

MANUFACTURES : VIRGINIA

STATISTICS OF MANUFACTURES FOR THE STATE, CITIES, AND INDUSTRIES

Prepared under the supervision of W. M. STEUART, Chief Statistician for Manufactures

INTRODUCTION.

This advance bulletin gives the statistics of manufactures for the state of Virginia for the calendar year 1909 as shown by the Thirteenth Census. It will be reprinted without change as a part of the Compendium of the Census for Virginia, and in the final reports of the Thirteenth Census.

The text summarizes the general results of the census inquiry, presenting a series of special tables in which the main facts printed in the general tables are given in convenient form for the state as a whole and for important industries. It also presents tables in which the statistics for the industries of the state as a whole and for a few important industries are classified by character of ownership, size of establishments, number of wage earners, and prevailing hours of labor, information which could not be presented in general tables for each industry without disclosing the facts for individual establishments.

At the end of the bulletin are two general tables.

Table I gives for 1909, 1904, and 1899 the number of establishments and of persons engaged in the industries, primary power, capital, salaries and wages, cost of materials, value of products, and value added by manufacture reported for all industries combined and for certain important industries (1) for the state as a whole and (2) for the cities of Richmond and Norfolk. It also gives the same items for all industries combined for every city having in 1910 a population of over 10,000 but less than 50,000.

Table II gives statistics in detail for 1909 for the state and for a larger number of industries.

Scope of census: Factory industries.—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 organization, location of establishments, size of establishments, labor force, and similar subjects. When use is made of the data for these purposes, it is imperative that due attention should be given to the limitations of the figures. Particularly is this true when the attempt is made to derive from them figures purporting to show average wages, cost of production, or profits. These limitations will be fully discussed in the general report on manufactures for the United States as a whole. It is impossible to reproduce such discussion in the bulletins relative to the individual states.

The census of 1909, like that of 1904, was confined to manufacturing establishments conducted under the factory system, as distinguished from the neighborhood, hand, and building industries. Where statistics for 1899 are given they have been reduced to a

comparable basis by eliminating the latter classes of industries. The census does not include establishments which were idle during the entire year, or had a value of products of less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions, or in governmental establishments, except those of the Federal Government.

Period covered.—The returns cover the calendar year 1909, or the business year which corresponds most nearly to that calendar year. The statistics cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—The term "establishment" comprises the factories, mills, or plants which are under a common ownership or control, and for which one set of books of account is kept.

If, however, the plants constituting an establishment as thus defined were not all located within the same city or state, separate reports were secured in order that the separate totals might be included in the statistics for each city or state. 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 very different from those covered by the class designation, and, on the other hand, may not include the total product covered by this designation, because some part of this product may be made in establishments in which it is not the product of chief value.

Selected industries.—The general tables at the end of this bulletin give the principal facts separately for the industries of the state. A selection has been made of the leading industries of the state for more detailed consideration. Sometimes an industry of greater importance than some of those selected is omitted because it comprises so few establishments that these detailed presentations would reveal the operations of individual concerns.

Comparisons with previous censuses.—Owing to the changes in industrial conditions it is not always possible to classify establishments by industries in such a way as to permit accurate comparison with preceding censuses. Table I, giving comparable figures for 1909, 1904, and 1899, therefore, does not embrace all the industries shown for 1909 in Table II.

Influence of increased prices.—In considering changes in cost of materials, value of products, and value added by manufacture, 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 can not be taken as an exact measure of increase in the volume of business.

Persons engaged in industry.—At the censuses of 1909, 1904, and 1899 the following general classes of persons engaged in manufacturing industries have been distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks, and (5) wage earners. In the censuses of 1904 and 1899 these five classes were shown according to the three main groups: (1) Proprietors and firm members, (2) salaried officials, clerks, etc., and (3) wage earners. The second group included the three classes of salaried officers of corporations, superintendents and

managers, and clerks. In the present census an entirely different grouping is employed: That into (1) proprietors and officials, (2) clerks, and (3) wage earners. The first group includes proprietors and firm members, salaried officers of corporations, and superintendents and managers.

At this census the number of persons engaged in the industries, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for December 15, or the nearest representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where conditions were exceptional, and particularly in the case of certain seasonal industries, such as canning, the December date could not be accepted as typical, and an earlier date had to be chosen.

In the case of employees other than wage earners the number thus reported on December 15, or other representative day, has been treated as equivalent to the average for the year, since the number of employees of this class does not vary much from month to month in a given industry. In the case of wage earners the average is obtained in the manner explained in the next paragraph.

Wage earners.—In addition to the report by sex and age of the number of wage earners on December 15, or other representative day, a report was obtained of the number employed on the 15th of each month, without distinction of sex or age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported each month by 12. The average thus obtained represents the number of wage earners that would be required to perform the work done if all were constantly employed during the entire year. Accordingly, the importance of any 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 for each separate industry, is not totaled for all industries combined, because in view of the variations of date such a total is believed not 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 particular, totals by sex and age for the wage earners reported for the representative day would be misleading because of the undue weight given to seasonal industries, in some of which, such as canning and preserving, the distribution of the wage earners by sex and age is materially different from that in most industries of more regular operation. In order to determine as nearly as possible the sex and age distribution of the average number of wage earners in the state as a whole, the following procedure has been adopted:

The percentage distribution by sex and age of the wage earners in each industry, for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. This percentage has been applied to the average number of wage earners for the year in that industry, to determine the average number of men, women, and children employed. These calculated averages for the several industries have been added up to give the average distribution for the state as a whole.

In 1899 and 1904 the schedule called for the average number of wage earners of each sex 16 years and over, and the total number under 16 years of age, for each month, and these monthly statements were combined in an annual average. Comparatively few manufacturing concerns, however, keep their books in such way as to show readily the number of men, women, and children (under 16) employed each month. These monthly returns by sex and age were, in fact, largely estimates. It was believed that a more accurate and reliable sex and age distribution could be secured by taking as a basis of estimate the actual numbers employed on a single day.

Prevailing hours of labor.—The census made no attempt to ascertain the number of employees 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 period to another are disregarded, and no attention is given to the fact that a limited number of employees may have hours differing from those of the majority. In the tables all the wage earners of each establishment are counted in the class within which the establishment itself falls. In most establishments, however, all or practically all the employees work the same number of hours, so that these figures give a substantially correct picture of the hours of labor in manufacturing industries.

Capital.—For reasons stated in prior census reports, the statistics of capital secured by the census canvass are so defective as to be without value, except as indicating very general conditions. The instructions on the schedule for securing 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 as 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.

Materials.—Cost of materials refers to the materials used during the year, which may be more or less than the materials purchased during the year. The term materials includes fuel, rent of power and heat, mill supplies, and containers, as well as materials forming a constituent part of the product. Fuel includes all fuel used, whether for heat, light, or power, or for the process of manufacture.

Expenses.—Under "Expenses" are included all items of expense incident to the year's business, except interest, whether on bonds or other forms of indebtedness, and allowances for depreciation.

Value of products.—The value of products for any industry includes the total value of all products manufactured in establishments whose products of chief value fall under the industry designation. The amounts given represent the selling value at the factory of all products manufactured during the year, which may differ from the value of the products sold. Amounts received for work on materials furnished by others are included.

Value added by manufacture.—The value of products is not 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 process carried on in the industry itself. Another part of it, and often by far the larger part, represents the value of the materials used, which have been produced by agriculture or mining or by other industrial establishments. For many purposes, therefore, the best measure of the importance of different classes of industry is the value created as the result of the manufacturing operations carried on within the industry. This value is obtained by deducting the cost of the materials consumed from the value of the product. The figure thus obtained is termed in the census reports "value added by manufacture."

There is a further statistical advantage which "value added" has over gross value of products. In combining the value of products for all industries the value of products produced by one establishment and used as materials in another is duplicated, and the total, therefore, gives a greatly exaggerated idea of the wealth created. No such duplication takes place in the total "value added by manufacture."

Cost of manufacture and profits.—Census data do not show the entire cost of manufacture, and consequently can not be used to show profits. No account has been taken of interest and depreciation. Even if the amount of profit could be determined by deducting the expenses from the value of the products, the rate of profit on the investment could not properly be calculated, because of the very defective character of the returns regarding capital.

Primary power.—The figures given for this item show the total of the primary power used by the establishments. They do not cover the power developed by motors operated by such power, the inclusion of which would evidently result in duplication.

Location of establishments.—The Census Bureau has classified establishments by their location in cities or classes of cities. In

interpreting these figures due consideration should be given to the fact that often establishments are located just outside the boundaries of cities, and are necessarily so classified, though locally they are looked upon as constituting a part of the manufacturing interests of the cities.

Laundries.—The census of 1909 was the first to include statistics of laundries. The reports are confined to establishments using

mechanical power. The data are presented separately and are not included in the general total for manufacturing industries, in order to avoid interference with comparisons with prior censuses.

Custom sawmills and gristmills.—In order to make the statistics for 1909 comparable with those for 1904 the data for these mills have been excluded from all the tables presenting general statistics, and are given in a separate table at the end of this report.

INDUSTRIES IN GENERAL.

General character of the state.—Virginia, with a gross area of 42,627 square miles, of which 2,365 represent water surface, ranks thirty-third in size among the states of the Union. Its population in 1910 was 2,061,612, as compared with 1,854,184 in 1900 and 1,655,980 in 1890. It ranked twentieth among the 49 states and territories in population in 1910 and seventeenth in 1900. The density of population per square mile was 51.2 in 1910, 46.1 in 1900, and 41.1 in 1890. Richmond, with a population of 127,628, and Norfolk, with 67,452, were the only cities in the state having over 50,000 inhabitants in 1910, but there were eight other cities which in 1910 had a population of over 10,000. These cities, named in the order of size, were: Roanoke, Portsmouth, Lynchburg, Petersburg, Newport News, Danville, Alexandria, and Staunton. Twenty-three and one-tenth per cent of the entire population of the state in 1910 resided in cities and incorporated towns of 2,500 inhabitants or over as against 17.6 per cent in 1900.

The state has excellent transportation facilities, both by rail and by water, its coal fields produce an abundance of fuel, and its iron mines, its forests, and its tobacco and cotton fields, together with those of

neighboring states, afford an abundance of raw materials, while many of its streams afford excellent water power. These natural advantages are all favorable to the development of manufacturing in the state.

Importance and growth of manufactures.—Considering Virginia's many advantages for the economical operation of factories and disposition of products, the state does not occupy as high a position in manufactures as might be expected. In 1889 it ranked twenty-first among the states in value of manufactured products and in both 1899 and 1909, twenty-second. There has been a considerable advance, however, during recent years in the activities of most of the manufacturing industries of the state, the number of establishments, average number of wage earners, and value of products showing marked increases. Virginia reported 1 per cent of the total value of the products of the manufacturing industries in the United States in 1899 as against 1.1 per cent in 1909.

The following table gives the most important figures relative to all classes of manufactures combined for the state as returned at the censuses of 1909, 1904, and 1899, together with the percentages of increase from census to census:

	NUMBER OR AMOUNT.			PER CENT OF INCREASE.	
	1909	1904	1899	1904-1909	1899-1904
Number of establishments.....	5,685	3,187	3,180	78.4	(1)
Persons engaged in manufactures.....	120,797	88,898	(2)	35.9	(2)
Proprietors and firm members.....	6,570	3,643	(2)	80.3	(2)
Salaried employees.....	3,551	4,970	3,828	72.1	29.8
Wage earners (average number).....	105,676	80,285	66,223	31.6	21.2
Primary horsepower.....	283,928	176,998	136,696	60.4	29.5
Capital.....	\$216,392,000	\$147,989,000	\$92,300,000	46.2	60.3
Expenses.....	196,246,000	130,870,000	94,513,000	50.0	38.5
Services.....	47,255,000	32,818,000	23,904,000	44.0	37.3
Salaries.....	9,101,000	4,875,000	3,630,000	86.7	34.3
Wages.....	38,154,000	27,943,000	20,274,000	36.5	37.8
Materials.....	125,583,000	83,649,000	59,359,000	50.1	40.9
Miscellaneous.....	23,408,000	14,403,000	11,250,000	62.5	28.0
Value of products.....	219,794,000	148,857,000	108,644,000	47.7	37.0
Value added by manufacture (value of products less cost of materials).....	94,211,000	65,208,000	49,285,000	44.5	32.3

¹ Less than one-tenth of 1 per cent.

² Figures not available.

In 1909 the state of Virginia had 5,685 manufacturing establishments, which gave employment to an average of 120,797 persons during the year and paid out \$47,255,000 in salaries and wages. Of the persons employed, 105,676 were wage earners. These establishments turned out products to the value of \$219,794,000, to produce which materials costing

\$125,583,000 were used. The value added by manufacture was thus \$94,211,000, which figure, as explained in the Introduction, best represents the net wealth created by the manufacturing operations during the year.

The totals presented in the preceding table do not include the statistics for an establishment operated by

the Federal Government, the United States navy yard at Portsmouth. In 1909 this plant employed an average of 2,471 wage earners, and the value of the work done, which was almost exclusively repair work, was reported as \$3,174,473.

In general, this table brings out the fact that the manufacturing industries of Virginia as a whole showed a greater development during the more recent five-year period, 1904-1909, than during the preceding five-year period, 1899-1904. During the later period the number of establishments increased 78.4 per cent and the average number of wage earners 31.6 per cent, while the value of products increased 47.7 per cent and the value added by manufacture 44.5 per cent. As pointed out in the Introduction, it would be improper

to infer that manufactures increased in volume to the full extent indicated by these figures regarding values, since the increase shown is certainly due, in part, to the increase that has taken place in the prices of commodities.

The exceptionally high increase shown in the number of establishments between 1904 and 1909 was due largely to the more complete canvass of the lumber and timber products industry in the latter year, the number of establishments reported for this industry increasing from 938 in 1904 to 2,617 in 1909.

The relative importance and growth of the leading manufacturing industries of the state are shown in the following table:

INDUSTRY.	Number of establishments.	WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.		PER CENT OF INCREASE. ¹			
		Average number.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.	Value of products.		Value added by manufacture.	
								1904-1909	1899-1904	1904-1909	1899-1904
All industries	5,085	105,676	100.0	\$219,704,000	100.0	\$94,211,000	100.0	47.7	37.0	44.5	32.3
Lumber and timber products.....	2,617	33,287	31.5	35,855,000	16.3	21,963,000	23.3	91.5	23.1	85.6	41.5
Tobacco manufactures.....	104	7,882	7.5	25,385,000	11.5	14,196,000	15.1	51.4	7.8	40.5	-1.7
Flour-mill and gristmill products.....	458	1,014	1.0	17,598,000	8.0	2,434,000	2.6	27.2	54.7	46.5	13.0
Cars and general shop construction and repairs by steam-railroad companies.....	28	7,588	7.2	9,950,000	4.5	4,701,000	5.0	14.5	38.5	14.2	49.9
Leather, tanned, curried, and finished.....	39	1,599	1.5	8,297,000	3.8	1,822,000	1.9	41.8	24.6	64.0	8.8
Fertilizers.....	45	1,956	1.8	8,035,000	3.7	2,046,000	2.8	72.5	30.4	86.0	13.0
Peanuts, grading, roasting, cleaning, and shelling.....	25	1,516	1.4	7,933,000	3.6	807,000	0.9	12.4		-10.9	
Cotton goods, including cotton small wares.....	10	5,057	4.8	7,490,000	3.4	2,791,000	3.0	67.0	68.9	65.9	35.3
Boots and shoes, including cut stock and findings.....	10	2,711	2.6	5,899,000	2.6	1,789,000	1.9				
Foundry and machine-shop products.....	110	2,798	2.7	5,727,000	2.6	2,579,000	2.7	68.8		29.7	
Iron and steel, blast furnaces.....	14	1,320	1.2	5,389,000	2.5	971,000	1.0	61.2	-48.6	55.1	-70.6
Printing and publishing.....	369	2,555	2.4	5,370,000	2.4	3,905,000	4.2	52.5	40.9	56.6	37.7
Slaughtering and meat packing.....	24	342	0.3	4,001,000	2.1	544,000	0.6	130.5		117.6	
Paper and wood pulp.....	9	912	0.9	3,657,000	1.7	1,509,000	1.6	20.5	256.9	21.2	183.6
Leather goods.....	31	1,487	1.4	3,492,000	1.6	1,591,000	1.7	64.7	113.5	63.7	96.8
Bread and other bakery products.....	135	870	0.8	2,706,000	1.3	1,045,000	1.1	72.2	74.2	61.7	21.4
Carrriages and wagons and materials.....	130	1,329	1.3	2,455,000	1.1	1,202,000	1.3	8.4	-44.5	6.7	22.9
Hosiery and knit goods.....	11	1,715	1.6	2,465,000	1.1	996,000	1.1	16.8	40.7	27.4	11.7
Coke.....	16	1,425	1.4	2,410,000	1.1	598,000	0.6	28.2	75.7	-14.8	77.2
Cooperage and wooden goods, not elsewhere specified.....	118	1,566	1.5	2,069,000	0.9	958,000	1.0	20.6	59.6	30.2	39.9
Brick and tile.....	86	2,090	2.0	1,922,000	0.9	1,412,000	1.5	6.5	79.3	2.7	69.5
Canning and preserving.....	325	1,800	1.8	1,854,000	0.8	646,000	0.7	52.2	92.4	50.0	81.2
Clothing, men's, including shirts.....	23	1,160	1.1	1,819,000	0.8	659,000	0.7	59.3	105.4	31.8	104.9
Liquors, malt.....	6	354	0.3	1,616,000	0.7	1,205,000	1.3	34.6	23.4	42.6	20.1
Liquors, distilled.....	65	126	0.1	1,572,000	0.7	1,339,000	1.4	204.7	67.7	285.9	73.5
Confectionery.....	33	341	0.3	1,525,000	0.7	422,000	0.4	121.7	55.3	67.2	58.5
Gas, illuminating and heating.....	21	378	0.4	1,472,000	0.7	1,041,000	1.1	50.2	102.0	49.8	97.4
Furniture and refrigerators.....	34	990	0.9	1,438,000	0.7	714,000	0.8	79.1	277.0	60.6	234.1
Marble and stone work.....	70	1,585	1.5	1,308,000	0.6	955,000	1.0	110.5	6.1	124.7	6.2
Ice, manufactured.....	74	475	0.4	1,139,000	0.5	875,000	0.9	79.7	48.6	88.6	44.1
Wood preserving.....	5	222	0.2	1,078,000	0.5	390,000	0.4	206.2		267.0	
Woolen, worsted, and felt goods, and wool hats.....	16	542	0.5	999,000	0.4	432,000	0.5	-20.1	60.0	-11.8	108.1
Lime.....	35	716	0.7	856,000	0.4	556,000	0.6	72.2		112.2	
Patent medicines and compounds and druggists' preparations.....	41	212	0.2	812,000	0.4	507,000	0.5				
Stoves and furnaces, including gas and oil stoves.....	9	363	0.3	683,000	0.3	441,000	0.5	27.2		23.9	
Glass.....	5	524	0.5	682,000	0.3	431,000	0.5	24.2		13.4	
Agricultural implements.....	16	272	0.3	516,000	0.2	272,000	0.3	27.7	17.8	22.5	3.3
Boxes, fancy and paper.....	10	558	0.5	413,000	0.2	200,000	0.3	27.5	-48.7	18.7	-32.0
Paint and varnish.....	8	53	(?)	345,000	0.2	157,000	0.2				
Mattresses and spring beds.....	18	103	0.1	244,000	0.1	115,000	0.1	68.3	6.8	125.5	-16.4
All other industries.....	482	13,832	13.1	30,730,000	14.0	12,275,000	13.0				

