, including fish oil, fatty acids, etc.	4,087,087	3,059,407	All other states.....	297,019	330,519
Illinois.....	64,143	93,593	Peanut oil.....	407,359	506,490
Massachusetts.....	38,217	41,785	California.....	135,156	177,879
New Jersey.....	155,893	188,198	Illinois.....	92,247	109,567
New York.....	1,363,946	903,142	New Jersey.....	18,668	25,629
Wisconsin.....	40,133	38,799	New York.....	10,484	17,092
All other states.....	2,424,755	1,793,900	All other states.....	150,704	176,323
Vegetable oils:			Soya-bean oil.....	7,786,746	8,082,380
Castor oil.....	362,746	463,745	California.....	360,203	337,047
Illinois.....	243,821	295,340	Illinois.....	109,809	110,081
New York.....	37,910	45,957	In Hana.....	110,896	122,939
Pennsylvania.....	26,034	38,817	Massachusetts.....	33,351	41,758
Wisconsin.....	20,430	33,827	New Jersey.....	283,006	345,882
All other states.....	28,545	49,795	New York.....	2,401,314	2,357,782
Coconut oil.....	24,349,831	28,217,738	Pennsylvania.....	334,443	423,818
California.....	1,901,598	1,910,385	All other states.....	4,153,734	4,343,573
Illinois.....	2,977,200	3,503,773	Other vegetable oils.....		1,163,617
Massachusetts.....	951,066	1,220,348	California.....		149,803
Missouri.....	2,140,070	2,942,904	Illinois.....		146,744
New Jersey.....	1,329,081	1,639,622	Massachusetts.....		276,870
New York.....	3,915,038	4,650,030	New Jersey.....		160,655
Pennsylvania.....	424,250	519,532	New York.....		127,897
Wisconsin.....	1,966,845	1,531,169	All other states.....		301,048
All other states.....	8,744,707	10,302,096	Hydrogenated oils.....	Pounds. 17,316,625	1,765,895
Corn oil.....	298,118	341,037	Illinois.....	35,300	6,201
Illinois.....	49,880	57,778	New Jersey.....	6,117,523	1,035,576
Indiana.....	30,317	28,701	New York.....	10,265,093	562,773
New Jersey.....	32,348	36,598	Wisconsin.....	37,302	8,579
New York.....	93,664	103,423	All other states.....	861,407	152,766
Pennsylvania.....	42,354	50,924	Rosin.....	119,529,661	7,836,738
All other states.....	49,555	63,003	California.....	2,767,585	166,214
Cottonseed oil.....	7,483,977	8,274,155	Illinois.....	11,101,057	684,433
California.....	876,184	1,049,363	Indiana.....	2,492,849	158,516
Illinois.....	512,623	719,860	Massachusetts.....	4,888,831	294,343
Minnesota.....	72,652	71,358	Missouri.....	3,020,960	217,656
Pennsylvania.....	88,400	100,925	New Jersey.....	32,880,366	2,360,715
All other states.....	5,934,118	6,333,149	New York.....	19,251,815	1,161,973
Cottonseed soap stock.....	Pounds. 108,389,245	4,048,000	Pennsylvania.....	15,268,722	1,069,049
Illinois.....	12,450,160	517,552	All other states.....	27,857,476	1,698,839
Indiana.....	6,488,717	308,191	Caustic soda.....	80,279	5,700,421
Massachusetts.....	2,616,243	185,433	California.....	7,059	347,271
Missouri.....	8,068,140	437,635	Illinois.....	9,082	487,439
New Jersey.....	14,366,112	642,801	Massachusetts.....	4,134	315,299
New York.....	10,882,730	862,284	New Jersey.....	8,899	399,298
All other states.....	62,917,143	1,934,204	New York.....	13,142	1,103,530
Linseed oil.....	Gallons. 38,785	55,962	Pennsylvania.....	5,835	399,994
Illinois.....	14,444	18,573	All other states.....	32,138	2,647,590
Minnesota.....	6,635	9,293	Soda ash.....	92,219	3,390,866
New Jersey.....	3,013	5,065	California.....	4,717	211,224
New York.....	7,732	11,832	Illinois.....	9,205	295,733
All other states.....	6,961	11,199	Indiana.....	8,607	317,795
Olive oil.....	124,644	264,896	Massachusetts.....	3,126	119,072
Illinois.....	27,281	72,987	New Jersey.....	22,764	743,571
Massachusetts.....	22,122	19,787	New York.....	14,907	647,546
Missouri.....	10,000	27,500	Pennsylvania.....	4,798	202,007
New Jersey.....	35,884	95,244	Rhode Island.....	2,901	109,482
New York.....	11,533	18,442	All other states.....	21,194	774,436
Pennsylvania.....	15,165	26,146	Sodium silicate.....	106,087	2,041,784
All other states.....	2,659	4,780	California.....	6,155	186,857
Olive-oil foots.....	Pounds. 3,964,434	825,182	Illinois.....	8,899	132,575
Massachusetts.....	368,997	87,403	Massachusetts.....	1,088	35,078
New Jersey.....	1,146,278	218,282	New Jersey.....	6,146	245,222
New York.....	376,954	70,868	New York.....	14,285	299,167
			Pennsylvania.....	7,510	175,008
			Wisconsin.....	3,341	60,578
			All other states.....	58,667	907,299

TABLE 13.—SOAP PRODUCTS, BY STATES: 1919, 1914, AND 1909.

KIND AND STATE.	Value, 1919	QUANTITY (POUNDS).			KIND AND STATE.	Value, 1919	QUANTITY (POUNDS).		
		1919	1914	1909			1919	1914	1909
Hard soap.....	\$227,050,710	2,322,793,443	2,064,227,064	1,794,240,101	Liquid soap.....	\$1,255,213	10,032,928	(*)	(*)
California.....	9,450,110	95,908,050	(1)	(1)	Illinois.....	145,008	1,289,331		
Illinois.....	34,892,993	419,339,507	337,886,077	254,017,401	New Jersey.....	121,926	717,177		
Indiana.....	4,745,723	65,820,215	(1)	(1)	New York.....	325,817	2,470,002		
Massachusetts.....	16,156,135	91,817,100	69,024,049	67,179,247	Pennsylvania.....	121,554	1,454,183		
Missouri.....	7,834,832	75,340,004	76,714,777	93,639,378	Wisconsin.....	51,256	507,500		
New Jersey.....	20,054,927	300,960,378	234,543,027	199,501,374	All other states.....	487,152	3,594,645		
New York.....	34,531,105	398,730,867	419,323,045	374,590,818	Special soap articles.....	3,568,093	36,301,719	(*)	(*)
Pennsylvania.....	14,367,108	137,482,021	108,858,891	107,700,046	Connecticut.....	1,211,911	8,843,549		
Wisconsin.....	6,738,050	45,363,990	(1)	(1)	Illinois.....	229,931	1,611,726		
All other states.....	68,350,127	692,015,231	756,976,328	637,620,927	Massachusetts.....	251,933	1,871,059		
Soft soap.....	3,925,000	74,463,471	57,001,556	60,036,070	New Jersey.....	641,640	7,856,380		
Illinois.....	538,516	7,497,031	8,320,247	10,201,816	New York.....	535,702	4,037,751		
Massachusetts.....	213,088	2,039,131	5,450,908	6,812,254	Pennsylvania.....	296,112	3,632,528		
New Jersey.....	726,008	12,069,942	3,074,715	7,293,291	All other states.....	371,474	7,518,126		
New York.....	860,092	31,672,160	19,012,016	14,788,812					
Pennsylvania.....	109,213	3,261,112	6,624,125	6,090,079					
Rhode Island.....	250,822	3,438,000	3,728,031	2,050,597					
All other states.....	1,100,721	13,887,895	10,776,914	9,103,851					

* Included with "All other states."

* Figures not available.

GENERAL TABLES.

Table 14 gives for 1919, 1914, and 1909 a comparative summary, by states, for number of establishments, average number of wage earners, primary horse-

power, wages, cost of materials, and value of products; and Table 15 presents for 1919 the detailed statistics for the industry, by states.

TABLE 14.—COMPARATIVE SUMMARY, BY STATES: 1919, 1914, AND 1909.

STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Pri- mary horse- power.	Wages.	Cost of mate- rials.	Value of prod- ucts.	STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Pri- mary horse- power.	Wages.	Cost of mate- rials.	Value of prod- ucts.
					Expressed in thousands.								Expressed in thousands.		
United States.....	1919	348	20,436	33,710	\$21,228	\$238,519	\$310,740	Missouri.....	1919	7	652	1,017	\$564	\$5,668	\$8,556
	1914	371	14,172	35,737	8,088	88,867	127,942		1914	9	521	1,358	279	2,811	4,920
	1909	420	12,099	28,300	6,227	72,170	111,358		1909	10	554	964	272	3,055	4,719
California.....	1919	27	608	1,520	610	8,312	11,205	New Jersey.....	1919	16	2,880	3,942	3,082	27,347	37,332
	1914	25	244	724	191	2,018	2,988		1914	16	2,057	4,270	1,200	10,760	16,692
	1909	23	166	477	115	1,117	1,576		1909	21	1,590	2,701	796	7,084	13,674
Connecticut.....	1919	6	445	1,054	423	2,178	5,145	New York.....	1919	56	4,159	8,142	4,319	37,784	50,844
	1914	7	258	636	131	771	1,672		1914	65	3,168	8,744	1,785	19,869	27,526
	1909	9	260	540	181	732	1,528		1909	67	2,976	5,873	1,436	15,612	23,583
Illinois.....	1919	29	2,270	2,578	2,366	19,484	25,734	Pennsylvania.....	1919	53	1,214	2,647	1,634	10,353	16,063
	1914	27	2,144	6,108	1,255	15,253	21,420		1914	50	1,150	2,554	657	6,601	10,068
	1909	34	2,188	5,155	1,053	13,948	20,181		1909	59	1,197	2,598	556	5,947	9,124
Indiana.....	1919	10	540	1,247	532	3,071	5,078	Rhode Island.....	1919	8	117	235	99	1,256	1,944
	1914	12	315	608	181	1,587	2,980		1914	12	107	461	85	929	1,539
	1909	11	126	300	54	552	813		1909	9	168	402	70	639	1,248
Iowa.....	1919	7	82	140	68	993	1,427	Washington ¹	1919	5	10	125	12	48	98
	1914	8	115	280	71	976	1,418		1914	4	9	35	6	32	64
	1909	9	150	270	58	910	1,382	Wisconsin.....	1919	11	691	729	607	5,720	8,909
Louisiana.....	1919	6	24	100	10	40	70		1914	11	272	330	132	1,369	2,894
	1914	4	22	78	8	107	172		1909	16	213	487	89	910	1,611
	1909	5	26	16	10	89	132	All other states.....	1919	73	5,681	6,046	5,877	104,470	124,043
Massachusetts.....	1919	27	1,008	2,785	984	11,173	18,730		1914	83	3,215	7,881	1,823	22,845	28,294
	1914	32	460	1,400	260	2,476	4,671		1909	100	2,918	7,082	1,360	18,907	27,504
	1909	38	458	1,379	227	2,377	4,283								
Minnesota ¹	1919	7	46	203	41	622	822								
	1914	6	40	185	24	463	614								

¹ Included with "All other states," 1909.

THE SOAP INDUSTRY.

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TABLE 15.—DETAILED STATEMENT FOR THE INDUSTRY, BY STATES: 1919.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.										WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.						EXPENSES.		
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.				Total.	16 and over.		Under 16.		Capital.	Salaries and wages.			
					Male.	Female.	Average number.	Number, 15th day of—		Male.		Female.	Male.	Female.	Officials.		Clerks, etc.			
								Maximum month.	Minimum month.											
United States.....	348	28,910	183	1,343	3,911	3,046	20,436	Se 22,653	Ap 17,963	20,290	14,125	5,926	120	119	\$212,416,866	\$5,785,159	\$3,386,692			
California.....	27	819	21	35	125	30	608.	No 645	My 524	621	479	142	.....	.....	6,968,144	236,552	280,660	
Colorado.....	0	19	5	1	1	1	11	Mh ¹ 12	Ja ¹ 9	10	9	1	.....	.....	18,876	.....	2,220
Connecticut.....	0	586	1	35	48	57	445	Oc 487	Jy 380	484	321	162	.....	1	2,720,839	172,921	128,840		
Illinois.....	29	3,039	10	123	462	174	2,270	Se 2,507	Mh 1,959	2,493	1,530	892	12	59	14,907,810	447,811	837,439			
Indiana.....	10	663	1	27	83	12	540	Se 585	De 500	501	325	169	1	6	3,762,673	79,939	160,954			
Iowa.....	7	135	7	14	26	6	82	Se 95	Ap 57	88	61	26	.....	1	1,009,268	31,295	69,750		
Louisiana.....	6	36	3	3	5	1	24	Se 33	My ¹ 14	29	19	10	.....	.....	111,288	8,157	5,348	
Massachusetts.....	27	1,583	18	108	284	185	1,008	No 1,274	Ap 786	1,189	783	370	10	26	14,902,772	367,966	391,135			
Minnesota.....	7	84	3	6	22	7	46	Au 57	De 37	44	33	11	.....	.....	453,144	17,846	41,810	
Missouri.....	7	943	1	29	139	122	652	Jy 804	Mh 448	687	379	291	8	9	3,952,212	123,725	246,651			
New Jersey.....	16	4,213	6	104	773	441	2,880	Au 3,150	Mh 2,662	2,896	1,979	853	61	3	24,971,427	878,987	1,568,280			
New York.....	56	6,505	17	436	620	1,333	4,159	Se 4,512	Mh 3,842	4,195	3,021	1,172	1	1	48,552,626	1,448,120	1,828,558			
Pennsylvania.....	53	1,530	50	76	98	92	1,214	Se 1,363	Mh 1,051	1,192	906	261	13	12	11,654,472	299,673	261,294			
Rhode Island.....	8	167	5	17	25	3	117	Ja 132	De 108	108	79	28	1	.....	932,497	101,655	50,975		
Utah.....	4	7	2	2	.....	1	4	Ja ¹ 5	Jy ¹ 3	5	5	.....	.....	.....	135,203	.....	750
Washington.....	5	10	3	2	3	1	10	De 18	Mh 6	19	15	4	.....	.....	99,590	3,680	4,132	
Wisconsin.....	11	1,390	4	33	490	172	691	Se 772	My 529	764	401	361	2	.....	7,704,943	168,052	948,569		
All other states ²	63	7,121	23	294	727	448	5,066	.....	.....	4,965	3,780	1,173	11	1	69,559,102	1,398,780	1,559,346	

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.						Electric horsepower generated in establishments reporting.	
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.							
	Wage earners.	For contract work.	Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.			Total.	Owned.				Rented. ¹		
										Steam engines (not turbines).	Steam turbines.	Internal-combustion engines.	Water power. ²			
United States.....	\$21,228,063	\$639,688	\$268,543	\$5,800,132	\$234,698,114	\$3,820,744	\$316,740,115	\$78,221,257	33,710	22,352	2,435	201	40	8,682	21,977	
California.....	610,405	489	8,693	147,819	8,150,285	161,812	11,295,294	2,983,197	1,520	598	-----	-----	-----	-----	922	78
Colorado.....	13,010	-----	3,310	122	102,136	2,034	135,454	31,284	36	30	-----	-----	-----	-----	6	-----
Connecticut.....	422,558	-----	1,400	285,317	2,101,519	76,616	5,144,996	2,966,861	1,054	835	-----	-----	40	179	850	-----
Illinois.....	2,366,407	10,654	51,278	156,780	19,083,904	400,004	25,733,832	6,249,824	2,578	1,050	-----	25	-----	-----	1,503	1,095
Indiana.....	532,091	8,672	4,258	382,657	3,016,713	63,888	5,678,183	2,607,582	1,247	174	-----	-----	-----	-----	1,073	-----
Iowa.....	67,769	-----	255	38,248	983,138	10,290	1,427,489	434,061	140	90	-----	-----	-----	-----	50	-----
Louisiana.....	10,496	-----	1,586	634	39,211	442	70,322	30,669	100	100	-----	-----	-----	-----	-----	-----
Massachusetts.....	984,138	-----	22,807	1,104,860	10,847,792	325,440	18,729,572	7,556,340	2,785	597	-----	-----	-----	-----	2,188	70
Minnesota.....	40,616	-----	2,052	18,198	614,129	8,045	822,363	200,189	203	130	-----	-----	-----	-----	73	5
Missouri.....	504,498	501,050	38,970	301,229	5,588,494	79,279	8,555,927	2,888,154	1,617	1,393	-----	-----	-----	-----	224	883
New Jersey.....	3,082,206	-----	31,355	887,924	27,061,178	346,054	37,381,759	10,034,527	3,942	3,826	-----	-----	-----	-----	116	3,237
New York.....	4,318,587	1,888	48,858	657,989	36,901,901	882,303	50,843,837	13,059,633	8,142	4,965	2,405	2	-----	-----	770	7,485
Pennsylvania.....	1,634,122	6,770	20,924	136,220	10,167,846	185,101	16,063,276	5,710,329	2,047	1,691	30	76	-----	-----	850	329
Rhode Island.....	99,395	-----	3,735	85,894	1,231,129	24,813	1,943,778	687,836	235	180	-----	-----	-----	-----	55	1
Utah.....	4,383	-----	235	315	5,468	229	13,597	7,900	35	20	-----	-----	-----	-----	15	-----
Washington.....	12,047	-----	300	818	46,215	1,894	98,247	50,138	125	100	-----	-----	-----	-----	25	-----
Wisconsin.....	607,124	-----	2,896	180,199	5,063,795	56,493	8,908,906	3,188,618	729	690	-----	-----	-----	-----	39	758
All other states ³	5,848,152	20,165	25,571	1,434,904	103,153,261	1,206,007	123,894,283	19,534,015	6,575	5,883	-----	98	-----	-----	594	7,186

¹ Same number reported for one or more other months.

² Includes Florida, 1 establishment; Georgia, 1; Idaho, 1; Kansas, 3; Kentucky, 2; Maryland, 1; Michigan, 4; Montana, 1; Nebraska, 4; Nevada, 1; New Hampshire, 2; North Carolina, 1; Ohio, 28; Oregon, 4; Tennessee, 3; Texas, 4; Virginia, 1; West Virginia, 1.

³ Includes water wheels and turbines (irrespective of ownership of water supply), and water motors (operated by water from city mains).

⁴ Chiefly electric motors operated by rented (or purchased) current; other power included chiefly shaft-belt or transmitted power from neighboring power plants.

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

FOURTEENTH CENSUS OF THE UNITED STATES
MANUFACTURES: 1919

STEAM AND ELECTRIC CARS,
AND RAILROAD REPAIR SHOPS

Prepared under the supervision of EUGENE F. HARTLEY, Chief Statistician for Manufactures

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or for which products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1919, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city, county, or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city, county, or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Classification by industries.—The establishments were assigned to the several classes of industries according to their products of chief value. The products reported for a given industry may thus, on the one hand, include minor products different from those covered by the class designation, and, on the other hand, may not represent the total product covered by this designation, because some products of this class may be made in establishments in which it is not the product of chief value.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1919 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners.

The number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date did not portray such conditions, an earlier date was requested.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, by sex, without distinction of age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The number of wage earners reported for the representative day, though given in certain tables for each separate industry, is not totaled for all industries combined, because, in view of the variations of date, such a total is not believed to be significant. It would involve more or less duplication of persons working in different industries at different times, would not represent the total number employed in all industries at any one time, and would give an undue weight to seasonal industries as compared with industries in continual operation.

In order to determine as nearly as possible the age distribution of the average number of wage earners for an industry, the per cent distribution by age of the wage earners for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. The percentages thus obtained have been applied to the average number of wage earners for the year to determine the average numbers 10 years and over, and under 16, employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calcu-

late accurately even so simple an average as this, since the number of wage earners fluctuates from month to month in every industry, and in some cases to a very great extent. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month, and while representing the number according to the pay rolls to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital (amount actually invested).—The instructions on the schedule for securing data relating to capital were as follows:

"The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises."

These instructions were identical with those employed at the censuses of 1914 and 1909. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include certain Federal taxes and state, county, and local taxes. Under "Federal taxes" there are included the internal revenue tax on manufactures (tobacco, beverages, etc.), excise taxes when included in values reported for products, corporation capital stock tax, and corporation income tax, but not the income tax for individuals and partners.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not always a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry, from a manufacturing standpoint, is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power equipment of the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, fuel oils, gasoline and other volatile oils, and gas, and represent the quantity used during the year. As only the principal kinds of fuel are shown, comparison as to the total cost of all fuel is impracticable.

STEAM AND ELECTRIC CARS, AND RAILROAD REPAIR SHOPS.

SUMMARY AND ANALYSIS.

Scope of the report.—This report presents statistics for (1) establishments building cars for use on steam railroads; (2) those building cars for use on electric railroads; (3) the operations of repair shops by steam-railroad companies; and (4) the operations of repair shops by electric-railroad companies. The first two classes include the reports of car-manufacturing establishments not including the operations of railroad companies, while the last two classes include the reports of railroad companies covering the operations of their machine and repair shops. The value of products of the latter group is not a selling value, but a value equal to operating expenses, including salaries and wages, cost of materials, rent and taxes, etc.

Cars, steam and electric railroad, and railroad repair shops, summary.—Table 1 summarizes the statistics of the four industries for 1919 and gives a comparison of the total with 1914, together with the percentages of increase.

Cars made.—Table 2 shows, for 1919 and 1914, the number and value of cars of all kinds, whether for steam or for electric roads, made by establishments reporting them as the chief product, by railroad repair shops, and by establishments engaged primarily in other lines of manufacture. The number of cars built showed an increase of 23,708, or 17.2 per cent, while the value increased \$238,705,245, or 144.7 per cent. Indicative of the high prices prevailing during the year 1919, the average value of steam-railroad cars increased from \$1,147 in 1914 to \$2,443 in 1919, and of electric-railroad cars from \$3,550 in 1914 to \$6,138 in 1919.

Cars made, classified by type of construction.—Table 3 gives, for 1919, the number of the different classes of cars, distributed according to material used, and the total value of each class.

TABLE 1.—CARS, STEAM AND ELECTRIC RAILROAD, AND RAILROAD REPAIR SHOPS, SUMMARY: 1919.

	TOTAL.			CARS: 1919.		RAILROAD REPAIR SHOPS: 1919.	
	1919	1914	Percent of increase.	Steam.	Electric.	Steam.	Electric.
Number of establishments.....	2, 474	2, 128	16.3	99	7	1, 744	624
Persons engaged.....	611, 467	453, 414	34.9	58, 782	3, 286	516, 279	33, 120
Proprietors and firm members.....	6	16	.....	2	1	2	1
Salaried employees.....	40, 534	29, 368	38.0	6, 482	365	31, 840	1, 847
Wage earners (average number).....	570, 927	424, 030	34.6	52, 298	2, 920	484, 437	31, 272
Primary horsepower.....	815, 600	615, 684	32.5	157, 865	9, 390	594, 515	53, 830
Capital.....	\$1, 129, 358, 163	\$590, 268, 801	91.3	\$335, 207, 363	\$17, 306, 485	\$694, 286, 410	\$82, 557, 905
Salaries and wages.....	893, 632, 913	330, 655, 874	170.3	92, 030, 039	4, 984, 941	754, 565, 412	42, 052, 521
Salaries.....	84, 525, 710	33, 645, 325	151.2	13, 745, 392	852, 851	66, 948, 100	2, 979, 367
Wages.....	809, 107, 203	297, 010, 549	172.4	78, 284, 647	4, 132, 090	687, 617, 312	39, 073, 154
Paid for contract work.....	1, 546, 581	355, 875	334.6	39, 054	.....	1, 389, 192	118, 335
Rent and taxes.....	34, 644, 871	3, 329, 777	940.5	30, 339, 241	446, 989	3, 093, 178	765, 463
Cost of materials.....	915, 972, 181	399, 988, 119	129.0	356, 084, 545	12, 058, 912	515, 803, 210	32, 026, 484
Value of products.....	1, 911, 110, 901	757, 888, 412	152.2	538, 222, 831	18, 441, 976	1, 279, 235, 393	75, 210, 701
Value added by manufacture ¹	995, 138, 720	357, 900, 293	178.0	182, 138, 286	6, 383, 034	763, 432, 183	43, 185, 217

¹ Value of products less cost of materials.

TABLE 2.—CARS MADE, NUMBER AND VALUE: 1919 AND 1914.

INDUSTRY.	Census year.	CARS MADE.					
		Total.		For steam railroads.		For electric railroads.	
		Number.	Value.	Number.	Value.	Number.	Value.
Total.....	1919	161, 531	\$403, 664, 910	159, 102	\$388, 754, 942	2, 429	\$14, 909, 968
	1914	137, 823	164, 959, 665	134, 960	154, 796, 515	2, 863	10, 163, 150
Cars, steam-railroad, not including operations of railroad companies.....	1919	153, 483	376, 135, 819	153, 288	373, 945, 213	195	2, 190, 606
	1914	120, 278	140, 868, 781	120, 084	140, 157, 583	194	711, 198
Cars, electric-railroad, not including operations of railroad companies.....	1919	1, 703	11, 312, 047	.....	.....	1, 703	11, 312, 047
	1914	2, 365	8, 150, 382	17	72, 034	2, 348	8, 078, 348
Cars and general shop construction and repairs by steam-railroad companies.....	1919	2, 685	5, 133, 115	2, 685	5, 133, 115	.....	.....
	1914	10, 745	11, 999, 983	10, 745	11, 999, 983	.....	.....
Cars and general shop construction and repairs by electric-railroad companies.....	1919	151	762, 293	.....	.....	151	762, 293
	1914	304	811, 104	.....	.....	304	811, 104
All other industries.....	1919	3, 509	10, 321, 636	3, 129	9, 676, 614	380	645, 022
	1914	4, 131	3, 129, 415	4, 114	2, 566, 915	17	562, 500

MANUFACTURES.

TABLE 3.—CARS MADE, CLASSIFIED BY TYPE OF CONSTRUCTION: 1919.

CLASS.	NUMBER.					Value.	CLASS.	NUMBER.					Value.
	Total.	All wood.	Steel under frame.	Steel body with wood interior.	All steel.			Total.	All wood.	Steel under frame.	Steel body with wood interior.	All steel.	
Total ¹	158,022	4,240	105,482	4,126	44,174	\$393,343,274	Electric-railroad cars.....	2,049	73	938	899	139	\$14,264,946
Steam-railroad cars.....	155,973	4,167	104,544	3,227	44,035	379,078,328	Passenger.....	1,814	41	840	808	35	12,131,561
Passenger.....	254	15	45	85	109	5,046,450	Freight and all other..	235	32	98	1	104	2,133,385
Freight and all other..	155,719	4,152	104,499	3,142	43,926	374,031,899							

¹ Does not include 3,509 cars, valued at \$10,321,030, made as subsidiary products by establishments engaged primarily in other lines of manufacture.

CARS, STEAM AND ELECTRIC RAILROAD, NOT INCLUDING OPERATIONS OF RAILROAD COMPANIES.

GENERAL STATISTICS.

General character of the industry.—This classification includes establishments engaged in the manufacture of all kinds of cars for use on steam and electric railroads. It does not include, however, the manufacture of steam and electric cars in railroad repair shops or in establishments engaged primarily in the manufacture of other products. Some establishments, besides making finished cars, reported the manufacture, for sale as such, of car materials and parts, such as brake beams, axles, underframes, trucks, car wheels, bolsters, castings, and car bodies; there is thus some duplication in value of products within the industry. Most concerns making exclusively or primarily parts or materials for cars are, however, reported under other classifications, such as "brass, bronze, and copper products," "foundry and machine-shop products," "lumber and timber products," and "springs, steel, car and carriage," for which statistics are shown in the general report on manufactures.