¹ Percentages are based on figures in Table I, and a minus sign (-) denotes decrease. Where the percentages are omitted, comparable figures can not be given.

² Less than one-tenth of 1 per cent.

It should be borne in mind, in considering this table, that the value of products for some of the industries involves a certain amount of duplication due to the use of the products of one establishment in the industry as material for another establishment.

Although a few industries greatly predominate in importance, it will be seen from Table II that there is

on the whole considerable diversity in the manufacturing activities of the state. The most important industries listed in the table given above, in which they are arranged in the order of the value of products, call for brief consideration.

Lumber and timber products.—Under this heading are included logging operations, sawmills, planing

mills, and wooden packing-box factories. The industry embraced 2,617 establishments in 1909, or 46 per cent of the total for all manufacturing industries of the state, gave employment to nearly one-third of the total number of wage earners in such industries, and reported nearly one-sixth of the total value of manufactured products and nearly one-fourth of the total value added by manufacture. From 1899 to 1909 the average number of wage earners increased 129.9 per cent, and the value of products and the value added by manufacture 135.6 per cent and 162.7 per cent, respectively.

Tobacco manufactures.—This industry includes the manufacture of chewing tobacco, smoking tobacco, cigars and cigarettes, and snuff. The 104 establishments reported for the industry in 1909 gave employment to 7.5 per cent of the total number of wage earners in all manufacturing industries in the state and reported 11 per cent of the total value of manufactured products and 15.1 per cent of the total value added by manufacture. The industry shows an increase of 51.4 per cent in value of products and 40.5 per cent in value added by manufacture from 1904 to 1909, as compared with an increase of only 7.8 per cent in the former and a decrease of 1.7 per cent in the latter for the preceding five years.

Flour-mill and gristmill products.—This industry gave employment to 1,014 wage earners and reported products valued at \$17,598,000, although of this amount only \$2,434,000 represents the value added to the materials by the manufacturing processes. This comparatively small excess of the value of products over the cost of materials is due to the fact that the processes involved in this industry are comparatively simple and are to a large extent carried on by machinery. These conditions, together with the large proportion of small establishments operated by individuals, also account for the relatively small number of wage earners employed as compared with the value of products. The statistics do not include those for mills doing custom work only, which are presented separately on page 17.

Cars and general shop construction and repairs by steam-railroad companies.—This industry represents the work done in the car shops operated by steam-railroad companies and is almost exclusively confined to repairs on the rolling stock and equipment of the roads which they operate; it does not, however, cover minor repairs in roundhouses. The industry gave employment to an average of 7,588 wage earners in 1909, and the value of its products amounted to \$9,956,000.

Leather, tanned, curried, and finished.—Measured by value of products, this industry ranked fifth in importance among the manufacturing industries of the state in 1909. Although the number of tanneries decreased from 44 to 39 during the five-year period 1904 to 1909, the average number of wage earners

increased 535, or 50.7 per cent, and the value of products \$2,437,000, or 41.8 per cent.

Fertilizers.—The manufacture of fertilizers is an important industry in Virginia, the state ranking fourth among the states of the Union in the value of this class of products. The statistics gathered from the establishments engaged primarily in the manufacture of such products do not fully represent the magnitude of the industry, as some establishments engaged chiefly in the manufacture of other products use their by-products in the manufacture of fertilizers. The average number of wage earners employed in this industry in Virginia was 1,956 in 1909 and 1,801 in 1904. Products to the value of \$8,035,000 were reported in 1909, the industry holding sixth place among the manufacturing industries of the state in this respect.

Peanuts, grading, roasting, cleaning, and shelling.—This industry is largely centered in Virginia, which reported 81.5 per cent of the total value of products for the industry in the United States in 1909 and 97.2 per cent in 1904. In 1909, 25 establishments, giving employment to an average of 1,516 wage earners and reporting products valued at \$7,933,000, were engaged in this industry in the state.

Textiles.—The manufacture of cordage and twine and jute goods, cotton goods, hosiery and knit goods, silk and silk goods, including the operations of throwsters; and woolen goods constitute the textile industry of the state. The statistics for the manufacture of cordage and twine and jute goods and of silk and silk goods are not shown in the preceding table because comparative figures can not be given, but are shown in Table II (p. 22), in which statistics for 1909 only are presented. Combined the five allied industries included 47 establishments in 1909, gave employment to 8,221 wage earners, and reported products valued at \$12,708,000. Of the combined value of products for these industries, the cotton-goods industry contributed 58.9 per cent; the hosiery and knit-goods industry, 19.4 per cent; the silk and silk-goods industry, 12.1 per cent; the woolen-goods industry, 7.9 per cent; and the manufacture of cordage and twine and jute goods, 1.7 per cent.

In addition to the 40 industries presented separately in the preceding table, there are 24 other industries in the state which had a value of products in 1909 in excess of \$200,000.¹ These are included under the

¹ These industries are:

Bags, other than paper.	Iron and steel, steel works and rolling mills.
Bags, paper.	Liquors, vinous.
Baking powders and yeast.	Locomotives, not made by railroad companies.
Cement.	Mineral and soda waters.
Chemicals.	Oil, cottonseed, and cake.
Coffee and spice, roasting and grinding.	Shipbuilding, including boat building.
Copper, tin, and sheet-iron products.	Silk and silk goods, including throwsters.
Cordage and twine and jute and linen goods.	Smelting and refining, copper.
Dyestuffs and extracts.	Smelting and refining, zinc.
Flavoring extracts.	Sulphuric, nitric, and mixed acids.
Grease and tallow.	Vinegar and cider.
Iron and steel, doors and shutters.	
Iron and steel forgings.	

head of "All other industries" in the table in some cases because the operations of individual establishments would be disclosed if they were shown separately; in others because the returns do not properly present the true condition of the industry, for the reason that it is more or less interwoven with one or more other industries; and in still others because comparative statistics can not be presented for either 1904 or 1899 on account of changes in classification. Statistics for 1909, however, for the manufacture of copper, tin, and sheet-iron products, cordage and twine and jute and linen goods, and silk and silk goods, including the operations of throwsters, are presented in Table II, page 22.

Of the 40 industries shown separately in the preceding table, only 7 hold the same rank when measured by value added by manufacture as when measured by value of products, although lumber and timber products and tobacco manufactures hold first and second place, respectively, in either case. The flour-mill and gristmill industry, which is third in value of products, drops into eighth place in value added by manufacture, the steam-railroad repair shops advance from fourth place to third, and printing and publishing from twelfth to fourth, while slaughtering and meat packing drops from thirteenth to thirtieth place and the coke industry from nineteenth to twenty-eighth.

This table shows also the percentages of increase in value of products and value added by manufacture in all cases where comparative statistics can be presented. The distillery industry shows the greatest rate of increase in both value of products and value added by manufacture for the five-year period 1904-1909, 264.7 per cent and 285.9 per cent, respectively. These increases are, however, to a considerable extent more apparent than real, being due in part to a difference in the method of reporting the internal-revenue tax at the two censuses. In 1909 internal-revenue taxes to the amount of \$1,025,940, representing the Federal tax on all taxable liquors manufactured by the distillers, including liquors placed in bond, were included in the value of the products, whereas at the previous census this tax was reported only when it had actually been paid by the manufacturers. Of the other industries, wood preserving shows the largest percentage of increase in both items, 206.2 and 267.9, respectively. Increases of more than 100 per cent in value of products from 1904 to 1909 are shown also for the slaughtering and meat-packing, confectionery, and marble and stone-work industries, while increases exceeding 50 per cent are shown for 16 other industries presented in the table.

The manufacture of woolen goods was the only industry showing a decrease in value of products

from 1904 to 1909, and this loss was not sufficient to offset the gain during the previous five-year period, so that a net increase is shown for the decade as a whole. The blast-furnace industry and the manufacture of fancy and paper boxes show decreases in value of products from 1899 to 1904. Increases were reported for the period from 1904 to 1909, but in neither case were these large enough to offset the loss during the preceding five years, so that the figures for 1909 are less than those for 1899. The value added by manufacture for the peanut, coke, and woolen-goods industries decreased between 1904 and 1909, but the two last-named industries show an increase in this respect for the decade as a whole.

Persons engaged in manufacturing industries.—The next table shows for 1909 the distribution of the number of persons engaged in manufactures, the average number of wage earners being distributed by sex and age. It should be borne in mind, however, that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

CLASS.	PERSONS ENGAGED IN MANUFACTURES.		
	Total.	Male.	Female.
All classes.....	120,797	104,062	16,135
Proprietors and officials.....	0,906	9,783	123
Proprietors and firm members.....	6,570	6,460	101
Salaried officers of corporations.....	1,139	1,128	11
Superintendents and managers.....	2,197	2,186	11
Clerks.....	5,215	4,333	882
Wage earners (average number).....	105,676	90,546	15,130
10 years of age and over.....	102,054	88,101	13,853
Under 10 years of age.....	3,022	2,355	1,267

The average number of persons engaged in manufactures during 1909 was 120,797, of whom 105,676 were wage earners. Of the remainder, 5,215 were clerks and 9,906 were proprietors and officials. Corresponding figures for individual industries will be found in Table II, page 22.

The next table shows, for 1909, the percentages of proprietors and officials, clerks, and wage earners, respectively, among the total number of persons employed in manufactures. It covers all industries combined and 20 important industries individually.

Of the total number of persons engaged in all manufacturing industries, 8.2 per cent were proprietors and officials, 4.3 per cent clerks, and 87.5 per cent wage earners. The highest proportion of proprietors and officials shown for any individual industry, 38.6 per cent, is for the flour-mill and gristmill industry, and the lowest, five-tenths of 1 per cent, for the cotton mills.

INDUSTRY.	PERSONS ENGAGED IN MANUFACTURES.			
	Total number.	Per cent of total.		
		Proprietors and officials.	Clerks.	Wage earners (average number).
All industries.....	120,797	8.2	4.3	87.5
Boots and shoes, including cut stock and findings.....	2,973	2.5	6.3	91.2
Bread and other bakery products.....	1,196	15.8	11.5	72.7
Canning and preserving.....	2,427	22.2	1.2	76.7
Carriages and wagons and materials.....	1,609	13.1	4.4	82.6
Cars and general shop construction and repairs by steam-railroad companies.....	7,943	0.7	3.8	95.5
Clothing, men's, including shirts.....	1,270	3.0	5.4	90.8
Cotton goods, including cotton small wares.....	5,123	0.5	0.8	98.7
Fertilizers.....	2,199	4.6	6.4	88.9
Flour-mill and gristmill products.....	1,817	38.6	5.6	65.8
Foundry and machine-shop products.....	3,248	7.0	5.9	86.1
Hosiery and knit goods.....	1,780	2.3	1.3	96.3
Iron and steel, blast furnaces.....	1,425	2.2	5.2	92.0
Leather goods.....	1,725	5.6	8.2	86.2
Leather, tanned, curried, and finished.....	1,730	4.8	3.3	91.9
Lumber and timber products.....	37,931	10.9	1.3	87.8
Paper and wood pulp.....	981	3.6	3.5	93.0
Peanuts, grading, roasting, cleaning, and shelling.....	1,662	4.0	4.8	91.2
Printing and publishing.....	3,719	16.1	15.2	68.7
Slaughtering and meat packing.....	444	11.0	11.0	77.0
Tobacco manufactures.....	8,978	4.5	7.7	87.8
All other industries.....	30,698	7.0	5.7	87.3

The following table shows, for 1909, in percentages, for all industries combined, the distribution of the average number of wage earners by age periods, and for those 16 years of age and over by sex, calculated in the manner described in the Introduction. It also shows, for some of the important industries separately, a similar distribution of wage earners as reported for December 15; or the nearest representative day. As a means of judging the importance of the several industries the average number employed for the year is also given in each case.

INDUSTRY.	WAGE EARNERS.			
	Average number.	Per cent of total.		
		16 years of age and over.		Under 16 years of age.
Male.		Female.		
All industries.....	105,676	83.5	13.1	3.4
Boots and shoes, including cut stock and findings.....	2,711	73.6	21.8	4.6
Bread and other bakery products.....	870	84.6	11.4	4.0
Canning and preserving.....	1,860	29.1	49.2	21.7
Carriages and wagons and materials.....	1,320	98.0	0.5	1.4
Cars and general shop construction and repairs by steam-railroad companies.....	7,588	99.9	0.1	(?) 3.4
Clothing, men's, including shirts.....	1,160	11.6	85.0	13.4
Cotton goods, including cotton small wares.....	5,057	57.1	29.5	0.2
Fertilizers.....	1,950	99.5	0.3	1.8
Flour-mill and gristmill products.....	1,014	98.6	0.1	1.0
Foundry and machine-shop products.....	2,798	99.0	(?)	12.9
Hosiery and knit goods.....	1,715	32.8	54.2	0.9
Iron and steel, blast furnaces.....	1,320	99.1	0.7	2.4
Leather goods.....	1,457	90.9	1.9	0.4
Leather, tanned, curried, and finished.....	1,590	97.6	0.5	1.5
Lumber and timber products.....	33,287	98.0	10.1	0.3
Paper and wood pulp.....	912	89.6	76.8	4.7
Peanuts, grading, roasting, cleaning, and shelling.....	1,510	21.0	22.7	0.3
Printing and publishing.....	2,555	72.6	4.7	6.1
Slaughtering and meat packing.....	342	95.0	87.9	3.1
Tobacco manufactures.....	7,882	39.4	54.5	0.1
All other industries.....	26,727	87.9	9.0	3.1

¹ For method of estimating the distribution, by sex and age periods, of the average number in all industries combined, see Introduction.
² Less than one-tenth of 1 per cent.

For all industries combined, 83.5 per cent of the wage earners were males 16 years of age and over;

13.1 per cent females 16 years of age and over; and 3.4 per cent children under 16 years of age. More than two-thirds (70.6 per cent) of the total number of female wage earners 16 years of age and over were employed in the tobacco, cotton-goods, hosiery and knit-goods, peanut, men's clothing, and canning and preserving industries. The proportion was highest in the men's clothing industry, in which such wage earners constituted more than five-sixths (85 per cent) of the total.

The industries employing the largest proportions of wage earners under 16 years of age were canning and preserving, cotton goods, hosiery and knit goods, and tobacco manufactures. These four industries combined with the lumber and timber products industry reported 63.5 per cent of the total number of wage earners under 16 years of age.