Comparative summary.—Table 4 summarizes the statistics of establishments engaged in the manufacture of steam and electric railroad cars for each census from 1899 to 1919 and gives percentages of increase.

The large increases, from 1914 to 1919, in salaries and wages, cost of materials, and value of products are due largely to a general rise in prices and wages following the World War, and do not, therefore, fairly measure the growth of the industry for that period. A truer index of the conditions is found in the average number of wage earners and primary horsepower. The addition of the Federal income tax since 1914 will account for the increase in "Rent and taxes."

Principal states, ranked by value of products.—Table 5 summarizes the more important statistics of the steam-railroad car industry, by states, the states being arranged according to the value of products reported for 1919.

Similar statistics can not be shown for the electric-railroad car industry without disclosing individual operations.

Pennsylvania ranked first in 1919 in the value of products manufactured and second in the average number of wage earners employed. In 1914 Illinois was the leading state, Pennsylvania ranking second in importance.

Persons engaged in the industry.—The age classification of the average number of wage earners in Table 6 is an estimate obtained by the method de-

scribed in the "Explanation of terms." The classification, by sex, for 1919 was reported separately, but for 1914 and 1909 was obtained in the same manner as the distribution by age. Figures in detail will be found in Table 16.

Wage earners, by months.—As shown by Table 7, the number of wage earners employed in the steam-railroad car industry month by month ranged from a maximum of 64,974 in January to a minimum of 45,031 in October, the minimum number being equivalent to 69.3 per cent of the maximum.

In the electric-railroad car industry the number of wage earners employed ranged from a maximum of 3,965 in January to a minimum of 2,471 in May, the minimum number being equivalent to 62.3 per cent of the maximum. Separate figures, by states, can not be given for this industry without disclosing individual operations.

The total number of males and females employed in the United States in 1919 is shown separately for each industry.

Average number of wage earners, by prevailing hours of labor per week.—Table 8 shows a marked shortening of the working day for both industries since 1914. In that year, in the steam-railroad car industry, only 10.4 per cent were reported as employed fewer than 54 hours per week as against 62.7 per cent in 1919. In 1914 the "60" group constituted 23 per cent of the total wage earners, as compared with 3.4 per cent in 1919.

Size of establishments, by average number of wage earners.—Analysis of Table 9 shows that both industries are largely concentrated in establishments employing 100 or more wage earners. In the steam-railroad car industry there were 66 establishments, or 66.7 per cent of the total establishments in the industry, employing more than 100 wage earners each. These establishments employed 50,857 wage earners, or 97.2 per cent of the total employed in the industry.

Size of establishments, by value of products.—At the censuses of 1909 and 1914 establishments with products valued at "\$100,000 to \$1,000,000" constituted one group, but at the census of 1919 this group was subdivided into "\$100,000 to \$500,000," and "\$500,000 to \$1,000,000." Separate figures for the number of establishments and value of products have been compiled, however, from the returns for 1914. Table 10, therefore, gives combined figures for these two groups for the steam-railroad car industry in the case of all items for 1909 and in the case of average number of wage earners and value added by manufacture for 1914.

Similar figures for the electric-railroad car industry can not be given without disclosing individual operations.

Number and horsepower of types of prime movers.—In the steam-railroad car industry from 1914 to 1919, as shown by Table 11, there was an increase in the total horsepower of 31,178, or 24.6 per cent, due wholly to an increase of 42,136 horsepower, or 202.9 per cent in rented power, since owned power decreased 10,958 horsepower, or 10.3 per cent, during this five-year period.

In the electric-railroad car industry the total power

decreased 624 horsepower, or 6.2 per cent, from 1914 to 1919. Owned power decreased 3,256 horsepower, or 63.1 per cent, while rented power increased 2,632 horsepower, or 54.2 per cent, during the same period.

Fuel consumed.—Table 12 shows the principal kinds of fuel used for the steam-railroad car industry in 1919 and 1914, and also gives separately the amounts consumed in states requiring considerable quantities of fuel for manufacturing purposes.

Only the total quantities of the various kinds of fuel used in the United States in the electric-railroad car industry are shown.

TABLE 4.—COMPARATIVE SUMMARY: 1919, 1914, 1909, 1904, AND 1899.

	1919	1914	1909	1904	1899	PER CENT OF INCREASE. ¹			
						1914-1919	1909-1914	1904-1909	1899-1904
CARS, STEAM-RAILROAD.									
Number of establishments.....	99	103	110	73	65	-3.0	-6.4	.....	.....
Persons engaged.....	58,782	58,088	47,004	36,367	34,826	-0.3	25.3	29.5	4.4
Proprietors and firm members.....	2	11	7	6	7	.....	.....	.....	.....
Salaried employees.....	6,482	4,680	4,001	2,308	1,360	38.2	17.2	73.7	68.6
Wage earners (average number).....	52,298	54,288	43,086	34,058	33,458	-3.7	26.0	26.5	1.8
Primary horsepower.....	157,805	126,687	97,797	55,994	33,395	24.6	29.5	74.7	67.7
Capital.....	\$335,207,363	\$157,811,100	\$130,804,607	\$88,179,047	\$88,323,852	112.4	12.9	58.5	-0.2
Salaries and wages.....	92,030,039	48,848,202	32,272,977	23,102,511	18,525,426	90.3	49.8	39.7	24.7
Salaries.....	13,745,392	6,954,623	5,187,755	2,854,690	1,538,132	97.6	35.4	80.0	85.6
Wages.....	78,284,647	41,893,579	27,135,222	20,247,821	16,987,294	89.1	52.5	34.0	19.2
Paid for contract work.....	39,054	.....	344,127	31,449	405,634	.....	.....	994.2	-92.2
Rent and taxes.....	30,339,241	909,059	686,885	2,408,084	2,191,037	3,237.4	32.4	68.0	113.9
Cost of materials.....	350,084,545	132,200,159	78,752,861	75,657,120	61,742,747	169.4	67.9	4.1	22.5
Value of products.....	538,222,831	194,775,690	128,729,627	111,175,310	90,510,180	176.3	57.4	11.3	22.8
Value added by manufacture ²	182,138,286	62,575,510	44,976,760	35,518,184	28,767,433	191.1	39.1	26.6	23.5
CARS, ELECTRIC-RAILROAD.									
Number of establishments.....	7	14	14	14	20	.....	.....	.....	.....
Persons engaged.....	3,286	4,286	4,005	4,097	3,736	-23.3	7.0	-19.9	33.8
Proprietors and firm members.....	1	.....	1	3	7	.....	.....	.....	.....
Salaried employees.....	365	446	421	204	144	-18.2	5.9	50.5	83.3
Wage earners (average number).....	2,920	3,840	3,583	4,730	3,585	-24.0	7.2	-24.2	31.9
Primary horsepower.....	9,390	10,014	15,101	7,054	4,865	-0.2	-33.9	114.9	45.0
Capital.....	\$17,306,485	\$14,751,582	\$14,167,990	\$12,975,703	\$7,615,397	17.3	4.1	9.2	70.4
Salaries and wages.....	4,984,941	3,199,674	2,770,506	3,237,825	2,185,370	55.8	15.5	-14.4	48.2
Salaries.....	852,851	732,047	593,617	398,246	234,503	16.4	23.4	49.1	69.8
Wages.....	4,132,090	2,467,627	2,176,949	2,839,579	1,950,876	97.5	18.3	-23.3	45.6
Paid for contract work.....	.....	129,004	233,508	.....	3,000	.....	-44.4	.....	.....
Rent and taxes.....	446,989	108,718	55,495	2,40,177	2,78,062	311.1	95.0	33.1	-49.1
Cost of materials.....	12,058,942	6,349,770	4,260,470	5,341,444	3,966,863	89.9	49.0	-20.2	34.7
Value of products.....	18,441,976	10,494,953	7,809,806	10,844,196	7,305,368	75.7	34.4	-28.0	43.4
Value added by manufacture ²	6,383,034	4,145,174	3,549,396	5,502,752	3,338,505	54.0	16.8	-35.5	64.8

¹ A minus sign (—) denotes decrease. Percentages are omitted where base is less than 100. ² Exclusive of internal revenue. ³ Value of products less cost of materials.

TABLE 5.—STEAM-RAILROAD CARS—PRINCIPAL STATES, RANKED BY VALUE OF PRODUCTS: 1919.

STATE.	Number of establishments.	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.			STATE.	Number of establishments.	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
		Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.			Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.
United States.....	99	52,298	100.0	.....	\$538,223	100.0	.....	\$182,138	100.0	.....	Indiana.....	9	6,050	12.7	3	\$86,021	16.0	3	\$19,946	11.0	3
Pennsylvania.....	15	11,075	22.3	2	146,879	27.3	1	58,012	31.9	1	Ohio.....	3	2,177	4.2	6	28,140	5.2	6	6,530	3.7	6
Illinois.....	19	13,775	26.3	1	125,218	23.3	2	42,799	23.5	2	Kansas.....	5	393	0.8	19	1,257	0.2	20	770	0.4	19
											All other states.....	43	17,028	33.7	180,702	28.0	53,790	29.5

CARS, STEAM AND ELECTRIC RAILROAD.

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TABLE 6.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1914, AND 1909.

CLASS.	Cen- sus year.	Total.	Male.	Fe- male.	PER CENT OF TOTAL.		CLASS.	Cen- sus year.	Total.	Male.	Fe- male.	PER CENT OF TOTAL.	
					Male.	Fe- male.						Male.	Fe- male.
CARS, STEAM-RAILROAD.							CARS, ELECTRIC-RAILROAD.						
All classes.....	1919	58,782	57,162	1,620	97.2	2.8	All classes.....	1919	3,286	3,118	168	94.9	5.1
	1914	58,988	58,487	501	99.2	0.8		1914	4,286	4,228	58	98.6	1.4
	1909	47,094	46,715	379	99.2	0.8		1909	4,005	3,949	56	98.6	1.4
Proprietors and officials.....	1919	1,904	1,849	55	97.1	2.9	Proprietors and officials.....	1919	84	83	1	98.8	1.2
	1914	980	975	5	99.5	0.5		1914	189	189	0	100.0	0.0
	1909	1,041	1,041	0	100.0	0.0		1909	158	157	1	99.4	0.6
Proprietors and firm members...	1919	2	2	0	100.0	0.0	Proprietors and firm members...	1919	1	1	0	100.0	0.0
	1914	11	7	4	63.6	36.4		1914	1	1	0	100.0	0.0
	1909	7	7	0	100.0	0.0		1909	1	1	0	100.0	0.0
Salaried officers of corporations...	1919	218	214	4	98.2	1.8	Salaried officers of corporations...	1919	16	16	0	100.0	0.0
	1914	209	208	1	99.5	0.5		1914	33	33	0	100.0	0.0
	1909	241	241	0	100.0	0.0		1909	36	36	0	100.0	0.0
Superintendents and managers...	1919	1,684	1,633	51	97.0	3.0	Superintendents and managers...	1919	67	66	1	98.5	1.5
	1914	760	760	0	100.0	0.0		1914	150	150	0	100.0	0.0
	1909	793	793	0	100.0	0.0		1909	121	121	0	100.0	0.0
Clerks and other subordinate salaried employees.	1919	4,580	3,535	1,045	77.2	22.8	Clerks and other subordinate salaried employees.	1919	252	184	68	65.2	34.8
	1914	3,720	3,419	301	91.9	8.1		1914	257	224	33	87.2	12.8
	1909	2,967	2,720	238	92.0	8.0		1909	264	231	33	87.5	12.5
Wage earners (average number).....	1919	52,298	51,778	520	99.0	1.0	Wage earners (average number).....	1919	2,920	2,851	69	97.6	2.4
	1914	54,288	54,093	195	99.6	0.4		1914	3,840	3,815	25	99.3	0.7
	1909	43,080	42,945	141	99.7	0.3		1909	3,583	3,561	22	99.4	0.6
16 years of age and over.....	1919	52,276	51,756	520	99.0	1.0	16 years of age and over.....	1919	2,917	2,848	69	97.6	2.4
	1914	54,273	54,078	195	99.6	0.4		1914	3,819	3,794	25	99.3	0.7
	1909	43,058	42,917	141	99.7	0.3		1909	3,569	3,547	22	99.4	0.6
Under 16 years of age.....	1919	22	22	0	100.0	0.0	Under 16 years of age.....	1919	3	3	0	100.0	0.0
	1914	15	15	0	100.0	0.0		1914	21	21	0	100.0	0.0
	1909	28	28	0	100.0	0.0		1909	14	14	0	100.0	0.0

TABLE 7.—WAGE EARNERS, BY MONTHS: 1919.

[The month of maximum employment for each state is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

The month of maximum employment for each state is indicated by bold face figures.

STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
CARS, STEAM-RAILROAD.														
United States:														69.3
1919.....	52,298	64,974	61,127	56,409	55,783	54,419	51,545	50,020	48,608	46,619	<i>45,031</i>	45,159	47,882	69.1
Males.....	51,778	64,306	60,579	55,884	55,303	53,955	51,076	49,642	48,217	46,199	<i>44,497</i>	44,437	47,241	56.6
Females.....	520	668	548	525	480	464	469	378	391	420	534	722	641	70.9
1914.....	54,288	63,678	56,077	55,359	51,080	50,532	53,214	56,893	58,529	56,184	54,707	50,050	<i>45,153</i>	59.2
1909.....	43,080	43,218	40,810	38,200	38,370	<i>34,426</i>	38,979	38,531	37,363	45,329	48,368	55,166	58,183	
Illinois.....	13,775	16,964	15,150	15,042	15,599	12,869	12,054	<i>11,161</i>	12,846	13,489	14,067	13,458	12,711	69.9
Indiana.....	6,660	6,701	7,503	7,191	7,343	7,842	7,767	7,583	5,519	<i>5,476</i>	5,510	5,494	5,881	69.8
Ohio.....	2,177	2,494	2,213	2,242	2,134	1,952	1,847	1,921	1,944	2,091	2,332	2,425	2,539	72.7
Pennsylvania.....	11,875	16,239	13,117	11,961	11,981	12,066	12,131	12,151	11,676	9,909	<i>7,394</i>	9,596	11,879	45.5
CARS, ELECTRIC-RAILROAD.														
United States.....	2,920	3,965	3,658	3,213	2,500	<i>2,471</i>	2,680	2,829	2,763	2,706	2,814	2,779	2,662	62.3
Males.....	2,851	3,889	3,587	3,147	2,431	<i>2,404</i>	2,616	2,758	2,694	2,637	2,742	2,710	2,597	61.8
Females.....	69	76	71	66	69	67	64	71	69	69	72	69	65	84.2

MANUFACTURES.

TABLE 8.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK: 1919 AND 1914.

STATE.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
			44 and under.	Between 44 and 48.	48. ¹	Between 48 and 54.	54.	Between 54 and 60.	60.	Over 60.
CARS, STEAM-RAILROAD.										
United States.....	1919	52,298	1,875	4,984	9,804	10,055	858	10,883	1,779	.....
	1914	54,288	(²)	(²)	341	5,204	19,201	10,885	12,477	.....
	1909	43,086	(²)	(²)	3	711	12,111	14,235	14,585	1,441
Illinois.....	1919	13,775	14	(²)	2,134	7,083	.....	4,544	.....	.....
	1914	18,000	(²)	(²)	.....	1,009	12,949	1,115	2,927	.....
Indiana.....	1919	6,650	417	311	2,427	1,088	.....	2,407	.....	.....
	1914	5,800	(²)	(²)	.....	1,591	95	818	3,296	.....
Ohio.....	1919	2,177	132	773	.....	213	.....	1,050	.....	.....
	1914	2,885	(²)	(²)	.....	920	08	1,858	.....	.....
Pennsylvania.....	1919	11,675	930	3,261	170	6,067	106	1,042	.....	.....
	1914	9,955	(²)	(²)	.....	.....	222	9,353	380	.....
CARS, ELECTRIC-RAILROAD.										
United States.....	1919	2,920	493	(²)	335	25	306	1,701	.....	.....
	1914	3,840	(²)	(²)	802	.....	403	2,103	442	.....

¹ Includes 48 and under for 1914 and 1909.² Corresponding figures not available.

TABLE 9.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS: 1919.

STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING—															
	Establishments.	Wage earners (average number).	1 to 5 wage earners, inclusive.		6 to 20 wage earners, inclusive.		21 to 50 wage earners, inclusive.		51 to 100 wage earners, inclusive.		101 to 250 wage earners, inclusive.		251 to 500 wage earners, inclusive.		501 to 1,000 wage earners, inclusive.		Over 1,000 wage earners.	
			Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
CARS, STEAM-RAILROAD.																		
United States..... 1919..	99	52,298	.....	.....	9	94	10	321	14	1,026	22	3,724	11	4,405	19	12,947	14	29,781
..... 1914..	103	54,288	5	20	6	72	13	440	15	1,214	20	2,943	10	5,821	13	9,154	15	34,024
Illinois.....	19	13,775	.....	.....	2	26	2	74	3	208	4	821	1	413	1	571	6	11,064
Indiana.....	9	6,650	.....	.....	.....	.....	1	45	1	97	.....	.....	3	1,102	2	1,713	2	3,093
Ohio.....	8	2,177	.....	.....	.....	.....	1	27	2	144	3	383	.....	.....	2	1,623	.....	.....
Pennsylvania.....	15	11,675	.....	.....	2	16	2	54	1	80	3	507	2	772	2	1,764	3	8,476
CARS, ELECTRIC-RAILROAD.																		
United States.....	7	2,920	.....	.....	1	10	1	25	.....	.....	1	150	3	1,184	.....	.....	1	1,551

TABLE 10.—STEAM-RAILROAD CARS—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919, 1914, AND 1909.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
All classes.....	99	103	110	52,298	54,288	43,086	\$538,222,831	\$104,775,069	\$123,720,027	\$182,138,286	\$32,575,510	\$44,976,766
\$5,000 to \$20,000.....	1	5	5	8	25	19	17,141	50,019	32,657	10,321	31,927	13,837
\$20,000 to \$100,000.....	12	16	29	206	478	1,000	640,030	859,593	1,790,326	344,021	425,297	888,406
\$100,000 to \$500,000.....	23	31	51	1,060	7,484	9,781	6,302,534	8,888,607	22,058,927	3,020,260	7,921,895	10,063,316
\$500,000 to \$1,000,000.....	10	15	.....	1,746	.....	.....	6,968,303	10,670,791	.....	3,213,834	.....	.....
\$1,000,000 and over.....	53	36	25	48,678	40,301	32,187	524,198,323	174,405,840	90,841,717	175,540,860	54,196,391	34,011,207
PER CENT DISTRIBUTION.												
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
\$5,000 to \$20,000.....	1.0	4.9	4.5	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	0.1	(¹)
\$20,000 to \$100,000.....	12.1	15.5	26.4	0.4	0.9	2.6	0.1	0.4	1.5	0.2	0.7	2.0
\$100,000 to \$500,000.....	23.2	30.1	40.4	3.2	13.8	22.7	1.2	4.6	17.8	1.7	12.6	22.4
\$500,000 to \$1,000,000.....	10.1	14.6	.....	3.3	.....	.....	1.3	5.4	.....	1.8	.....	.....
\$1,000,000 and over.....	53.5	35.0	22.7	93.1	85.3	74.7	97.4	89.5	80.7	96.4	80.6	75.6

¹ Less than one-tenth of 1 per cent.

CARS, STEAM AND ELECTRIC RAILROAD.

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TABLE 11.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919, 1914, AND 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
	1919	1914	1909	Amount.			Per cent distribution.		
				1919	1914	1909	1919	1914	1909
CARS, STEAM-RAILROAD.									
Primary power, total.....	3,777	1,772	929	157,865	126,687	97,797	100.0	100.0	100.0
Owned.....	315	438	504	94,963	105,921	91,341	60.2	83.6	93.4
Steam.....	207	410	484	92,015	99,934	89,823	58.3	78.9	91.8
Engines.....	261	(2)	(2)	55,519	(2)	(2)	35.2	-----	-----
Turbines.....	36	(2)	(2)	36,496	(2)	(2)	23.1	-----	-----
Internal-combustion engines.....	17	24	12	2,848	5,757	1,148	1.8	4.5	1.2
Water wheels and turbines.....	1	4	8	100	230	370	0.1	0.2	0.4
Rented.....	3,462	1,334	425	62,902	20,766	6,456	39.8	16.4	6.6
Electric.....	3,462	1,334	425	62,827	20,416	6,456	39.8	16.1	6.6
Other.....	-----	-----	-----	75	350	-----	(2)	0.3	-----
Electric.....	10,157	7,263	3,710	170,485	115,479	61,060	100.0	100.0	100.0
Rented.....	3,462	1,334	425	62,827	20,416	6,456	39.9	17.7	10.6
Generated by establishments reporting.....	6,695	5,929	3,285	107,658	95,063	54,604	63.1	82.3	89.4
CARS, ELECTRIC-RAILROAD.									
Primary power, total.....	575	223	237	9,390	10,014	15,161	100.0	100.0	100.0
Owned—Steam engines.....	7	31	67	1,900	5,156	11,032	20.2	51.5	72.8
Rented.....	568	192	170	7,490	4,858	4,129	79.8	48.5	27.2
Electric.....	568	192	170	7,490	4,405	4,089	79.8	44.0	27.0
Other.....	-----	-----	-----	-----	453	40	-----	4.5	0.2
Electric.....	692	399	325	9,020	8,483	7,984	100.0	100.0	100.0
Rented.....	568	192	170	7,490	4,405	4,089	83.0	51.9	51.2
Generated by establishments reporting.....	124	207	155	1,530	4,078	3,895	17.0	48.1	48.8

- 1 Figures for horsepower include for 1909 the amount reported under the head of "Other" owned power.
 2 Not reported separately.
 3 Less than one-tenth of 1 per cent.

TABLE 12.—FUEL CONSUMED: 1919 AND 1914.

STATE.	Census year.	COAL.		Coke (tons, 2,000 pounds).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
		Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).				
CARS, STEAM-RAILROAD.							
United States.....	1919	53,644	819,988	73,638	552,007.	8,462	1,108,259
	1914	34,978	698,097	70,886	294,826	(1)	1,221,695
Illinois.....	1919	709	177,503	21,114	149,754	646	5,577
	1914	2,815	149,472	10,608	138,369	(1)	10,661
Indiana.....	1919		153,949	12,406	135,204	682	1,894
	1914		124,221	11,453	41,115	(1)	138
Ohio.....	1919		22,444	582	8,369	2	95,448
	1914	53	34,153	1,375	22,361	(1)	126,309
Pennsylvania.....	1919	37,863	212,111	16,109	61,727	1,915	765,588
	1914	30,915	185,044	15,220	14,377	(1)	963,585
All other states.....	1919	15,072	253,981	23,427	196,953	5,217	236,752
	1914	1,195	205,207	32,230	78,604	(1)	121,002
CARS, ELECTRIC-RAILROAD.							
United States.....	1919	199	46,628	2,083	16,349	16	4,414
	1914	3,032	53,841	686	15,107	(1)	3,805

1 Included in figures for fuel oils.

SPECIAL STATISTICS.

Table 13 shows in detail for the census years 1919, 1914, 1909, and 1904, statistics of establishments constructing steam and electric railroad cars, not including the work of steam and electric railroad companies in their repair shops.

The total number of steam-railroad cars manufactured increased 33,187, or 27.6 per cent, from 1914 to 1919. There was a decrease of 3,211, or 93.2 per cent, in cars made for use in passenger service during this period. There was, however, an increase of 36,398 cars, or 31.2 per cent, in those made for use in freight service, due entirely to the increases in box cars, gondolas, hoppers, and tank cars. Electric-railroad cars

decreased 644, or 25.3 per cent, from 1914 to 1919. The item "All other products" includes largely the amount received for repair work done in establishments engaged primarily in the manufacture of cars. It also includes parts of cars such as trucks, etc., ordnance material and work in progress.

Table 14 shows, for 1919, the number and kind of cars, distributed according to character of construction, together with the value of each kind. All-steel cars and those with steel underframe constituted the most important kinds. Of the total cars made those with steel underframe represented 67.4 per cent and all steel cars 28.4 per cent.

TABLE 13.—DETAILED STATISTICS OF NUMBER AND VALUE: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904		1919	1914	1909	1904
Total value ¹	\$556,004,807	\$205,270,622	\$131,539,493	\$122,019,506	Steam-railroad cars—Con.				
Steam-railroad cars:					Freight service—Con.				
Number.....	153,288	120,101	74,945	102,782	Hopper ²	16,670	9,754	11,473	27,996
Value.....	\$373,945,213	\$140,229,017	\$75,033,245	\$87,348,911	Refrigerator ³	\$45,757,395	\$10,708,407	\$9,419,655	\$21,367,218
Passenger service ⁴					Number.....	629	5,800	2,618	3,353
Number.....	234	3,445	1,601	2,030	Value.....	\$1,237,557	\$8,077,062	\$2,747,957	\$3,042,835
Value.....	\$4,854,768	\$44,011,882	\$13,820,607	\$18,140,293	Steel—				
Passenger—					Number.....	410	3,929	2,349	4,235
Number.....	78	1,053	957	428	Value.....	\$960,018	\$2,587,065	\$1,586,008	\$2,453,123
Value.....	\$1,285,630	\$19,607,416	\$7,209,425	\$2,955,517	Tank—				
Baggage and express,					Number.....	11,592	1,250		
chair, dining, and					Value.....	\$26,540,682	\$1,265,167		
buffet, parlor, sleep-					Other varieties ⁵ —				
ing, mail, and all other—					Number.....	5,195	15,584	4,337	12,652
Number.....	156	1,792	644	1,002	Value.....	\$7,245,572	\$9,708,662	\$3,905,585	\$5,425,572
Value.....	\$3,500,138	\$24,404,466	\$6,620,182	\$15,184,776	Electric-railroad cars:				
Freight service—					Number.....	1,898	2,542	2,525	4,284
Number.....	153,054	116,056	73,344	100,752	Value.....	\$13,502,653	\$8,789,546	\$6,626,357	\$9,297,166
Value.....	\$369,090,445	\$96,217,735	\$61,893,038	\$69,208,018	Passenger—				
Box—					Number.....	1,726	2,335	2,345	4,008
Number.....	69,689	50,481	29,728	38,184	Value.....	\$11,495,791	\$8,075,710	\$6,249,415	\$8,809,261
Value.....	\$160,903,210	\$40,952,538	\$23,082,446	\$28,508,632	Other varieties—				
Flat—					Number.....	172	207	180	376
Number.....	4,020	4,781	3,232	5,412	Value.....	\$2,006,862	\$713,836	\$376,942	\$487,905
Value.....	\$7,592,108	\$3,120,084	\$2,033,801	\$2,893,154	All other products,				
Gondolas—					value.....	\$169,216,941	\$50,251,459	\$49,279,891	\$25,373,429
Number.....	54,840	25,077	19,607	9,518					
Value.....	\$118,853,843	\$22,808,750	\$18,128,186	\$5,518,084					

¹ In addition, 5,814 steam-railroad cars, valued at \$14,899,729, 531 electric-railroad cars, valued at \$1,407,315, and parts and repairs, valued at \$3,133,797, were reported in 1919; 14,859 steam-railroad cars, valued at \$14,506,898, 321 electric-railroad cars, valued at \$1,373,604, and parts and repairs, valued at \$980,074 were reported in 1914, and 23,526 steam-railroad cars, valued at \$19,251,042, 247 electric-railroad cars, valued at \$636,752, and parts and repairs, valued at \$210,487 were reported in 1909, by establishments engaged primarily in other industries.

² Includes gasoline motor cars for use as passenger cars by steam railroads for 1914 and 1909.

³ Reported as coal and coke cars in 1909 and 1904.

⁴ Includes fruit cars for 1919.

⁵ Includes 2,391 logging, mining, industrial, and dump cars, valued at \$2,916,806 in 1919, and 9,737 cars of the same classes, valued at \$1,825,693 in 1914; and 167 cars in 1914, and 136 cars in 1909 whose type was not specifically designated.

TABLE 14.—CARS MADE, CLASSIFIED BY KIND AND TYPE OF CONSTRUCTION: 1919.

KIND.	NUMBER.					Value.		KIND.	NUMBER.					Value.
	Total.	All wood.	Steel under-frame.	Steel body with wood interior.	All steel.				Total.	All wood.	Steel under-frame.	Steel body with wood interior.	All steel.	
Aggregate.....	155,186	2,840	164,563	3,698	44,095	\$387,447,866		Steam-railroad cars—Con.						
Steam-railroad cars.....	153,288	2,796	163,689	2,810	43,993	\$373,945,213		Freight service—Con.						
Passenger service, total..	234	8	43	85	98	4,854,768		Gondolas.....	54,840	100	40,042		14,608	\$118,853,843
Passenger.....	78	5	24	7	42	1,285,630		Hopper.....	16,670	2			16,668	45,757,395
Baggage and express,								Refrigerator ¹	629		504	125		1,237,557
chair, dining and								Stock.....	410	200	100			\$90,018
buffet, parlor, sleep-								Tank.....	11,592				11,582	26,540,682
ing, mail, and other								All other freight.....	5,195	2,307	1,644	500	744	7,245,572
Freight service, total.....	153,054	3	10	78	50	3,500,138		Electric-railroad cars.....	1,898	44	804	888	102	13,502,653
Box.....	69,689	143	103,046	2,725	43,895	369,090,445		Passenger.....	1,726	28	810	888		11,495,791
Flat.....	4,020	39	3,910		83	160,903,210		Other varieties.....	172	16	54		102	2,006,862
						7,592,108								

¹ Includes fruit cars.

GENERAL TABLES.

Table 15 gives, for 1919, 1914, and 1909, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products for the steam-railroad car industry.

Table 16 presents, for 1919, statistics in detail for the steam-railroad car industry as a whole, and for each

state that can be shown separately without the possibility of disclosing the operations of individual establishments. Similar figures are shown for the electric-railroad car industry as a whole. No states could be shown separately without disclosing the operations of individual establishments.

TABLE 15.—STEAM-RAILROAD CARS—COMPARATIVE SUMMARY, BY STATES: 1919, 1914, AND 1909.

STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Primary horse- power.	Wages.	Cost of mate- rials.	Value of prod- ucts.	STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earners (aver- age num- ber).	Primary horse- power.	Wages.	Cost of mate- rials.	Value of prod- ucts.
					Expressed in thousands.								Expressed in thousands.		
United States...	1919	99	52,298	157,865	\$78,285	\$356,085	\$538,223	Ohio.....	1919	8	2,177	12,685	\$3,336	\$21,315	\$28,146
	1914	103	54,288	126,687	41,394	132,200	194,776		1914	5	2,885	6,420	2,434	8,558	11,796
	1909	110	43,086	97,797	27,135	78,753	123,730		1909	6	2,282	4,410	1,304	4,195	6,451
Illinois.....	1919	19	13,775	32,429	20,340	82,428	125,218	Pennsylvania.....	1919	15	11,675	43,044	16,738	88,867	146,879
	1914	23	18,000	37,622	15,686	40,429	61,316		1914	12	9,955	26,462	6,635	29,877	39,831
	1909	28	10,945	18,651	7,824	15,336	27,001		1909	13	7,766	31,732	4,819	19,002	27,510
Indiana.....	1919	9	6,650	21,325	11,502	66,075	86,021	All other states.....	1919	48	18,021	48,382	26,369	97,400	151,959
	1914	10	5,800	13,171	3,981	13,711	21,570		1914	53	17,648	43,012	12,658	40,125	60,263
	1909	7	4,084	10,699	1,901	6,309	9,498		1909	55	18,009	32,305	11,197	33,911	53,270

MANUFACTURES.

TABLE 16.—DETAILED STATEMENT, BY STATES: 1919.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.				EXPENSES.			
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.	Capital.	Salaries and wages.		
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.			Male.	Officials.	Clerks, etc.
								Maximum month.	Minimum month.								
CARS, STEAM-RAILROAD.																	
United States....	90	58,782	2	1,902	3,535	1,045	52,298	Jan 64,974	Dec 45,031	50,909	50,540	429	21	\$335,207,363	\$6,376,052	\$7,309,340	
Illinois.....	19	15,145	.....	389	791	190	13,775	Jan 15,964	Dec 11,151	13,109	12,970	139	.....	63,884,050	1,105,959	1,465,712
Indiana.....	9	7,491	.....	292	419	133	6,650	May 7,842	Dec 5,476	7,045	7,018	27	.....	62,901,805	1,166,008	930,831
Kansas.....	5	430	.....	17	13	7	393	May 445	Dec 355	331	330	1	.....	1,039,262	33,473	31,691
Ohio.....	8	2,576	.....	79	237	83	2,177	Dec 2,539	Dec 1,847	2,539	2,536	2	1	20,576,710	561,454	348,686
Pennsylvania.....	15	13,307	.....	270	1,075	287	11,675	Jan 16,239	Dec 7,394	11,710	11,557	146	7	98,062,625	1,201,367	2,485,003
All other states ¹	43	19,830	2	855	1,000	345	17,628	.....	.....	16,265	16,138	114	13	88,712,911	2,307,191	2,108,597
CARS, ELECTRIC-RAILROAD.																	
United States ² ...	7	3,286	1	83	184	98	2,920	Jan 3,965	May 2,471	2,709	2,641	65	3	17,300,485	475,212	377,639	
EXPENSES—continued.																	
STATE.	Salaries and wages—Continued.		Rent and taxes.		For materials.		Value of products.	Value added by manufacture.	POWER.					Electric horsepower generated in establishments reporting.			
	Wage earners.	For contract work.	Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.			Primary horsepower.								
									Total.	Steam engines (not turbines).	Team turbines.	Internal-combustion engines.	Water power. ³		Rent. ⁴		
CARS, STEAM-RAILROAD.																	
United States....	\$78,284,647	\$39,054	\$158,045	\$30,181,106	\$349,003,030	\$6,180,615	\$538,222,831	\$182,138,280	157,865	55,519	36,496	2,848	100	62,902	107,658		
Illinois.....	20,339,878	.....	50,031	6,704,792	81,077,615	1,350,119	125,217,722	42,789,088	32,429	8,451	18,333	1,000	.....	4,645	32,077	
Indiana.....	11,501,903	.....	.....	4,336,086	64,987,248	1,087,746	86,021,028	10,946,034	21,325	5,375	6,100	.....	.....	9,850	12,036	
Kansas.....	478,226	252	6,000	9,816	461,097	26,152	1,257,225	709,070	775	.....	.....	45	.....	730	.....	
Ohio.....	3,335,505	8,585	22,835	922,410	21,097,856	217,288	28,145,542	6,830,398	12,685	1,905	.....	450	.....	10,330	300	
Pennsylvania.....	10,737,740	.....	13,693	6,302,181	87,425,755	1,440,929	146,879,011	58,012,327	43,044	21,434	7,933	675	.....	13,602	29,724	
All other states ¹	25,891,395	30,217	65,186	11,905,961	94,854,359	2,058,381	150,702,303	53,789,563	47,607	18,354	4,130	678	100	24,345	33,591		
CARS, ELECTRIC-RAILROAD.																	
United States ² ...	4,132,090	.....	10,879	436,110	11,081,416	377,526	18,441,076	6,383,034	9,390	1,000	.....	.....	.....	7,490	1,530	

¹ All other states embrace: Alabama, 1 establishment; California, 4; Delaware, 2; Georgia, 1; Iowa, 2; Kentucky, 1; Maryland, 1; Massachusetts, 2; Michigan, 1; Mississippi, 1; Missouri, 8; Nebraska, 1; New Hampshire, 1; New Jersey, 2; New York, 2; Oklahoma, 1; Oregon, 1; Tennessee, 2; Texas, 2; Virginia, 2; Washington, 2; West Virginia, 1; and Wisconsin, 2.

² Comprises: Missouri, 1 establishment; North Carolina, 1; Ohio, 3; Pennsylvania, 2.

³ Includes water wheels and turbines (irrespective of ownership of water supply) and water motors (operated by water from city mains).

⁴ Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft-belt or transmitted power from neighboring power plants).

STEAM AND ELECTRIC RAILROAD REPAIR SHOPS.

GENERAL STATISTICS.

General character of the industry.—This industry is divided for census purposes into two classes—cars and general shop construction and repairs by steam-railroad companies, and cars and general shop construction and repairs by electric-railroad companies.

The products are not ordinarily given a selling or contract value. The amount reported as the value represents the cost of materials, salaries, wages, rent, and taxes. Measured by the number of persons employed, the steam-railroad repair shops constitute one of the important industries covered by the statistics of manufactures.

Comparative summary.—Table 17 summarizes the statistics for each census since 1899, with percentages of increase for each five-year period.

With few exceptions increases are noticeable at each succeeding census. The large increases, however, from 1914 to 1919, in salaries and wages, cost of materials, and value of products are due largely to a general rise of prices and wages following the World War, and do not, therefore, fairly measure the growth of the industry for that period. A truer index of the conditions is found in the increases in the average number of wage earners and primary horsepower.

Persons engaged in the industry.—The classification, by sex, for 1919 was reported separately, but for 1914 and 1909 was obtained in the same manner as the distribution by age. The age classification of the average number of wage earners in Table 18 is an estimate obtained by the method described in the "Explanation of terms." Figures in detail will be found in Table 25.

Wage earners, by months.—Table 19 presents separately for steam and electric railroad repair shops, the number of wage earners employed on the 15th of each month, or the nearest representative day, for 1919, 1914, and 1909, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Average number of wage earners, by prevailing hours of labor per week.—Table 20 shows a marked shortening of the working day for the industry since 1914. In that year only 21.9 per cent were reported as employed in steam-railroad repair shops 48 hours or less per week, as against 73.3 per cent in 1919. In

1914 the "60" and "Over 60" groups constituted 19.8 per cent of the total wage earners, as compared with seven-tenths of 1 per cent in 1919.

In electric-railroad repair shops in 1914 only 12.5 per cent were employed fewer than 54 hours per week, as compared with 51.1 per cent in 1919.

Size of establishments, by average number of wage earners.—Analysis of Table 21 discloses the significant fact that in 1919, 303,277 wage earners, or 62.6 per cent of the total employed in steam-railroad repair shops, were employed in shops having more than 500 wage earners each.

In electric-railroad repair shops in 1919, 403 establishments, or 64.6 per cent of the total number for the industry, employed fewer than 21 wage earners each, while only 2,709, or 8.7 per cent of the total number of wage earners, were employed therein, evidencing the predominance of small establishments based on the average number of wage earners.

Size of establishments, by value of products.—At the censuses of 1909 and 1914 establishments with products valued at "\$100,000 to \$1,000,000" constituted one group, but at the census of 1919 this group was subdivided into "\$100,000 to \$500,000," and "\$500,000 to \$1,000,000." Separate figures for the number of establishments and value of products have been compiled, however, from the returns for 1914. Table 22, therefore, gives combined figures for these two groups in the case of all items for 1909, and in the case of average number of wage earners and value added by manufacture for 1914.

Number and horsepower of types of prime movers.—From 1914 to 1919, as shown by Table 23, there was an increase in the total horsepower for the steam-railroad repair shop industry of 160,521 horsepower, or 37 per cent, due to an increase in owned power of 52,098 horsepower, or 15.7 per cent, and to an increase in rented power of 108,423 horsepower, or 105.6 per cent.

From 1914 to 1919 there was an increase in the total horsepower for the electric-railroad repair shop industry of 8,841 horsepower, or 19.6 per cent, due entirely to an increase in rented power of 10,530 horsepower, or 28.6 per cent, since owned power decreased 1,689 horsepower, or 20.8 per cent.

TABLE 17.—COMPARATIVE SUMMARY: 1919, 1914, 1909, 1904, AND 1899.

	1919	1914	1909	1904	1899	PER CENT OF INCREASE. ¹			
						1914-1919	1909-1914	1904-1909	1899-1904
STEAM-RAILROAD REPAIR SHOPS.									
Number of establishments.....	1,744	1,362	1,146	1,140	1,202	28.0	19.0	0.4	-11.8
Persons engaged.....	516,279	361,025	301,273	250,199	180,689	42.6	20.1	20.4	38.5
Proprietors and firm members.....	2	1	2						
Salaried employees.....	31,840	22,406	19,097	13,329	7,094	42.1	17.0	43.3	87.9
Wage earners (average number).....	484,437	339,518	282,174	236,870	173,595	42.7	20.3	19.1	36.4
Primary horsepower.....	594,515	433,904	203,361	167,973	95,087	37.0	47.9	74.6	76.7
Capital.....	\$604,286,410	\$354,002,300	\$238,317,497	\$146,886,479	\$119,473,042	96.1	48.6	62.2	22.9
Salaries and wages.....	754,565,412	258,548,615	198,683,273	151,072,306	102,214,817	191.8	30.1	29.0	50.7
Salaries.....	66,948,100	24,043,517	17,338,977	11,919,558	6,208,247	178.4	38.7	45.5	92.0
Wages.....	687,617,312	234,505,098	181,344,296	142,152,748	96,006,570	193.2	29.3	27.6	48.1
Paid for contract work.....	1,389,192	201,375	265,036	(²)	(²)	589.9	-24.0		
Rent and taxes.....	3,093,178	1,730,343	1,178,867	(²)	(²)	78.8	46.8		
Cost of materials.....	515,803,210	243,828,607	199,413,412	151,104,801	109,472,353	111.5	22.3	32.0	38.0
Value of products.....	1,279,235,393	514,041,225	405,600,727	309,775,080	218,113,658	148.9	26.7	30.9	42.0
Value added by manufacture ³	763,432,183	270,212,618	206,187,315	158,670,288	108,641,305	182.5	31.1	29.9	46.0
ELECTRIC-RAILROAD REPAIR SHOPS.									
Number of establishments.....	624	649	541	86	108	-3.9	20.0		-20.4
Persons engaged.....	33,120	28,215	23,609	11,551	7,226	17.4	19.1	105.2	59.9
Proprietors and firm members.....	1	4							
Salaried employees.....	1,847	1,827	1,381	499	201	1.1	42.6	156.7	148.3
Wage earners (average number).....	31,272	26,384	22,418	11,052	7,025	18.5	17.7	102.8	157.3
Primary horsepower.....	53,830	44,989	35,794	3,154	6,443	19.7	25.7	1,034.9	-51.0
Capital.....	\$82,557,005	\$63,613,741	\$3,808,686	\$12,905,853	\$10,781,930	29.8	63.5	201.4	19.7
Salaries and wages.....	42,052,521	20,550,383	15,690,228	7,555,485	4,598,268	104.5	31.0	107.7	64.3
Salaries.....	2,970,367	1,914,538	1,204,219	542,687	193,675	55.0	59.0	121.9	180.2
Wages.....	39,073,154	18,644,845	14,486,009	7,012,798	4,404,593	100.6	28.7	106.6	59.2
Paid for contract work.....	118,335	24,596	23,480	13,195	23,392	381.1	4.8	77.9	-43.6
Rent and taxes.....	795,463	581,057	351,626	4,119,598	4,136,193	31.6	65.4		-12.2
Cost of materials.....	32,025,484	17,609,574	15,167,890	5,463,360	4,336,744	81.9	16.1	177.6	26.0
Value of products.....	75,210,701	38,576,565	31,962,561	13,437,121	9,370,811	95.0	20.7	137.9	43.4
Value added by manufacture ³	43,185,217	20,966,991	16,794,662	7,973,761	5,034,667	106.0	24.8	110.6	58.4

¹ A minus sign (—) denotes decrease. Percentages are omitted where base is less than 100.² Figures not available.³ Value of products less cost of materials.⁴ Exclusive of internal revenue.

TABLE 18.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1914, AND 1909.

CLASS.	Cen- sus year.	Total.	Male.	Fe- male.	PER CENT OF TOTAL.		CLASS.	Cen- sus year.	Total.	Male.	Fe- male.	PER CENT OF TOTAL.	
					Male.	Fe- male.						Male.	Fe- male.
STEAM-RAILROAD REPAIR SHOPS.							ELECTRIC-RAILROAD REPAIR SHOPS.						
All classes.....	1919	516,279	507,467	8,812	98.3	1.7	All classes.....	1919	33,120	32,361	759	97.7	2.3
	1914	361,925	360,842	1,083	99.7	0.3		1914	28,215	28,022	193	99.3	0.7
	1909	301,273	300,454	819	99.7	0.3		1909	23,699	23,550	149	99.4	0.6
Proprietors and officials.....	1919	15,476	15,451	25	99.8	0.2	Proprietors and officials.....	1919	867	867		100.0	
	1914	6,825	6,825		100.0			1914	803	799	4	99.5	0.5
	1909	6,974	6,973	1	100.0			1909	658	657	1	99.8	0.2
Proprietors and firm members ..	1919	2	2		100.0		Proprietors and firm members ..	1919	1	1		100.0	
	1914	1	1		100.0			1914	4	4		100.0	
	1909	2	2		100.0			1909					
Salaried officers of corporations..	1919	136	136		100.0		Salaried officers of corporations..	1919	65	65		100.0	
	1914	133	133		100.0			1914	101	97	4	96.0	4.0
	1909	1,877	1,877		100.0			1909	107	106	1	99.1	0.9
Superintendents and managers..	1919	15,338	15,313	25	99.8	0.2	Superintendents and managers..	1919	801	801		100.0	
	1914	6,691	6,691		100.0			1914	698	698		100.0	
	1909	5,095	5,094	1	100.0			1909	551	551		100.0	
Clerks and other subordinate salaried employees.	1919	16,366	12,057	4,309	73.7	26.3	Clerks and other subordinate salaried employees.	1919	981	721	260	73.5	26.5
	1914	15,682	14,035	1,647	95.8	4.2		1914	1,028	941	87	91.5	8.5
	1909	12,125	11,732	393	96.8	3.2		1909	623	579	44	92.9	7.1
Wage earners (average number).....	1919	484,437	479,950	4,478	99.1	0.9	Wage earners (average number).....	1919	31,272	30,773	499	98.4	1.6
	1914	339,518	339,082	436	99.9	0.1		1914	26,384	26,282	102	99.6	0.4
	1909	282,174	281,749	425	99.8	0.2		1909	22,418	22,314	104	99.5	0.5
16 years of age and over.....	1919	484,395	479,917	4,478	99.1	0.9	16 years of age and over.....	1919	31,262	30,763	499	98.4	1.6
	1914	339,438	339,002	436	99.9	0.1		1914	26,377	26,275	102	99.6	0.4
	1909	281,993	281,568	425	99.8	0.2		1909	22,403	22,300	103	99.5	0.5
Under 16 years of age.....	1919	42	42		100.0		Under 16 years of age.....	1919	10	10		100.0	
	1914	80	80		100.0			1914	7	7		100.0	
	1909	181	181		100.0			1909	15	14	1	93.3	6.7

RAILROAD REPAIR SHOPS.

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TABLE 19.—WAGE EARNERS, BY MONTHS: 1919, 1914, AND 1909.

MONTH.	NUMBER. ¹			PER CENT OF MAXIMUM.			MONTH.	NUMBER. ¹			PER CENT OF MAXIMUM.		
	1919	1914	1909	1919	1914	1909		1919	1914	1909	1919	1914	1909
STEAM-RAILROAD REPAIR SHOPS.							ELECTRIC-RAILROAD REPAIR SHOPS.						
January.....	487, 141	343, 500	278, 795	95.3	99.0	92.5	January.....	31, 499	26, 267	21, 922	98.8	97.4	95.7
February.....	484, 047	340, 925	273, 678	94.7	98.2	90.8	February.....	31, 702	26, 709	22, 005	99.4	99.0	96.1
March.....	472, 266	340, 933	273, 022	92.4	98.2	90.7	March.....	31, 686	26, 849	22, 169	99.3	99.6	96.8
April.....	467, 674	333, 423	269, 502	91.5	96.1	89.4	April.....	31, 332	26, 880	22, 198	98.2	99.7	96.9
May.....	406, 905	332, 028	268, 700	91.4	95.7	89.1	May.....	30, 937	26, 919	22, 280	97.0	99.8	97.3
June.....	404, 019	332, 735	272, 165	91.0	95.0	90.3	June.....	30, 220	26, 745	22, 325	94.8	99.2	97.5
July.....	476, 570	343, 570	276, 061	93.0	99.0	91.6	July.....	30, 896	28, 970	22, 273	96.9	100.0	97.3
August.....	480, 705	345, 275	284, 253	94.0	99.5	94.3	August.....	30, 796	26, 694	22, 411	96.6	99.0	97.9
September.....	493, 057	347, 031	292, 042	96.5	100.0	96.9	September.....	30, 960	26, 336	22, 857	97.1	97.6	99.8
October.....	502, 119	345, 195	296, 302	98.2	99.5	98.3	October.....	31, 568	25, 945	22, 869	99.0	96.2	99.9
November.....	507, 617	339, 300	299, 381	99.3	97.5	99.3	November.....	31, 774	25, 139	22, 825	99.6	93.2	99.7
December.....	511, 134	351, 207	301, 538	100.0	95.4	100.0	December.....	31, 894	26, 186	22, 898	100.0	93.2	100.0

¹ The figures represent the number employed on the 15th of each month or the nearest representative day. Maximum number indicated by bold-faced figures, minimum by italic figures.

TABLE 20.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK: 1919 AND 1914.

PREVAILING HOURS OF LABOR PER WEEK.	WAGE EARNERS IN ESTABLISHMENTS WITH SPECIFIED NUMBER OF HOURS.				PREVAILING HOURS OF LABOR PER WEEK.	WAGE EARNERS IN ESTABLISHMENTS WITH SPECIFIED NUMBER OF HOURS.			
	Average number.		Per cent of total.			Average number.		Per cent of total.	
	1919	1914	1919	1914		1919	1914	1919	1914
STEAM-RAILROAD REPAIR SHOPS.					ELECTRIC-RAILROAD REPAIR SHOPS.				
Total.....	484,437	339,518	100.0	100.0	Total.....	31,272	26,384	100.0	100.0
44 and under.....	2,893	(1)	0.6	.....	44 and under.....	1,278	(1)	4.1	.....
Between 44 and 48.....	45,481	(1)	9.4	.....	Between 44 and 48.....	829	(1)	2.7	.....
48 ²	306,639	74,431	63.3	21.9	48 ²	5,200	1,665	16.7	6.3
Between 48 and 54.....	10,671	50,616	2.2	14.9	Between 48 and 54.....	8,682	1,638	27.7	6.2
54.....	7,061	100,759	1.5	29.7	54.....	7,302	6,160	23.3	23.3
Between 54 and 60.....	108,403	46,375	22.4	13.7	Between 54 and 60.....	3,124	6,640	10.0	25.2
60.....	1,968	16,767	0.4	4.9	60.....	2,523	6,040	8.1	22.9
Over 60.....	1,321	50,670	0.3	14.9	Over 60.....	2,345	4,241	7.5	16.1

¹ Figures not available.

² Includes 48 and under for 1914.

TABLE 21.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS: 1919 AND 1914.

WAGE EARNERS PER ESTABLISHMENT.	NUMBER OF ESTABLISHMENTS.		AVERAGE NUMBER OF WAGE EARNERS.		WAGE EARNERS PER ESTABLISHMENT.	NUMBER OF ESTABLISHMENTS.		AVERAGE NUMBER OF WAGE EARNERS.	
	1919	1914	1919	1914		1919	1914	1919	1914
STEAM-RAILROAD REPAIR SHOPS.					ELECTRIC-RAILROAD REPAIR SHOPS.				
All establishments.....	1, 744	1, 362	484, 437	339, 518	All establishments.....	624	649	31, 272	26, 384
1 to 5 wage earners.....	125	76	374	234	1 to 5 wage earners.....	229	253	640	719
6 to 20 wage earners.....	206	194	2, 617	2, 503	6 to 20 wage earners.....	174	193	2, 069	2, 134
21 to 50 wage earners.....	253	202	8, 582	6, 840	21 to 50 wage earners.....	111	112	3, 696	3, 537
51 to 100 wage earners.....	255	213	18, 857	15, 634	51 to 100 wage earners.....	47	37	3, 467	2, 623
101 to 250 wage earners.....	397	287	64, 735	45, 788	101 to 250 wage earners.....	41	34	5, 884	4, 862
251 to 500 wage earners.....	238	197	85, 995	67, 492	251 to 500 wage earners.....	9	9	2, 860	3, 306
501 to 1,000 wage earners.....	164	131	117, 723	91, 041	501 to 1,000 wage earners.....	9	8	6, 738	5, 265
Over 1,000 wage earners.....	106	62	185, 554	109, 986	Over 1,000 wage earners.....	4	3	5, 918	3, 578

TABLE 22.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919, 1914, AND 1909.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
STEAM-RAILROAD REPAIR SHOPS.												
All classes.....	1,744	1,362	1,145	484,437	330,518	282,174	\$1,270,235,393	\$514,041,225	\$435,000,727	\$763,432,183	\$270,212,618	\$206,187,315
Less than \$5,000.....	38	44	52	57	115	152	113,082	133,531	163,034	70,282	81,770	98,545
\$5,000 to \$20,000.....	130	154	149	686	1,584	1,515	1,640,002	1,805,296	1,760,898	1,137,072	1,202,354	1,124,545
\$20,000 to \$100,000.....	300	358	286	8,544	14,430	12,059	19,329,363	19,548,203	14,701,863	13,799,747	12,158,925	8,963,187
\$100,000 to \$500,000.....	615	529	564	68,005	168,586	152,534	159,630,869	127,284,964	199,863,116	100,792,732	133,985,665	109,493,386
\$500,000 to \$1,000,000.....	246	155	94	79,515	154,803	115,914	177,503,358	109,892,969	189,111,816	114,119,338	122,783,898	86,807,671
\$1,000,000 and over.....	852	122	94	336,630	154,803	115,914	921,012,119	253,310,562	189,111,816	524,504,012	122,783,898	86,807,671
PER CENT DISTRIBUTION.												
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....	2.2	3.2	4.5	(1)	(1)	0.1	(1)	(1)	(1)	(1)	(1)	(1)
\$5,000 to \$20,000.....	7.5	11.3	13.0	0.1	0.5	0.5	0.1	0.4	0.4	0.1	0.4	0.5
\$20,000 to \$100,000.....	20.6	26.3	25.0	1.8	4.3	4.3	1.5	3.8	3.0	1.8	4.5	4.3
\$100,000 to \$500,000.....	35.4	38.8	49.3	14.0	49.7	54.1	12.5	24.7	49.3	14.4	49.0	53.1
\$500,000 to \$1,000,000.....	14.1	11.4	8.2	14.6	45.6	41.1	13.9	21.4	46.6	14.9	45.4	42.0
\$1,000,000 and over.....	20.2	9.0	8.2	60.5	45.6	41.1	72.0	49.7	46.6	68.7	45.4	42.0
ELECTRIC-RAILROAD REPAIR SHOPS.												
All classes.....	624	649	541	31,272	26,384	22,418	\$75,210,701	\$38,576,665	\$31,962,501	\$43,185,217	\$20,966,991	\$16,794,662
Less than \$5,000.....	73	154	125	117	344	279	220,800	440,504	361,073	120,332	253,087	197,379
\$5,000 to \$20,000.....	200	242	190	925	1,842	1,068	2,333,145	2,554,138	2,230,601	1,280,614	1,410,900	1,254,306
\$20,000 to \$100,000.....	227	176	155	4,883	5,140	4,834	10,618,287	7,029,094	6,261,138	6,174,511	4,023,670	3,370,762
\$100,000 to \$500,000.....	100	58	55	9,654	12,482	10,034	22,212,484	10,109,255	14,396,014	12,036,549	9,825,494	7,693,202
\$500,000 to \$1,000,000.....	9	12	7	2,317	6,506	5,603	6,432,118	8,319,230	8,743,676	3,408,327	5,453,780	4,279,013
\$1,000,000 and over.....	15	7	7	13,376	6,506	5,603	33,493,777	10,058,338	8,743,676	19,240,984	5,453,780	4,279,013
PER CENT DISTRIBUTION.												
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....	11.7	23.7	23.1	0.4	1.3	1.2	0.3	1.2	1.1	0.3	1.2	1.2
\$5,000 to \$20,000.....	32.1	37.3	30.8	3.0	7.0	7.4	3.0	6.6	7.0	3.0	6.7	7.5
\$20,000 to \$100,000.....	36.4	27.1	28.6	15.6	19.5	21.6	14.1	18.2	19.0	14.3	19.2	20.1
\$100,000 to \$500,000.....	16.0	8.9	10.2	30.9	47.2	44.8	20.5	20.3	44.9	30.0	46.9	45.8
\$500,000 to \$1,000,000.....	1.4	1.9	1.3	7.4	25.0	25.0	8.6	21.6	27.4	7.9	26.0	25.5
\$1,000,000 and over.....	2.4	1.1	1.3	42.8	25.0	25.0	44.5	26.1	27.4	44.6	26.0	25.5

¹ Less than one-tenth of 1 per cent.