In order to compare the distribution of persons engaged in manufactures in 1909 with that shown at the census of 1904 it is necessary to use the classification employed at the earlier census. (See Introduction.) The following table makes this comparison according to occupational status:

CLASS.	PERSONS ENGAGED IN MANUFACTURES.				Per cent of increase, 1904-1909.
	1909		1904		
	Number.	Percent distribution.	Number.	Percent distribution.	
Total.....	120,797	100.0	88,898	100.0	35.9
Proprietors and firm members.....	6,570	5.4	3,643	4.1	80.3
Salaried employees.....	8,561	7.1	4,070	5.6	72.1
Wage earners (average number).....	105,676	87.5	80,285	90.3	31.6

Comparable figures are not obtainable for 1899. The table shows a much higher percentage of increase in the number of proprietors and firm members and of salaried employees than in the number of wage earners. The large increase shown for the former class, 80.3 per cent, was due largely to the increase in the number of small establishments under individual or firm ownership reported in 1909. More than four-fifths of the increase was in the lumber and timber products industry alone, and was due mainly to the more complete canvass of this industry in 1909.

The next table shows the average number of wage earners, distributed according to age periods, and in the case of those 16 years of age and over according to sex, for 1909, 1904, and 1899. The averages for 1909 are estimated on the basis of the actual number reported for a single representative day. (See Introduction.)

This table indicates that for all industries combined there was an increase in the proportion of male wage earners 16 years of age and over and a decrease in the proportion of females 16 years of age and over. The proportion of children under 16 years of age decreased at each census since 1899.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS.					
	1900		1901		1899	
	Number.	Percent distribution.	Number.	Percent distribution.	Number.	Percent distribution.
Total.....	105,876	100.0	80,285	100.0	66,223	100.0
16 years of age and over..	102,054	96.6	77,045	96.0	62,560	94.5
Male.....	88,191	83.5	65,055	81.0	52,671	79.5
Female.....	13,863	13.1	11,000	14.9	8,889	14.0
Under 16 years of age....	3,622	3.4	3,240	4.0	3,663	5.5

Wage earners employed, by months.—The table in the next column gives the number of wage earners employed on the 15th of each month during the year 1909 for all industries combined, for the canning and preserving industry, and for all other industries combined; it gives also the percentage which the number reported for each month is of the greatest number reported for any month. In Table II, page 22, are shown, for practically all of the important industries in the state, the largest number and the smallest number of wage earners reported for any month. The figures are for the 15th day, or the nearest representative day, of the month.

In all industries combined the number of wage earners employed was 18.2 per cent less in January, the month of minimum employment, than in Septem-

ber, the month of maximum employment. In the canning and preserving industry the irregularity of the employment is pronounced. The number of wage earners employed in this industry in September was 7,469, whereas in January of the same year the number was only 181. This industry and a few others of lesser importance materially affect the totals for the state.

MONTH.	NUMBER OF WAGE EARNERS.					
	All industries.		Canning and preserving.		All other industries.	
	Number.	Percent of maximum.	Number.	Percent of maximum.	Number.	Percent of maximum.
January.....	94,885	81.8	181	2.4	94,704	87.0
February.....	97,714	84.2	184	2.5	97,530	89.0
March.....	101,750	87.7	353	4.7	101,397	93.2
April.....	104,303	90.0	850	11.4	103,593	95.1
May.....	104,865	90.4	901	12.1	103,904	95.5
June.....	105,036	90.5	518	6.0	104,518	96.0
July.....	104,231	89.9	904	13.3	103,247	94.8
August.....	110,059	95.4	6,044	80.0	104,015	95.6
September.....	115,998	100.0	7,469	100.0	108,529	99.7
October.....	112,270	90.8	3,023	48.5	108,653	99.8
November.....	109,210	94.2	372	5.0	108,844	100.0
December.....	107,092	92.3	237	3.2	100,855	98.2

Prevailing hours of labor.—In the following table wage earners have been classified according to the hours of labor prevailing in the establishment in which they are employed:

INDUSTRY.	AVERAGE NUMBER OF WAGE EARNERS IN ESTABLISHMENTS GROUPED ACCORDING TO PREVAILING HOURS OF WORK PER WEEK.								
	Total.	48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
All industries.....	105,876	5,415	4,752	6,807	18,934	55,820	9,473	1,208	3,467
Agricultural implements.....	272			20	3	240			
Boots and shoes, including cut stock and findings.....	2,711				503	2,208			
Boxes, fancy and paper.....	558		350		150	49			
Bread and other bakery products.....	870	108	31	107	6	495	57	49	17
Brick and tile.....	2,000	137	60	49	105	1,633	16		
Canning and preserving.....	1,800	80	82	34	43	1,542	19	36	21
Carriages and wagons and materials.....	1,320	3	7	343	108	788	9	11	
Cars and general shop construction and repairs by steam-railroad companies.....	7,588	1,710	823	848	2,198	308	311		1,381
Clothing, men's, including shirts.....	1,100	288	45	10	680	137			
Coke.....	1,425		306		33	706			366
Confectionery.....	341	14	30	13	172	100	1		2
Cooperage and wooden goods, not elsewhere specified.....	1,566	20	74		67	1,301	2	3	
Cotton goods, including cotton small wares.....	5,057					5,057			
Fertilizers.....	1,956	4	3	14	108	1,465	255	107	
Flour-mill and gristmill products.....	1,014	83	12	18	13	510	71	300	7
Foundry and machine-shop products.....	2,798	3	35	581	583	1,595	1		
Furniture and refrigerators.....	900	7		73	90	820			
Gas, illuminating and heating.....	378	2				3	30		334
Glass.....	524		465	59					
Hostery and knit goods.....	1,715				1,241	474			
Ice, manufactured.....	475			1	3	59	47	147	218
Iron and steel, blast furnaces.....	1,320				73		145	50	1,052
Leather goods.....	1,487	188	5	218	50	1,026			
Leather, tanned, curried, and finished.....	1,500	1	49	1	31	1,506		2	
Lime.....	716			23	9	320	220	50	67
Liquors, distilled.....	126	26		13	17	54		16	
Liquors, malt.....	354		20		131	120			
Lumber and timber products.....	33,287	888	1,222	969	3,306	20,340	6,295	145	23
Marble and stone work.....	1,585	107	142	144	273	464	454	1	
Mattresses and spring beds.....	103	7		1	2	93			
Paint and varnish.....	53	2			7	22			22
Paper and wood pulp.....	912				63	655		184	
Patent medicines and compounds and druggists' preparations.....	212	22	10	11	21	145	3		
Peanuts, grading, roasting, cleaning, and shelling.....	1,516		208	5	295	1,008			
Printing and publishing.....	2,555	726	341	1,105	178	107	6	2	
Slaughtering and meat packing.....	342	2	1	51	100	158	20	4	
Stoves and furnaces, including gas and oil stoves.....	363	167		103		93			
Tobacco manufactures.....	7,882	498	240	403	5,518	1,222			1
Wood preserving.....	222	2			21	100			
Woolen, worsted, and felt goods, and wool hats.....	542					542			
All other industries.....	13,832	298	173	1,313	2,478	7,992	1,493	82	3

In making the classification in the preceding table the average number of wage earners employed in each establishment is classified as a total according to the hours prevailing in that establishment, even though a few employees work a greater or less number of hours.

Of the wage earners employed in the manufacturing industries of Virginia, 81,361, or 77 per cent, worked in establishments where the usual hours of labor ranged from 54 to 60 a week. Only 9.6 per cent were employed in establishments where the prevailing hours of employment were less than 54 a week, and 13.4 per cent in establishments where they were more than 60 a week.

In 14 out of 21 manufacturing industries in the state employing over 1,000 wage earners each more than half the wage earners worked 60 hours a week, while in the cotton-goods industry all the wage earners worked in establishments where these hours prevailed. Most of the wage earners in the gas and blast-furnace indus-

tries worked more than 72 hours a week, and the majority of those in the manufactured-ice industry worked 72 hours or over. The wide range of hours shown for some industries, conspicuous among which are the steam-railroad repair shops, and the lumber and timber products, marble and stone work, and printing and publishing industries, is noteworthy.

Location of establishments.—The next table shows the extent to which the manufactures of Virginia are carried on in cities of 10,000 inhabitants or over. (See Introduction.) The comparison is confined here, as in other states, to the years 1899 and 1909, in the absence of a Federal census of population by which the grouping of cities in 1904 could be determined.

The statistics for Newport News are omitted from those for cities having the specified population and included with those for the remainder of the state in order to avoid a possible disclosure of individual operations.

ITEM.	Year.	Aggregate.	CITIES HAVING A POPULATION OF 10,000 AND OVER.								DISTRICTS OUTSIDE OF CITIES HAVING A POPULATION OF 10,000 AND OVER.	
			Total.		10,000 to 25,000.		25,000 to 100,000.		100,000 and over.		Number or amount.	Percent of total.
			Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.		
Population.....	1910 1900	2,061,612 1,854,184	361,718 252,000	17.5 13.6	69,680 110,671	3.3 6.0	165,010 141,389	8.0 7.6	127,628	6.2	1,099,804 1,602,124	82.5 86.4
Number of establishments.....	1909 1899	5,685 3,186	902 717	17.4 22.5	222 301	3.0 9.5	300 416	6.8 13.1	380	6.7	4,693 2,469	82.0 77.5
Average number of wage earners..	1909 1899	105,676 66,223	36,782 28,142	34.8 42.5	8,772 11,789	8.3 17.8	13,161 10,353	12.4 24.7	14,849	14.1	68,804 38,081	65.2 57.5
Value of products.....	1909 1899	\$219,793,858 108,044,150	\$66,603,688 46,239,307	44.0 45.3	\$10,927,390 10,877,907	9.1 18.3	\$29,318,313 20,301,490	13.3 27.0	\$47,357,085	21.6	\$123,100,170 50,404,763	56.0 54.7
Value added by manufacture.....	1909 1899	64,211,171 49,284,666	42,068,849 23,827,644	45.6 48.3	7,305,020 8,493,683	7.8 17.2	12,557,970 16,333,001	13.3 31.1	23,105,850	24.5	51,242,322 25,457,022	54.4 51.7

In 1909 the cities having over 10,000 inhabitants, exclusive of Newport News, reported 44 per cent of the total value of manufactured products for the state and 34.8 per cent of the average number of wage earners in manufacturing industries, the former percentage being slightly larger and the latter considerably smaller than the corresponding figures for 1899. The proportions of the total number of establishments and total value added by manufacture reported from such cities also show decreases, that in number of establishments being considerable. The great increase during the decade in the number of manufacturing establishments located outside of this class of cities is due to some extent to the more complete canvass of the lumber industry in 1909.

The composition of the groups shown in the table, and consequently their relative industrial importance, has undergone considerable change since 1899, owing to the increase in the population of certain cities. In 1900 none of the cities had as many as 100,000 inhabitants, while Richmond and Norfolk were the only ones having more than 25,000 inhabitants. During the decade, however, the population of Richmond passed the 100,000 mark, so that for 1909 the statistics for

this city are shown separately. The population of Lynchburg, Portsmouth, and Roanoke, which in 1900 were among the cities having between 10,000 and 25,000 inhabitants, increased to such an extent during the decade that for 1909 they are included with Norfolk in the group made up of cities having between 25,000 and 100,000 inhabitants. Their addition, however, failed to make up for the loss of Richmond, so that this class of cities shows a considerable decrease in relative industrial importance, as well as an actual decrease in number of establishments, average number of wage earners, and value added by manufacture. Staunton, which had less than 10,000 inhabitants in 1900, was added to the group of cities having between 10,000 and 25,000 inhabitants for 1909, but the loss of Lynchburg, Portsmouth, and Roanoke from this group of cities more than counterbalanced the effect of this addition and this group also shows a loss in relative industrial importance as well as actual decreases in every item shown in the table except value of products.

The population in 1910 and 1900 of the 10 cities which had 10,000 inhabitants or over in 1910 is given in the next statement.

CITY.	1910	1900	CITY.	1910	1900
Richmond.....	127,028	104,765	Petersburg.....	21,127	21,810
Norfolk.....	67,452	46,024	Newport News...	20,205	19,035
Roanoke.....	34,374	21,495	Danville.....	19,020	10,520
Portsmouth.....	33,190	17,427	Alexandria.....	15,320	14,528
Lynchburg.....	20,494	18,891	Staunton.....	10,604	7,280

¹ Includes population of Manchester, annexed to Richmond in 1910.

The relative importance in manufactures of each of the 10 cities having a population of 10,000 or over in 1910, with the exception of Newport News, is shown in the following table, in which the value of products and average number of wage earners are shown separately for 1909, 1904, and 1899, so far as figures can be presented:

CITY.	AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.		
	1909	1904	1899	1909	1904	1899
Richmond ¹	14,849	12,444	13,715	\$47,357,085	\$27,744,020	\$24,060,711
Norfolk.....	4,749	2,935	2,038	10,341,321	5,738,006	4,601,770
Lynchburg.....	4,020	2,534	1,487	10,188,130	4,065,435	2,903,551
Petersburg.....	3,887	3,288	3,008	8,895,562	5,890,574	5,203,527
Newport News.....	(²)	7,406	5,285	(²)	9,063,006	5,937,820
Roanoke.....	3,544	3,080	2,431	7,200,850	5,544,007	5,307,003
Danville.....	3,070	3,018	2,933	5,380,430	4,774,818	3,033,702
Alexandria.....	1,470	1,201	859	4,410,502	2,180,058	1,538,671
Portsmouth.....	842	551	471	1,527,007	945,439	600,173
Staunton.....	330	(³)	(³)	1,232,846	(³)	(³)

¹ Figures for Richmond and for Norfolk do not agree with those published in 1904, because it was necessary to revise the totals in order to include data only for those establishments located within the corporate limits of the city. For Richmond in 1904 and 1899, the statistics for Manchester, which was annexed in 1910, are included.

² Figures omitted to avoid disclosure of individual operations.

³ Figures not available.

Every city for which comparative figures are given shows an increase in value of products from 1904 to 1909, and all except Portsmouth an increase from 1899 to 1904. In all the cities, with the exception of Danville, the greater increases were for the later five-year period. The greatest relative gain from 1904 to 1909, 105.2 per cent, was made by Lynchburg, Alexandria following closely with 102.1 per cent. Richmond, the largest and most important city in the state, shows an increase of 70.7 per cent in value of products in 1909, as compared with 1904, and an increase of 19.3 per cent in the average number of wage earners.

The chief industry of Richmond was the manufacture of tobacco products. Other important industries were printing and publishing; the manufacture of boots and shoes; the flour-mill and gristmill industry; steam-railroad repair shops; and the manufacture of bags, other than paper.

Norfolk held second place in the value of manufactured products, showing an increase of 80.2 per cent in this respect together with an increase of 61.8 per cent in the average number of wage earners from 1904 to 1909. The manufacture of lumber and timber products, hosiery and knit goods, and silk goods, and the grading, roasting, cleaning, and shelling of peanuts were among the important industries in this city.

Lynchburg shows increases of 105.2 per cent in value of products and 58.9 per cent in number of wage earners from 1904 to 1909. The principal industries of the city were the manufacture of boots and shoes and of cotton goods, flour-mill and gristmill and foundry and

machine-shop industries. Cast-iron pipe forms the chief product of the last-named industry.

Petersburg, Roanoke, and Danville show increases of 51 per cent, 30.9 per cent, and 12.9 per cent, respectively, in value of manufactured products from 1904 to 1909. The leading manufacturing industries of Petersburg were the manufacture of trunks and valises, the grading, roasting, cleaning, and shelling of peanuts, and the tobacco industry. In Roanoke the steam-railroad repair shops and foundries and machine shops, and in Danville the manufacture of cotton goods and tobacco products were the leading industries. In Alexandria the more prominent industries were the manufacture of fertilizers; the tanning, currying, and finishing of leather; the glass industry; and breweries. In Portsmouth the manufacture of hosiery and knit goods and lumber and timber products were the leading branches of manufacture, and the flour mills and gristmills of Staunton formed the leading industry of that city.

In Newport News shipbuilding was by far the leading industry. The statistics for the city, however, can not be shown separately because of the possibility of disclosing individual operations.

The statistics for that part of Bristol which lies in Virginia are included with those for the outside district in the table on page 9. The following statement presents the totals for the entire city and for the parts situated in Virginia and Tennessee, respectively.

	Total for city.	Bristol, Va.	Bristol, Tenn.
Population.....	13,395	6,247	7,148
Number of establishments.....	51	28	23
Persons engaged in manufactures.....	1,310	642	667
Proprietors and firm members.....	42	20	22
Salaried employees.....	148	80	68
Wage earners (average number).....	1,120	842	287
Primary horsepower.....	3,014	2,025	1,289
Capital.....	\$3,002,409	\$1,710,738	\$1,345,671
Expenses.....	2,610,392	1,798,716	820,676
Services.....	631,813	471,486	160,327
Salaries.....	142,741	89,126	53,615
Wages.....	489,072	382,360	106,712
Materials.....	1,828,206	1,234,322	593,874
Miscellaneous.....	160,283	92,908	60,375
Value of products.....	2,848,777	1,970,068	878,709
Value added by manufacture (value of products less cost of materials).....	1,020,481	736,346	284,135

The leading industries in Bristol, Va., were flour mills and gristmills, railroad repair shops, the tanning, currying, or finishing of leather, the manufacture of paper and wood pulp, and the lumber industry, while the principal industries in Bristol, Tenn., were flour mills and gristmills and the manufacture of dyestuffs and extracts.