TABLE 23.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919, 1914, AND 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
	1919	1914	1909	Amount.			Per cent distribution.		
				1919	1914	1909	1919	1914	1909
STEAM-RAILROAD REPAIR SHOPS.									
Primary power, total.....	14,295	8,245	4,105	504,515	433,094	293,361	100.0	100.0	100.0
Owned.....	2,659	2,716	2,366	383,440	331,342	259,430	64.5	76.3	88.4
Steam engines.....	2,490	2,514	2,220	375,606	323,634	255,840	63.2	74.6	87.2
Engines.....	2,358	(2)	(2)	325,738	(2)	(2)	54.8	.....	.....
Turbines.....	132	(2)	(2)	40,808	(2)	(2)	8.4	.....	.....
Internal-combustion engines.....	158	175	130	6,993	5,016	3,140	1.2	1.4	1.1
Water wheels, turbines, and motors.....	11	27	16	841	1,702	450	0.1	0.4	0.2
Rented.....	11,636	5,529	1,829	211,075	102,652	33,931	35.5	23.7	11.6
Electric.....	11,636	5,529	1,829	207,630	102,562	33,780	34.9	23.6	11.5
Other.....	.....	.....	.....	3,445	90	145	0.6	(2)	(2)
Electric.....	30,185	19,056	9,468	500,141	325,054	161,288	100.0	100.0	100.0
Rented.....	11,636	5,529	1,820	207,630	102,562	33,780	41.5	31.6	20.9
Generated by establishments reporting.....	18,549	13,527	7,630	292,511	222,492	127,502	58.5	68.4	79.1
ELECTRIC-RAILROAD REPAIR SHOPS.									
Primary power, total.....	3,577	2,649	1,830	53,830	44,989	35,794	100.0	100.0	100.0
Owned.....	56	44	38	6,439	8,128	4,840	12.0	18.1	13.5
Steam engines.....	45	34	37	5,875	5,997	4,831	10.9	13.3	13.5
Internal-combustion engines.....	11	8	1	504	1,121	9	1.0	2.5	(2)
Water wheels and turbines.....	.....	2	.....	.....	1,010	.....	.....	2.2	.....
Rented.....	3,521	2,605	1,792	47,391	36,861	30,954	88.0	81.9	86.5
Electric.....	3,521	2,605	1,792	47,396	36,861	30,954	88.0	81.9	86.5
Other.....	.....	.....	.....	25	.....	.....	(2)	.....	.....
Electric.....	3,711	3,095	1,887	50,016	44,070	33,024	100.0	100.0	100.0
Rented.....	3,521	2,605	1,792	47,396	36,861	30,954	94.7	82.5	83.7
Generated by establishments reporting.....	190	490	95	2,650	7,800	2,070	5.3	17.5	6.3

¹ Figures for horsepower include for 1909 the amount reported under the head of "Other" owned power. ² Not shown separately. ³ Less than one-tenth of 1 per cent.

SPECIAL STATISTICS.

Table 24 gives in detail the statistics of steam and electric railroad repair shops for 1919, 1914, 1909, and 1904.

A gradual decline is shown in the number of locomotives built in steam-railroad repair shops since 1909. The total number of cars built in steam and electric railroad repair shops decreased considerably during the decade.

In 1919 the motive power and machinery department of steam-railroad repair shops reported 48.7 per

cent of the total value of products; car department, 44.8 per cent; bridge and building department, seven-tenths of 1 per cent; and all other, or unclassified products, 5.8 per cent. In the same year the motive power and machinery department of electric-railroad repair shops reported 10.5 per cent of the total value of products; car department, 85.4 per cent; bridge and building department, four-tenths of 1 per cent; and all other, or unclassified products; 3.7 per cent.

TABLE 24.—DETAILED STATISTICS OF NUMBER AND VALUE: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904		1919	1914	1909	1904
STEAM-RAILROAD REPAIR SHOPS.					ELECTRIC-RAILROAD REPAIR SHOPS.				
Total value.....	\$1,279,235,393	\$514,041,225	\$405,600,727	\$309,775,089	Total value.....	\$75,210,701	\$38,576,565	\$31,962,561	\$13,437,121
Motive power and machinery department, value.....	\$622,480,393	\$236,723,724	\$184,971,870	\$149,643,953	Motive power and machinery department, value.....	\$7,926,303	\$5,380,573	\$4,510,332	\$510,946
Locomotives built—					Repairs to motors, etc.....	\$7,081,735	\$4,933,436	\$4,004,336	.....
Number.....	106	187	215	148	Work for other corporations.....	\$75,182	\$56,944	\$88,070	\$2,626
Value.....	\$5,825,096	\$3,594,008	\$3,280,140	\$1,853,939	All other products or work.....	\$769,386	\$390,193	\$417,926	\$508,320
Repairs to locomotives, motors, etc.....	\$463,952,871	\$169,057,932	\$127,928,773	\$101,326,805	Car department, value.....	\$64,237,805	\$31,086,043	\$25,835,463	\$12,581,365
Work for other corporations.....	\$16,889,147	\$7,053,430	\$4,735,004	\$5,681,307	Cars built, value.....	\$762,293	\$311,104	\$626,752	\$805,144
All other products or work.....	\$135,813,279	\$57,018,359	\$49,018,953	\$40,781,902	Passenger—				
Car department, value.....	\$573,709,875	\$242,976,774	\$199,768,939	\$149,748,820	Number.....	88	235	129	288
Cars built, value.....	\$5,133,115	\$11,999,983	\$13,326,171	\$12,990,011	Value.....	\$635,770	\$737,926	\$498,709	\$580,669
Passenger—					Freight—				
Number.....	20	123	218	414	Number.....	46	11	63	13
Value.....	\$191,691	\$1,233,302	\$1,291,354	\$2,337,977	Value.....	\$95,638	\$21,196	\$59,102	\$11,866
Freight—					Other—				
Number.....	2,394	10,314	13,972	14,742	Number.....	17	53	51	9
Value.....	\$4,590,482	\$10,513,070	\$11,767,694	\$10,006,642	Value.....	\$30,885	\$51,982	\$68,941	\$13,109
Other—					Repairs to cars of all kinds.....	\$80,060,255	\$27,628,802	\$22,869,777	\$11,254,505
Number.....	271	308	359	2,000	Work for other corporations.....	\$1,174,282	\$441,323	\$624,805	\$36,714
Value.....	\$350,942	\$253,005	\$267,153	\$645,392	All other products or work.....	\$2,240,975	\$2,204,814	\$1,714,129	\$985,007
Repairs to cars of all kinds.....	\$479,229,076	\$183,753,538	\$147,194,065	\$105,319,032	Bridge and building department (shopwork), value.....	\$268,655	\$434,427	\$330,948	\$327,855
Work for other corporations.....	\$31,101,248	\$14,819,984	\$8,784,239	\$6,946,990	Repairs and renewals.....	\$261,679	\$196,751	\$273,581	\$253,133
All other products or work.....	\$58,246,436	\$32,403,269	\$30,464,464	\$24,492,787	All other products or work.....	\$6,976	\$234,676	\$57,367	\$74,722
Bridge and building department (shopwork), value.....	\$8,535,303	\$3,127,644	\$2,799,898	\$5,096,141	All other products and work not classified, value.....	\$2,777,938	\$1,675,522	\$1,285,818	\$16,933
Repairs and renewals.....	\$7,288,375	\$2,449,821	\$1,906,737	\$4,351,467					
Work for other corporations.....	\$22,804	\$37,001	\$46,496	\$40,581					
All other products or work.....	\$1,224,126	\$640,762	\$846,665	\$704,073					
All other products and work not classified, value.....	\$74,509,822	\$31,213,083	\$18,060,020	\$5,286,175					

¹ Includes the value of 2 electric locomotives.

² Includes the value of 1 locomotive.

³ Includes the value of 3 electric locomotives.

GENERAL TABLE.

Table 25 presents for 1919 statistics in detail for both steam and electric railroad repair shops as a whole, and for each state that can be shown sepa-

rately without the possibility of disclosing the operations of individual establishments.

TABLE 25.—DETAILED STATEMENT

STATE.		Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.										WAGE EARNERS, DEC. 15, OR NEAREST REPRESENTATIVE DAY.				Capital.	EXPENSES.	
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.	Salaries and wages.	Officials.			
						Male.	Female.	Average number.	Number, 15th day of—										
									Maximum month.	Minimum month.									
STEAM-RAILROAD REPAIR SHOPS.																			
1	United States.....	1,744	516,279	2	15,474	12,057	4,309	484,437	De 511,134	Jo 404,919	510,384	506,365	3,975	44	\$604,286,410	\$41,225,228			
2	Alabama.....	20	9,291	.....	282	291	53	8,065	De 9,104	Ja 7,643	9,105	9,079	24	2	11,938,405	785,379		
3	Arizona.....	17	2,258	.....	75	71	9	2,103	Mh 2,196	Ja 2,023	2,108	2,105	2	1	2,145,769	220,609		
4	Arkansas.....	17	5,006	.....	176	105	34	4,691	No 4,978	Ja 4,520	4,870	4,864	6	.....	4,374,588	440,120	
5	California.....	60	17,200	.....	494	449	50	16,213	De 17,382	Ja 15,234	17,006	16,893	113	.....	14,628,648	1,306,573	
6	Colorado.....	30	6,161	.....	203	194	25	5,739	Ap 6,089	My 5,003	6,060	6,054	6	.....	11,076,400	484,539	
7	Delaware.....	5	3,485	.....	15	208	39	3,223	De 3,601	Mh 2,884	3,599	3,522	71	6	2,985,731	59,903		
8	Florida.....	19	3,076	.....	119	78	17	3,762	My 4,073	Jy 3,352	3,992	3,981	11	.....	8,121,237	360,537	
9	Georgia.....	29	8,534	.....	176	102	40	8,210	Mh 8,579	Jy 7,796	8,418	8,298	120	.....	10,630,529	496,302	
10	Idaho.....	9	1,980	.....	63	28	12	1,877	No 1,959	Au 1,741	1,894	1,872	22	.....	3,199,004	163,576	
11	Illinois.....	133	43,498	.....	1,219	1,005	455	40,219	No 41,883	My 38,978	41,917	41,658	257	2	80,181,297	4,142,766		
12	Indiana.....	77	25,090	.....	893	852	246	23,099	De 24,841	Ap 21,821	25,075	24,962	113	.....	28,456,300	2,341,708	
13	Iowa.....	51	14,214	.....	622	20	127	13,536	De 14,037	Jo 13,157	14,015	13,944	71	.....	17,410,294	1,409,793	
14	Kansas.....	32	12,033	.....	449	290	98	11,196	De 11,853	Jo 10,787	11,852	11,806	40	.....	16,414,426	1,178,654	
15	Kentucky.....	30	13,124	.....	245	460	47	12,372	De 13,397	Jo 11,257	13,370	13,358	12	.....	13,991,435	778,036	
16	Louisiana.....	28	4,035	.....	86	101	24	4,424	Mh 4,584	Jo 4,118	4,625	4,585	40	.....	4,727,861	191,792	
17	Maine.....	16	1,820	.....	47	45	10	1,721	De 1,808	Ja 1,634	1,808	1,800	8	.....	3,192,350	131,989	
18	Maryland.....	17	8,842	.....	236	187	56	8,363	De 8,803	Jo 7,969	8,402	8,273	129	.....	11,594,990	630,589	
19	Massachusetts.....	14	8,260	.....	220	245	71	7,724	De 8,101	Jo 7,414	8,101	8,044	49	8	9,007,976	639,655		
20	Michigan.....	36	7,579	.....	297	170	87	7,025	De 7,298	Ap 6,910	7,280	7,214	65	1	14,479,362	763,239		
21	Minnesota.....	75	10,808	.....	381	294	157	10,076	Se 10,375	Au 16,190	15,809	15,620	189	.....	30,083,952	1,047,762	
22	Mississippi.....	13	4,266	.....	92	107	37	4,030	De 4,287	Jy 3,746	4,224	4,190	25	.....	4,394,222	259,869	
23	Missouri.....	45	14,321	.....	460	309	81	13,471	No 14,294	Ap 12,942	14,209	14,133	65	11	17,585,442	1,235,125		
24	Montana.....	30	5,530	.....	134	36	48	5,312	No 5,662	Ap 5,043	5,340	5,261	89	.....	9,584,572	355,745	
25	Nebraska.....	24	0,662	.....	264	153	77	6,178	De 6,849	My 5,687	6,747	6,720	27	.....	12,245,191	567,859	
26	Nevada.....	13	1,839	.....	51	25	13	1,760	Au 1,791	Jo 1,609	1,771	1,752	14	5	1,650,677	140,524		
27	New Jersey.....	36	11,252	.....	508	276	147	10,321	De 10,902	Ap 9,455	10,809	10,800	68	1	12,367,108	1,156,203		
28	New Mexico.....	15	3,219	.....	115	95	16	2,993	No 3,127	Ja 2,847	3,109	3,103	6	.....	3,646,746	334,613	
29	New York.....	180	32,851	.....	1,050	1,077	201	30,427	De 32,215	Jo 29,418	32,200	31,974	226	.....	44,039,781	2,647,106	
30	North Carolina.....	11	4,287	.....	124	81	11	4,071	Ap 4,327	Au 3,788	4,162	4,085	77	.....	7,179,529	361,996	
31	North Dakota.....	21	1,617	.....	53	17	8	1,539	De 1,679	Jo 1,418	1,640	1,621	19	.....	2,839,577	143,495	
32	Ohio.....	117	38,584	.....	1,177	1,742	420	35,245	De 37,236	Ap 32,688	37,234	36,973	261	.....	42,581,602	2,847,966	
33	Oklahoma.....	12	2,828	.....	71	52	18	2,687	De 3,012	Ap 2,472	3,012	3,007	5	.....	1,672,447	215,618	
34	Oregon.....	21	2,924	.....	95	47	31	2,751	De 3,145	Jo 2,551	3,145	3,100	39	.....	3,858,129	242,710	
35	Pennsylvania.....	195	82,347	.....	2,440	300	858	78,749	No 84,367	Ap 71,979	84,359	83,107	1,260	2	108,688,781	6,022,612		
36	Rhode Island.....	4	354	.....	1	1	1	351	My 368	Oc 326	330	330	.....	.....	194,138	2,880	
37	South Carolina.....	8	2,030	.....	68	34	15	1,911	Se 2,083	Ja 1,660	2,004	1,979	23	2	4,964,639	203,585		
38	South Dakota.....	15	1,295	.....	37	17	19	1,222	De 1,392	Au 1,126	1,388	1,378	10	.....	1,202,945	95,045	
39	Tennessee.....	20	10,837	.....	292	307	65	10,173	De 11,041	Jo 8,901	11,039	10,970	69	.....	14,172,907	810,629	
40	Texas.....	85	17,740	.....	531	406	101	16,703	De 17,622	Ja 16,860	17,623	17,616	6	1	26,968,028	1,419,690		
41	Utah.....	9	3,473	.....	88	42	25	3,318	De 3,511	My 2,847	3,502	3,488	14	.....	2,388,659	238,271	
42	Vermont.....	6	1,639	.....	29	27	17	1,566	Oc 1,698	Jy 1,531	1,698	1,585	13	.....	1,336,285	70,193	
43	Virginia.....	31	12,014	.....	370	398	60	12,080	De 13,022	Jo 11,090	13,023	12,978	45	.....	16,561,310	1,147,917	
44	Washington.....	35	0,813	.....	177	103	53	6,480	De 6,832	Ap 6,280	6,572	6,400	82	.....	11,903,741	441,668	
45	West Virginia.....	38	12,300	.....	397	215	79	11,609	De 12,394	Ap 10,534	12,401	12,316	85	.....	10,539,844	992,561	
46	Wisconsin.....	58	13,163	.....	408	190	74	12,491	Jy 13,827	Oc 12,049	12,094	11,998	90	.....	21,868,856	1,056,029	
47	Wyoming.....	16	3,312	.....	122	79	54	3,057	De 3,492	My 2,075	3,488	3,485	2	1	6,853,775	337,402		
48	All other states.....	15	4,073	.....	126	118	21	3,808	.....	.....	4,095	4,080	5	1	3,753,905	304,286	

¹ Includes water wheels and turbines (irrespective of ownership of water supply), and water motors (operated by water from city mains).

² Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft-belt or transmitted power from neighboring power plants).

RAILROAD REPAIR SHOPS.

19

BY STATES: 1919.

EXPENSES—continued.							Value of products.	Value added by manufacture.	POWER.					
Salaries and wages—Continued.		For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
Clerks, etc.	Wage earners.		Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.			Total.	Owned.				
										Steam engines (not turbines).	Steam turbines.	Internal-combustion engines.	Water power. ¹		Rented.^{2}

STEAM-RAILROAD REPAIR SHOPS.

\$26,722,572	\$687,617,312	\$1,380,192	\$192,185	\$2,900,993	\$484,402,576	\$31,400,634	\$1,279,235,393	\$763,432,183	594,515	325,738	49,868	6,993	841	211,075	292,511	1
429,858	12,139,046	11,570	.....	56,140	7,390,769	364,322	21,233,516	13,478,425	10,275	7,466	50	.....	.....	2,759	3,016	2
91,526	3,152,502	11,580	.....	15,399	1,547,030	355,857	5,398,489	3,495,602	3,405	2,343	133	370	.....	559	517	3
192,250	6,824,275	.....	.....	18,307	3,356,425	214,653	11,030,409	7,459,331	8,534	3,709	500	22	.....	4,303	2,447	4
708,103	24,069,764	.....	.....	98,744	14,284,057	1,476,852	41,926,975	26,166,066	15,508	2,752	.....	127	.....	12,719	84	5
266,010	8,585,725	1,176	15,000	100,248	5,244,405	403,782	15,130,423	9,482,236	8,282	4,615	.....	30	138	3,499	1,332	6
580,843	4,107,745	.....	.....	16,992	2,829,457	86,072	7,687,013	4,771,484	2,515	1,765	750	.....	.....	.....	3,018	7
122,800	4,744,412	.....	.....	2,526	2,363,808	864,801	8,468,318	5,239,709	3,557	1,460	733	6	.....	1,358	1,100	8
239,459	11,192,179	900,000	10	10,505	7,366,790	304,644	19,731,320	12,059,886	12,903	4,375	4,170	8	.....	4,350	3,453	9
63,781	1,815,616	.....	100	58,600	2,189,857	63,352	4,401,733	2,151,524	2,788	1,074	.....	.....	.....	1,714	154	10
2,889,576	55,600,064	310,107	6,000	258,343	37,290,566	2,610,261	103,219,253	63,418,426	54,852	32,680	3,789	117	.....	18,266	31,705	11
1,474,525	32,393,309	.....	15,025	70,902	23,232,855	1,633,808	61,232,356	36,365,093	30,354	17,376	2,208	22	8	10,740	14,593	12
546,479	18,906,237	1,015	.....	105,975	11,221,140	997,830	33,098,800	20,879,630	12,063	7,020	2,418	166	.....	2,459	12,390	13
463,957	15,987,475	3,004	.....	142,665	9,482,878	952,211	28,230,850	17,795,761	11,928	9,583	740	.....	250	1,355	8,949	14
624,166	17,125,442	.....	2,500	81,613	11,543,502	413,746	30,597,962	18,640,714	8,799	7,233	900	.....	.....	666	9,691	15
164,544	6,282,928	33,127	15	48,121	2,614,186	184,342	9,519,059	6,720,531	3,214	1,921	.....	453	.....	840	2,203	16
109,538	2,738,157	.....	.....	23,883	1,625,422	130,992	4,743,759	2,987,345	2,466	908	.....	.....	.....	1,558	667	17
331,689	11,027,441	.....	.....	9,128,451	9,128,451	360,441	22,837,066	13,339,174	14,341	6,886	50	10	.....	7,395	5,606	18
562,863	11,271,695	.....	.....	83,229	9,802,210	428,338	22,637,990	12,347,442	11,259	7,528	1,000	6	.....	2,725	6,196	19
309,385	9,862,344	965	.....	60,485	5,751,556	477,086	10,994,547	11,079	3,250	260	33	.....	.....	7,536	955	20
568,567	21,070,163	57,021	.....	11,698,979	1,098,576	35,350,764	22,658,210	15,157	7,252	1,416	142	.....	.....	6,347	9,725	21
224,958	5,648,985	.....	.....	15,333	3,853,543	205,348	10,225,791	6,166,905	4,433	1,557	.....	.....	.....	2,876	.....	22
464,744	18,529,988	1,615	5,240	71,879	11,950,929	776,136	33,020,800	20,293,735	14,904	6,917	2,450	25	.....	5,512	7,090	23
110,948	7,477,056	.....	.....	83,234	2,673,637	216,910	10,957,439	8,066,892	5,689	3,078	.....	.....	.....	2,611	2,056	24
230,628	9,831,822	188	.....	50,778	6,715,696	501,021	17,969,063	10,692,376	11,407	5,965	4,394	36	.....	1,012	10,640	25
47,016	2,309,593	.....	.....	25,015	1,311,387	163,251	3,991,838	2,517,200	3,816	2,154	.....	30	.....	1,632	1,273	26
538,067	15,198,882	.....	.....	154,392	11,170,053	609,859	29,467,415	17,681,503	19,056	12,370	2,760	103	.....	3,823	8,216	27
161,771	3,990,313	.....	.....	28,049	2,253,846	326,227	7,084,719	4,504,646	3,905	2,703	1,200	.....	.....	2	1,193	28
1,721,596	43,954,547	20,508	.....	222,580	31,804,989	1,986,387	82,790,533	48,999,157	48,136	26,963	1,412	518	.....	19,243	19,176	29
234,722	5,757,259	.....	300	6,647	7,417,067	230,918	13,898,873	6,250,288	3,432	2,692	.....	198	.....	642	4,880	30
28,604	2,015,973	.....	.....	53,204	789,940	151,269	3,182,706	2,241,497	720	.....	.....	.....	.....	198	350	31
3,135,954	50,694,380	.....	81,000	89,567	30,997,952	2,592,096	66,483,946	56,893,898	50,650	24,943	5,187	1,610	.....	18,910	22,252	32
80,600	3,777,544	.....	.....	3,382	1,859,992	195,108	6,149,067	4,093,967	2,130	415	.....	866	.....	849	50	33
110,436	3,693,827	.....	.....	4,420	2,232,075	222,263	6,472,962	4,018,624	2,938	763	.....	.....	.....	2,175	72	34
4,314,836	115,028,406	.....	64,875	177,474	98,479,050	4,684,467	231,533,870	128,370,353	90,678	64,216	6,907	1,296	.....	18,259	61,786	35
2,606	516,094	.....	.....	232	129,482	60,487	712,579	522,610	445	60	.....	.....	.....	385	.....	36
64,982	2,694,780	5,800	120	4,280	2,132,804	29,347	5,137,658	2,975,507	713	664	.....	17	.....	32	293	37
39,809	1,939,062	.....	.....	17,372	786,871	98,072	2,970,399	2,084,556	878	.....	.....	.....	.....	.....	430	38
417,574	14,901,103	.....	.....	28,952	10,212,234	307,508	26,678,565	16,158,823	9,627	3,415	1,267	32	.....	4,913	2,148	39
1,268,026	24,199,080	252	1,400	172,189	12,900,983	1,270,038	41,486,703	27,216,682	17,233	8,056	200	565	300	8,112	4,966	40
98,752	4,911,623	.....	.....	39,045	3,003,376	230,561	8,584,993	5,351,056	3,415	1,588	.....	.....	.....	1,827	1,424	41
43,580	2,225,997	.....	.....	40	2,112,000	155,286	4,607,671	2,340,385	2,015	252	.....	.....	.....	1,763	.....	42
530,221	16,724,737	.....	.....	120,339	13,692,816	640,095	32,777,078	18,444,167	19,081	5,160	2,681	.....	.....	11,240	10,927	43
204,632	8,476,604	.....	.....	91,282	5,200,982	432,829	14,935,008	9,211,197	6,785	1,853	.....	12	.....	4,920	1,417	44
369,629	16,065,221	.....	.....	63,710	9,889,339	586,391	28,248,489	17,772,759	12,332	8,003	2,133	67	50	2,079	5,280	45
415,757	16,300,414	.....	.....	35,234	18,074,099	882,484	36,790,522	17,833,339	6,959	5,257	10	.....	.....	1,692	7,845	46
176,136	5,284,652	7,698	.....	47,268	3,058,883	197,743	9,111,184	5,854,558	6,573	2,353	.....	31	.....	4,189	46	47
148,903	5,941,601	17,497	.....	21,747	3,595,038	307,673	10,326,478	6,423,767	3,196	1,845	150	67	95	1,031	900	48

¹ Same number reported for one or more other months.² All other states embrace: Connecticut, 10 establishments; District of Columbia, 2; and New Hampshire, 3.

TABLE 25.—DETAILED STATEMENT

STATE.		Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.										WAGE EARNERS, DEC. 15, OR NEAREST REPRESENTATIVE DAY.				Capital.	EXPENSES.	
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.	Salaries and wages.	Officials.			
						Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.						
									Maximum month.	Minimum month.									
ELECTRIC-RAILROAD REPAIR SHOPS.																			
1	United States.....	624	33,120	1	800	721	260	31,272	Do	31,894	Je	30,220	32,108	31,060	438	10	\$82,557,905	\$1,932,578	
2	Alabama.....	6	174	.....	6	2	2	164	Jy	182	Oc	137	155	155	.....	.....	1,124,109	7,060
3	California.....	22	1,820	.....	50	33	15	1,731	Fe	1,830	Je	1,552	1,727	1,705	22	.....	3,784,097	87,455
4	Colorado.....	5	203	.....	1	5	.....	197	Ja	214	Jy	188	206	205	1	.....	713,975	5,000
5	Connecticut.....	22	475	.....	4	15	2	454	Ja	469	Au	448	466	465	1	.....	1,918,702	5,388
6	Florida.....	5	102	.....	9	4	.....	89	Ja	113	Do	48	91	91	.....	.....	542,671	15,779
7	Georgia.....	9	232	.....	7	5	2	218	Mh	238	Do	190	190	197	1	1	769,697	18,895
8	Idaho.....	3	20	.....	2	.....	.....	18	No	10	Fe	17	19	19	.....	.....	51,313	3,800
9	Illinois.....	49	3,314	.....	72	62	29	3,151	Do	3,474	Jy	2,842	3,463	3,443	20	.....	14,390,576	183,539
10	Indiana.....	30	1,042	.....	37	23	5	977	Jy	1,001	Je	949	996	970	26	.....	1,770,669	65,228
11	Iowa.....	15	345	.....	13	4	5	323	Mh	331	Au	312	321	316	5	.....	841,603	28,327
12	Kansas.....	11	183	.....	8	9	4	162	Au	172	Fe	152	170	168	2	.....	292,531	18,637
13	Kentucky.....	7	210	.....	7	5	2	196	Je	227	Se	74	213	213	.....	.....	734,622	21,400
14	Louisiana.....	7	440	.....	10	13	.....	417	Do	482	Ja	330	482	481	1	.....	684,158	12,793
15	Maine.....	11	166	.....	11	3	1	151	Ja	156	Do	145	145	145	.....	.....	569,384	20,498
16	Maryland.....	6	965	.....	17	16	5	927	Ja	1,062	Do	875	893	820	67	.....	1,222,232	44,786
17	Massachusetts.....	30	1,945	.....	27	55	17	1,846	Mh	1,938	My	1,738	1,813	1,796	16	1	2,855,884	57,308
18	Michigan.....	15	1,513	.....	18	84	10	1,401	My	1,433	Je	1,318	1,381	1,377	2	2	3,139,419	35,956
19	Minnesota.....	8	479	.....	24	11	8	436	Do	511	Je	349	511	498	13	.....	2,027,034	49,552
20	Mississippi.....	5	13	.....	2	.....	.....	10	Ap	17	Ja	15	17	17	.....	.....	38,897	2,700
21	Missouri.....	8	1,208	.....	16	16	14	1,162	Oc	1,228	Ap	1,117	1,211	1,206	5	.....	2,181,551	40,680
22	Montana.....	5	57	.....	5	2	.....	50	Ja	60	Oc	43	49	49	.....	.....	434,150	8,470
23	New Hampshire.....	7	79	.....	2	1	.....	76	Ja	79	Ap	73	75	75	.....	.....	244,274	5,536
24	New Jersey.....	15	1,366	.....	19	11	3	1,333	Ja	1,533	Je	1,178	1,324	1,323	1	.....	3,094,024	49,025
25	New York.....	53	6,009	.....	142	153	58	5,656	Oc	5,807	Ja	5,517	5,596	5,564	32	.....	14,255,592	365,189
26	Ohio.....	60	2,009	1	60	19	26	1,903	Mh	1,965	Ja	1,707	1,899	1,804	5	.....	4,942,956	173,436
27	Oklahoma.....	10	151	.....	7	4	2	138	No	145	Mh	130	144	144	.....	.....	545,879	15,900
28	Oregon.....	4	250	.....	0	12	2	230	Ja	239	My	221	237	235	2	.....	631,351	15,387
29	Pennsylvania.....	80	4,361	.....	152	73	14	4,122	Ja	4,208	Je	4,023	4,172	4,017	152	3	8,140,200	299,780
30	Rhode Island.....	4	249	.....	3	10	1	235	Ap	247	Jy	203	239	239	.....	.....	758,637	10,900
31	Tennessee.....	5	303	.....	15	4	4	280	Jy	294	Fe	250	290	268	20	2	922,603	38,251
32	Texas.....	18	601	.....	23	10	1	567	Do	598	Mh	550	614	613	1	.....	1,204,411	43,181
33	Utah.....	3	159	.....	4	3	.....	152	Oc	169	No	142	151	148	3	.....	554,838	9,942
34	Vermont.....	7	31	.....	2	.....	.....	20	Je	30	Ja	28	31	30	1	.....	79,842	2,527
35	Virginia.....	10	422	.....	13	1	1	407	Do	427	Ja	377	434	432	2	.....	629,483	75,459
36	Washington.....	16	711	.....	16	13	3	679	No	787	Mh	495	975	966	8	1	1,535,856	27,370
37	West Virginia.....	13	204	.....	6	2	1	195	Fe	203	Oc	191	192	187	5	.....	452,918	10,544
38	Wisconsin.....	17	644	.....	24	22	10	579	Fe	631	Jy	479	587	566	21	.....	2,061,466	37,622
39	All other states ⁴	23	651	.....	26	16	4	605	.....	.....	.....	.....	620	617	3	.....	2,415,701	49,070

¹ Includes water wheels and turbines (irrespective of ownership of water supply), and water motors (operated by water from city mains).² Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft-belt or transmitted power from neighboring power plants).³ Same number reported for one or more other months.

RAILROAD REPAIR SHOPS.

21

BY STATES: 1919—Continued.

EXPENSES—continued.							Value of products.	Value added by manufacture.	POWER.						
Salaries and wages—Continued.		For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.	
Clerks, etc.	Wage earners.		Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.			Total.	Owned.					Rented. ²
										Steam engines (not turbines).	Steam turbines.	Internal-combustion engines.	Water power. ¹		

ELECTRIC-RAILROAD REPAIR SHOPS.

\$1,046,789	\$39,073,154	\$118,335	\$61,576	\$703,887	\$30,820,218	\$1,205,266	\$75,210,701	\$43,185,217	53,830	5,875	.....	584	.....	47,391	2,650	1
2,289	250,762	.....	170	13,739	229,762	11,904	515,536	273,810	551	500	.....	.....	.....	51	90	2
62,517	2,066,759	3,000	.....	9,027	1,739,446	64,888	4,057,871	2,253,537	4,307	350	.....	4	.....	3,953	.....	3
5,163	253,386	.....	.....	8,001	189,362	26,390	485,291	269,539	421	.....	.....	.....	.....	421	.....	4
25,491	521,874	2,000	.....	8,671	495,284	7,132	1,062,678	560,290	1,321	10	.....	.....	.....	1,311	5	5
2,341	103,939	.....	.....	.....	58,594	769	175,778	116,415	133	.....	.....	.....	.....	133	.....	6
8,530	204,791	.....	129	3,083	221,231	4,523	461,653	235,899	170	.....	.....	65	.....	105	274	7
.....	22,186	3,184	240	.....	28,440	721	53,331	29,170	11	.....	.....	.....	.....	11	.....	8
92,378	4,399,343	.....	7,895	29,806	2,717,837	79,136	7,478,033	4,681,060	6,395	995	.....	.....	.....	5,400	.....	9
21,440	1,005,083	.....	.....	11,910	808,076	41,011	1,960,617	1,111,530	2,054	1,400	.....	.....	.....	654	47	10
9,185	401,530	7,183	.....	12,971	297,402	14,393	769,566	457,771	538	50	.....	.....	.....	488	8	11
6,899	182,147	.....	.....	4,252	138,426	6,506	360,154	215,222	827	.....	.....	375	.....	452	.....	12
6,840	216,481	.....	.....	4,711	200,726	12,266	463,563	250,571	251	40	.....	.....	.....	211	.....	13
13,768	508,212	11,249	.....	14,275	443,850	2,121	1,066,129	620,158	396	.....	.....	.....	.....	396	.....	14
3,475	178,219	627	.....	8,421	182,146	9,264	402,621	211,211	149	.....	.....	.....	.....	149	.....	15
19,131	1,170,002	.....	.....	17,224	639,522	7,045	1,904,353	1,257,756	591	.....	.....	.....	.....	591	.....	16
108,229	2,446,126	9,282	.....	56,412	1,696,710	59,688	4,504,579	2,748,181	2,790	225	.....	.....	.....	2,565	18	17
36,362	2,088,383	.....	9,268	25,451	1,580,149	45,050	3,828,271	2,203,072	849	385	.....	.....	.....	464	.....	18
26,511	648,909	.....	82	4,219	396,585	43,876	1,065,144	624,683	1,285	.....	.....	.....	.....	1,285	.....	19
36,063	1,407,212	.....	870	486	13,802	1,231	40,556	25,523	48	10	.....	.....	.....	38	.....	20
.....	.....	.....	.....	300	1,203,459	30,437	2,719,021	1,485,125	540	.....	.....	.....	.....	540	1,511	21
3,337	53,932	.....	.....	5,322	40,465	4,426	121,952	71,061	153	.....	.....	.....	.....	153	.....	22
1,735	98,196	1,917	.....	2,300	74,961	6,198	183,853	107,784	76	.....	.....	.....	.....	76	.....	23
21,173	1,754,803	.....	15,000	15,641	1,536,849	41,239	3,439,418	1,911,330	3,887	.....	.....	.....	.....	3,887	.....	24
242,288	7,230,994	20,471	3,200	229,741	6,128,091	234,585	14,369,235	8,006,599	7,276	20	.....	.....	.....	7,256	.....	25
52,735	2,269,966	13,499	8,120	30,412	1,914,050	202,382	4,724,631	2,608,193	2,545	129	.....	2	.....	2,414	374	26
6,475	162,973	.....	.....	1,542	108,272	4,118	312,753	200,363	238	.....	.....	100	.....	138	.....	27
15,431	328,169	.....	.....	304	206,775	12,050	578,081	359,260	728	.....	.....	.....	.....	728	.....	28
100,313	4,673,154	42,091	12,130	53,518	3,043,935	72,070	8,306,228	5,190,217	5,199	25	.....	15	.....	5,159	.....	29
12,978	322,769	.....	.....	7,581	341,052	9,060	704,040	353,928	420	50	.....	.....	.....	370	8	30
8,145	297,405	.....	.....	4,899	278,947	7,501	690,266	403,758	1,478	1,255	.....	.....	.....	223	90	31
10,310	493,592	.....	.....	8,829	364,165	13,628	924,564	546,771	1,713	400	.....	3	.....	1,310	35	32
3,283	189,798	.....	.....	3,905	99,235	6,807	313,028	206,986	1,025	.....	.....	.....	.....	1,025	.....	33
.....	25,807	.....	.....	1,848	38,218	4,056	82,092	39,818	244	1	.....	.....	.....	243	5	34
2,042	885,116	.....	1,000	7,156	358,931	2,093	830,937	499,913	638	.....	.....	.....	.....	638	.....	35
15,671	939,984	832	.....	17,628	547,908	30,781	1,580,174	1,001,485	1,390	30	.....	.....	.....	1,360	.....	36
3,350	216,675	.....	1,877	8,007	138,409	2,283	395,919	255,227	331	.....	.....	.....	.....	331	.....	37
39,717	790,994	.....	1,100	43,223	1,640,372	65,448	2,622,802	918,982	1,956	.....	.....	.....	.....	1,956	.....	38
21,204	779,421	2,400	407	28,352	672,768	18,138	1,595,925	905,019	906	.....	.....	.....	.....	906	185	39

¹ All other states embrace: Arizona, 2 establishments; Arkansas, 3; Delaware, 1; District of Columbia, 2; Nebraska, 4; Nevada, 1; North Carolina, 3; North Dakota, 2; South Carolina, 2; South Dakota, 2; and Wyoming, 1.

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

FOURTEENTH CENSUS OF THE UNITED STATES
MANUFACTURES: 1919

THE SUGAR INDUSTRY

Prepared under the supervision of EUGENE F. HARTLEY, Chief Statistician for Manufactures

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or for which products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1919, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city, county, or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city, county, or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Classification by industries.—The establishments were assigned to the several classes of industries according to their products of chief value. The products reported for a given industry may thus, on the one hand, include minor products different from those covered by the class designation, and, on the other hand, may not represent the total product covered by this designation, because some products of this class may be made in establishments in which it is not the product of chief value.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1919 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners.

The number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date did not portray such conditions, an earlier date was requested.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, by sex, without distinction of age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The number of wage earners reported for the representative day, though given in certain tables for each separate industry, is not totaled for all industries combined, because, in view of the variations of date, such a total is not believed to be significant. It would involve more or less duplication of persons working in different industries at different times, would not represent the total number employed in all industries at any one time, and would give an undue weight to seasonal industries as compared with industries in continual operation.

In order to determine as nearly as possible the age distribution of the average number of wage earners for an industry, the per cent distribution by age of the wage earners for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. The percentages thus obtained have been applied to the average number of wage earners for the year to determine the average numbers 16 years and over, and under 16, employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calcu-

late accurately even so simple an average as this, since the number of wage earners fluctuates from month to month in every industry, and in some cases to a very great extent. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month, and while representing the number according to the pay rolls to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital (amount actually invested).—The instructions on the schedule for securing data relating to capital were as follows:

"The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises."

These instructions were identical with those employed at the census of 1914 and 1909. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include certain Federal taxes and state, county, and local taxes. Under "Federal taxes" there are included the internal revenue tax on manufactures (tobacco, beverages, etc.), excise taxes when included in values reported for products, corporation capital stock tax, and corporation income tax, but not the income tax for individuals and partners.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not always a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry, from a manufacturing standpoint, is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power equipment of the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, fuel oils, gasoline and other volatile oils, and gas, and represent the quantity used during the year. As only the principal kinds of fuel are shown, comparison as to the total cost of all fuel is impracticable.

THE SUGAR INDUSTRY.

GENERAL STATISTICS.

Scope of the report.—This report presents statistics for establishments engaged in the manufacture of beet and cane sugar and cane-sugar refining. Practically all of the mills engaged in the manufacture of cane sugar are located in Louisiana; those manufacturing beet sugar, in the western part of the country where the sugar beets are grown; and refineries are

located in places where the raw sugar can be most conveniently and economically obtained.

Comparative summary for the industry.—Table 1 summarizes statistics for the industry as a whole and for the three branches separately for 1919 and 1914, with percentages of increase for the five-year period.

TABLE 1.—COMPARATIVE SUMMARY FOR THE COMBINED INDUSTRY AND EACH OF THE THREE BRANCHES: 1919 AND 1914.

	TOTAL.		BEET SUGAR.		CANE SUGAR.		SUGAR REFINING.		PER CENT OF INCREASE, 1914-1919. ¹			
	1919	1914	1919	1914	1919	1914	1919	1914	Total.	Beet.	Cane.	Refin- ing.
Number of establishments.....	307	259	85	60	202	181	20	18	18.5	-----	11.6	-----
Persons engaged.....	42,156	26,739	14,190	9,634	7,045	4,544	20,921	12,561	57.7	47.3	55.0	68.6
Proprietors and firm members.....	172	181	1	1	165	172	6	8	-5.0	-----	-4.1	-----
Salaried employees.....	5,900	3,076	2,408	1,638	779	740	2,713	1,300	60.5	47.2	5.3	108.7
Wage earners (average number).....	36,084	22,822	11,781	7,997	6,101	3,632	18,202	11,253	57.7	47.3	68.0	61.8
Primary horsepower.....	281,798	239,017	127,394	76,705	101,881	113,246	52,541	49,666	17.6	66.1	-10.1	5.8
Capital.....	\$473,242,031	\$315,077,669	\$224,584,679	\$142,181,326	\$55,117,127	\$32,096,524	\$193,540,825	\$140,499,819	49.9	58.0	67.0	37.8
Salaries and wages.....	\$54,163,542	\$21,242,971	\$20,336,074	\$8,894,853	\$5,674,817	\$2,052,521	\$28,152,651	\$10,325,597	156.0	129.4	176.5	172.6
Salaries.....	\$11,535,591	\$5,252,014	\$4,427,950	\$2,258,649	\$1,665,448	\$491,145	\$5,442,187	\$2,502,220	119.6	96.0	239.1	117.5
Wages.....	\$42,627,951	\$15,990,957	\$15,908,118	\$6,636,204	\$4,009,369	\$1,561,376	\$22,710,464	\$7,823,377	166.6	140.8	156.8	190.3
Paid for contract work.....	\$891,060	\$279,915	\$790,772	\$247,657	\$27,366	\$11,988	\$37,522	\$20,270	218.5	221.7	128.3	233.1
Rent and taxes (including internal revenue).....	\$19,154,128	\$2,014,111	\$11,450,200	\$807,223	\$1,142,247	\$263,820	\$6,561,582	\$943,068	851.0	1,318.5	333.0	595.8
Cost of materials.....	\$793,810,541	\$321,442,937	\$87,029,144	\$41,399,361	\$44,143,416	\$15,958,218	\$602,143,981	\$264,085,358	146.8	110.2	176.6	150.7
Value of products.....	\$937,883,918	\$373,039,298	\$149,155,892	\$62,605,210	\$57,741,320	\$21,635,373	\$730,986,706	\$289,398,715	151.0	138.2	166.9	152.6
Value added by manufacture ²	\$144,507,377	\$52,196,361	\$62,126,748	\$21,205,849	\$13,597,904	\$5,677,155	\$68,842,725	\$25,313,357	177.0	193.0	139.5	172.0
Sugar:												
Tons (2,000 pounds).....	4,408,860	4,341,408	721,909	743,473	225,498	264,801	3,521,453	3,333,134	2.9	-2.9	-14.8	5.6
Value.....	\$888,326,173	\$363,034,123	\$138,099,693	\$58,590,466	\$30,659,085	\$18,947,683	\$713,567,395	\$285,495,974	144.7	135.7	93.5	149.9

¹ A minus sign (—) denotes decrease; percentages are omitted where base is less than 100.

² Value of products less cost of materials.

BEET SUGAR.

Importance and growth of the industry.—Table 2 summarizes the statistics for each census since 1904, with percentages of increase for each five-year period. With few exceptions, increases are noticeable at each succeeding census. The large increases, however, from 1914 to 1919, in salaries and wages, cost of materials, and value of products are due largely to a general rise of prices and wages following the World War, and do not, therefore, fairly measure the growth of the industry for that period. A truer index of the conditions is found in the increases in the average number of wage earners and primary horsepower. The addition of the Federal income tax since 1914 will account for the increase in "Rent and taxes." Contract work, or work performed by employees other than those in the plants reporting, has little significance, since it represents merely the methods of manufacture used by establishments, which vary from year to year.

Principal states, ranked by value of products.—Table 3 summarizes the more important statistics of the beet-sugar industry, by states. Colorado is the leading state in the manufacture of beet sugar, but on account of disclosure of individual operations can not be shown separately. Nebraska also can not be shown although it ranks fifth in the United States and shows a large production. Altogether 16 states reported the manufacture of beet sugar, but an idea of the centralization of the industry can be obtained from the fact that Colorado, Michigan, California, Utah, Nebraska, and Ohio combined produced 86.4 per cent of the total for the United States.

Persons engaged in the industry.—The classification by sex for 1919 was reported separately, but for 1914 and 1909 was obtained in the same manner as the distribution by age. The age classification of the average number of wage earners in Table 4 is an estimate obtained by the method described in "Explanation of terms." Figures by states will be found in Table 14.

Wage earners, by months, for states.—As shown by Table 5, the number of wage earners employed in the industry month by month ranged from a maximum of 27,064 in November to a minimum of 4,661 in March, the minimum number being equivalent to 17.2 per cent of the maximum. Figures are given for the states separately, while for the United States the number of males and females is also shown.

Prevailing hours of labor.—Table 6 shows the average number of wage earners reported in 1919 and 1914 classed according to the number of hours of labor per week prevailing in the establishments in which they were employed. Figures for 1919 are also shown for five states, 1914 figures for these states not being available. The groups "60" and "over 60" at both

censuses show the largest proportion of wage earners, being 96.4 per cent in 1914 and 82.5 per cent in 1919.

Size of establishments, by average number of wage earners.—Analysis of Table 7 discloses the fact that in 1919 the largest number of establishments and practically all of the wage earners were employed in the groups "51 to 100," "101 to 250," and "251 to 500," constituting 80 establishments, or 94.1 per cent of the total number and 11,607 wage earners, or 98.5 per cent of the total average number. Only 5 establishments and 174 wage earners were reported in the smaller groups.

Size of establishments, by value of products.—At the census of 1914 establishments with products valued at "\$100,000 to \$1,000,000" constituted one group, but at the census of 1919 this group was subdivided into "\$100,000 to \$500,000" and "\$500,000 to \$1,000,000." Separate figures for number of establishments and value of products have been compiled, however, from the returns of 1914. This table, therefore, gives combined figures for these two groups in case of average number of wage earners and value added by manufacture for 1914. The statistics in Table 8 show the concentration of production in large establishments. In 1919, the groups "\$500,000 to \$1,000,000" and "\$1,000,000 and over" included 78 establishments, or 91.8 per cent of the total number for the industry, employed 11,392 wage earners, or 96.7 per cent of the average number, and reported products to the value of \$146,805,244, or 98.4 per cent of the total value of products.

Character of ownership.—This table can not be shown in the beet-sugar industry on account of disclosures of individual establishments. All of the establishments reporting were under corporate form of ownership except one, which was operated under individual ownership.

Number and horsepower of types of prime movers.—From 1914 to 1919, as shown by Table 9, there was an increase in the total horsepower for the industry of 50,689 horsepower, or 66.1 per cent, due largely to the increase of 4,556 horsepower, or 89.8 per cent, in rented power. There was also a large increase, 22,444 horsepower, or 175.4 per cent, in power generated by establishments reporting.

Fuel consumed.—Table 10 shows the principal kinds of fuel used for the industry for 1919 and also gives separately amounts consumed in states requiring considerable quantities of fuel used in connection with the industry. Colorado, Michigan, and Utah reported 69.2 per cent of bituminous coal, while California consumed 67.1 per cent of the coke and 89.8 per cent of the fuel oils.

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TABLE 2.—COMPARATIVE SUMMARY: 1919, 1914, 1909, 1904.

	1919	1914	1909	1904	PER CENT OF INCREASE. ¹		
					1914-1919	1909-1914	1904-1909
Number of establishments.....	85	60	58	.....	.....	.....	.....
Persons engaged.....	14,190	9,634	8,389	4,726	47.3	14.8	77.5
Proprietors and firm members.....	1	1	1	.....	.....	.....	.....
Salaried employees.....	2,408	1,636	1,184	763	47.2	38.2	55.2
Wage earners (average number).....	11,781	7,997	7,204	3,963	47.3	11.0	81.8
Primary horsepower.....	127,394	76,705	57,202	35,490	66.1	34.1	61.2
Capital.....	\$224,584,679	\$142,181,326	\$120,628,938	\$55,923,459	58.0	9.7	131.8
Salaries and wages.....	\$20,336,074	\$8,864,853	\$6,577,900	\$3,491,338	129.4	34.8	88.4
Salaries.....	\$4,427,956	\$2,258,649	\$1,769,454	\$1,004,636	76.0	27.6	76.1
Wages.....	\$15,908,118	\$6,606,204	\$4,808,446	\$2,486,702	140.8	37.4	93.4
Paid for contract work.....	\$796,772	\$247,657	\$1,591	\$13,255	221.7	15,466.1	-88.0
Rent and taxes.....	\$11,460,299	\$807,223	\$634,111	\$243,443	1,318.5	27.3	160.5
Cost of materials.....	\$87,020,144	\$41,399,361	\$27,265,170	\$14,486,876	110.2	51.8	88.2
Value of products.....	\$149,155,892	\$62,605,210	\$48,122,383	\$24,393,794	138.2	30.1	97.2
Value added by manufacture ²	\$62,126,748	\$21,205,849	\$20,857,213	\$9,906,918	193.0	1.7	110.5
Beets used (tons, 2,000 pounds).....	5,648,552	5,639,103	3,965,356	2,175,417	0.2	42.2	82.3
Sugar produced:							
Tons (2,000 pounds).....	721,909	743,473	591,682	253,921	-2.9	48.2	97.6
Value.....	\$138,099,693	\$58,590,466	\$45,937,629	\$23,924,602	135.7	27.5	92.0

¹ A minus sign (—) denotes decrease; per. entages are omitted where base is less than 100. ² Exclusive of internal revenue. ³ Value of products less cost of materials.

TABLE 3.—PRINCIPAL STATES, RANKED BY VALUE OF PRODUCTS: 1919.

STATE.	Number of establishments.	WAGE EARNERS.		Rank.	VALUE OF PRODUCTS.		Rank.	VALUE ADDED BY MANUFACTURE.		Rank.	STATE.	Number of establishments.	WAGE EARNERS.		Rank.	VALUE OF PRODUCTS.		Rank.	VALUE ADDED BY MANUFACTURE.		Rank.
		Average number.	Per cent distribution.		Amount (expressed in thousands).	Per cent distribution.		Amount (expressed in thousands).	Per cent distribution.				Average number.	Per cent distribution.		Amount (expressed in thousands).	Per cent distribution.		Amount (expressed in thousands).	Per cent distribution.	
United States.....	85	11,781	.....	.....	\$149,156	.....	.....	\$62,127	.....	.....	Utah.....	16	2,214	18.8	3	\$20,569	13.8	4	\$7,939	12.8	4
Michigan.....	16	1,836	15.6	2	26,379	17.7	2	9,697	15.6	3	Ohio.....	5	630	5.3	7	7,249	4.9	7	2,141	3.4	7
California.....	10	1,512	12.8	4	26,354	17.7	3	12,200	19.6	2	Wisconsin.....	4	334	2.8	8	3,246	2.2	8	1,187	1.9	8
											All other states.....	34	5,255	44.6	.....	65,359	43.8	.....	28,963	46.6	.....

TABLE 4.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1914, AND 1909.

CLASS.	Census year.	Total.	Male.	Female.	PER CENT OF TOTAL. ¹		CLASS.	Census year.	Total.	Male.	Female.	PER CENT OF TOTAL.	
					Male.	Female.						Male.	Female.
All classes.....	1919	14,190	13,275	915	93.6	6.4	Clerks and other subordinate salaried employees.....	1919	1,737	1,266	471	72.9	27.1
	1914	9,634	9,458	176	98.2	1.8		1914	1,260	1,121	139	89.0	11.0
	1909	8,389	8,281	108	98.7	1.3		1909	865	772	93	89.2	10.8
Proprietors and officials.....	1919	672	670	2	99.7	0.3	Wage earners (average number).....	1919	11,781	11,339	442	96.2	3.8
	1914	377	377	.....	100.0	.....		1914	7,997	7,980	17	99.5	0.5
	1909	320	320	.....	100.0	.....		1909	7,204	7,189	15	99.8	0.2
Proprietors and firm members.....	1919	1	1	.....	100.0	.....	16 years of age and over.....	1919	11,780	11,333	447	96.2	3.8
	1914	1	1	.....	100.0	.....		1914	7,985	7,958	27	99.5	0.5
	1909	1	1	.....	100.0	.....		1909	7,198	7,183	15	99.8	0.2
Salaried officers of corporations....	1919	113	112	1	99.1	0.9	Under 16 years of age.....	1919	1	1	.....	100.0	.....
	1914	98	98	.....	100.0	.....		1914	2	2	.....	100.0	.....
	1909	91	91	.....	100.0	.....		1909	6	6	.....	100.0	.....
Superintendents and managers....	1919	558	557	1	99.8	0.2							
	1914	278	278	.....	100.0	.....						
	1909	228	228	.....	100.0	.....						

MANUFACTURES.

TABLE 5.—WAGE EARNERS, BY MONTHS, FOR STATES: 1919.

[The month of maximum employment is indicated by **bold-faced** figures and that of minimum employment by *italic* figures.]

STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States:														
1919.....	11,781	11,627	5,926	<i>4,661</i>	5,573	6,386	7,248	7,994	9,064	10,607	23,281	27,064	21,941	17.2
Males.....	11,339	11,234	5,788	<i>4,596</i>	5,475	6,263	7,150	7,836	8,889	10,409	22,028	25,515	20,885	18.0
Females.....	442	393	138	<i>65</i>	98	123	98	158	175	198	1,253	1,549	1,056	4.2
1914.....	7,997	6,593	<i>2,627</i>	2,537	3,164	3,980	4,045	4,470	7,180	9,006	20,353	18,086	13,354	12.4
California.....	1,512	1,170	<i>652</i>	646	719	700	811	1,191	1,925	2,771	3,654	2,731	1,505	15.1
Michigan.....	1,836	2,102	870	<i>590</i>	741	1,050	1,349	1,302	1,453	1,476	2,314	4,342	4,383	13.5
Ohio.....	630	733	188	<i>207</i>	262	285	343	370	461	489	1,263	1,472	1,388	12.8
Utah.....	2,214	2,825	1,825	<i>776</i>	864	1,059	1,258	1,109	1,234	1,467	4,493	5,024	4,035	15.4
Wisconsin.....	334	177	<i>57</i>	77	83	112	131	160	191	240	781	1,032	958	5.5

TABLE 6.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR STATES: 1919.