Character of ownership.—The next table has for its purpose the presentation of conditions in respect to the character of ownership, or legal organization, of manufacturing enterprises. For all industries combined comparative figures are given covering the censuses of 1909 and 1904. Comparative data for 1899 are not available. Figures for 1909 only are presented for several important industries individually. In order to avoid disclosing the operations of individual establishments it is necessary to omit several important industries from this table and the one following.

INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.	INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
ALL INDUSTRIES:									
1909.....	5,685	105,676	\$219,793,858	\$94,211,171					
1904.....	3,187	80,285	148,856,525	65,207,376					
Individual:									
1909.....	3,061	19,037	29,954,089	14,254,269					
1904.....	1,590	10,323	17,707,725	8,308,305					
Firm:									
1909.....	1,492	13,673	25,207,070	10,216,652					
1904.....	874	9,892	20,093,382	8,180,080					
Corporation:									
1909.....	1,099	72,773	163,780,071	69,129,888					
1904.....	702	59,735	109,516,390	48,102,559					
Other:									
1909.....	33	193	791,728	610,362					
1904.....	15	335	849,028	549,742					
Per cent of total:									
1909.....	100.0	100.0	100.0	100.0					
1904.....	100.0	100.0	100.0	100.0					
Individual:									
1909.....	53.8	18.0	13.6	15.1					
1904.....	50.1	12.9	11.9	12.8					
Firm:									
1909.....	26.2	12.9	11.5	10.8					
1904.....	27.4	12.3	13.9	12.6					
Corporation:									
1909.....	19.3	68.9	74.5	73.4					
1904.....	22.0	74.4	73.6	73.8					
Other:									
1909.....	0.6	0.2	0.4	0.6					
1904.....	0.5	0.4	0.6	0.8					
Flour-mill and gristmill products, 1909.....	458	1,014	\$17,598,045	\$2,433,777					
Individual.....	256	365	5,023,139	770,500					
Firm.....	133	314	6,374,083	735,904					
Corporation.....	69	335	6,200,823	921,247					
Per cent of total.....	100.0	100.0	100.0	100.0					
Individual.....	55.9	36.0	28.5	31.9					
Firm.....	29.0	31.0	36.2	30.2					
Corporation.....	15.1	33.0	35.2	37.9					
Foundry and machine-shop products, 1909.....	110	2,798	\$5,727,014	\$2,579,006					
Individual.....	46	273	478,304	293,051					
Firm.....	24	237	304,473	207,687					
Corporation.....	40	2,288	4,854,237	2,017,708					
Per cent of total.....	100.0	100.0	100.0	100.0					
Individual.....	41.8	9.8	8.4	11.4					
Firm.....	21.8	8.5	6.9	10.4					
Corporation.....	36.4	81.8	84.8	78.2					
					Leather goods, 1909.....				
Individual.....	11	84	202,190	79,474	31	1,487	\$3,492,051	\$1,590,907	
Firm.....	10	84	245,891	100,702	11	84	202,190	79,474	
Corporation.....	10	1,319	3,043,970	1,410,731	10	84	245,891	100,702	
Per cent of total.....	100.0	100.0	100.0	100.0	10	1,319	3,043,970	1,410,731	
Individual.....	35.5	5.0	5.8	5.0	100.0	100.0	100.0	100.0	
Firm.....	32.3	5.0	7.0	6.3	35.5	5.0	5.8	5.0	
Corporation.....	32.3	88.7	87.2	88.7	32.3	5.0	7.0	6.3	
					Leather, tanned, curried, and finished, 1909.....				
Individual.....	17	19	28,049	14,534	39	1,590	\$8,266,850	\$1,821,689	
Firm.....	7	140	1,168,446	310,013	17	19	28,049	14,534	
Corporation.....	15	1,431	7,079,755	1,491,142	7	140	1,168,446	310,013	
Per cent of total.....	100.0	100.0	100.0	100.0	15	1,431	7,079,755	1,491,142	
Individual.....	43.6	1.2	0.3	0.8	100.0	100.0	100.0	100.0	
Firm.....	17.9	8.8	14.0	17.3	43.6	1.2	0.3	0.8	
Corporation.....	38.5	90.0	85.0	81.9	17.9	8.8	14.0	17.3	
					Lumber and timber products, 1909.....				
Individual.....	1,634	12,015	10,687,384	7,589,482	2,617	33,287	\$35,855,310	\$21,062,911	
Firm.....	793	7,178	7,034,056	4,687,628	1,634	12,015	10,687,384	7,589,482	
Corporation.....	190	14,094	18,133,870	9,685,801	793	7,178	7,034,056	4,687,628	
Per cent of total.....	100.0	100.0	100.0	100.0	190	14,094	18,133,870	9,685,801	
Individual.....	62.4	36.1	29.8	34.6	100.0	100.0	100.0	100.0	
Firm.....	30.3	21.6	19.6	21.3	62.4	36.1	29.8	34.6	
Corporation.....	7.3	42.3	50.6	44.1	30.3	21.6	19.6	21.3	
					Printing and publishing, 1909.....				
Individual.....	186	734	1,188,704	875,475	309	2,555	\$5,369,738	\$3,964,864	
Firm.....	66	440	717,204	488,571	186	734	1,188,704	875,475	
Corporation.....	94	1,342	3,317,349	2,463,790	66	440	717,204	488,571	
Other.....	23	39	146,331	136,822	94	1,342	3,317,349	2,463,790	
Per cent of total.....	100.0	100.0	100.0	100.0	23	39	146,331	136,822	
Individual.....	60.4	28.7	22.1	22.1	100.0	100.0	100.0	100.0	
Firm.....	17.9	17.2	13.4	12.3	60.4	28.7	22.1	22.1	
Corporation.....	25.5	52.5	61.8	62.1	17.9	17.2	13.4	12.3	
Other.....	0.2	1.5	2.7	3.5	25.5	52.5	61.8	62.1	
					Slaughtering and meat packing, 1909.....				
Individual.....	11	124	2,444,213	208,885	24	342	\$4,000,630	\$543,477	
Firm.....	5	33	426,802	60,384	11	124	2,444,213	208,885	
Corporation.....	8	185	1,720,015	265,208	5	33	426,802	60,384	
Per cent of total.....	100.0	100.0	100.0	100.0	8	185	1,720,015	265,208	
Individual.....	45.8	30.3	53.1	38.4	100.0	100.0	100.0	100.0	
Firm.....	20.8	0.6	0.3	12.8	45.8	30.3	53.1	38.4	
Corporation.....	33.3	54.1	37.0	48.8	20.8	0.6	0.3	12.8	

The most important distinction shown is that between corporate and all other forms of ownership. For all manufacturing industries combined, 19.3 per cent of the total number of establishments were under corporate ownership in 1909, as against 80.7 per cent under all other forms. The corresponding figures for 1904 were 22 per cent and 78 per cent, respectively. On the other hand in 1909 and in 1904 nearly three-fourths of the average number of wage earners, value of products, and value added by manufacture were reported by establishments operated by corporations. The proportion of the total number of wage earners reported by establishments operated by corporations was considerably smaller in 1909 than in 1904, but their proportions of the total value of products and value added by manufacture show very little change.

There was a marked increase in the relative importance of the establishments under individual ownership, a tendency in marked contrast to that shown for most of the states. This was due mainly to the more complete canvass of the lumber industry in 1909, which resulted in securing reports from many small establishments operated by individuals or firms from which reports were not secured in 1904. Outside of the lumber industry only 46.5 per cent of the manufacturing establishments in the state were under individual ownership in 1909.

Size of establishment.—The tendency for manufacturing to become concentrated in large establishments, or the reverse, is a matter of interest from the standpoint of industrial organization. In order to throw some light upon it the next table groups the establishments according to the value of their products. The table also shows the average size of establishments for all industries combined and for certain important industries separately as measured by number of wage earners, value of products, and value added by manufacture. The totals for all industries are shown for the last two censuses, while for individual industries figures are given for 1909 only.

The table shows that of the 5,685 manufacturing establishments in the state in 1909, only 26, or four-tenths of 1 per cent, reported products exceeding \$1,000,000 in value. These establishments, however, employed an average of 22,615 wage earners, or 21.4 per cent of the total number in all establishments, and reported 26.9 per cent of the total value of products and 25.5 per cent of the total value added by manufacture.

On the other hand, the very small establishments—that is, those having a value of products less than \$5,000—constituted nearly half (45.4 per cent) of the total number of establishments, but the value of their products amounted to only 2.7 per cent

MANUFACTURES—VIRGINIA.

of the total, and they employed only 6.8 per cent of the total number of wage earners. Seventy-three per cent of the total value of products was reported by establishments whose annual output was valued at \$100,000 or over. These establishments employed 60.7 per cent of the total number of wage earners, and were credited with 66.1 per cent of the total value added by manufacture.

The group which embraces the smallest establishments shows the largest percentage of increase in all

items shown in the table except value of products, largely as a result of the increase in the number of small establishments reported for the lumber industry in 1909. This fact also explains the decreases shown in the average number of wage earners, average value of products, and average value added by manufacture per establishment. From 1904 to 1909 the average value of products per establishment reported decreased from \$46,707 to \$38,662, and the average number of wage earners per establishment from 25 to 19.

INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.	INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
ALL INDUSTRIES:					Foundry and machine-shop products—Continued.				
1909.....	5,685	105,676	\$219,793,858	\$94,211,171	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	3,187	80,285	148,856,525	65,207,376	Less than \$5,000.....	33.6	2.4	1.7	2.3
Less than \$5,000:					\$5,000 and less than \$20,000.....	29.1	8.7	6.5	9.6
1909.....	2,581	7,170	5,936,118	3,859,930	\$20,000 and less than \$100,000.....	28.2	30.8	21.8	31.7
1904.....	1,109	2,374	2,710,615	1,788,004	\$100,000 and less than \$1,000,000 ¹	9.1	58.1	70.0	56.3
\$5,000 and less than \$20,000:					Average per establishment.....		25	\$52,064	\$23,446
1909.....	1,917	15,254	19,134,920	11,171,420	Leather goods, 1909.....	31	1,487	\$3,492,051	\$1,590,907
1904.....	1,102	8,900	12,578,958	6,917,700	Less than \$5,000.....	15	54	108,718	85,152
\$20,000 and less than \$100,000:					\$5,000 and less than \$20,000.....	11	212	507,455	105,027
1909.....	805	19,134	34,233,401	16,900,075	\$100,000 and less than \$1,000,000 ¹	5	1,221	2,815,878	1,316,728
1904.....	603	14,992	25,078,424	12,089,240	Per cent of total.....	100.0	100.0	100.0	100.0
\$100,000 and less than \$1,000,000:					\$5,000 and less than \$20,000.....	48.4	3.6	4.8	5.3
1909.....	356	41,497	101,364,437	38,289,549	\$20,000 and less than \$100,000.....	35.5	14.3	14.5	12.3
1904.....	268	36,224	73,817,089	28,505,680	\$100,000 and less than \$1,000,000 ¹	16.1	82.1	80.6	82.4
\$1,000,000 and over:					Average per establishment.....		48	\$112,647	\$51,320
1909.....	26	22,615	59,124,982	23,900,197	Lumber and timber products, 1909.....	2,617	33,287	\$35,855,310	\$21,062,911
1904.....	15	17,690	34,071,439	15,906,743	Less than \$5,000.....	1,301	4,034	3,003,574	2,317,843
Per cent of total:					\$5,000 and less than \$20,000.....	941	10,308	8,755,981	6,307,874
1909.....	100.0	100.0	100.0	100.0	\$20,000 and less than \$100,000.....	224	6,476	8,470,348	5,069,803
1904.....	100.0	100.0	100.0	100.0	\$100,000 and less than \$1,000,000 ¹	61	11,569	15,526,407	8,177,391
Less than \$5,000:					Per cent of total.....	100.0	100.0	100.0	100.0
1909.....	45.4	6.8	2.7	4.1	Less than \$5,000.....	53.2	14.8	8.6	10.6
1904.....	34.8	3.0	1.8	2.7	\$5,000 and less than \$20,000.....	36.0	31.0	24.4	29.1
\$5,000 and less than \$20,000:					\$20,000 and less than \$100,000.....	8.6	19.4	23.7	23.1
1909.....	33.7	14.4	8.7	11.9	\$100,000 and less than \$1,000,000 ¹	2.3	34.8	43.3	37.2
1904.....	37.4	11.2	8.5	10.0	Average per establishment.....		13	\$13,701	\$4,392
\$20,000 and less than \$100,000:					Printing and publishing, 1909.	369	2,555	\$5,369,738	\$3,064,864
1909.....	14.2	18.1	15.6	17.9	Less than \$5,000.....	224	392	552,223	425,552
1904.....	18.9	18.7	17.2	18.5	\$5,000 and less than \$20,000.....	95	580	918,171	685,578
\$100,000 and less than \$1,000,000:					\$20,000 and less than \$100,000.....	35	737	1,483,915	1,057,831
1909.....	6.3	39.3	46.1	40.6	\$100,000 and less than \$1,000,000 ¹	15	846	2,415,429	1,795,903
1904.....	8.4	45.1	49.6	43.7	Per cent of total.....	100.0	100.0	100.0	100.0
\$1,000,000 and over:					Less than \$5,000.....	60.7	15.3	10.3	19.7
1909.....	0.4	21.4	26.9	25.5	\$5,000 and less than \$20,000.....	25.7	22.7	17.1	17.3
1904.....	0.5	22.0	22.0	24.4	\$20,000 and less than \$100,000.....	0.5	28.8	27.6	26.7
Average per establishment:					\$100,000 and less than \$1,000,000 ¹	4.1	33.1	45.0	45.3
1909.....	19		\$38,662	\$16,572	Average per establishment.....		7	\$14,552	\$10,745
1904.....	25		46,707	20,460	Slaughtering and meat packing, 1909.....	24	342	\$4,600,630	\$543,477
Flour-mill and gristmill products, 1909.....	458	1,014	\$17,598,045	\$2,433,777	\$5,000 and less than \$20,000.....	8	11	84,522	26,984
Less than \$5,000.....	79	46	242,794	43,509	\$20,000 and less than \$100,000.....	10	51	304,600	79,405
\$5,000 and less than \$20,000.....	217	235	2,514,055	446,149	\$100,000 and less than \$1,000,000 ¹	6	280	4,151,508	437,388
\$20,000 and less than \$100,000.....	150	349	5,171,764	813,354	Per cent of total.....	100.0	100.0	100.0	100.0
\$100,000 and less than \$1,000,000 ¹	35	387	9,669,392	1,180,765	Less than \$5,000.....	60.7	15.3	10.3	19.7
Per cent of total.....	100.0	100.0	100.0	100.0	\$5,000 and less than \$20,000.....	25.7	22.7	17.1	17.3
Less than \$5,000.....	16.6	4.5	1.4	1.8	\$20,000 and less than \$100,000.....	0.5	28.8	27.6	26.7
\$5,000 and less than \$20,000.....	47.4	23.2	14.3	18.3	\$100,000 and less than \$1,000,000 ¹	4.1	33.1	45.0	45.3
\$20,000 and less than \$100,000.....	28.4	34.1	20.1	33.4	Average per establishment.....		7	\$14,552	\$10,745
\$100,000 and less than \$1,000,000 ¹	7.6	38.2	54.9	46.5	Foundry and machine-shop products, 1909.....	110	2,798	\$5,727,014	\$2,579,098
Average per establishment.....		2	\$38,424	\$5,314	Less than \$5,000.....	37	98	99,032	59,757
Foundry and machine-shop products, 1909.....	110	2,798	\$5,727,014	\$2,579,098	\$5,000 and less than \$20,000.....	32	243	369,875	248,245
Less than \$5,000.....	37	98	99,032	59,757	\$20,000 and less than \$100,000.....	31	861	1,240,337	818,765
\$5,000 and less than \$20,000.....	32	243	369,875	248,245	\$100,000 and less than \$1,000,000 ¹	10	1,626	4,011,770	1,452,230
\$20,000 and less than \$100,000.....	31	861	1,240,337	818,765	Per cent of total.....	100.0	100.0	100.0	100.0
\$100,000 and less than \$1,000,000 ¹	10	1,626	4,011,770	1,452,230	Less than \$5,000.....	33.3	3.2	1.8	4.9

¹ Includes the group "\$1,000,000 and over."

² Includes the group "Less than \$5,000."

In some respects, especially from the standpoint of conditions under which persons engaged in manufactures work, the best classification of establishments to bring out the feature of size is a classification according to the number of wage earners employed. The next table shows for 1909 such a classification for all industries combined and for 18 important industries individually, and gives not only the number of establishments in each group but also the average number of wage earners employed.