STATE.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							STATE.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
		44 and under.	Between 44 and 48.	48.	Between 48 and 54.	54.	Between 54 and 60.	60.			Over 60.	44 and under.	Between 44 and 48.	48.	Between 48 and 54.	54.	Between 54 and 60.	60.	Over 60.
United States..1919..	11,781	32	.....	175	.....	107	1,742	1,213	Michigan.....	1,836	.....	.....	112	.....	.....	.....	107	1,617
1914..	7,997	.....	.....	.....	.....	180	1,088	2,558	Ohio.....	630	.....	.....	.....	.....	.....	.....	322	306
California.....	1,512	.....	.....	.....	.....	107	.....	1,405	Utah.....	2,214	32	.....	63	.....	.....	1,383	734	230
		.....	.....	.....	.....	.....	.....	.....	Wisconsin.....	334	.....	.....	.....	.....	.....	.....	84	.....

TABLE 7.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS, FOR STATES: 1919.

STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING—											
	Estab-lish-ments.	Wage earners (average number).	6 to 20 wage earners, in-clusive.		21 to 50 wage earners, in-clusive.		51 to 100 wage earners, in-clusive.		101 to 250 wage earners, in-clusive.		251 to 500 wage earners, in-clusive.		Over 500 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.	Estab-lish-ments.	Wage earners.
United States..... 1919..	85	11,781	1	16	4	158	24	1,909	47	6,875	9	2,823	.....	.....
..... 1914..	60	7,997	1	8	8	333	23	1,794	22	3,504	4	1,232	2	1,126
California.....	10	1,512	1	16	1	48	1	90	6	1,000	1	358	.....	.....
Michigan.....	16	1,836	.....	.....	.....	.....	6	472	10	1,364	.....	.....	.....	.....
Ohio.....	6	630	3	260	2	370
Utah.....	10	2,214	1	32	6	357	8	1,251	2	574
Wisconsin.....	4	384	3	230	1	104

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TABLE 8.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919 AND 1914.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.		AVERAGE NUMBER OF WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.	
	1919	1914	1919	1914	1919	1914	1919	1914
All classes.....	85	60	11,781	7,997	\$149,155,892	62,605,210	\$62,126,748	21,205,849
\$100,000 to \$500,000.....	17	20	1,389	1,260	12,350,648	7,273,188	1,963,876	1,719,836
\$500,000 to \$1,000,000.....	20	17	1,873	1,873	15,954,011	11,031,339	5,912,765	5,912,765
\$1,000,000 and over.....	58	23	9,519	5,377	130,851,233	43,400,683	55,250,107	14,012,013
PER CENT DISTRIBUTION.								
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
\$100,000 to \$500,000.....	8.3	33.3	3.3	32.8	1.6	11.6	1.6	33.9
\$500,000 to \$1,000,000.....	23.5	28.3	15.9	67.2	10.7	19.1	9.5	66.1
\$1,000,000 and over.....	68.2	38.3	80.8		87.7	69.3	88.9	

¹ Includes the group "\$20,000 to \$100,000."

TABLE 9.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919 AND 1914.

POWER.	NUMBER OF ENGINES OR MOTORS.		HORSEPOWER.						POWER.	NUMBER OF ENGINES OR MOTORS.		HORSEPOWER.					
			Amount.		Per cent distribu- tion.		Amount.					Per cent distribu- tion.					
	1919	1914	1919	1914	1919	1914	1919	1914		1919	1914	1919	1914				
Primary power, total.....	1,136	686	127,394	76,705	100.0	100.0	Primary power—Continued.										
Owned.....	679	506	117,763	71,630	92.4	93.4	Rented.....	457	180	9,631	5,075	7.6	6.6				
Steam.....	659	449	117,409	70,507	92.2	91.9	Electric.....	457	180	9,631	5,075	7.6	6.6				
Engines.....	624	449	103,697	70,507	81.4	91.9	Other.....										
Turbines.....	35		13,772		10.8		Electric.....	2,406	814	44,871	17,871	100.0	100.0				
Internal-combustion engines.....	19	39	259	928	0.2	1.2	Rented.....	457	180	9,631	5,075	21.5	28.4				
Water wheels, turbines, and motors.....	1	18	35	195	(1)	0.3	Generated by establishments report- ing.....	1,049	634	35,240	12,796	78.5	71.6				

¹ Less than one-tenth of 1 per cent.

TABLE 10.—FUEL CONSUMED, BY STATES: 1919.

STATE.	COAL.		Coke (tons, 2,000 lbs.).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).	STATE.	COAL.		Coke (tons, 2,000 lbs.).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).						Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).				
United States...1919..		1,047,643	125,282	504,059	209	57,862	Michigan.....		221,203	6,853	782	174	
.....1914..	37,235	682,693	37,854	803,693	(¹)	4,789	Ohio.....		65,702	2,577			
California.....			84,065	506,277		201	Utah.....		153,637	8,142		35	
							Wisconsin.....		26,834	300			

¹ Included in figures for fuel oils.

SPECIAL STATISTICS.

Detailed statistics of quantity and quality of beets treated.—Table 11 shows, for 1919, 1914, and 1909, the acreage, quantity, and quality of the beets treated for the manufacture of beet sugar. Of the total acreage in 1919, 6.6 per cent was planted directly by factory owners, 2.5 per cent by tenants of factory owners, and 90.9 per cent by independent growers. Of the total quantity of beets treated during the same year, 3.9 per cent was grown directly by the factories, 2 per cent by tenants, and 94.1 per cent by independent growers.

TABLE 11.—ACREAGE, QUANTITY, AND QUALITY OF BEETS TREATED: 1919, 1914, AND 1909.

	UNITED STATES.		
	1919	1914	1909
Total acreage of beets planted.....	602,555	532,421	415,004
By proprietors.....	30,637	28,200	20,450
By tenants.....	15,340	15,307	18,100
By independent growers.....	517,578	488,788	308,339
Total quantity of beets treated (tons of 2,000 pounds).....	5,648,552	5,030,103	3,005,350
Grown by proprietors.....	222,130	214,023	200,708
Grown by tenants.....	114,503	135,537	103,843
Grown by independent growers.....	5,311,860	5,288,643	3,534,745
Quantity of beets used:			
Average percentage of sucrose.....	15.2	16.1	16.1
Average coefficient of purity.....	83.2	84.0	84.1

The quality of the beet is indicated by "percentage of sucrose" and the "coefficient of purity." Both of these terms relate to the sugar content, the former representing the ratio between the weight of the sugar and that of the whole beet, and the latter the ratio between the weight of the sugar and that of the

solid content of the beet. In the operation of beet-sugar factories the coefficient of purity of the beets used is of great importance, as upon this depends to a considerable extent the cost of the separation of the sugar from the solids.

Detailed statement of the quantity and value of products.—Table 12 shows the quantity and value of the various products manufactured from the sugar beets for 1919, 1914, and 1909. The molasses and pulp are used largely in the preparation of stock feed.

TABLE 12.—DETAILED STATEMENT OF QUANTITY AND VALUE OF PRODUCTS: 1919, 1914, AND 1909.

PRODUCT.	UNITED STATES.		
	1919	1914	1909
Total value.....	\$140,155,802	\$02,005,210	\$48,122,383
Sugar:			
Tons (2,000 pounds).....	721,000	743,473	501,082
Value.....	\$138,000,003	\$58,590,466	\$45,937,620
Granulated—			
Tons.....	719,420	739,233	496,807
Value.....	\$137,852,387	\$58,351,324	\$45,645,810
Raw—			
Tons.....	2,480	4,240	4,875
Value.....	\$247,306	\$239,142	\$291,819
Average pounds of sugar per ton of beets..	250	264	253
Molasses:			
Gallons.....	18,841,420	20,461,291	20,812,747
Value.....	\$2,304,563	\$1,536,192	\$1,129,803
Pulp, value.....	5,798,412	2,004,863	795,900
Dried.....	4,820,568	1,510,759	(1)
Moist.....	968,844	584,104	(1)
All other products, value.....	2,803,224	383,689	258,949

¹ Not reported separately.

Products, by states.—Table 13 gives, for 1919, the detailed statement of quantity and value of products for the beet-sugar industry, by states.

TABLE 13.—DETAILED STATEMENT OF QUANTITY AND VALUE OF PRODUCTS, BY STATES: 1919.

PRODUCT.	BEET SUGAR.						
	United States.	California.	Michigan.	Ohio.	Utah.	Wisconsin.	All other states.
Total value.....	\$140,155,802	\$26,354,094	\$26,378,870	\$7,249,156	\$20,560,185	\$3,245,611	\$65,359,026
Sugar:							
Tons (2,000 pounds).....	721,000	125,104	122,708	32,838	94,659	10,701	335,809
Value.....	\$138,000,003	\$24,405,088	\$23,900,310	\$6,553,778	\$10,067,324	\$2,952,868	\$60,529,425
Granulated—							
Tons.....	719,420	124,003	122,530	32,838	94,497	10,671	333,972
Value.....	\$137,852,387	\$24,454,722	\$23,887,805	\$6,553,778	\$10,051,943	\$2,946,768	\$60,367,371
Raw—							
Tons.....	2,480	201	169	.....	162	30	1,837
Value.....	\$247,306	\$41,206	\$12,505	.....	\$15,381	\$6,100	\$172,054
Molasses:							
Gallons.....	18,841,420	2,897,240	3,435,672	941,640	6,009,040	758,980	4,798,942
Value.....	\$2,304,563	\$381,161	\$504,445	\$102,048	\$705,560	\$79,860	\$531,490
Pulp, value.....	\$5,798,412	\$1,320,878	\$1,800,475	\$505,305	\$105,084	\$212,883	\$1,693,887
Dried, value.....	\$4,820,568	\$1,142,347	\$1,800,475	\$503,805	.....	\$206,198	\$1,116,743
Moist, value.....	\$968,844	\$187,531	\$1,500	\$195,984	\$6,685	\$677,144
All other products, value.....	\$2,803,224	\$147,007	\$113,040	\$28,025	\$258	\$2,604,234

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GENERAL TABLE.

Table 14 presents, for 1919, statistics in detail for the industry as a whole, and for each state that can be shown separately without the possibility of closing the operations of individual establishments.

TABLE 14.—DETAILED STATEMENT OF STATES: 1919.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.				Capital.	EXPENSES.		
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.		Officials.	Clerks, etc.	
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.					Male.
								Maximum month.	Minimum month.								
United States...	85	14,190	1	671	1,206	471	11,781	No. 27,064	Mh. 4,661	26,489	25,275	1,213	1	\$224,584,679	\$2,565,036	\$1,862,920	
California.....	10	1,896	.....	92	203	89	1,512	Oct. 3,654	Fe. 552	3,715	3,631	83	1	45,839,036	436,343	302,843
Michigan.....	16	2,221	.....	106	210	69	1,836	Dec. 4,383	Mh. 500	4,807	4,733	74	.....	27,673,805	365,163	299,421
Ohio.....	5	693	.....	25	20	18	630	No. 1,472	Fe. 188	1,390	1,377	13	.....	5,983,906	90,179	47,881
Utah.....	16	2,530	.....	155	117	44	2,214	No. 5,024	Mh. 775	4,724	4,249	475	.....	39,922,847	467,138	160,344
Wisconsin.....	4	393	.....	24	28	7	334	No. 1,032	Fe. 57	958	958	.....	.....	3,734,008	71,612	47,388
All other states ¹	34	6,457	1	269	688	244	5,255	.....	.....	10,895	10,327	568	.....	101,431,077	1,134,601	1,015,043

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.						
	Salaries and wages—Con.	For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.	
			Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.			Total.	Owned.			Rented. ²		
										Steam engines (not turbines).	Steam turbines.	Internal-combustion engines.		Water power. ³	
United States...	\$15,908,118	\$796,772	\$7,414	\$11,442,885	\$81,650,540	\$5,378,604	\$140,155,892	\$62,126,748	127,394	103,697	13,772	259	35	9,631	35,240
California.....	2,240,411	28,228	7,152	1,389,751	13,174,193	980,108	26,354,094	12,199,733	27,155	19,895	2,300	3	.....	4,957	7,279
Michigan.....	2,764,016	70,863	.....	1,331,032	15,520,700	1,161,150	26,378,870	9,697,020	20,550	17,387	2,335	89	.....	739	4,726
Ohio.....	1,126,648	5,601	.....	199,529	4,819,409	288,707	7,249,156	2,141,040	7,180	6,650	400	35	.....	95	1,555
Utah.....	1,909,012	.....	.....	1,056,647	11,868,671	761,664	20,569,135	7,938,800	14,948	11,310	500	.....	.....	3,138	2,757
Wisconsin.....	325,555	.....	.....	26,605	1,928,191	130,138	3,245,611	1,187,282	3,565	3,380	10	4	.....	171	1,255
All other states ¹	7,445,576	692,080	262	7,439,321	34,339,376	2,056,777	65,359,026	28,962,873	53,996	45,075	8,227	128	35	531	17,668

¹ Includes Colorado, 14 establishments; Idaho, 8; Illinois, 1; Indiana, 1; Iowa, 1; Kansas, 1; Minnesota, 1; Montana, 1; Nebraska, 4; Washington, 1; and Wyoming, 1.
² Includes water wheels and turbines (irrespective of ownership of water supply), and water motors (operated by water from city mains).
³ Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft-belt or transmitted power from neighboring power plants).

CANE SUGAR, INCLUDING REFINING.

GENERAL STATISTICS.

The two industries, cane sugar and cane-sugar refining, have been combined; and, in order to prevent disclosures, statistics for states have not been shown.

Comparative summary.—Table 15 summarizes the statistics for each census since 1909. Increases are noticeable in both industries for the five-year period 1914–1919. The large increases, however, in salaries and wages, cost of materials, and value of products are due largely to a general rise of prices and wages following the World War, and do not, therefore, fairly measure the growth of the industries for that period. A truer index of conditions is found in the increases in the average number of wage earners and primary horsepower. The addition of the Federal income tax since 1914 will account for the increase in "Rent and taxes." Contract work, or work performed by employees other than those in plants reporting, has little significance, since it represents merely the methods of manufacture used by establishments, which vary from year to year.

Principal states, ranked by value of products.—As has been mentioned before, data for states can not be given on account of disclosure of individual operations.

New York led in sugar refining, followed by Pennsylvania, Louisiana, and California, while Louisiana was the leading state in the cane-sugar industry.

Persons engaged in the industry.—The classification by sex, for 1919, was reported separately, but for 1914 and 1909 was obtained in the same manner as the distribution by age. The age classification of the average number of wage earners in Table 16 is an estimate obtained by the method described in the "Explanation of terms." Figures in detail will be found in Table 27.

Wage earners, by months.—The statistics for wage earners in Table 17 show the regularity of employment, or the reverse, in accordance with existing industrial conditions during the several census years, together with the percentage which the number reported by each of the several months forms of the number reported for the maximum month.

Prevailing hours of labor.—Table 18 shows a marked shortening of the working-day for these two industries since 1914. In that year only 8.1 per cent were reported as employed less than 54 hours per week as against 26.4 per cent in 1919. In 1914 the "60" and "Over 60" groups constituted 81.2 per cent of the total wage earners as compared with 66.1 per cent in 1919.

Size of establishments, by average number of wage earners.—Table 19 shows the size of establishments by average number of wage earners as a total in com-

parison with 1914. Analysis of this table reveals the fact that in 1919, 60 establishments, or 27 per cent of the total number for the two industries, employed less than 6 wage earners each, while 86, or four-tenths of 1 per cent of the total average number of wage earners, were employed therein, evidencing the predominance of the small establishments based upon the average number of wage earners. On the other hand, the classes "501 to 1,000" and "Over 1,000" comprising 15 establishments employed 16,288 wage earners, or 67 per cent of the total average number, illustrating the extent of the manufacturing operations in a few large establishments.

Size of establishments, by value of products.—At the census of 1914, establishments with products valued at "\$100,000 to \$1,000,000," constituted one group, but at the census of 1919 this group was subdivided into "\$100,000 to \$500,000" and "\$500,000 to \$1,000,000." Separate figures for the number of establishments and value of products have been compiled, however, from the returns for 1914. The table, therefore, gives combined figures for these two groups in case of average number of wage earners and value added by manufacture for 1914. The statistics in Table 20 show the degree of concentration of production in large establishments. In 1919 the groups "\$500,000 to \$1,000,000" and "\$1,000,000 and over" included 58 establishments, or 26.1 per cent of the total, employed 21,116 wage earners, or 86.8 per cent of the total number for the industries, and reported products to the value of \$764,787,417, or 97 per cent of the total value of products.

Character of ownership.—Table 21 emphasizes the predominance of corporate form of ownership. Corporations owned 53.6 per cent of the total number of establishments for these industries in 1919, employed 85.6 per cent of the total average number of wage earners, and reported 87.9 per cent of the value of products. During the five-year period 1914 to 1919 the average number of wage earners in corporations increased 8,766, or 72.8 per cent, and the value of products \$427,082,536, or 160.6 per cent.

Number and horsepower of types of prime movers.—From 1914 to 1919, as shown by Table 22, there was a decrease in the total horsepower for these industries of 8,510 horsepower, or 5.2 per cent. The largest decrease is in the rented power, being 3,860 horsepower, or 91.4 per cent, while electric power generated by establishments reporting, increased 34,033 horsepower, or 150.8 per cent.

Fuel consumed.—Table 23 shows the principal kinds of fuel used in these two industries for 1919 and 1914 separately and as a whole.

THE SUGAR INDUSTRY.

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TABLE 15.—COMPARATIVE SUMMARY: 1919, 1914, AND 1909.

	TOTAL.			CANE SUGAR.			CANE-SUGAR REFINING.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909
Number of establishments.....	222	199	233	1 202	1 181	1 214	2 20	2 18	2 19
Persons engaged.....	27,966	17,105	15,658	7,045	4,544	5,313	20,921	12,561	10,345
Proprietors and firm members.....	171	180	204	165	172	198	6	8	6
Salaried employees.....	3,492	2,040	1,928	779	740	988	2,713	1,300	940
Wage earners (average number).....	24,303	14,885	13,526	6,101	3,632	4,127	18,202	11,253	9,399
Primary horsepower.....	154,402	162,912	160,603	101,861	113,246	122,189	52,541	49,666	38,414
Capital.....	\$248,057,952	\$173,496,343	\$153,166,561	\$55,117,127	\$32,906,524	\$37,925,770	\$103,540,825	\$140,499,819	\$115,249,791
Salaries and wages.....	\$33,827,468	\$12,378,118	\$9,875,298	\$5,674,817	\$2,052,521	\$2,600,172	\$28,152,651	\$10,325,597	\$7,275,126
Salaries.....	\$7,107,035	\$2,993,305	\$2,391,576	\$1,665,448	\$491,145	\$747,421	\$5,442,187	\$2,592,220	\$1,654,155
Wages.....	\$26,719,833	\$9,384,753	\$7,483,722	\$4,009,369	\$1,561,376	\$1,862,751	\$22,710,464	\$7,823,377	\$5,620,971
Paid for contract work.....	\$94,888	\$52,258	\$40,893	\$27,366	\$11,988	\$43,068	\$67,522	\$20,270	\$3,825
Rent and taxes (including internal revenue).....	\$7,703,820	\$1,296,888	\$886,032	\$1,142,247	\$203,820	\$315,631	\$6,561,582	\$943,068	\$370,491
Cost of materials.....	\$706,287,397	\$280,043,576	\$247,582,804	\$44,143,416	\$15,958,218	\$21,294,844	\$662,143,981	\$264,055,358	\$226,287,960
Value of products.....	\$88,728,026	\$311,034,088	\$279,240,397	\$57,741,320	\$21,635,373	\$30,620,738	\$730,986,706	\$289,398,715	\$248,628,659
Value added by manufacture.....	\$82,440,029	\$31,990,512	\$31,666,593	\$13,597,904	\$5,677,155	\$9,325,894	\$68,842,725	\$25,313,357	\$22,340,699
Sugar:									
Tons (2,000 pounds).....	3,746,951	3,597,035	(4)	225,498	264,801	326,858	3,521,453	3,333,134	(4)
Value.....	\$759,226,480	\$304,443,657	(4)	\$36,659,085	\$18,947,683	\$26,095,673	\$713,567,395	\$285,495,974	(4)

¹ Includes for 1919: Florida, 3 establishments; Georgia, 2; Louisiana, 189; Mississippi, 1; South Carolina, 6; and Texas, 1. For 1914: Arizona, 1; Florida, 5; Louisiana, 168; Mississippi, 2; South Carolina, 1; and Texas, 4. For 1909: Illinois, 1; Louisiana, 204; Maryland, 1; Minnesota, 2; and Texas, 6.

² Includes for 1919: California, 2 establishments; Louisiana, 3; Massachusetts, 2; New Jersey, 2; New York, 5; Pennsylvania, 4; Texas, 1; and Georgia, 1. For 1914: California, 2; Louisiana, 3; Massachusetts, 2; New Jersey, 2; New York, 5; Pennsylvania, 3; and Texas, 1. For 1909: California, 2; Louisiana, 5; Massachusetts, 2; New Jersey, 2; New York, 5; Pennsylvania, 2; and Texas, 1.

³ Value of products less cost of materials.

⁴ The quantity and value for sugar refining were not reported for 1909.

TABLE 16.—PERSONS ENGAGED IN THE INDUSTRIES: 1919, 1914, AND 1909.

CLASS.	CANE SUGAR AND CANE-SUGAR REFINING.						CANE SUGAR.						CANE-SUGAR REFINING.					
	Cen- sus year.	Total.	Male.	Fe- male.	Per cent of total.		Total.	Male.	Fe- male.	Per cent of total.		Total.	Male.	Fe- male.	Per cent of total.			
					Male.	Fe- male.				Male.	Fe- male.				Male.	Fe- male.		
All classes.....	1919	27,966	25,483	2,483	91.1	8.9	7,045	6,398	647	90.8	9.2	20,921	19,085	1,836	91.2	8.8		
	1914	17,105	16,392	713	95.8	4.2	4,544	4,423	121	97.3	2.7	12,561	11,969	592	95.3	4.7		
	1909	15,658	15,228	430	97.3	2.7	5,313	5,213	100	98.1	1.9	10,345	10,015	330	96.8	3.2		
Proprietors and officials.....	1919	1,011	988	23	97.7	2.3	640	621	19	97.0	3.0	371	367	4	98.9	1.1		
	1914	601	641	20	97.0	3.0	450	432	18	96.0	4.0	211	209	2	99.1	0.9		
	1909	789	743	46	94.2	5.8	590	544	46	92.2	7.8	199	190	9	100.0	.....	
Proprietors and firm members...	1919	171	150	21	87.7	12.3	165	146	19	88.5	11.5	6	4	2	66.7	33.3		
	1914	180	160	20	88.9	11.1	172	154	18	89.5	10.5	8	6	2	75.0	25.0		
	1909	204	160	44	78.4	21.6	198	154	44	77.8	22.2	0	6	.....	100.0	.....	
Salaried officers of corporations..	1919	206	206	.....	100.0	.....	159	159	.....	.....	.....	47	47	.....	.....	.....
	1914	96	96	.....	100.0	.....	72	72	.....	100.0	.....	24	24	.....	100.0	.....	
	1909	140	138	2	98.6	1.4	105	103	2	98.1	1.9	35	35	.....	100.0	.....	
Superintendents and managers..	1919	634	632	2	99.7	0.3	316	316	.....	.....	.....	318	316	2	99.4	0.6
	1914	385	385	.....	.....	.....	206	206	.....	100.0	.....	179	179	.....	100.0	.....	
	1909	445	445	.....	.....	.....	287	287	.....	100.0	.....	158	158	.....	100.0	.....	
Clerks and other subordinate sal- aried employees.	1919	2,652	2,095	557	79.0	21.1	304	281	23	92.4	7.6	2,348	1,814	534	77.3	22.7		
	1914	1,559	1,453	106	93.2	6.8	462	442	20	95.7	4.3	1,097	1,011	86	92.2	7.8		
	1909	1,343	1,262	81	94.0	6.0	596	567	29	95.1	4.9	747	695	52	93.0	7.0		
Wage earners (average number)....	1919	24,303	22,400	1,903	92.2	7.8	6,101	5,496	605	90.0	9.9	18,202	16,904	1,298	92.9	7.1		
	1914	14,885	14,208	677	96.1	3.9	3,632	3,549	83	97.7	2.3	11,253	10,749	504	95.5	4.5		
	1909	13,526	13,223	303	97.8	2.2	4,127	4,102	25	99.4	0.6	9,399	9,121	278	97.0	3.0		
16 years of age and over.....	1919	24,244	22,344	1,900	92.2	7.8	6,049	5,447	602	90.0	10.0	18,195	16,897	1,298	92.9	7.1		
	1914	14,813	14,238	575	96.1	3.9	3,588	3,509	79	97.8	2.2	11,225	10,729	496	95.6	4.4		
	1909	13,458	13,160	298	97.8	2.1	4,104	4,080	24	99.4	0.6	9,354	9,080	274	97.1	2.9		
Under 16 years of age.....	1919	59	56	3	94.9	5.1	52	49	3	94.2	5.8	7	7	.....	.....	.....
	1914	72	60	12	83.3	16.7	44	40	4	90.9	9.1	28	20	8	71.4	28.6		
	1909	68	63	5	92.6	7.4	23	22	1	95.7	4.3	45	41	4	91.1	8.9		

TABLE 17.—WAGE EARNERS, BY MONTHS: 1919, 1914, AND 1909.

MONTH.	CANE SUGAR AND SUGAR REFINING.						CANE SUGAR.						CANE-SUGAR REFINING.					
	Number. ¹			Per cent of maximum.			Number. ¹			Per cent of maximum.			Number. ¹			Per cent of maximum.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
January.....	23,186	10,666	9,533	65.1	42.7	37.6	8,053	1,453	1,598	44.2	9.9	10.1	14,533	9,112	7,955	70.9	71.2	79.7
February.....	23,643	10,823	9,212	66.4	43.7	36.3	4,951	893	559	25.3	6.1	3.5	18,692	9,030	8,653	91.2	77.6	86.9
March.....	21,471	12,395	10,605	61.3	50.1	41.8	2,100	673	715	11.0	4.6	4.5	10,311	11,722	9,890	94.2	91.6	92.4
April.....	20,418	12,684	10,450	57.4	51.2	41.2	1,614	701	708	7.7	4.8	5.1	18,904	11,983	9,652	92.2	93.7	97.0
May.....	21,185	12,952	10,366	59.5	52.3	40.9	1,646	723	874	8.1	4.9	5.5	10,539	12,229	9,492	95.3	95.6	95.4
June.....	21,327	13,649	10,966	59.9	54.3	43.3	1,727	857	1,040	8.8	5.9	6.6	10,600	12,792	9,926	95.6	100.0	92.7
July.....	22,346	13,533	11,071	62.8	54.7	43.7	1,845	1,062	1,122	9.4	7.3	7.1	20,501	12,471	9,952	100.0	97.5	100.0
August.....	20,851	13,414	10,533	58.6	54.2	41.6	1,703	1,017	920	9.2	6.9	5.8	19,058	12,397	9,613	93.0	96.9	97.3
September.....	21,220	12,931	11,002	59.6	52.2	43.4	1,854	1,338	1,322	9.5	0.1	8.4	19,306	11,593	9,680	94.5	90.6	97.3
October.....	25,728	17,643	19,034	72.3	71.3	75.1	8,104	7,253	9,093	41.4	49.6	61.5	17,624	10,390	9,341	85.0	81.2	93.9
November.....	35,599	24,752	25,349	100.0	100.0	100.0	19,395	14,635	15,761	99.1	100.0	100.0	16,204	10,117	9,588	79.0	79.1	96.3
December.....	34,662	23,270	24,163	97.4	94.0	95.3	19,570	12,079	15,115	100.0	88.7	95.9	15,092	10,300	9,048	73.6	80.5	90.9

¹ The figures represent the number employed on the 15th of each month or the nearest representative day. Maximum indicated by bold-faced figures, minimum by italic figures.