Of the 5,685 establishments reported for all industries, 4.7 per cent employed no wage earners; 53.8 per cent employed from 1 to 5; 28.7 per cent, from 6 to 20; and 6.5 per cent, from 21 to 50. The most numerous group is that consisting of the 3,058 establishments employing from 1 to 5 wage earners. Of these, 1,281, or 41.9 per cent, were engaged in the manufacture of lumber and timber products. Fifty-nine establishments employed more than 250 wage earners each; 26, more than 500; and 7, more than 1,000.

INDUSTRY.	Total.	ESTABLISHMENTS EMPLOYING—								
		No wage earners.	1 to 5 wage earners.	6 to 20 wage earners.	21 to 50 wage earners.	51 to 100 wage earners.	101 to 250 wage earners.	251 to 500 wage earners.	501 to 1,000 wage earners.	Over 1,000 wage earners.
NUMBER OF ESTABLISHMENTS.										
All industries.....	5,686	270	3,058	1,631	370	192	105	33	19	7
Boots and shoes, including cut stock and findings.....	10	1	1	1	1	2	2	1	1	1
Bread and other bakery products.....	135	12	87	26	8	1	1			
Carriages and wagons and materials.....	130	10	71	37	4	7	1			
Cars and general shop construction and repairs by steam-railroad companies.....	28		2	3	1	5	0	2	5	1
Cotton goods, including cotton small wares.....	10				1	2	3	1	1	2
Fertilizers.....	45		10	11	9	10	4	1		
Flour-mill and gristmill products.....	458	74	352	29	2	1				
Foundry and machine-shop products.....	110	5	44	37	13	6	2	3		
Hosiery and knit goods.....	11				1	3	5	2		
Iron and steel, blast furnaces.....	14			1	1	7	5			
Leather goods.....	31		15	7	4	1	3		1	
Leather, tanned, curried, and finished.....	39	4	10		8	4	7			
Lumber and timber products.....	2,617	27	1,281	1,078	161	36	18	12	3	1
Paper and wood pulp.....	9		1			4	2	1		
Peanuts, grading, roasting, cleaning, and shelling.....	25		3	3	6	10	3			
Printing and publishing.....	360	62	219	59	18	10	1			
Slaughtering and meat packing.....	24		16	2	5		1			
Tobacco manufactures.....	104	13	46	12	8	11	7	2	4	1
All other industries.....	1,516	63	894	324	119	72	31	8	4	1
AVERAGE NUMBER OF WAGE EARNERS.										
All industries.....	105,676	7,666	17,825	11,884	13,686	16,049	11,066	13,600	13,903	
Boots and shoes, including cut stock and findings.....	2,711	3	6	31	140	277	343	802	1,100	
Bread and other bakery products.....	870	200	245	245	77	103				
Carriages and wagons and materials.....	1,320	104	431	144	473	117				
Cars and general shop construction and repairs by steam-railroad companies.....	7,588	8	38	28	427	1,917	511	3,240	1,710	
Cotton goods, including cotton small wares.....	5,057			27	117	371	450	609	3,183	
Fertilizers.....	1,956	20	135	332	676	541	252			
Flour-mill and gristmill products.....	1,014	624	254	68	68					
Foundry and machine-shop products.....	2,798	110	457	447	422	325	1,037			
Hosiery and knit goods.....	1,715			21	262	827	605			
Iron and steel, blast furnaces.....	1,320		20	50	610	634				
Leather goods.....	1,487	47	84	135	61	522		638		
Leather, tanned, curried, and finished.....	1,590	23	44	309	272	690				
Lumber and timber products.....	33,287	3,606	11,742	4,928	2,440	3,024	3,807	2,100	1,490	
Paper and wood pulp.....	912	2	12		275	242	381			
Peanuts, grading, roasting, cleaning, and shelling.....	1,516	12	44	200	776	484				
Printing and publishing.....	2,555	540	644	550	693	122				
Slaughtering and meat packing.....	342	35	28	173		100				
Tobacco manufactures.....	7,882	117	148	334	777	1,153	835	3,181	1,337	
All other industries.....	29,747	2,149	3,537	3,802	5,114	4,505	2,785	2,640	5,005	
PER CENT OF AVERAGE NUMBER OF WAGE EARNERS.										
All industries.....	100.0	7.3	16.9	11.2	12.9	15.2	10.5	12.9	13.2	
Boots and shoes, including cut stock and findings.....	100.0	0.1	0.2	1.1	5.2	10.2	12.7	20.6	40.0	
Bread and other bakery products.....	100.0	23.0	28.2	28.2	8.8	11.8				
Carriages and wagons and materials.....	100.0	12.3	32.4	10.8	35.6	8.8				
Cars and general shop construction and repairs by steam-railroad companies.....	100.0	0.1	0.5	0.4	5.6	21.3	6.7	42.7	22.7	
Cotton goods, including cotton small wares.....	100.0			0.5	2.3	7.3	8.9	18.0	63.0	
Fertilizers.....	100.0	1.0	6.9	17.0	34.6	27.7	12.9			
Flour-mill and gristmill products.....	100.0	61.5	25.0	6.7	6.7					
Foundry and machine-shop products.....	100.0	3.9	16.3	16.0	15.1	11.6	37.1			
Hosiery and knit goods.....	100.0			1.2	15.3	48.2	35.3			
Iron and steel, blast furnaces.....	100.0		1.5	3.8	46.7	48.0				
Leather goods.....	100.0	3.2	5.6	9.1	4.1	35.1		42.9		
Leather, tanned, curried, and finished.....	100.0	1.4		19.4	17.1	62.0				
Lumber and timber products.....	100.0	10.8	35.3	14.8	7.3	9.1	11.0	6.0	4.5	
Paper and wood pulp.....	100.0	0.2	1.3		30.2	26.5	41.8			
Peanuts, grading, roasting, cleaning, and shelling.....	100.0	0.8	2.9	13.2	51.2	31.9				
Printing and publishing.....	100.0	21.4	25.2	21.5	27.1	4.8				
Slaughtering and meat packing.....	100.0	10.2	8.2	50.6		31.0				
Tobacco manufactures.....	100.0	1.5	1.9	4.2	9.9	14.6	10.6	40.4	16.9	
All other industries.....	100.0	7.2	11.9	13.0	17.2	15.4	9.4	8.9	17.0	

Of the total number of wage earners, 24.2 per cent were in establishments employing less than 21; 26.1 per cent in establishments employing more than 500; and 49.8 per cent in establishments employing from 21 to 500.

Expenses.—As stated in the Introduction, the census does not purport to furnish figures that can be used for determining the cost of manufacture and profits. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expenses going to make up the total.

The next table shows for 1909, in percentages, the distribution of expenses among the classes indicated

for all industries combined and for certain important industries separately. The figures on which the percentages are based appear in Table II, page 22.

This table shows that, for all industries combined, 64 per cent of the total expense was incurred for materials, 24 per cent for services—that is, salaries and wages—and 11.9 per cent for other purposes. These proportions vary greatly in the different industries. The proportions shown for cost of materials in the flour-mill and gristmill, slaughtering and meat-packing, and peanut industries are very large relatively, because the manufacturing operations are comparatively simple or are largely carried on by machinery.

All of the pig iron produced in Virginia with the exception of a small amount of charcoal pig iron—less than 1 per cent of the total in 1909—was made with coke fuel. Foundry pig iron, which is manufactured largely for local consumption, was the chief grade produced in Virginia, forming 83.1 per cent of the total output of pig iron in 1909, 78.6 per cent in 1904, and 71.1 per cent in 1899. The total tonnage and value of pig iron produced were less in 1909 than in 1899, although larger than in 1904.

Printing and publishing.—The relative importance of the different classes of newspapers and periodicals is probably best indicated by their aggregate circulation. In the following table the number of the different classes of publications and the aggregate circulation per issue is given for 1909, 1904, and 1899:

	NUMBER OF PUBLICATIONS.			AGGREGATE CIRCULATION PER ISSUE.		
	1909	1904	1899	1909	1904	1899
Total	258	241	220	1,019,968	885,391	627,280
Daily.....	32	31	37	174,149	131,099	92,370
Sunday.....	8	10	16	79,258	62,088	(1)
Semiweekly and triweekly.....	12	8	9	16,789	17,000	16,130
Weekly.....	161	149	126	392,106	352,856	291,699
Monthly.....	28	30	23	183,605	167,448	96,800
All other classes.....	17	13	9	174,061	154,300	130,200

¹ Included in circulation of daily.

Many newspapers publish daily, Sunday, and weekly or semiweekly editions, and each of these editions is counted as a separate publication in the above table. The total number of publications in 1909 was 258, of which 32, or 12.4 per cent, were dailies, and 161, or 62.4 per cent, weeklies. Of the total circulation, that of the dailies constituted 17.1 per cent; that of the weeklies, 38.4 per cent; and that of the monthlies, 18 per cent. All of the publications were in the English language except two, one daily and one weekly, which were printed in German. All classes made gains in circulation during both five-year periods except the semiweeklies and triweeklies, which show a slight decrease from 1904 to 1909.

Fertilizers.—In 1909 Virginia ranked fourth among the states in the manufacture of fertilizers. The next table shows the quantity and cost of the principal materials and the quantity and value of the principal products for 1909, 1904, and 1899.

In 1909 fish was the principal material used, in respect to cost, representing 30.2 per cent of the cost of all materials in that year, as against 6 per cent in 1904 and only 2.7 per cent in 1899. From 1904 to 1909 the amount paid for ammoniates increased \$475,587, or 83.8 per cent, while phosphate rock shows an increase of 5,738 tons, or 8.2 per cent, in quantity and of \$94,292, or 25.4 per cent, in cost.

The total value of products increased 36.4 per cent from 1899 to 1904 and 72.4 per cent from 1904 to 1909. In the output of complete fertilizer, which was the product of chief value in 1909, there was an increase

from 1904 to 1909 of 90,873 tons, or 155.8 per cent, the value increasing \$2,067,631, or 202.2 per cent. During the same period the production of superphosphates from minerals, bones, etc., increased 30.3 per cent in tonnage and 56.6 per cent in value, while the quantity of ammoniated fertilizers produced decreased 61,325 tons, or 57 per cent, and their value \$1,009,818, or 50.3 per cent.

MATERIAL OR PRODUCT.	1909	1904	1899
Materials used, total cost	\$5,389,110	\$3,240,875	\$2,161,423
Ammoniates:			
Tons.....	59,635	(1)	(1)
Cost.....	\$1,043,117	\$567,530	\$557,892
Ammonium sulphate:			
Tons.....	6,417	1,119	365
Cost.....	\$378,451	\$73,634	\$21,900
Kalmit:			
Tons.....	20,941	26,109	1,107
Cost.....	\$256,883	\$255,915	\$10,781
Nitrate of soda:			
Tons.....	4,882	5,473	1,774
Cost.....	\$216,431	\$225,697	\$64,901
Phosphate rock:			
Tons.....	75,493	(6),755	82,482
Cost.....	\$465,220	\$370,028	\$290,778
Potash salts:			
Tons.....	8,121	3,277	(1)
Cost.....	\$266,368	\$127,100	\$237,207
Pyrites:			
Tons.....	28,283	31,142	35,988
Cost.....	\$138,555	\$145,927	\$147,312
Sulphuric acid:			
Tons.....	21,250	14,343	16,211
Cost.....	\$93,528	\$83,507	\$90,246
Superphosphates:			
Tons.....	30,877	14,003	14,646
Cost.....	\$201,320	\$115,281	\$130,525
Fish.....	\$1,025,792	\$103,633	\$57,451
All other materials.....	\$913,436	\$1,080,433	\$543,440
Products, total value	\$8,034,543	\$4,659,281	\$3,415,850
Fertilizers:			
Tons.....	364,013	218,347	258,398
Value.....	\$6,569,787	\$3,879,385	\$3,323,479
Superphosphates from minerals, bones, etc.—			
Tons.....	68,040	52,207	120,633
Value.....	\$786,217	\$502,016	\$1,024,893
Ammoniated—			
Tons.....	46,318	107,643	4,300
Value.....	\$996,454	\$2,000,272	\$72,100
Complete—			
Tons.....	149,181	58,308	106,828
Value.....	\$3,090,124	\$1,022,403	\$1,820,771
Concentrated phosphate—			
Tons.....	38,552	(1)	(1)
Value.....	\$759,235	(1)	(1)
Other—			
Tons.....	62,516	30,189	26,637
Value.....	\$928,757	\$348,604	\$405,715
Sulphuric acid (reduced to 50° Baumé):			
Tons.....	933	(2)	1,514
Value.....	\$5,508	(2)	\$8,929
Fish scrap.....	\$998,761		
Pyrite clinker.....	\$13,348	\$779,896	\$83,442
Fish oil.....	\$142,835		
Chemicals not otherwise specified.....	\$55,892		
All other products.....	\$257,352		

¹ Figures not available.

² In addition, 8,794 tons of fertilizers, valued at \$218,538, were made by establishments engaged primarily in the manufacture of other products.

³ Not reported.

Boots and shoes.—The following statement shows the total number of pairs of the various kinds of boots, shoes, and slippers manufactured in Virginia during 1909, 1904, and 1899:

PRODUCT.	NUMBER OF PAIRS.		
	1909	1904	1899
Total	4,255,236	2,710,938	1,896,444
Boots and shoes, total.....	4,169,835	2,616,438	1,792,061
Men's.....	815,476	80,450	40,925
Boys' and youths'.....	361,846	216,116	2,899
Women's.....	2,370,961	2,013,408	1,450,989
Misses' and children's.....	621,552	297,404	297,214
Slippers, including infants' shoes and slippers.....	85,401	94,500	104,383

The total output of boots and shoes manufactured in the state increased 1,553,397 pairs, or 59.4 per cent, from 1904 to 1909, and 824,377 pairs, or 46 per cent, from 1899 to 1904. Women's boots and shoes formed the leading class of footwear in 1909, as at the two previous censuses, although constituting only 56.9 per cent of the total output, as against 77 per cent in 1904 and 81 per cent in 1899. Men's boots and shoes shows a marked development, the output having increased from 40,928 pairs in 1899 to 89,450 pairs in 1904 and 815,476 pairs in 1909. The output of boys' and youths' boots and shoes increased from 2,930 pairs in 1899 to 361,846 pairs in 1909, while that of misses' and children's was practically the same in 1904 as in 1899, but increased more than 100 per cent from 1904 to 1909.

The following table shows a distribution of the various kinds of footwear produced in 1909 according to the method employed in their manufacture:

PRODUCT.	NUMBER OF PAIRS, BY METHOD OF MANUFACTURE.			
	Total.	Machine or hand welt.	McKay.	All other methods. ¹
Boots and shoes.....	4,169,835	615,949	3,336,000	217,886
Men's.....	815,476	402,977	319,399	33,100
Boys' and youths'.....	361,846	35,884	285,362	40,600
Women's.....	2,370,961	117,088	2,185,873	68,000
Misses' and children's.....	621,552	.....	545,360	76,190
Slippers, including infants' shoes and slippers.....	85,401	.....	35,809	49,592

¹ Includes the wire-screw or metal-fastened, the turned, and the wooden-pegged.

Of the boots and shoes manufactured in the state in 1909, 3,336,000 pairs, or 80 per cent, were McKay sewed; 615,949 pairs, or 14.8 per cent, were machine or hand welt; and 217,886 pairs, or 5.2 per cent, were made by other methods. The women's, misses' and children's, and boys' and youths' boots and shoes were almost wholly McKay made, while more than half of the men's boots and shoes were machine or hand welt.

Laundries.—Statistics for steam laundries are not included in the general tables or in the totals for manufacturing industries. There were 57 such establishments in Virginia in 1909, 9 of which were in Richmond, 6 in Norfolk, 3 in Lynchburg, 3 in Petersburg, and 4 in Roanoke. The following statement summarizes the statistics:

Number of establishments.....	57
Persons engaged in the industry.....	1,523
Proprietors and firm members.....	63
Salaried employees.....	109
Wage earners (average number).....	1,351
Primary horsepower.....	1,199
Capital.....	\$835,607
Expenses.....	786,733
Services.....	503,046
Materials.....	173,097
Miscellaneous.....	109,690
Amount received for work done.....	1,003,191

Of the 57 establishments reported, 28 were operated by individuals, 17 by firms, and 12 by corporations. Thirteen establishments had receipts for the year's business of less than \$5,000; 26, receipts of \$5,000 but less than \$20,000; and 18, receipts of \$20,000 but less than \$100,000.

The number of wage earners employed each month and the per cent which this number represented of the greatest number employed in any month were as follows:

MONTH.	WAGE EARNERS.		MONTH.	WAGE EARNERS.	
	Number.	Per cent of maximum.		Number.	Per cent of maximum.
January.....	1,283	99.9	July.....	1,412	100.0
February.....	1,275	99.3	August.....	1,401	99.2
March.....	1,270	99.6	September.....	1,395	98.8
April.....	1,314	93.1	October.....	1,376	97.5
May.....	1,370	97.0	November.....	1,361	98.4
June.....	1,390	98.4	December.....	1,354	95.9

The different kinds of primary power, the number of engines or motors, and the horsepower used in 1909 are shown in the following tabular statement:

KIND.	Number of engines or motors.	H. P.
Primary power, total.....	.....	1,199
Owned:	.....	.....
Steam.....	53	1,031
Gas.....	2	17
Rented—Electric.....	50	151

The kind and amount of fuel used are shown in the following statement:

KIND.	Unit.	Quantity.
Anthracite coal.....	Tons.....	84
Bituminous coal.....	Tons.....	12,006
Coke.....	Tons.....	2,515
Wood.....	Cords.....	38
Oil.....	Barrels.....	38
Gas.....	1,000 feet.....	7,215

Custom sawmills and gristmills.—Statistics for custom sawmills and gristmills are not included in the general tables or in the totals for manufacturing industries, but are presented in the following summary:

	Custom sawmills.	Custom gristmills.
Number of establishments.....	284	1,261
Persons engaged in the industry.....	1,092	2,390
Proprietors and firm members.....	415	1,525
Salaried employees.....	1	9
Wage earners (average number).....	676	802
Primary horsepower.....	4,600	20,710
Capital.....	\$350,535	\$2,430,564
Expenses.....	143,596	4,019,761
Services.....	119,533	143,191
Materials.....	5,482	1,824,256
Miscellaneous.....	24,581	63,314
Value of products.....	206,068	1,468,631

¹ Includes estimate of all grain ground. A similar estimate for value of lumber sawed by custom sawmills is impracticable.

MANUFACTURES—VIRGINIA.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899.
THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES.

INDUSTRY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaried employes.	Wage earners (average number).							
Expressed in thousands.													
STATE—All industries.....	1909	5,685	120,797	6,570	8,551	105,676	283,028	\$216,392	\$9,101	\$38,154	\$125,583	\$219,794	\$64,211
	1904	3,187	88,898	3,643	4,970	80,285	176,998	147,989	4,875	27,943	83,649	148,857	65,208
	1899	3,186	.....	.....	3,828	66,223	136,696	92,300	3,030	20,274	59,359	108,644	49,285
Agricultural implements.....	1909	10	319	22	25	272	503	474	24	117	244	516	272
	1904	11	353	18	21	314	383	330	20	116	182	404	222
	1899	13	327	20	29	278	.....	473	22	108	128	343	215
Boots and shoes, including cut stock and findings.....	1909	10	2,973	6	256	2,711	1,453	3,990	252	805	4,020	5,800	1,789
	1904	10	1,801	.....	63	1,738	515	975	81	360	1,915	2,627	712
	1899	5	1,203	5	45	1,153	.....	641	51	206	1,160	1,452	292
Boxes, fancy and paper.....	1909	10	605	2	45	558	198	337	42	128	153	413	260
	1904	8	584	6	29	540	127	223	28	104	105	324	210
	1899	11	973	11	20	942	.....	371	31	101	310	632	322
Bread and other bakery products.....	1909	135	1,196	152	174	870	761	1,103	126	418	1,721	2,706	1,045
	1904	80	708	90	49	569	221	597	31	236	1,061	1,606	545
	1899	97	606	109	74	423	.....	321	30	157	473	922	449
Brick and tile.....	1909	86	2,311	87	134	2,090	5,540	3,083	142	732	510	1,922	1,412
	1904	84	2,176	84	128	1,964	4,977	3,146	118	680	420	1,804	1,375
	1899	80	1,664	90	56	1,418	.....	1,531	46	404	105	1,006	811
Canning and preserving.....	1909	325	2,427	476	91	1,860	1,382	1,129	35	277	1,208	1,854	640
	1904	170	1,877	262	44	1,071	1,048	688	16	181	790	1,218	428
	1899	99	867	143	34	690	.....	263	6	89	307	633	236
Carriages and wagons and materials.....	1909	130	1,609	142	138	1,329	2,032	3,020	137	529	1,283	2,485	1,202
	1904	102	1,540	121	87	1,332	1,735	2,078	75	473	1,199	2,292	1,096
	1899	150	.....	.....	42	964	.....	1,373	37	371	604	1,580	892
Cars and general shop construction and repairs by steam-railroad companies.....	1909	28	7,943	.....	355	7,588	6,412	3,098	332	4,082	5,255	6,956	4,701
	1904	29	7,740	.....	401	7,345	4,117	2,740	323	3,663	4,577	8,693	4,116
	1899	28	5,205	.....	283	4,022	.....	1,733	248	2,452	3,531	6,277	2,746
Clothing, men's, including shirts.....	1909	23	1,279	11	108	1,160	346	1,250	100	288	1,160	1,810	659
	1904	20	960	15	60	891	239	530	46	201	642	1,142	500
	1899	15	.....	.....	44	512	.....	238	29	97	312	556	244
Coke.....	1909	10	1,553	5	123	1,425	1,700	6,287	100	543	1,818	2,416	598
	1904	13	1,104	.....	70	1,094	4,830	3,467	58	440	1,183	1,885	792
	1899	5	808	.....	23	785	.....	1,252	26	226	677	1,073	396
Confectionery.....	1909	33	472	31	100	341	341	904	110	103	1,103	1,525	422
	1904	17	297	15	56	226	214	297	38	68	474	688	214
	1899	16	.....	.....	29	150	.....	100	10	35	398	443	135
Cooperage and wooden goods, not elsewhere specified.....	1909	118	1,808	158	84	1,566	2,577	2,220	83	490	1,111	2,069	958
	1904	45	1,720	77	60	1,583	2,308	2,145	67	429	980	1,716	736
	1899	75	.....	.....	67	1,259	.....	902	60	299	549	1,075	526
Cotton goods, including cotton small wares.....	1909	10	5,123	.....	66	5,057	19,750	14,070	130	1,480	4,669	7,490	2,701
	1904	10	3,501	.....	45	3,456	9,340	7,067	65	884	2,802	4,484	1,682
	1899	7	2,063	.....	32	2,031	5,020	4,403	50	669	1,412	2,655	1,243
Fertilizers.....	1909	45	2,199	10	233	1,956	5,560	9,767	260	760	5,380	8,035	2,646
	1904	37	1,935	16	118	1,801	5,643	4,872	111	571	3,241	4,659	1,418
	1899	39	1,318	35	112	1,171	.....	4,908	142	321	2,161	3,416	1,255
Flour-mill and gristmill products.....	1909	458	1,817	571	232	1,014	21,454	8,700	198	308	15,164	17,598	2,434
	1904	365	1,597	498	142	957	16,032	5,503	105	349	12,171	13,842	1,601
	1899	359	.....	.....	100	613	.....	3,198	67	262	7,484	8,042	1,458
Foundry and machine-shop products.....	1909	110	3,248	100	350	2,708	4,012	7,103	376	1,385	3,148	5,727	2,579
	1904	74	2,378	81	202	2,095	2,671	3,466	238	917	1,404	3,393	1,989
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Furniture and refrigerators.....	1909	34	1,096	26	80	990	2,326	1,620	78	349	724	1,438	714
	1904	20	786	20	53	713	1,500	763	45	229	382	803	421
	1899	14	223	18	13	192	.....	160	7	55	87	213	126
Gas, illuminating and heating.....	1909	21	494	1	115	378	1,116	4,808	95	217	431	1,472	1,041
	1904	19	350	1	81	268	367	2,747	64	136	285	980	695
	1899	12	186	.....	53	133	.....	2,625	42	85	131	483	352
Glass.....	1909	5	549	.....	25	524	245	526	41	306	251	682	431
	1904	4	485	.....	11	472	100	402	18	264	169	549	380
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hosiery and knit goods.....	1909	11	1,780	7	58	1,715	1,079	1,093	88	503	1,467	2,463	990
	1904	14	1,913	11	60	1,842	1,211	716	49	430	1,426	2,108	782
	1899	15	1,887	.....	38	1,845	.....	979	36	395	708	1,498	700
Ice, manufactured.....	1909	74	652	67	110	475	8,553	3,090	93	220	268	1,143	875
	1904	48	445	43	56	346	4,604	1,805	41	138	172	636	464
	1899	30	271	20	46	205	.....	1,199	35	87	106	428	322
Iron and steel, blast furnaces.....	1909	14	1,425	.....	105	1,320	17,320	6,305	189	540	4,418	5,389	971
	1904	10	1,150	.....	69	1,081	12,468	3,157	82	346	2,717	3,343	626
	1899	16	1,710	.....	116	1,594	.....	5,028	147	529	4,374	6,605	2,131

¹ Excluding statistics for two establishments, to avoid disclosure of individual operations.

² Excluding statistics for one establishment, to avoid disclosure of individual operations.

³ Figures not comparable.

⁴ Figures can not be shown without disclosing individual operations.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899—Continued.

THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES—Continued.

INDUSTRY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horsepower.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaried employes.	Wage earners (average number).							
Expressed in thousands.													
STATE—Continued.													
Leather goods.....	1909	31	1,725	33	205	1,487	058	\$2,600	\$283	\$527	\$1,001	\$3,492	\$1,501
	1904	22	1,495	22	110	1,303	599	1,307	111	470	1,148	2,120	972
	1899	19			80	767		433	62	200	490	993	494
Leather, tanned, curried, and finished...	1909	39	1,730	37	103	1,590	4,223	11,090	171	589	6,445	8,207	1,822
	1904	44	1,169	43	71	1,055	2,598	4,635	95	358	4,719	5,830	1,111
	1899	65	1,018	70	59	889		4,032	85	314	3,606	4,717	1,021
Lime.....	1909	35	803	20	58	716	924	938	47	232	300	856	556
	1904	20	461	19	24	418	371	368	10	148	235	497	262
	1899												
Liquors, distilled.....	1909	65	210	56	28	129	1,557	410	14	48	233	1,572	1,339
	1904	98	217	102	1	114	909	237	(2)	30	81	431	347
	1899	91	166	93	7	66		271	3	15	67	257	200
Liquors, malt.....	1909	6	432		78	354	3,170	2,687	115	185	411	1,616	1,205
	1904	6	331		59	272	2,172	2,252	82	151	202	1,201	909
	1899	6	372		72	300		2,001	90	145	216	973	767
Lumber and timber products.....	1909	2,617	37,031	3,479	1,165	33,287	99,474	28,392	1,170	0,062	13,892	35,855	21,063
	1904	938	17,000	1,263	603	15,134	44,212	13,253	538	4,972	6,801	18,727	11,836
	1899	991			539	14,480		8,255	380	3,915	6,856	15,218	8,362
Marble and stone work.....	1909	70	1,750	63	102	1,585	4,553	3,718	89	651	351	1,300	955
	1904	15	637	16	34	587	933	803	40	234	108	595	237
	1899	30			22	671		330	30	236	159	561	402
Mattresses and spring beds.....	1909	18	139	12	24	103	181	155	17	41	129	244	116
	1904	14	93	13	7	73	90	60	5	28	94	145	51
	1899	16			8	81		44	5	20	76	137	61
Paint and varnish.....	1909	8	80	5	22	53	241	204	25	21	188	345	157
	1904	3	115	5	17	93	645	213	28	23	114	195	81
	1899												
Paper and wood pulp.....	1909	9	981	1	68	612	9,770	5,268	163	412	2,148	3,657	1,500
	1904	9	1,058		65	993	7,800	5,517	134	363	1,780	3,034	1,245
	1899	7	336		34	302		2,282	58	103	411	850	439
Patent medicines and compounds and druggists' preparations.	1909	41	311	27	72	212	623	724	89	72	305	812	507
	1904	22	125	20	33	72	198	240	25	24	115	290	181
	1899	14	87	13	15	50		80	11	15	90	187	97
Peanuts, grading, roasting, cleaning, and shelling.	1909	25	1,062	15	131	1,516	2,271	2,865	135	258	7,126	7,033	807
	1904	26	1,458	14	112	1,332	1,562	1,115	113	196	6,149	7,055	906
	1899												
Printing and publishing.....	1909	369	3,710	347	817	2,555	2,210	5,456	688	1,307	1,405	5,370	3,065
	1904	309	2,934	330	593	2,101	1,243	3,566	382	903	973	3,522	2,540
	1899	259			326	1,655		2,709	224	601	648	2,499	1,851
Slaughtering and meat packing.....	1909	24	444	23	79	342	1,491	2,251	85	118	4,057	4,601	544
	1904	14	200	12	30	158	650	683	28	69	1,740	1,996	250
	1899	3	63	4	17	42		157	13	18	477	560	83
Stoves and furnaces, including gas and oil stoves.	1909	9	417		54	363	464	923	72	206	242	683	441
	1904	4	331		32	299	300	474	44	186	181	537	356
	1899												
Tobacco manufactures.....	1909	104	8,978	104	992	7,882	3,591	13,131	1,244	2,102	11,189	25,385	14,190
	1904	143	8,597	145	521	7,931	3,385	23,478	519	1,829	6,664	16,768	10,104
	1899	158	9,471	180	635	8,056		6,509	682	1,608	5,275	15,551	10,276
Wood preserving.....	1909	5	258		36	222	660	1,186	61	93	688	1,078	390
	1904	3	140		17	123	1,150	437	23	31	246	352	106
	1899												
Woolen, worsted, and felt goods, and wool hats.	1909	16	590	18	30	542	1,352	1,191	33	170	567	990	432
	1904	24	701	23	29	640	1,556	1,046	29	179	760	1,259	490
	1899	28	416	15	39	392		784	38	104	392	628	236
All other industries.....	1909	482	15,759	447	1,480	13,832	41,494	47,551	1,561	6,418	18,461	30,736	12,275
	1904	281	16,864	256	797	15,811	31,838	40,582	941	6,525	13,078	25,120	12,042
	1899	408			719	15,713		32,610	806	5,792	15,220	25,375	10,155

¹ Not reported separately.

² Less than \$500.

³ Excluding statistics for one establishment, to avoid disclosure of individual operations.

⁴ Figures can not be shown without disclosing individual operations.

⁵ Excluding statistics for two establishments, to avoid disclosure of individual operations.

MANUFACTURES—VIRGINIA.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899—Continued.

CITIES OF 50,000 INHABITANTS OR MORE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES.

INDUSTRY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaried employes.	Wage earners (average number).							
Expressed in thousands.													
NORFOLK—All industries	1909	215	5,590	104	647	4,740	20,408	\$10,744	\$636	\$2,041	\$5,482	\$10,341	\$4,850
	1904	121	3,292	125	232	2,935		4,374	236	1,091	3,202	5,739	2,537
	1899	140			231	2,638		4,419	187	004	2,542	4,692	2,150
Bread and other bakery products.....	1909	17	247	13	56	178	210	307	35	95	350	595	245
	1904	13	132	15	5	112		99	6	63	204	335	131
	1899	15			10	93		59	6	35	117	238	121
Flour-mill and gristmill products.....	1909	4	15	3	5	7	78	28	1	3	97	107	10
	1904	3	21		6	15		107	5	9	190	210	20
	1899												
Foundry and machine-shop products...	1909	12	231	19	18	104	248	284	22	134	88	316	228
	1904	7	253	10	16	227		215	19	107	62	240	178
	1899												
Ice, manufactured.....	1909	6	95	2	14	79	1,500	710	15	43	63	225	162
	1904	4	71	2	9	60		592	7	24	51	132	81
	1899	5			0	49		480	8	26	30	116	77
Lumber and timber products.....	1909	13	1,128	6	70	1,052	14,082	2,283	76	498	748	1,515	767
	1904	7	284	7	13	264		243	18	103	436	671	235
	1899	9			41	340		363	20	129	342	634	292
Patent medicines and compounds and druggists' preparations.	1909	9	35	6	10	19	3	192	15	6	29	87	58
	1904	4	22	8	3	11		8	1	5	5	18	13
	1899	4				6		3		1	4	9	5
Peanuts, grading, roasting, cleaning, and shelling.	1909	4	202	2	21	179	355	469	16	31	914	991	77
	1904	3	256		15	241		101	19	28	650	792	142
	1899												
Printing and publishing.....	1909	33	443	32	160	251	255	711	127	155	151	684	533
	1904	22	300	21	46	233		351	4	129	106	416	310
	1899	21			37	168		180	29	80	59	267	208
Tobacco manufactures.....	1909	13	94	12	3	79		65	3	42	59	139	80
	1904	9	94	8	10	76		39	11	38	41	124	83
	1899	12			6	89		46	4	30	44	111	67
All other industries.....	1909	104	3,100	90	290	2,711	3,677	5,686	326	1,034	2,083	5,682	2,699
	1904	49	1,859	54	109	1,680		2,619	140	585	1,457	2,801	1,344
	1899	74			128	1,893		3,273	111	594	1,937	3,317	1,380
RICHMOND—All industries	1909	380	17,300	302	2,149	14,840	20,087	\$31,660	\$2,486	\$5,821	\$24,252	\$47,358	\$23,106
	1904	300	13,795	278	1,073	12,444		30,942	1,125	4,156	13,763	27,745	13,982
	1899	276			1,032	13,715		16,890	1,128	4,316	11,466	24,670	13,184
Boxes, fancy and paper.....	1909	6	478	2	32	444	160	271	30	99	90	270	186
	1904	4	403	4	23	466		177	21	85	59	223	173
	1899	6			15	801		337	26	169	281	549	268
Bread and other bakery products.....	1909	23	491	23	60	408	334	422	63	191	839	1,291	452
	1904	18	304	21	17	266		297	15	100	521	769	248
	1899	17			20	162		86	0	67	162	361	139
Carriages and wagons and materials...	1909	14	156	20	12	124	53	166	10	71	104	286	182
	1904	12	140	14	4	122		129	4	55	45	140	95
	1899	15			2	115		121	2	49	49	159	110
Confectionery.....	1909	10	193	6	31	156	129	154	26	43	254	400	146
	1904	6	107	4	17	86		94	11	28	186	274	88
	1899	7			16	46		38	8	14	97	153	56
Foundry and machine-shop products...	1909	21	355	18	41	296	410	487	40	175	369	625	316
	1904	13	350	10	29	317		311	30	136	119	350	231
	1899												
Ice manufactured.....	1909	6	77	4	13	60	1,452	500	16	33	37	199	162
	1904	4	84	2	8	74		338	11	33	26	109	83
	1899	3			8	15		222	8	11	14	65	51
Leather goods.....	1909	12	453	10	56	387	210	813	79	160	594	1,045	451
	1904	4	108	9	16	83		86	17	28	144	236	92
	1899	4			10	66		81	6	21	114	217	103
Lumber and timber products.....	1909	15	706	13	61	632	1,726	1,113	59	286	656	1,187	531
	1904	13	472	19	46	407		650	36	186	377	718	341
	1899	9			32	389		478	20	142	317	678	361
Marble and stone work.....	1909	9	66	10	3	53	54	43	3	36	34	92	58
	1904	3	77	4	1	72		28	1	37	37	89	52
	1899	4			1	38		29	1	20	11	38	27
Paper and wood pulp.....	1909	4	220		25	195	1,405	816	49	82	382	748	366
	1904	3	181		24	157		744	49	57	209	446	237
	1899												

¹ Figures do not agree with those published in 1904, because it was necessary to revise the totals in order to include data only for those establishments located within the corporate limits of the city.