TABLE 18.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR CANE-SUGAR AND CANE-SUGAR REFINING: 1919 AND 1914.

INDUSTRY.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
			44 and under.	Be- tween 44 and 48.	48. ¹	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Over 60.
Total.....	1910 1914	24,303 14,885	745 (²)	3 (²)	5,643 614	25 503	1,271 82	553 1,512	6,525 3,450	9,638 8,034
Cane-sugar.....	1910 1914	6,101 3,632	745	3	621	25 2	10 82	553 14	501 305	3,634 3,130

INDUSTRY.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							
			44 and under.	Be- tween 44 and 48.	48. ¹	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Over 60.
Cane-sugar refin- ing.....	1910 1914	18,202 11,253	..... (²)	..... (²)	5,022 614	..... 591	1,252 .....	..... 1,498	6,024 3,055	5,904 5,495

¹ Includes 48 and under for 1914.

² Corresponding figures not available.

TABLE 19.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS, FOR CANE SUGAR AND CANE-SUGAR REFINING: 1919 AND 1914.

	1919	1914		1919	1914
Total number of establishments.....	222	199	51 to 100 wage earners—		
Total wage earners (average number).....	24,303	14,885	Establishments.....	16	10
Establishments employing:			Wage earners.....	1,101	711
No wage earners—			101 to 250 wage earners—		
Establishments.....	5	.....	Establishments.....	10	7
1 to 5 wage earners—			Wage earners.....	1,499	989
Establishments.....	55	52	251 to 500 wage earners—		
Wage earners.....	86	100	Establishments.....	7	5
6 to 20 wage earners—			Wage earners.....	2,711	2,032
Establishments.....	59	74	501 to 1,000 wage earners—		
Wage earners.....	758	942	Establishments.....	7	9
21 to 50 wage earners—			Wage earners.....	5,228	6,683
Establishments.....	55	41	Over 1,000 wage earners—		
Wage earners.....	1,800	1,237	Establishments.....	8	1
			Wage earners.....	11,060	2,131

TABLE 20.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919 AND 1914.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.		AVERAGE NUMBER OF WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.	
	1919	1914	1919	1914	1919	1914	1919	1914
All classes.....	222	199	24,303	14,885	\$788,728,026	\$311,084,088	\$82,440,629	\$30,990,512
Less than \$5,000.....	34	17	30	28	74,412	38,067	32,343	14,184
\$5,000 to \$20,000.....	17	14	36	88	143,902	178,406	47,891	36,063
\$20,000 to \$100,000.....	32	72	394	958	1,992,051	4,140,240	410,403	883,317
\$100,000 to \$500,000.....	81	74	2,727	2,558	21,730,184	14,596,958	5,371,220	4,743,591
\$500,000 to \$1,000,000.....	28	4	1,507	.....	18,813,505	2,031,702	4,269,916	25,313,367
\$1,000,000 and over.....	30	18	19,609	11,253	745,973,852	289,398,716	72,308,856	.....
PER CENT DISTRIBUTION.								
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....	15.3	8.5	0.1	0.2	(¹)	(¹)	(¹)	0.1
\$5,000 to \$20,000.....	7.7	7.0	0.1	0.6	(¹)	.....	.....	2.9
\$20,000 to \$100,000.....	14.4	36.2	1.6	6.4	.....	0.1	0.5	15.3
\$100,000 to \$500,000.....	36.5	37.2	11.2	17.2	0.3	4.7	6.5	.....
\$500,000 to \$1,000,000.....	12.6	2.0	6.2	.....	2.8	0.9	5.2	.....
\$1,000,000 and over.....	13.5	9.0	80.7	75.6	94.8	93.0	87.7	81.7

¹ Less than one-tenth of 1 per cent.

TABLE 21.—CHARACTER OF OWNERSHIP: 1919 AND 1914.

CHARACTER OF OWNERSHIP.	Cen- sus year.	Num- ber of estab- lish- ments.	Aver- age num- ber of wage earners.	Value of products.	Value added by manufac- ture.	CHARACTER OF OWNERSHIP.	Cen- sus year.	Num- ber of estab- lish- ments.	Aver- age num- ber of wage earners.	Value of products.	Value added by manufac- ture.
All classes.....	1919 1914	222 199	24,303 14,885	\$788,728,026 311,034,088	\$82,440,629 30,900,512	Per cent distribution:					
Individual.....	1919 1914	65 55	562 808	4,386,546 3,710,938	1,005,354 969,732	Individual.....	1919 1914	29.3 27.6	2.3 5.8	0.6 1.2	1.3 3.1
Corporation.....	1919 1914	119 106	20,812 12,046	693,006,951 265,924,415	73,568,434 27,294,528	Corporation.....	1919 1914	53.6 53.3	85.6 80.9	87.9 85.5	89.2 88.1
All other.....	1919 1914	38 38	2,029 1,971	91,334,529 41,398,735	7,786,841 2,730,252	All other.....	1919 1914	17.1 19.1	12.1 13.2	11.6 13.3	9.4 8.8

TABLE 22.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919 AND 1914.

POWER.	NUMBER OF ENGINES OR MOTORS.		HORSEPOWER.				POWER.	NUMBER OF ENGINES OR MOTORS.		HORSEPOWER.			
	1919	1914	Amount.		Per cent distribution.			1919	1914	Amount.		Per cent distribution.	
			1919	1914	1919	1914				1919	1914		
Primary power, total.....	1,575	1,970	154,402	162,912	.....	.....	Primary power—Continued.						
Owned.....	1,572	1,966	154,040	158,690	99.8	97.4	Rented.....	3	274	362	4,222	0.2	2.6
Steam.....	1,399	1,644	161,004	158,183	97.8	97.1	Electric.....	3	274	360	4,222	0.2	2.6
Engines.....	1,355	(1)	130,221	(1)	84.3	.....	Other.....			2	.....	(?)	.....
Turbines.....	44	(1)	20,783	(1)	13.5	.....	Electric.....	4,031	2,195	56,956	26,785	100.0	100.0
Internal-combustion engines.....	172	62	3,028	507	2.0	0.3	Rented.....	3	274	360	4,222	0.6	15.8
Water wheels and turbines.....	1	.....	8	.....	(2)	.....	Generated by establishments reporting.....	4,028	1,921	56,596	22,563	99.4	84.2

1 Not reported separately.

2 Less than one-tenth of 1 per cent.

TABLE 23.—FUEL CONSUMED: 1919 AND 1914.

INDUSTRY.	Cen- sus year.	COAL.		Coke (tons, 2,000 pounds).	Fuel oils (barrels).	Gasoline and other volatile oils (barrels).	Gas (1,000 cubic feet).
		Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).				
Cane sugar and cane-sugar refining, total....	1919 1914	407,481 453,797	1,017,513 906,293	542 1,639	2,741,665 1,588,712	(1) 3,514	154,277
Cane sugar.....	1919 1914	1,233 2,487	29,823 30,411	112 15	1,036,566 840,179	(1) 3,100	154,277
Cane-sugar refining.....	1919 1914	406,248 451,310	987,690 875,882	430 1,624	1,705,099 748,533	(1) 414	.....

1 Included in figures for fuel oils.

SPECIAL STATISTICS.

Detailed statistics of materials used in the cane-sugar industry.—Table 24 shows statistics on the quantity and cost of the cane crushed and cost of other materials of the cane-sugar industry for 1919 and 1914. Of the total quantity of cane crushed, 46.7 per cent in 1919, as against 40.8 per cent in 1914, was grown on plantations controlled by mill owners. The average cost per ton of cane thus grown, as reported for 1919, was \$8.89, while that of cane purchased was \$10.27. Of the total cost of materials used, the cane crushed represented 80.6 per cent in 1919, as against 84 per cent in 1914.

TABLE 24.—QUANTITY AND VALUE OF MATERIALS USED IN THE CANE-SUGAR INDUSTRY: 1919 AND 1914.

MATERIALS.	1919	1914
Total cost.....	\$44,143,416	\$15,958,218
Cane crushed:		
Tons, 2,000 pounds.....	3,688,002	3,754,820
Cost.....	\$35,694,766	\$13,408,689
Grown on plantations controlled by mill owners—		
Tons, 2,000 pounds.....	1,724,435	1,532,575
Cost.....	\$15,342,707	\$5,259,833
Purchased—		
Tons, 2,000 pounds.....	1,922,398	2,166,477
Cost.....	\$19,761,721	\$7,969,882
Treated on shares or contract—		
Tons, 2,000 pounds.....	41,169	55,768
Cost.....	\$490,338	\$178,874
Cost of fuel and rent of power.....	\$1,962,180	\$1,151,610
All other materials, cost.....	\$6,566,470	\$1,397,919

Detailed statistics of products.—Table 25 gives the quantity and value of the products made from the sugar cane.

TABLE 25.—QUANTITY AND VALUE OF PRODUCTS OF THE CANE-SUGAR INDUSTRY: 1919 AND 1914.

PRODUCT.	1919	1914
Total value.....	\$57,741,320	\$21,635,373
Sugar:		
Tons, 2,000 pounds.....	225,478	264,801
Value.....	\$46,659,085	\$18,947,683
Brown or open kettle—		
Tons, 2,000 pounds.....	3,940	5,300
Value.....	649,593	\$361,410
Sugar other than brown—		
Tons, 2,000 pounds.....	221,538	259,492
Value.....	\$46,009,492	\$18,586,273
Refined—		
Tons, 2,000 pounds.....	35,814	53,594
Value.....	\$9,547,378	\$4,228,860
Clarified—		
Tons, 2,000 pounds.....	129,147	91,075
Value.....	\$26,563,159	\$9,742,266
Raw—		
Tons, 2,000 pounds.....	56,577	114,823
Value.....	\$9,898,958	\$7,615,147
Molasses:		
Gallons.....	20,058,248	20,075,260
Value.....	\$4,868,740	\$2,021,517
Sirup:		
Gallons.....	6,739,978	2,420,633
Value.....	\$4,189,199	\$609,696
All other products, value.....	\$2,024,206	\$56,477

The average value per pound of the sugar reported was 10.3 cents in 1919, as against 3.6 cents in 1914. The average value of molasses per gallon, from which more or less sugar content had been taken, was 24.3 cents in 1919 as against 9.8 cents in 1914.

The sirup, from which practically no sugar had been taken, averaged 62.2 cents per gallon in 1919 as against 25.2 cents in 1914.

Detailed statistics of materials and products for cane-sugar refining.—Table 26 presents statistics for the quantity and cost of materials and the quantity and value of products of the sugar-refining industry for 1919 and 1914. There are certain duplications in this table in the materials and value of products due to the use of the products of the cane sugar as material for sugar refining.

TABLE 26.—MATERIALS AND PRODUCTS OF SUGAR REFINING, 1919 AND 1914.

MATERIAL AND PRODUCT.	1919 ¹	1914
MATERIALS.		
Total cost.....	\$662,143,081	\$264,085,358
Raw sugar:		
Tons, 2,000 pounds.....	4,293,417	3,560,479
Cost.....	\$614,735,694	\$247,086,355
All other materials, cost.....	\$17,408,297	\$16,999,003
PRODUCTS.		
Total value.....	\$730,986,706	\$289,398,716
Refined sugar:		
Tons, 2,000 pounds.....	3,521,453	3,333,134
Value.....	\$713,567,395	\$285,495,974
Molasses and sirup:		
Gallons.....	44,060,988	35,802,995
Value.....	\$15,317,061	\$3,294,278
All other products, value.....	\$2,102,710	\$618,463

¹ In addition 12,171 tons of raw sugar costing \$1,467,801 with 10,929 tons of refined sugar valued at \$1,627,833 were reported by establishments not engaged primarily in the sugar refining industry.

GENERAL TABLE.

Table 27 presents, for 1919, statistics in detail for the cane sugar and cane-sugar refining industries separately and combined.

TABLE 27.—DETAILED STATEMENT OF THE CANE-SUGAR INDUSTRY, INCLUDING REFINING: 1919.

	Total.	Cane sugar.	Cane-sugar refining.		Total.	Cane sugar.	Cane-sugar refining.
Number of establishments.....	222	202	20	Capital.....	\$248,657,952	\$55,117,127	\$193,540,825
Persons engaged.....	27,966	7,045	20,921	Salaries and wages.....	33,827,468	5,674,817	28,152,651
Proprietors and firm members.....	171	165	6	Officials.....	3,573,824	1,173,706	2,400,118
Salaried officers, superintendents, and managers.....	840	475	365	Clerks, etc.....	3,533,811	491,742	3,042,069
Clerks and other subordinate salaried employees.....	2,052	304	2,348	Wage earners.....	26,719,833	4,009,369	22,710,464
Male.....	2,095	281	1,814	Contract work.....	94,888	27,366	67,522
Female.....	557	23	534	Rent and taxes.....	7,703,829	1,142,247	6,561,582
Wage earners—				Rent of factory.....	96,534	11,498	85,036
Average number.....	24,303	6,101	18,202	Taxes, Federal, State, county, and local.....	7,607,295	1,130,749	6,476,546
Number, 15th day of month—				Cost of materials.....	706,287,897	44,143,416	662,143,981
Maximum month and number.....		De 19,570	Jy 20,501	Principal materials.....	604,536,096	42,161,236	652,374,860
Minimum month and number.....		Ap 1,514	Ja 14,533	Fuel and rent of power.....	11,751,301	1,982,180	9,769,121
Wage earners Dec. 15 or nearest representative day.....	38,909	20,586	18,383	Value of products.....	788,728,026	57,741,320	730,986,706
16 years of age and over.....	38,790	20,414	18,376	Value added by manufacture.....	82,440,629	13,597,904	68,842,725
Male.....	34,973	17,010	17,063	Primary horsepower.....	154,402	101,861	52,541
Female.....	3,817	2,504	1,313				
Under 16 years of age.....	179	172	7				
Male.....	167	160	7				
Female.....	12	12					

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

FOURTEENTH CENSUS OF THE UNITED STATES
MANUFACTURES: 1919

WOOD DISTILLATION

Prepared under the supervision of EUGENE F. HARTLEY, Chief Statistician for Manufactures

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EXPLANATION OF TERMS.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally, the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the statistics for these purposes it is imperative that due attention be given to their limitations, particularly in connection with any attempt to derive from them figures purporting to show average wages, cost of production, or profits.

The census did not cover establishments which were idle during the entire year or for which products were valued at less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1919, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or factory, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept. If, however, the plants constituting an establishment as thus defined were not all located within the same city, county, or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city, county, or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Classification by industries.—The establishments were assigned to the several classes of industries according to their products of chief value. The products reported for a given industry may thus, on the one hand, include minor products different from those covered by the class designation, and, on the other hand, may not represent the total product covered by this designation, because some products of this class may be made in establishments in which it is not the product of chief value.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1919 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—The following general classes of persons engaged in the manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners.

The number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where this date did not portray such conditions, an earlier date was requested.

In the case of employees other than wage earners the number thus reported for the representative date has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average has been obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on the representative date, a report was obtained of the number employed on the 15th of each month, by sex, without distinction of age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

The number of wage earners reported for the representative day, though given in certain tables for each separate industry, is not totaled for all industries combined, because, in view of the variations of date, such a total is not believed to be significant. It would involve more or less duplication of persons working in different industries at different times, would not represent the total number employed in all industries at any one time, and would give an undue weight to seasonal industries as compared with industries in continual operation.

In order to determine as nearly as possible the age distribution of the average number of wage earners for an industry, the per cent distribution by age of the wage earners for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. The percentages thus obtained have been applied to the average number of wage earners for the year to determine the average numbers 16 years and over, and under 16, employed.

Salaries and wages.—Under these heads are given the total payments during the year for salaries and wages, respectively. The Census Bureau has not undertaken to calculate the average annual earnings of either salaried employees or wage earners. Such averages would possess little real value, because they would be based on the earnings of employees of both sexes, of all ages, and of widely varying degrees of skill. Furthermore, so far as wage earners are concerned, it would be impossible to calcu-

late accurately even so simple an average as this, since the number of wage earners fluctuates from month to month in every industry, and in some cases to a very great extent. The Census Bureau's figures for wage earners, as already explained, are averages based on the number employed on the 15th of each month, and while representing the number according to the pay rolls to whom wages were paid on that date, no doubt represent a larger number than would be required to perform the work in any industry if all were continuously employed during the year.

Prevailing hours of labor.—No attempt was made to ascertain the number of wage earners working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a few wage earners might have hours differing from those of the majority. All the wage earners of each establishment are therefore counted in the class within which the establishment itself falls. In most establishments, however, practically all the wage earners work the same number of hours, so that the figures give a substantially correct representation of the hours of labor.

Capital (amount actually invested).—The instructions on the schedule for securing data relating to capital were as follows:

"The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises."

These instructions were identical with those employed at the censuses of 1914 and 1900. The data compiled in respect to capital, however, at both censuses, as well as at all preceding censuses of manufactures, have been so defective as to be of little value except as indicating general conditions. In fact, it has been repeatedly recommended by the census authorities that this inquiry be omitted from the schedule. While there are some establishments whose accounting systems are such that an accurate return for capital could be made, this is not true of the great majority, and the figures therefore do not show the actual amount of capital invested.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the materials purchased during the year. The term "materials" covers fuel, rent of power and heat, mill supplies, and containers, as well as materials which form a constituent part of the product.

Rent and taxes.—The taxes include certain Federal taxes and state, county, and local taxes. Under "Federal taxes" there are included the internal revenue tax on manufactures (tobacco, beverages, etc.), excise taxes when included in values reported for products, corporation capital stock tax, and corporation income tax, but not the income tax for individuals and partners.

Value of products.—The amounts given under this heading represent the selling value or price at the factory of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not always a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part, and often by far the larger one, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry, from a manufacturing standpoint, is the value created by the manufacturing operations carried on within the industry. This value is calculated by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—The census data do not show the entire cost of manufacture, and consequently can not be used for the calculation of profits. No account has been taken of depreciation or interest, rent of offices and buildings other than factory or works, insurance, ordinary repairs, advertising, and other sundry expenses.

Primary horsepower.—This item represents the total primary power equipment of the manufacturing establishments plus the amount of power, principally electric, rented from other concerns. It does not cover the power of electric motors taking their current from dynamos driven by primary power machines operated by the same establishment, because the inclusion of such power would obviously result in duplication. The figures for primary horsepower represent the rated capacity of the engines, motors, etc., and not the amount of power in actual daily use.

Fuel.—Statistics of the quantity of fuel used are shown only for anthracite and bituminous coal, coke, fuel oils, gasoline and other volatile oils, and gas, and represent the quantity used during the year. As only the principal kinds of fuel are shown, comparison as to the total cost of all fuel is impracticable.

WOOD DISTILLATION.

GENERAL STATISTICS.

General character of the industry.—This report embraces the establishments engaged primarily in the distillation of wood for the recovery of the volatile products, and the production of charcoal. Two distinct processes are employed—the destruction process and the steam process. In the former, the wood is heated to such a temperature that the fiber is destroyed and new products are created. In the latter process, the volatile substances are removed from the wood by the use of steam, which does not destroy the fiber. The industry is divided into two distinct branches—hardwood distillation and softwood distillation. Measured by the quantity of wood used, the hardwood branch is by far the more important, consuming 82.2 per cent of the total quantity of wood used for distillation in the United States in 1919. This branch is confined practically to the Northern and Central states. Softwood distillation is carried on largely in the South Atlantic and Gulf states, and the southern longleaf pine is the principal raw material used in this industry.

Several important establishments manufacturing wood-distillation products are operated in connection with the manufacture of lumber. These plants utilize the slabs, sawdust, and other waste products of the sawmill or timber camp.

Comparative summary.—Table 1 presents the comparative statistics for the industry for the census years 1899 to 1919, inclusive, with percentages of increase for each census period.

Principal states, ranked by value of products.—Table 2 shows the number of establishments, wage earners, value of products, and value added by manufacture, by states, ranked according to value of products, 1919.

Persons engaged in the industry.—The age classification of the average number of wage earners in Table 3 is estimated by the method described in the "Explanation of terms." No wage earners under 16 years of age were reported. Figures for states will be found in Table 17.

Wage earners, by months.—The statistics for wage earners, Table 4, are intended to show the steadiness of employment, or the reverse, in accordance with the industrial conditions existing during the year. The few females reported are negligible.

Prevailing hours of labor.—In 1909, 96.4 per cent of the wage earners were employed in plants where the prevailing hours of labor per week were 60 or over, and in 1914, 88.5 per cent were of this class. The figures presented in Table 5 show progress toward a reduction in the hours of labor per week, the proportion for wage earners employed in establishments

where the prevailing hours of labor were 60 or more per week in 1919 dropped to 69.3 per cent. On the other hand, in 1919, 14.9 per cent of the wage earners were in establishments where the hours of labor per week were fewer than 54, as compared with 3.7 per cent in 1914 and 1.8 per cent in 1909.

Size of establishments, by average number of wage earners.—The average number of wage earners per establishment increased from 29 in 1914 to 43 in 1919. Table 6 shows that 11 establishments employed over 100 wage earners in 1919, representing 38 per cent of all wage earners; as compared with 3 establishments and 13 per cent in 1914.

Size of establishments, by value of products.—A grouping by value of products is necessarily affected by the general increase in prices for 1919 as compared with 1914, and this accounts to a considerable extent for the changes from lower to higher groups, as shown in Table 7. During this census period there was an increase of 229.3 per cent in value of products, yet the increase in quantity production, based upon cords of wood distilled, was but 38.4 per cent, and the increase in average number of wage earners 77.8 per cent. The average value of products per establishment was \$81,000 in 1909, \$104,000 in 1914, and \$283,000 in 1919.

Character of ownership.—Table 8 presents the statistics for establishments classified according to form of ownership. Corporations operated 86.1 per cent of the plants and accounted for all but 2 per cent of the products.

Number and horsepower of types of prime movers.—Table 9 presents the power statistics for the industry for 1919, 1914, and 1909. Electric power is a growing factor, and of the total primary power capacity, 30.1 per cent were utilized in the form of electric power in 1919, this including electric motor equipment operated with purchased electric current, specified as rented, and secondary electric or that generated by the establishment, as compared with 26.2 per cent in 1914, and 5.9 per cent in 1909.

Fuel consumed.—Table 10 presents the statistics for certain specified fuels, namely, coal, anthracite and bituminous, fuel oils, gasoline, and gas, by kinds and by states, for 1919 and 1914. No coke was reported by the wood-distillation plants. In addition to the fuels shown in the table, considerable quantities of charcoal and tar, for which there was not a ready market, were used as fuel. Moreover, the consumption of wood as a fuel was not reported. The amount reported as expense for fuel and rent of power in 1919 was \$2,287,221, as compared with \$1,024,479 in 1914.

MANUFACTURES.

TABLE 1.—COMPARATIVE SUMMARY: 1919, 1914, 1909, 1904, AND 1899.

	1919	1914	1909	1904	1899	PER CENT OF INCREASE. ¹			
						1914-1919	1909-1914	1904-1909	1899-1904
Number of establishments.....	115	95	120	141	102	21.1	-20.8	-14.9	38.2
Persons engaged.....	5,634	3,142	3,095	2,655	(²)	70.3	1.5	16.6	.....
Proprietors and firm members.....	28	30	56	82	(²)	.....	.....	.....	.....
Salaried employees.....	660	324	318	301	235	103.7	1.9	5.6	28.1
Wage earners (average number).....	4,946	2,782	2,721	2,272	1,556	77.8	2.2	19.8	46.0
Primary horsepower.....	15,938	10,045	9,854	4,620	(²)	58.7	1.9	113.3	.....
Capital.....	\$42,334,503	\$17,502,849	\$13,017,192	\$10,506,979	\$6,729,127	141.0	34.9	23.9	56.1
Salaries and wages.....	6,632,256	1,968,011	1,818,059	1,304,314	913,500	237.0	8.2	33.3	49.3
Salaries.....	1,322,567	403,180	355,211	297,528	213,025	228.0	13.5	19.4	39.7
Wages.....	5,309,689	1,564,822	1,462,848	1,006,786	700,484	230.3	7.0	37.1	52.3
Paid for contract work.....	327,473	72,260	15,536	21,970	(²)	353.2	365.0	-29.3	.....
Rent and taxes.....	1,200,325	146,533	69,442	85,869	(²)	760.1	111.0	.....	.....
Cost of materials.....	20,059,651	6,495,570	5,875,851	4,847,770	3,455,015	208.8	10.5	21.2	40.3
Value of products.....	32,545,314	9,882,537	9,736,998	7,813,483	6,001,023	229.3	1.5	24.6	30.2
Value added by manufacture ⁴	12,485,663	3,380,967	3,861,147	2,905,713	2,546,008	268.6	-12.3	30.2	16.5

¹ A minus sign (-) denotes decrease. Percentages not shown where base is less than 100 or where figures are not strictly comparable.

² Figures not available.

³ Exclusive of internal revenue.

⁴ Value of products less cost of materials.

TABLE 2.—PRINCIPAL STATES, RANKED BY VALUE OF PRODUCTS: 1919.

STATE.	Number of establishments.	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
		Average number.	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.	Amount (expressed in thousands).	Per cent distribution.	Rank.
United States.....	115	4,946	100.0	.....	\$32,545	100.0	.....	\$12,486	100.0	.....
Michigan.....	16	1,586	32.1	1	10,651	32.7	1	4,858	38.9	1
Pennsylvania.....	44	1,211	24.5	2	6,542	17.0	3	2,288	18.3	2
Florida.....	6	412	8.3	4	2,005	6.2	5	909	7.3	5
Alabama.....	4	155	3.1	6	780	2.4	7	402	3.2	6
Louisiana.....	4	78	1.6	10	629	1.9	9	293	2.3	8
All other states.....	41	1,504	30.4	.....	12,038	36.8	.....	3,736	29.9	.....

TABLE 3.—PERSONS ENGAGED IN THE INDUSTRY: 1919, 1914, AND 1909.

CLASS.	Cen-sus year.	Total.	Male.	Fe-male.	PER CENT OF TOTAL.		CLASS.	Cen-sus year.	Total.	Male.	Fe-male.	PER CENT OF TOTAL.	
					Male.	Fe-male.						Male.	Fe-male.
All classes.....	1919	5,634	5,514	120	97.0	2.1	Clerks and other subordinate salaried employees.	1919	289	204	85	70.6	29.4
	1914	3,142	3,108	34	98.0	1.1		1914	139	111	28	79.9	20.1
	1909	3,095	3,004	31	99.0	1.0		1909	119	94	25	79.0	21.0
Proprietors and officials.....	1919	390	302	7	98.2	1.8	Wage earners (average number).....	1919	4,946	4,918	28	99.4	0.6
	1914	221	215	6	97.3	2.7		1914	2,782	2,782	.....	100.0	.....
	1909	255	249	6	97.6	2.4		1909	2,721	2,721	.....	100.0	.....
Proprietors and firm members.....	1919	28	25	3	89.3	10.7	16 years of age and over.....	1919	4,946	4,918	28	99.4	0.6
	1914	36	32	4	88.9	11.1		1914	2,782	2,782	.....	100.0	.....
	1909	56	50	6	89.3	10.7		1909	2,721	2,721	.....	100.0	.....
Salaried officers of corporations.....	1919	128	124	4	96.9	3.1	Under 16 years of age.....	1919	.....	.....	.....	.....	.....
	1914	70	74	2	97.4	2.6		1914	.....	.....	.....	.....	.....
	1909	73	73	.....	100.0	.....		1909	.....	.....	.....	.....	.....
Superintendents and managers.....	1919	243	243	.....	100.0	.....						
	1914	100	100	.....	100.0	.....						
	1909	126	126	.....	100.0	.....						