² Figures can not be shown without disclosing individual operations.

³ Figures not comparable.

⁴ Excluding statistics for one establishment, to avoid disclosure of individual operations.

⁵ Includes statistics for Manchester.

⁶ Excluding statistics for two establishments, to avoid disclosure of individual operations.

MANUFACTURES—VIRGINIA.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899—Continued.

CITIES OF 50,000 INHABITANTS OR MORE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES—Continued.

INDUSTRY AND CITY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaried employ-ees.	Wage earners (average number).							
Expressed in thousands.													
RICHMOND—Continued.													
Patent medicines and compounds and druggists' preparations.	1909	9	43	4	19	20	26	\$66	\$16	\$7	\$45	\$103	\$58
	1904	9	69	5	20	44	.....	154	18	12	79	106	87
	1899	4	.....	.....	15	37	.....	74	15	9	71	106	35
Printing and publishing.....	1909	82	1,510	68	353	1,089	941	2,281	339	585	732	2,780	2,054
	1904	71	1,207	73	237	807	.....	1,802	200	390	531	1,747	1,216
	1899	53	.....	.....	147	630	.....	1,590	110	300	250	1,682	832
All other industries.....	1909	169	12,552	124	1,443	10,985	13,187	24,528	1,747	4,053	20,176	38,320	18,144
	1904	139	10,197	113	631	9,453	.....	26,120	712	3,003	11,439	22,478	11,039
	1899	152	.....	.....	760	11,416	.....	13,828	914	3,514	10,120	21,322	11,202

CITIES OF 10,000 TO 50,000 INHABITANTS—ALL INDUSTRIES COMBINED.

Alexandria.....	1909	54	1,713	52	191	1,470	3,250	\$4,687	\$222	\$697	\$2,731	\$4,420	\$1,689
	1904	51	1,446	63	92	1,201	.....	2,328	93	655	992	2,187	1,195
	1899	57	.....	.....	94	850	.....	1,600	73	374	670	1,539	809
Danville.....	1909	52	3,346	46	224	3,076	4,634	6,059	279	903	3,236	5,389	2,153
	1904	34	3,177	28	131	3,018	.....	5,119	126	811	2,706	4,775	2,009
	1899	46	.....	.....	134	2,933	.....	4,324	106	694	1,868	3,694	1,826
Lynchburg.....	1909	82	4,519	48	445	4,026	7,952	9,217	454	1,544	6,459	10,188	3,729
	1904	55	2,793	41	218	2,534	.....	4,258	217	780	2,882	4,965	2,033
	1899	61	.....	.....	87	1,487	.....	2,300	79	451	1,525	2,994	1,469
Petersburg.....	1909	72	4,332	45	400	3,887	5,239	5,221	434	1,107	5,759	8,896	3,137
	1904	72	3,631	62	281	3,288	.....	4,592	240	806	3,794	5,891	2,097
	1899	77	.....	.....	222	3,608	.....	3,175	298	792	3,115	5,294	2,179
Portsmouth.....	1909	31	936	26	98	842	1,777	1,233	95	307	776	1,528	752
	1904	28	630	26	59	551	.....	594	46	185	486	945	459
	1899	22	.....	.....	53	471	.....	815	38	132	614	990	346
Roanoke.....	1909	62	3,989	43	402	3,544	6,774	4,828	389	1,718	4,044	7,201	3,217
	1904	54	3,493	43	331	3,089	.....	2,957	303	1,520	3,232	5,545	2,313
	1899	38	.....	.....	194	2,431	.....	1,916	162	1,107	3,593	5,398	1,805
Staunton.....	1909	44	447	56	52	339	601	715	43	118	890	1,223	327
	¹ 1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	² 1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ Excluding statistics for two establishments, to avoid disclosure of individual operations.

² Figures not available.

MANUFACTURES—VIRGINIA.

TABLE II.—DETAIL STATEMENT FOR

INDUSTRY.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—NUMBER DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.
		Total.	Proprietors and firm members.	Salted officers, supts. and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.				
					Male.	Female.	Average number.	Number.			Male.	Female.	Male.	Female.			
								Maximum month.	Minimum month.								
All industries	5,685	120,797	6,570	3,336	4,333	882	105,076	Se 115,098	Ja 94,885	(1)	(1)	(1)	(1)	(1)	283,928		
1 Agricultural implements.....	10	319	22	11	10	4	272	Fe 294	Jy 253	305	300	5	5	503			
2 Boots and shoes, including out stock and findings.....	10	2,973	6	68	120	02	2,711	Je 2,768	Fe 2,048	2,694	1,984	580	72	52	1,453		
3 Boxes, fancy and paper.....	10	605	2	31	9	5	558	No 587	Ja 480	586	06	451	9	30	193		
4 Bread and other bakery products.....	135	1,190	152	37	83	54	870	Se 910	Ja 830	875	740	100	27	8	761		
5 Brick and tile.....	80	2,311	87	88	39	7	2,090	Au 2,041	Ja 1,317	2,400	2,334	12	54	5,540			
6 Brooms.....	15	66	10	3	.....	.....	44	Se 47	My 40	45	40	2	3	10	
7 Butter, cheese, and condensed milk.....	11	28	10	2	.....	.....	16	Au 20	Mh 13	21	20	1	.....	141	
8 Canning and preserving.....	325	2,427	476	62	21	8	1,800	Se 7,469	Ja 181	7,473	2,175	3,075	578	1,045	1,382		
9 Carriages and wagons and materials.....	130	1,600	142	68	57	13	1,329	My 1,302	Ja 1,225	1,410	1,383	7	19	1	2,032		
10 Cars and general shop construction and repairs by steam-railroad companies.....	28	7,943	.....	58	293	4	7,588	Do 7,810	Jy 7,328	7,994	7,084	7	3	.....	6,412
11 Cars and general shop construction and repairs by street-railroad companies.....	7	132	.....	10	4	1	117	Je 123	Do 111	111	111	.....	.....	.....	121
12 Clothing, men's, including shirts.....	23	1,270	11	30	49	20	1,160	No 1,270	Jy 1,041	1,230	143	1,051	12	30	346		
13 Coko.....	16	1,553	5	34	80	3	1,425	Do 1,631	Jy 1,309	1,631	1,025	.....	6	.....	1,760
14 Confectionery.....	33	472	31	31	52	17	341	No 388	Ja 283	374	233	139	1	1	341		
15 Cooperage and wooden goods, not elsewhere specified.....	118	1,808	158	30	41	4	1,566	Je 1,783	Au 1,344	1,841	1,430	335	53	14	2,577		
16 Copper, tin, and sheet-iron products.....	43	945	49	30	39	9	818	Jy 931	Ja 635	950	704	126	53	13	296		
17 Cordage and twine and jut6 and linen goods.....	3	102	4	3	7	.....	88	My 112	Ja 61	69	22	45	2	.....	32
18 Cotton goods, including cotton small wares.....	10	5,123	.....	26	39	1	5,057	Fe 5,240	Se 4,901	5,098	2,910	1,504	364	320	19,750	
19 Dairy-men's, poulterers', and apiarists' supplies.....	12	42	14	1	.....	.....	27	Au 33	Ja 13	30	31	.....	5	.....	68
20 Flour-mill and gristmill products.....	45	2,199	10	92	121	20	1,950	Se 2,517	Do 1,027	2,510	2,504	7	5	.....	5,560	
21 Flour-mill and gristmill products.....	468	1,817	571	130	70	26	1,014	Oc 1,062	My 970	1,068	1,053	1	14	.....	21,454	
22 Foundry and machine-shop products.....	110	3,248	100	157	166	27	2,798	Do 3,166	Fe 2,473	3,166	3,133	1	32	.....	4,012	
23 Furniture and refrigerators.....	34	1,000	26	56	17	7	990	Do 1,033	My 944	1,073	976	5	92	.....	2,320	
24 Gas, illuminating and heating.....	21	494	1	38	69	8	378	Jy 418	Je 338	381	380	.....	1	.....	1,116
25 Glass.....	5	549	.....	14	10	1	524	Je 603	Jy 46	609	552	3	54	.....	245
26 Hand stamps and stencils and brands.....	5	99	6	5	26	6	56	Se 02	Ap 52	59	28	4	20	7	48		
27 Hosiery and knit goods.....	11	1,780	7	34	22	2	1,715	De 1,704	Ja 1,633	1,704	570	667	90	132	1,079		
28 Ice, manufactured.....	74	652	07	69	38	3	475	Jy 685	Ja 281	481	407	.....	14	.....	8,553
29 Iron and steel, blast furnaces.....	14	1,425	.....	31	60	5	1,320	De 1,704	My 1,114	1,699	1,084	.....	15	.....	17,320
30 Leather goods.....	31	1,725	33	68	121	21	1,487	Se 1,585	Ap 1,286	1,547	1,400	104	35	2	958		
31 Leather, tanned, curried, and finished.....	39	1,730	37	46	54	8	1,590	Au 1,710	Mh 1,487	1,501	1,524	30	7	.....	4,223	
32 Lime.....	35	803	29	34	18	0	716	Se 018	Ja 480	702	702	.....	.....	.....	924
33 Liqueurs, distilled.....	65	210	50	16	11	1	126	Do 182	My 90	218	218	.....	.....	.....	1,557
34 Liqueurs, malt.....	6	432	.....	37	36	5	364	Jy 409	Fe 306	337	337	.....	.....	.....	3,176
35 Lumber and timber products.....	2,617	37,931	3,479	670	425	70	33,287	No 35,949	Ja 29,010	40,692	39,875	187	630	.....	99,474	
36 Marble and stone work.....	70	1,750	63	48	46	8	1,585	Au 1,697	Ja 1,421	1,682	1,072	.....	10	.....	4,553
37 Mattresses and spring beds.....	18	139	12	9	13	2	103	Do 118	Ap 90	118	96	20	2	.....	181	
38 Oil, essential.....	5	12	6	.....	.....	.....	0	My 13	Jy 2	10	16	.....	.....	.....	48
39 Paint and varnish.....	8	80	5	12	5	5	53	Se 58	Ap 48	57	55	2	.....	.....	241
40 Paper and wood pulp.....	9	981	1	34	28	6	912	Au 997	My 865	935	838	94	3	.....	9,770	
41 Patent medicines and compounds, and druggists' preparations.....	41	311	27	26	35	11	212	Mh 227	Jy 175	222	181	34	7	.....	623	
42 Peanuts, grading, roasting, cleaning, and shelling.....	25	1,062	15	51	64	10	1,516	Ja 1,800	Au 1,099	1,746	366	1,341	1	38	2,271		
43 Pottery, terra-cotta, and fire-clay products.....	4	70	4	3	1	.....	68	Je 87	Mh 49	81	58	17	0	.....	158
44 Printing and publishing.....	369	3,719	347	250	400	167	2,555	De 2,652	Jy 2,504	2,660	1,931	603	123	3	2,210		
45 Silk and silk goods, including throwsters.....	7	857	.....	13	21	4	810	Do 869	Fe 708	802	335	410	44	78	1,858	
46 Slaughtering and meat packing.....	24	444	23	26	41	12	342	Ja 424	My 297	415	304	20	1	.....	1,491	
47 Stoves and furnaces, including gas and oil stoves.....	9	417	.....	25	25	4	303	No 388	Ja 321	392	384	.....	8	.....	464
48 Tobacco manufactures.....	104	8,978	104	303	590	93	7,882	De 8,401	Ja 7,226	8,825	3,470	4,810	278	261	3,591		
49 Wood preserving.....	5	258	.....	13	10	4	222	De 289	My 132	269	206	.....	3	.....	690
50 Woolen, worsted, and felt goods, and wool hats.....	16	590	18	22	7	1	542	Je 564	Fe 515	570	376	183	12	8	1,352		
51 All other industries.....	370	13,400	335	308	798	126	11,773	.....	.....	.....	.....	.....	.....	.....	38,684

1 No figures given for reasons explained in the Introduction, page 2. See also discussion of wage earners on page 8.

2 Same number reported for one or more other months.

3 All other industries embrace—

Artificial stone.....	28	Carpets and rugs, other than rag.....	1	Fancy articles, not elsewhere specified.....	1
Awnings, tents, and sails.....	7	Cars, steam-railroad, not including operations of railroad companies.....	2	Flags, banners, regalia, society badges and emblems.....	4
Babbitt metal and solder.....	7	Cash registers and calculating machines.....	1	Flavoring extracts.....	6
Bags, other than paper.....	3	Cement.....	1	Food preparations.....	2
Bags, paper.....	3	Chemicals.....	4	Foundry supplies.....	1
Baking powders and yeast.....	3	Clothing, women's.....	3	Fur goods.....	1
Baskets, and rattan and willow ware.....	3	Coffee and spice, roasting and grinding.....	10	Furnishing goods, men's.....	1
Belting and hose, leather.....	1	Coffins, burial cases, and undertakers' goods.....	3	Glass, cutting, staining, and ornamenting.....	1
Billiard tables and materials.....	1	Cutlery and tools, not elsewhere specified.....	2	Gloves and mittens, leather.....	3
Blackening and cleansing and polishing preparations.....	3	Dyestuffs and extracts.....	14	Grease and tallow.....	3
Bluing.....	2	Electrical machinery, apparatus, and supplies.....	2	Hats and caps, other than felt, straw, and wool.....	5
Boxes, cigar.....	3	Electroplating.....	5	Hats, straw.....	3
Brass and bronze products.....	1	Engraving and die-sinking.....	1	House-furnishing goods, not elsewhere specified.....	1

MANUFACTURES—VIRGINIA.

THE STATE, BY INDUSTRIES: 1909.