WOOD DISTILLATION.

5

TABLE 4.—WAGE EARNERS, BY MONTHS FOR STATES: 1919.

[The month of maximum employment is indicated by bold-faced figures and that of minimum employment by *italic* figures.]

STATE.	Average number employed during year.	NUMBER EMPLOYED ON 15TH DAY OF THE MONTH OR NEAREST REPRESENTATIVE DAY.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States:														
1919.....	4,946	5,838	5,718	5,345	4,650	4,503	<i>4,246</i>	4,541	4,538	4,658	4,934	5,042	5,339	72.7
Males.....	4,918	5,809	5,661	5,316	4,621	4,470	<i>4,217</i>	4,514	4,510	4,630	4,907	5,014	5,311	72.6
Females.....	28	29	27	29	29	27	29	27	28	28	27	28	28	93.1
1914.....	2,782	3,531	3,359	2,887	2,552	2,463	<i>2,453</i>	2,454	2,607	2,664	2,721	2,787	2,926	68.9
1909.....	2,721	2,800	2,868	2,807	2,754	2,626	<i>2,563</i>	2,519	2,478	2,604	2,707	2,869	3,053	81.2
Alabama.....	155	151	143	139	136	137	153	151	148	152	174	192	184	70.8
Florida.....	412	<i>346</i>	354	382	300	404	389	457	436	445	426	412	503	68.8
Louisiana.....	78	77	77	77	77	77	78	78	79	79	79	79	79	97.5
Michigan.....	1,586	1,739	1,773	1,710	1,453	1,561	<i>1,444</i>	1,621	1,581	1,530	1,514	1,515	1,591	81.4
Pennsylvania.....	1,211	1,559	1,500	1,360	1,125	992	<i>937</i>	973	1,028	1,125	1,262	1,307	1,355	60.1

TABLE 5.—AVERAGE NUMBER OF WAGE EARNERS, BY PREVAILING HOURS OF LABOR PER WEEK, FOR STATES: 1919 AND 1914.

STATE.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—							STATE.	Cen- sus year.	Total.	IN ESTABLISHMENTS WHERE THE PREVAILING HOURS OF LABOR PER WEEK WERE—								
			44 and un- der.	Be- tween 44 and 48.	48. ¹	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.				Over 60.	44 and un- der.	Be- tween 44 and 48.	48. ¹	Be- tween 48 and 54.	54.	Be- tween 54 and 60.	60.	Over 60.
United States..	1919	4,046	10	10	717	1	162	616	1,724	1,706	Louisiana.....	1919	78	.....	.....	3	.....	52	23	.....
	1914	2,782	(²)	(²)	103	.....	8	208	1,221	1,242	Michigan.....	1919	1,586	.....	.....	240	.....	4	50	753	539
	1909	2,721	(²)	(²)	51	.....	42	6	1,023	1,599		1914	645	.....	.....	.....	.....	.....	167	478	
Alabama.....	1919	155	10	.....	22	.....	.....	.....	.....	123	Pennsylvania.....	1919	1,211	.....	.....	231	.....	39	120	466	355
Florida.....	1919	412	.....	2	.....	.....	.....	344	.....	66		1914	1,185	(²)	(²)	11	.....	8	.....	678	488

¹ Includes 48 and under for 1914 and 1909.² Corresponding figures not available.

TABLE 6.—SIZE OF ESTABLISHMENTS, BY AVERAGE NUMBER OF WAGE EARNERS, FOR STATES: 1919.

STATE.		TOTAL.		ESTABLISHMENTS EMPLOYING—											
		Estab-lish-ments.	Wage earners (average number).	1 to 5 wage earners, inclusive.		6 to 20 wage earners, inclusive.		21 to 50 wage earners, inclusive.		51 to 100 wage earners, inclusive.		101 to 250 wage earners, inclusive.		Over 250 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.	Estab-lish-ments.	Wage earners.
United States.....	1919..	115	4,946	13	39	35	422	35	1,212	20	1,386	9	1,308	2	579
	1914..	95	2,782	13	45	36	467	26	829	17	1,082	3	359	—	—
Alabama.....		4	155	—	—	2	18	1	22	—	—	1	115	—	—
Florida.....		6	412	1	2	2	14	—	—	1	59	2	337	—	—
Louisiana.....		4	78	2	8	1	18	—	—	1	52	—	—	—	—
Michigan.....		16	1,586	1	5	—	—	5	203	4	366	5	730	1	282
Pennsylvania.....		44	1,211	6	19	14	174	16	535	8	483	—	—	—	—

MANUFACTURES.

TABLE 7.—SIZE OF ESTABLISHMENTS, BY VALUE OF PRODUCTS: 1919, 1914, AND 1909.

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1919	1914	1909	1919	1914	1909	1919	1914	1909	1919	1914	1909
All classes.....	115	95	120	4,946	2,782	2,721	\$32,545,314	\$9,882,537	\$9,736,998	\$12,485,663	\$3,380,967	\$3,881,147
Less than \$5,000.....	4	5	8	6	12	35	6,536	14,110	22,670	2,331	8,638	10,279
\$5,000 to \$20,000.....	10	9	30	53	54	268	101,950	95,102	392,207	41,269	38,645	198,533
\$20,000 to \$100,000.....	41	54	61	788	1,082	1,216	2,185,196	2,764,619	3,111,998	864,783	953,720	1,296,796
\$100,000 to \$500,000.....	42	25		1,871			9,471,636			4,358,351		
\$500,000 to \$1,000,000.....	13	1	21	1,301	1,634	1,202	8,757,056	7,008,700	6,210,063	3,266,531	2,385,964	2,355,719
\$1,000,000 and over.....	5	1		927			12,022,910			3,952,398		
PER CENT DISTRIBUTION.												
All classes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than \$5,000.....	3.5	5.3	6.7	0.1	0.4	1.3	(1)	0.1	0.2	(1)	0.3	0.3
\$5,000 to \$20,000.....	8.7	9.5	25.0	1.1	1.9	9.8	0.3	1.0	4.0	0.3	1.1	5.1
\$20,000 to \$100,000.....	35.7	56.8	50.8	15.9	38.9	44.7	6.7	28.0	32.0	6.9	28.2	33.6
\$100,000 to \$500,000.....	36.5	26.3		37.8			20.1			34.9		
\$500,000 to \$1,000,000.....	11.3	1.1	17.5	26.3	58.7	44.2	20.9	70.0	63.8	26.2	70.4	61.0
\$1,000,000 and over.....	4.3	1.1		18.7			36.9			31.7		

¹ Less than one-tenth of 1 per cent.

TABLE 8.—CHARACTER OF OWNERSHIP, BY STATES: 1919 AND 1914.

STATE.	Cen- sus year.	NUMBER OF ESTABLISH- MENTS OWNED BY--			AVERAGE NUMBER OF WAGE EARNERS.						VALUE OF PRODUCTS.							
		Indi- vid- uals.	Cor- pora- tions.	All oth- ers.	Total.	In establishments owned by--			Per cent of total.			Total.	Of establishments owned by--			Per cent of total.		
						Indi- vid- uals.	Cor- pora- tions.	All oth- ers.	Indi- vid- uals.	Cor- pora- tions.	All oth- ers.		Individ- uals.	Corpora- tions.	All others.	Indi- vid- uals.	Corpora- tions.	All oth- ers.
United States.....	1919	9	99	7	4,946	164	4,090	92	3.3	94.8	1.9	\$32,545,314	\$483,553	\$31,887,648	\$174,113	1.5	98.0	0.5
	1914	11	75	9	2,782	155	2,383	244	5.6	85.7	8.8	9,882,537	485,921	8,758,425	638,191	4.9	88.6	6.5
	1909	14	92	14	2,721	275	2,215	231	10.2	81.4	8.5	9,736,998	648,479	8,414,986	673,533	6.7	86.4	6.9
Alabama.....	1919	.....	4	.....	155	.....	155	.....	100.0	.....	.....	780,475	.....	780,475	.....	.....	100.0	.....
Florida.....	1919	.....	6	.....	412	.....	412	.....	100.0	.....	.....	2,004,931	.....	2,004,931	.....	.....	100.0	.....
Louisiana.....	1919	.....	4	.....	78	.....	78	.....	100.0	.....	.....	620,022	.....	620,022	.....	.....	100.0	.....
Michigan.....	1919	.....	16	.....	1,586	.....	1,586	.....	100.0	.....	.....	10,651,181	.....	10,651,181	.....	.....	100.0	.....
	1914	.....	10	.....	645	.....	645	.....	100.0	.....	.....	2,078,151	.....	2,078,151	.....	.....	100.0	.....
Pennsylvania.....	1919	4	36	4	1,211	70	1,117	24	5.8	92.2	2.0	5,542,215	334,392	5,120,911	77,912	6.0	92.6	1.4
	1914	4	34	8	1,185	33	1,012	240	2.8	77.0	20.3	3,417,199	100,505	2,680,503	636,191	2.9	78.4	18.7

TABLE 9.—NUMBER AND HORSEPOWER OF TYPES OF PRIME MOVERS: 1919, 1914, AND 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
	1919	1914	1909	Amount.			Per cent distribution.		
				1919	1914	1909	1919	1914	1909
Primary power, total.....	401	256	226	15,938	10,045	9,854	100.0	100.0	100.0
Owned.....	254	237	224	13,055	9,110	9,779	85.7	90.7	92.2
Steam.....	209	188	170	12,730	8,230	9,056	79.9	81.9	81.9
Engines.....	198	188	170	10,254	8,230	9,056	64.3	81.9	81.9
Turbines.....	11	(2)	(2)	2,482	(2)	(2)	15.6	(2)	(2)
Internal-combustion engines.....	35	33	25	810	741	462	5.1	7.4	4.7
Water wheels and turbines.....	10	16	20	100	139	261	0.7	1.4	2.6
Rented.....	147	19	2	2,283	935	75	14.3	9.3	0.8
Electric.....	147	19	2	1,533	935	75	9.6	9.3	0.8
Other.....				750			4.7		
Electric.....	201	128	30	4,811	2,630	580	100.0	100.0	100.0
Rented.....	147	19	2	1,533	935	75	31.9	35.6	12.9
Generated by establishments reporting.....	144	100	37	3,278	1,695	505	68.1	64.4	87.1

¹ Figures for horsepower include for 1909 the amount reported under the head of "Other" owned power.² Not reported separately.

TABLE 10.—FUEL CONSUMED, BY STATES: 1919.

STATE.	Cen- sus year.	COAL.		Fuel oils (bar- rels).	Gasoline and other volatile oils (bar- rels).	Gas (1,000 cubic feet).	STATE.	Cen- sus year.	COAL.		Fuel oils (bar- rels).	Gasoline and other volatile oils (bar- rels).	Gas (1,000 cubic feet).
		Anthra- cite (tons, 2,240 pounds).	Bitumi- nous (tons, 2,000 pounds).						Anthra- cite (tons, 2,240 pounds).	Bitumi- nous (tons, 2,000 pounds).			
United States.....	1919	40,677	308,747	56,445	10,814	1,798,302	Michigan.....	1919	7,000	105,189	.....	.....	6
	1914	38,994	196,594	18	(1)	1,521,660		1914	4,600	47,103	3	(1)	3,235
Alabama.....	1919	.....	938	.....	4,403	.....	Pennsylvania.....	1919	9,260	96,818	17,800	12	1,798,249
Florida.....	1919	.....	3,579	22,467	6,174	.....		1914	4,795	107,150	.....	.....	1,431,016
Louisiana.....	1919	.....	4,235	.....	2	.....	All other states.....	1919	24,417	97,988	16,178	223	47
								1914	29,599	42,341	15	(1)	87,415

¹ Included with figures for fuel oils.

SPECIAL STATISTICS.

Materials.—The schedule employed in the canvass of the industry called for quantity and kind of wood used and the quantity and cost of crude alcohol purchased in cases where crude alcohol was purchased for refining.

Table 11 gives the data relating to materials for 1919, 1914, 1909, and 1904.

TABLE 11.—MATERIALS: 1919, 1914, 1909, AND 1904.

MATERIALS.	1919	1914	1909	1904
Total cost.....	\$20,059,651	\$6,495,570	\$5,875,851	\$4,847,770
Wood, cords.....	1,442,675	1,042,517	1,265,157	1,049,503
Hardwoods—				
Cords.....	1,186,477	970,308	1,149,847	1,018,072
Cost.....	\$7,965,089	(2)	(2)	(2)
Softwood (pine)—				
Cords.....	250,198	72,209	115,310	31,431
Cost.....	\$1,593,077	(2)	(2)	(2)
Crude wood alcohol:				
Purchased—				
Gallons.....	7,360,390	5,065,446	7,135,614	(1)
Cost.....	\$5,593,509	\$1,408,124	\$1,784,029	(1)
Made and consumed, gallons.....	2,123,303	2,405,456	2,534,883	1,468,028

¹ Includes 540 cords, cost \$0.893, consumed in the manufacture of subsidiary wood-distillation products in other industries, not included in above table.

² Figures not available.

Wood consumed in distillation.—Table 12 gives the consumption of wood in distillation, by states, by all establishments, primary and subsidiary, for 1919. Beech, birch, and maple are the principal hardwoods for which returns are available. A few other species have been used from time to time, but they are of less importance, and in many instances were not reported separately, viz: Alder, ash, cherry, chestnut, elm, gum, hickory, ironwood, oak, and a few others not specified. The principal softwood is the longleaf pine, although other resinous woods have been used in limited quantities.

TABLE 12.—WOOD CONSUMED IN DISTILLATION, BY STATES: 1919.

STATE.	Number of estab- lish- ments.	QUANTITY.		Cost.	Av- erage cost per cord.
		Cords.	Per cent distri- bution.		
Total.....		1,442,675	.....	\$9,559,046	\$6.63
Hardwoods.....	87	1,186,477	100 0	7,965,089	6.71
Michigan.....	15	648,910	54.7	4,307,797	6.64
Pennsylvania.....	42	281,320	23.7	1,882,795	6.69
New York.....	20	104,493	8.8	747,882	7.16
Wisconsin.....	3	60,544	5.1	519,131	8.57
All other states ¹	7	91,210	7.7	507,464	5.56
Softwoods.....	25	256,198	100 0	1,593,977	6.22
Georgia.....	7	103,964	40.6	561,576	5.40
Florida.....	6	86,065	33.6	618,743	7.19
Alabama.....	3	41,416	16.2	264,912	6.40
Louisiana ²	4	18,005	7.0	95,788	5.32
All other states ³	5	6,748	2.6	52,958	7.85

¹ All other states embrace: Alabama, 1 establishment; Connecticut, 1; Kentucky, 1; Mississippi, 1; Missouri, 1; Tennessee, 1; and West Virginia, 1.

² Includes 1 establishment distilling sawdust.

³ All other states embrace: Michigan, 1 establishment; Mississippi, 1; North Carolina, 2; and Texas, 1.

Products.—Table 13 gives comparative statistics of products for the years 1919, 1914, 1909, and 1904. The principal basic products obtained from the hardwoods by distillation are crude wood alcohol, charcoal, acetate, tar, and tar oils, and the quantity of each that a cord of wood will yield depends largely on the kind and efficiency of the equipment used. Many of the plants are converting their primary products into more highly manufactured forms and some products that were wasted in the early stages of the industry are now saved. Of the crude wood alcohol produced, 6,980,693 gallons were produced for sale and 2,123,303 gallons were consumed by the establishments reporting in the manufacture of refined wood alcohol and other derived products, such as formaldehyde, acetone, methyl

acetone, ketone, etc. A considerable portion of the charcoal—26 per cent in 1919—was the product of plants operated in conjunction with charcoal iron blast furnaces, in Michigan, Wisconsin, and Connecticut.

TABLE 13.—DETAILED STATISTICS OF QUANTITY AND VALUE: 1919, 1914, 1909, AND 1904.

PRODUCT.	1919	1914	1909	1904
Total value.....	\$32,625,305	\$10,520,820	\$10,312,657	\$9,637,313
The wood-distillation industry.....	\$32,545,314	\$10,882,537	\$9,736,998	\$7,813,483
Subsidiary wood-distillation products of other industries.....	\$79,991	\$647,292	\$575,650	\$1,223,830
Wood alcohol:				
Crude, gallons.....	9,103,906	9,602,431	9,307,583	8,282,286
For sale—				
Gallons.....	6,980,693	7,196,975	6,772,700	6,814,258
Value.....	\$5,593,509	\$1,605,880	\$1,774,450	\$2,201,061
Average unit value, gallon.....	\$0.80	\$0.22	\$0.26	\$0.32
Made and consumed, gallons.....	2,123,303	2,405,456	2,534,883	1,468,028
Refined, gallons.....	7,391,010	6,404,955		
For sale—				
Gallons.....	6,984,668	6,235,113	6,732,877	5,917,153
Value.....	\$5,381,863	\$2,700,369	\$3,006,808	\$3,455,625
Average unit value, gallon.....	\$1.20	\$0.43	\$0.40	\$0.58
Made and consumed, gallons.....	406,342	220,842	(1)	(1)
Acetate of lime, pounds.....	108,956,432	166,084,523	(1)	(1)
For sale—				
Pounds.....	153,910,340	163,521,577	141,478,296	110,383,097
Value.....	\$2,682,232	\$2,138,000	\$2,118,443	\$1,527,733
Average unit value, pound.....	1.74 cents.	1.31 cents.	1.5 cents.	1.4 cents.
Made and consumed, pounds.....	15,046,083	2,502,046	(1)	(1)
Acetate of soda:				
Pounds.....	9,175	(1)	(1)	(1)
Value.....	\$908	(1)	(1)	(1)
Acetone:				
Pounds.....	3,015,507	(1)	(1)	(1)
Value.....	\$352,212	(1)	(1)	(1)
Acetone oil:				
Gallons.....	42,281	(1)	(1)	(1)
Value.....	\$52,499	(1)	(1)	(1)
Acetic acid:				
Pounds.....	4,180,583	(1)	(1)	(1)
Value.....	\$392,397	(1)	(1)	(1)
Methyl acetone:				
Pounds.....	930,253	(1)	(1)	(1)
Value.....	\$134,166	(1)	(1)	(1)
Ketone:				
Pounds.....	269,984	(1)	(1)	(1)
Value.....	\$52,141	(1)	(1)	(1)
Formaldehyde:				
Pounds.....	5,865,007	(1)	(1)	(1)
Value.....	\$1,121,999	(1)	(1)	(1)
Tar, gallons.....	2,677,881	2,965,354	(1)	(1)
For sale—				
Gallons.....	2,143,157	1,470,797	1,570,257	(1)
Value.....	\$481,820	\$145,084	\$113,225	(1)
Made and consumed, gallons.....	534,724	1,488,557	(1)	(1)
Tar oils:				
Gallons.....	803,440	(1)	(1)	(1)
Value.....	\$240,805	(1)	(1)	(1)
Wood creosote:				
Pounds.....	1,152,655	2,073,057	2,549,190	(1)
Value.....	\$31,957	\$38,872	\$34,645	(1)
Turpentine:				
Gallons.....	1,534,333	575,557	706,808	442,185
Value.....	\$1,207,739	\$194,183	\$249,526	\$176,621
Resin:				
Barrels (280 pounds).....	234,030	51,825	(1)	(1)
Value.....	\$2,742,552	\$108,165	(1)	(1)
Charcoal:				
Total production, bushels.....	48,056,445	(1)	(1)	(1)
For sale—				
Bushels.....	35,594,160			
Value.....	\$5,304,638			
Blast furnace consumption—				
Bushels.....	12,455,052	44,827,836	39,052,235	20,917,212
Value.....	\$2,916,737	\$2,829,571	\$2,428,648	\$1,487,165
Made and consumed, bushels.....	161,285	(1)	(1)	(1)
Other wood-distillation products, value.....	\$412,541	\$441,399	\$231,192	\$138,481
All other products, value.....	\$552,590	\$227,497	\$207,711	\$49,827

¹ Figures not available.

Products, by principal states.—Table 14 shows the production of the principal products, by states, for 1919 and 1914.

TABLE 14.—PRODUCTS, BY PRINCIPAL STATES; 1919 AND 1914

	1919		1914	
	Quantity.	Value.	Quantity.	Value.
Wood alcohol, refined (for sale).....	Gallons.		Gallons.	
Michigan.....	6,984,668	\$8,381,863	6,235,113	\$2,709,369
All other states.....	1,580,282	1,700,421	1,570,658	588,908
	5,404,386	6,591,442	4,664,455	2,120,461
Wood alcohol, crude (for sale).....				
Pennsylvania.....	6,980,693	5,593,509	7,196,975	1,605,880
Michigan.....	2,529,420	1,900,805	4,235,636	904,700
All other states.....	2,282,790	1,831,729	1,593,134	364,507
	2,171,474	1,754,975	1,598,205	336,673
Acetate of lime.....	Pounds.		Pounds.	
Michigan.....	153,910,340	2,682,232	163,521,577	2,138,000
Pennsylvania.....	64,611,564	1,900,495	57,756,234	718,753
All other states.....	52,322,435	909,337	77,140,287	1,043,636
	36,976,350	682,399	28,625,056	376,520
Charcoal.....	Bushels.		Bushels.	
Pennsylvania.....	35,594,160	5,304,638	44,827,836	2,829,571
Michigan.....	12,370,527	1,858,620	17,726,774	1,318,109
All other states.....	11,730,953	1,746,597	19,152,454	960,414
	11,474,680	1,690,421	7,948,608	551,018

Equipment.—Table 15 presents the statistics for equipment, retorts, ovens, kilns, and steam extractors, by states, for 1919. The wood-distillation industry has gone through several stages of development since it was established in the United States.

Brickkilns were first employed to recover the condensable gases which were lost in burning charcoal in pits. This kind of equipment is still being used, but a great step forward was made when the use of cylindrical iron retorts, built in pairs, was inaugurated. Large rectangular ovens or retorts represent a still later improvement, and these are being installed in many of the larger plants in place of the iron retorts.

TABLE 15.—EQUIPMENT: 1919.

STATE.	RETORTS AND OVENS.		KILNS.		STEAM EXTRACTORS.	
	Number.	Total capacity, cords per day.	Number.	Total capacity, cords per charge.	Number.	Total capacity, cords per day.
United States.....	1,087	5,148	167	10,070	132	870
Hardwood distillation.....	860	4,614	167	10,070		
Michigan.....	180	1,282	130	8,200		
New York.....	235	605				
Pennsylvania.....	373	1,908	12	120		
Wisconsin.....	10	82	25	1,750		
All other states ¹	62	587				
Softwood distillation.....	207	534			132	870
Alabama.....	20	10			60	150
Florida.....	29	100			40	80
Georgia.....	76	306			22	363
Louisiana.....	32	40			8	17
All other states ²	50	78			2	20

¹ Includes Alabama, Connecticut, Kentucky, Mississippi, Missouri, Tennessee, and West Virginia.

² Includes Michigan, Mississippi, North Carolina, and Texas.

GENERAL TABLES.

Table 16 gives the comparative statistics for the principal items, number of establishments, average number of wage earners, primary horsepower, wages,

cost of materials, and value of products for the census years 1919, 1914, and 1909. Table 17 is a detailed statement, by states, for the census of 1919.

TABLE 16.—COMPARATIVE SUMMARY, BY STATES: 1919, 1914, AND 1909.

STATE.	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earn- ers (aver- age num- ber).	Pri- mary horse- power.	Wages.	Cost of mater- ials.	Value of prod- ucts.	STATE,	Cen- sus year.	Num- ber of estab- lish- ments.	Wage earn- ers (aver- age num- ber).	Pri- mary horse- power.	Wages.	Cost of mater- ials.	Value of prod- ucts.
					Expressed in thousands.								Expressed in thousands.		
United States.....	1919	115	4,916	15,938	\$5,310	\$20,000	\$32,545	Pennsylvania.....	1919	44	1,211	2,569	\$1,273	\$3,254	\$5,542
	1914	95	2,782	10,045	1,565	6,496	8,883		1914	46	1,185	2,514	682	2,218	3,417
	1909	120	2,721	9,854	1,463	5,876	9,737		1909	50	933	1,749	522	1,684	2,960
Michigan.....	1919	16	1,586	5,985	1,988	5,793	10,651	All other states.....	1919	55	2,149	7,784	2,049	11,013	16,352
	1914	10	645	2,644	415	1,708	2,678		1914	39	952	4,887	468	2,570	3,788
	1909	12	806	5,012	504	1,155	2,399		1909	58	982	3,093	437	3,037	4,578

TABLE 17.—DETAILED STATEMENT FOR THE INDUSTRY, BY STATES: 1919.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.									WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.						EXPENSES.		
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.				16 and over.		Under 16.		Capital.	Salaries and wages.			
					Male.	Female.	Average number.	Number, 15th day of—		Male.	Female.	Male.	Female.	Officials.		Clerks, etc.			
								Maximum month.	Minimum month.										
United States....	115	5,634	28	371	204	85	4,946	Ja 5,838	Je 4,246	5,463	5,437	26	.....	\$42,334,503	\$950,476	\$372,091		
Alabama.....	4	188	.....	17	10	6	155	No 192	Ap 136	184	182	2	.....	660,446	33,687	19,374	
Florida.....	6	470	.....	32	26	9	412	De 503	Ja 346	346	346	.....	.....	1,838,182	91,009	42,670
Louisiana.....	4	91	.....	10	1	2	78	De 1 79	Ja 1 77	79	79	.....	.....	217,800	29,715	2,500
Michigan.....	16	1,764	.....	72	69	37	1,586	Fe 1,773	Je 1,444	1,591	1,591	.....	.....	15,381,952	210,463	153,926
Pennsylvania.....	44	1,401	16	126	31	17	1,211	Ja 1,559	Je 937	1,475	1,473	2	.....	9,821,100	263,250	39,655		
All other states ²	41	1,711	12	114	67	14	1,504	.....	.....	1,788	1,766	22	.....	14,385,023	322,352	113,966

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.						
	Salaries and wages—Con.	For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.	
			Rent of factory.	Taxes, Federal, state, county, and local.	Principal materials.	Fuel and rent of power.			Total.	Owned.					
										Steam engines (not turbines).	Steam turbines.	Internal-combustion engines.	Water power. ²		Rent. ⁴
United States....	\$5,309,680	\$327,473	\$22,638	\$1,237,687	\$17,772,430	\$2,287,221	\$32,545,314	\$12,485,663	15,938	10,254	2,482	810	109	2,283	3,278
Alabama.....	145,200	.....	.....	9,034	353,003	25,926	780,475	401,540	411	308	.....	.....	.....	103	.....
Florida.....	400,086	.....	.....	28,050	966,441	129,066	2,004,931	909,424	1,837	1,731	62	44	.....	.....	392
Louisiana.....	82,040	.....	.....	41,042	314,633	21,452	629,022	292,937	82	80	.....	2	.....	.....	60
Michigan.....	1,988,414	207,213	600	587,044	5,056,143	737,305	10,651,181	4,857,733	5,985	3,829	150	.....	.....	2,006	570
Pennsylvania.....	1,273,417	50,993	10,133	374,851	2,604,226	649,699	5,542,215	2,288,290	2,569	1,657	35	699	104	74	424
All other states ²	1,420,532	9,267	10,990	197,606	8,477,984	723,773	12,937,490	3,735,733	5,054	2,649	2,235	65	5	100	1,832

¹ Same number reported for one or more other months.

² All other states embrace: Georgia, 7 establishments; Kentucky, 1; Mississippi, 2; Missouri, 1; New Jersey, 1; New York, 21; North Carolina, 2; Tennessee, 1; Texas, 1; West Virginia, 1; Wisconsin, 3.

³ Includes water wheels and turbines (irrespective of ownership of water supply).

⁴ Chiefly electric motors operated by rented (or purchased) current; other power included (chiefly shaft-belt or transmitted power from neighboring power plants).