	Capital.	EXPENSES.										Value of products.	Value added by manu- facture.
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
1	\$216,392,388	\$196,246,119	\$5,029,417	\$4,071,373	\$38,154,506	\$7,184,245	\$118,398,442	\$516,150	\$6,235,001	\$1,713,523	\$14,043,402	\$210,793,858	\$94,211,171
2	473,693	426,580	12,067	11,367	117,015	13,064	230,140	3,630	1,720	12,202	24,175	516,358	272,554
3	3,999,690	5,610,340	141,577	110,624	804,921	20,615	3,998,880	14,836	27,295	566	401,018	5,808,503	1,788,900
4	337,008	374,802	31,402	10,383	128,278	6,030	146,767	7,375	2,278	.....	42,289	412,684	259,887
5	1,103,517	2,419,077	62,025	63,165	418,261	50,714	1,669,078	28,652	10,682	118	114,882	2,766,283	1,045,501
6	3,983,120	1,540,155	111,211	31,067	731,707	416,669	93,815	4,197	0,025	3,774	137,890	1,922,476	1,412,092
7	27,928	56,341	2,020	.....	11,133	531	40,208	905	213	10	1,321	67,800	27,061
8	96,812	62,313	680	.....	6,353	1,457	62,363	143	330	.....	1,007	67,467	13,637
9	1,128,576	1,573,307	23,567	11,713	277,153	19,061	1,188,306	3,377	4,104	2,703	42,423	1,854,318	646,051
10	3,028,729	2,145,609	90,153	46,620	520,313	23,176	1,200,104	15,951	15,838	7,564	156,089	2,485,221	1,201,941
11	3,998,169	9,955,501	77,519	254,282	4,082,312	163,706	5,001,107	.....	17,073	125,048	144,364	9,955,501	4,700,628
12	111,650	161,708	2,775	2,470	71,777	276	81,380	1,800	440	.....	841	161,708	80,112
13	1,250,150	1,674,839	47,081	53,080	288,108	10,057	1,149,053	5,973	6,917	4,002	100,512	1,818,885	658,875
14	6,286,982	2,646,821	50,650	58,825	542,747	1,728,106	90,146	.....	18,700	.....	157,557	2,415,769	597,517
15	603,907	1,424,942	47,490	62,700	102,030	9,834	1,093,100	9,614	3,613	2,274	93,682	1,625,119	422,185
16	2,220,123	1,864,121	37,957	44,640	489,967	10,252	1,100,290	3,754	8,305	3,782	165,084	2,060,687	658,546
17	4,364,054	1,641,024	48,030	44,771	360,040	11,123	1,040,484	8,048	4,640	1,633	111,755	2,047,690	987,083
18	198,000	101,292	3,336	4,000	27,660	559	146,025	2,225	1,138	.....	5,740	212,740	66,156
19	14,069,690	6,880,766	80,330	49,482	1,479,807	84,418	4,614,605	200	60,291	.....	502,573	7,489,653	2,700,630
20	18,207	16,042	500	.....	6,839	303	7,277	354	84	160	536	22,203	14,623
21	9,766,831	7,198,108	140,315	120,087	759,514	152,499	5,236,611	3,202	40,333	.....	727,547	8,034,543	2,045,433
22	8,699,852	16,020,735	131,361	66,423	398,460	96,270	15,097,908	27,605	33,431	2,588	202,509	17,698,046	2,433,777
23	7,102,703	5,273,380	225,313	150,273	1,385,486	108,907	2,979,101	16,408	25,028	150	318,814	6,727,014	2,579,006
24	1,620,085	1,246,491	61,501	16,601	348,857	14,682	799,644	3,598	5,983	.....	85,626	1,437,833	713,507
25	4,807,894	822,390	43,806	50,808	216,780	351,374	79,593	160	10,947	.....	60,631	1,472,384	1,041,507
26	520,462	628,027	25,525	15,580	305,719	59,896	109,891	.....	574	.....	20,842	681,900	431,113
27	58,950	71,851	7,290	6,800	22,560	795	16,409	1,400	433	.....	16,254	77,044	60,740
28	1,093,087	2,219,821	65,233	22,300	503,224	25,727	1,441,409	26,204	5,158	7,807	122,699	2,402,787	995,651
29	3,000,340	754,961	68,758	23,888	220,163	185,196	82,712	5,110	20,051	18	149,065	1,143,358	875,450
30	6,304,888	5,403,880	121,875	67,653	545,749	1,780,341	2,637,800	27,070	34,430	.....	188,002	5,389,287	971,086
31	2,600,003	2,938,430	113,060	169,774	520,080	9,237	1,891,907	0,778	18,439	25	108,924	3,492,051	1,500,907
32	11,089,690	7,562,493	111,787	59,583	588,591	43,564	6,401,657	8,550	31,660	.....	317,062	8,260,850	1,821,689
33	938,104	633,705	35,896	11,005	231,039	138,852	161,208	3,510	3,089	15	48,131	850,417	556,357
34	418,931	1,363,841	9,021	4,930	48,432	14,660	218,122	532	1,044,614	.....	23,524	1,572,112	1,339,330
35	2,687,340	1,294,284	76,397	39,444	185,451	44,700	395,845	.....	391,519	.....	301,519	1,615,062	1,205,417
36	28,302,248	28,731,977	826,006	344,333	0,001,588	106,153	13,786,246	39,981	127,085	1,144,784	2,395,201	35,855,310	21,062,011
37	3,715,747	1,161,926	53,185	35,926	650,936	49,708	301,190	4,072	6,078	.....	1,775	1,305,860	954,962
38	155,333	204,862	8,804	8,240	41,267	2,151	126,933	2,406	680	.....	14,309	244,499	115,415
39	3,850	4,151	.....	.....	1,240	65	2,040	.....	28	.....	178	6,230	3,525
40	293,937	276,408	20,857	4,112	20,028	2,084	185,955	4,235	1,048	.....	36,189	344,625	150,587
41	5,267,553	2,969,720	112,430	40,751	412,122	194,063	1,954,309	.....	13,272	.....	242,782	3,661,745	1,508,373
42	723,556	559,138	38,625	50,144	72,209	15,117	290,045	6,162	3,062	.....	83,714	811,742	506,580
43	2,805,097	7,693,847	76,370	58,403	258,028	19,255	7,100,906	8,030	10,516	.....	156,270	7,933,440	807,279
44	93,397	43,760	2,920	650	20,175	7,425	11,155	.....	210	.....	1,225	51,586	33,000
45	5,456,014	4,417,837	354,442	333,487	1,307,388	74,381	1,330,493	76,813	29,369	237,021	674,443	5,369,738	3,964,864
46	1,226,412	1,491,203	23,307	13,742	260,598	10,164	1,000,720	900	3,541	78,024	100,198	1,543,723	532,830
47	2,250,799	4,308,501	45,085	38,943	117,084	23,663	4,033,400	7,140	7,130	.....	34,766	4,600,630	543,477
48	923,178	558,239	42,798	29,396	206,402	10,959	230,622	350	3,602	.....	34,020	682,713	441,132
49	13,130,654	23,234,549	508,880	734,693	2,101,540	95,698	11,093,575	44,995	4,222,871	3,010	4,366,275	25,385,314	14,190,041
50	1,186,073	920,223	42,840	17,916	93,243	17,128	670,928	2,800	2,364	1,931	80,073	1,077,704	389,648
51	1,100,760	816,757	28,353	4,850	175,059	12,819	554,274	450	2,105	.....	38,026	900,441	432,348
52	41,352,474	24,740,957	726,657	670,612	5,628,802	893,521	15,125,978	69,105	110,463	72,353	1,443,466	26,470,555	10,457,056

*All other industries embrace—Continued.

Iron and steel, steel works and rolling mills.....	3	Optical goods.....	1	Soap.....	1
Iron and steel, doors and shutters.....	1	Paper goods, not elsewhere specified.....	3	Stationary goods, not elsewhere specified.....	1
Iron and steel forgings.....	2	Photo-engraving.....	2	Statuary and art goods.....	1
Kaolin and ground earths.....	5	Pipes, tobacco.....	1	Stereotyping and electrotyping.....	1
Liquors, vinous.....	2	Roofing materials.....	1	Sulphuric, nitric, and mixed acids.....	2
Locomotives, not made by railroad companies.....	1	Safes and vaults.....	1	Surgical appliances and artificial limbs.....	1
Looking-glass and picture frames.....	3	Scales and balances.....	1	Type founding and printing materials.....	1
Millinery and lace goods.....	1	Shipbuilding, including boat building.....	36	Umbrellas and canes.....	1
Mineral and soda waters.....	76	Show cases.....	1	Upholstering materials.....	10
Mirrors.....	1	Signs and advertising novelties.....	1	Vinegar and cider.....	28
Models and patterns, not including paper patterns.....	4	Silverware and plated ware.....	1	Wall plaster.....	2
Musical instruments, pianos and organs and materials.....	1	Smelting and refining, copper.....	1	Wire.....	1
Oil, cottonseed, and cake.....	1	Smelting and refining, zinc.....	1	Wirework, including wire rope and cable.....	3
		Smelting and refining, not from the ore.....	1	Wood, turned and carved.....	19

MANUFACTURES : WASHINGTON

STATISTICS OF MANUFACTURES FOR THE STATE, CITIES, AND INDUSTRIES

Prepared under the supervision of W. M. STEUART, Chief Statistician for Manufactures

INTRODUCTION.

This advance bulletin gives the statistics of manufactures for the state of Washington for the calendar year 1909 as shown by the Thirteenth Census. It will be reprinted without change as a part of the Compendium of the Census for Washington, and in the final reports of the Thirteenth Census.

The text summarizes the general results of the census inquiry, presenting a series of special tables in which the main facts printed in the general tables are given in convenient form for the state as a whole and for important industries. It also presents tables in which the statistics for the industries of the state as a whole and for a few important industries are classified by character of ownership, size of establishments, number of wage earners, and prevailing hours of labor, information which could not be presented in general tables for each industry without disclosing the facts for individual establishments.

At the end of the bulletin are two general tables.

Table I gives for 1909, 1904, and 1899 the number of establishments and of persons engaged in the industries, primary power, capital, salaries and wages, cost of materials, value of products, and value added by manufacture reported for all industries combined and for certain important industries (1) for the state as a whole and (2) for the cities of Seattle, Spokane, and Tacoma. It also gives the same items for all industries combined for every city and town having in 1910 a population of over 10,000 but less than 50,000.

Table II gives statistics in detail for 1909 for the state and for a larger number of industries.

Scope of census: Factory industries.—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 organization, location of establishments, size of establishments, labor force, and similar subjects. When use is made of the data for these purposes, it is imperative that due attention should be given to the limitations of the figures. Particularly is this true when the attempt is made to derive from them figures purporting to show average wages, cost of production, or profits. These limitations will be fully discussed in the general report on manufactures for the United States as a whole. It is impossible to reproduce such discussion in the bulletins relative to the individual states.

The census of 1909, like that of 1904, was confined to manufacturing establishments conducted under the factory system, as distinguished from the neighborhood, hand, and building industries. Where statistics for 1899 are given they have been reduced to a

comparable basis by eliminating the latter classes of industries. The census does not include establishments which were idle during the entire year, or had a value of products of less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions, or in governmental establishments, except those of the Federal Government.

Period covered.—The returns cover the calendar year 1909, or the business year which corresponds most nearly to that calendar year. The statistics cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—The term "establishment" comprises the factories, mills, or plants which are under a common ownership or control, and for which one set of books of account is kept.

If, however, the plants constituting an establishment as thus defined were not all located within the same city or state, separate reports were secured in order that the separate totals might be included in the statistics for each city or state. 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 very different from those covered by the class designation, and, on the other hand, may not include the total product covered by this designation, because some part of this product may be made in establishments in which it is not the product of chief value.

Selected industries.—The general tables at the end of this bulletin give the principal facts separately for the industries of the state. A selection has been made of the leading industries of the state for more detailed consideration. Sometimes an industry of greater importance than some of those selected is omitted because it comprises so few establishments that these detailed presentations would reveal the operations of individual concerns.

Comparisons with previous censuses.—Owing to the changes in industrial conditions it is not always possible to classify establishments by industries in such a way as to permit accurate comparison with preceding censuses. Table I, giving comparable figures for 1909, 1904, and 1899, therefore, does not embrace all the industries shown for 1909 in Table II.

Influence of increased prices.—In considering changes in cost of materials, value of products, and value added by manufacture, 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 can not be taken as an exact measure of increase in the volume of business.

Persons engaged in industry.—At the censuses of 1909, 1904, and 1899 the following general classes of persons engaged in manufacturing industries have been distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks, and (5) wage earners. In the censuses of 1904 and 1899 these five classes were shown according to the three main groups: (1) Proprietors and firm members, (2) salaried officials, clerks, etc., and (3) wage earners. The second group included the three classes of salaried officers of corporations, superintendents and

managers, and clerks. In the present census an entirely different grouping is employed: That into (1) proprietors and officials, (2) clerks, and (3) wage earners. The first group includes proprietors and firm members, salaried officers of corporations, and superintendents and managers.

At this census the number of persons engaged in the industries, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for December 15, or the nearest representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where conditions were exceptional, and particularly in the case of certain seasonal industries, such as canning, the December date could not be accepted as typical, and an earlier date had to be chosen.

In the case of employees other than wage earners the number thus reported on December 15, or other representative day, has been treated as equivalent to the average for the year, since the number of employees of this class does not vary much from month to month in a given industry. In the case of wage earners the average is obtained in the manner explained in the next paragraph.

Wage earners.—In addition to the report by sex and age of the number of wage earners on December 15, or other representative day, a report was obtained of the number employed on the 15th of each month, without distinction of sex or age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported each month by 12. The average thus obtained represents the number of wage earners that would be required to perform the work done if all were constantly employed during the entire year. Accordingly, the importance of any 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 for each separate industry, is not totaled for all industries combined, because in view of the variations of date such a total is believed not 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 particular, totals by sex and age for the wage earners reported for the representative day would be misleading because of the undue weight given to seasonal industries, in some of which, such as canning and preserving, the distribution of the wage earners by sex and age is materially different from that in most industries of more regular operation. In order to determine as nearly as possible the sex and age distribution of the average number of wage earners in the state as a whole, the following procedure has been adopted:

The percentage distribution by sex and age of the wage earners in each industry for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. This percentage has been applied to the average number of wage earners for the year in that industry, to determine the average number of men, women, and children employed. These calculated averages for the several industries have been added up to give the average distribution for the state as a whole.

In 1899 and 1904 the schedule called for the average number of wage earners of each sex 16 years and over, and the total number under 16 years of age, for each month, and these monthly statements were combined in an annual average. Comparatively few manufacturing concerns, however, keep their books in such way as to show readily the number of men, women, and children (under 16) employed each month. These monthly returns by sex and age were, in fact, largely estimates. It was believed that a more accurate and reliable sex and age distribution could be secured by taking as a basis of estimate the actual numbers employed on a single day.

Prevailing hours of labor.—The census made no attempt to ascertain the number of employees 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 period to another are disregarded, and no attention is given to the fact that a limited number of employees may have hours differing from those of the majority. In the tables all the wage earners of each establishment are counted in the class within which the establishment itself falls. In most establishments, however, all or practically all the employees work the same number of hours, so that these figures give a substantially correct picture of the hours of labor in manufacturing industries.

Capital.—For reasons stated in prior census reports, the statistics of capital secured by the census canvass are so defective as to be without value, except as indicating very general conditions. The instructions on the schedule for securing 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.

Materials.—Cost of materials refers to the materials used during the year, which may be more or less than the materials purchased during the year. The term materials includes fuel, rent of power and heat, mill supplies, and containers, as well as materials forming a constituent part of the product. Fuel includes all fuel used, whether for heat, light, or power, or for the process of manufacture.

Expenses. Under "Expenses" are included all items of expense incident to the year's business, except interest, whether on bonds or other forms of indebtedness, and allowances for depreciation.

Value of products.—The value of products for any industry includes the total value of all products manufactured in establishments whose products of chief value fall under the industry designation. The amounts given represent the selling value at the factory of all products manufactured during the year, which may differ from the value of the products sold. Amounts received for work on materials furnished by others are included.

Value added by manufacture.—The value of products is not 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 process carried on in the industry itself. Another part of it, and often by far the larger part, represents the value of the materials used, which have been produced by agriculture or mining or by other industrial establishments. For many purposes, therefore, the best measure of the importance of different classes of industry is the value created as the result of the manufacturing operations carried on within the industry. This value is obtained by deducting the cost of the materials used from the value of the product. The figure thus obtained is termed in the census reports "value added by manufacture."

There is a further statistical advantage which "value added" has over gross value of products. In combining the value of products for all industries the value of products produced by one establishment and used as materials in another is duplicated, and the total, therefore, gives a greatly exaggerated idea of the wealth created. No such duplication takes place in the total "value added by manufacture."

Cost of manufacture and profits.—Census data do not show the entire cost of manufacture, and consequently can not be used to show profits. No account has been taken of interest and depreciation. Even if the amount of profit could be determined by deducting the expenses from the value of the products, the rate of profit on the investment could not properly be calculated, because of the very defective character of the returns regarding capital.

Primary power.—The figures given for this item show the total of the primary power used by the establishments. They do not cover the power developed by motors operated by such power, the inclusion of which would evidently result in duplication.

Location of establishments.—The Census Bureau has classified establishments by their location in cities or classes of cities. In interpreting these figures due consideration should be given to the

fact that often establishments are located just outside the boundaries of cities, and are necessarily so classified, though locally they are looked upon as constituting a part of the manufacturing interests of the cities.

Laundries.—The census of 1909 was the first to include statistics of laundries. The reports are confined to establishments using mechanical power. The data are presented separately and are

INDUSTRIES IN GENERAL.

General character of the state.—Washington, with a gross area of 69,127 square miles, of which 2,291 represent water surface, ranks nineteenth in size among the states and territories of continental United States. Its population in 1910 was 1,141,990, as compared with 518,103 in 1900 and 357,232 in 1890. It ranked thirtieth among the 49 states and territories as regards population in 1910 and thirty-fourth in 1900, the rate of increase during the decade being 120.4 per cent, the largest shown for any state. The density of population for the entire state in 1910 was 17.1 per square mile, the corresponding figure for 1900 being 7.8. In 1910, 53 per cent of the entire population of the state resided in cities and incorporated towns having a population of 2,500 inhabitants or over, as against 39.9 per cent in 1900.

Three cities of the state had a population of over 50,000 in 1910, namely, Seattle, Spokane, and Tacoma. Five other cities, Everett, Bellingham, Walla Walla, North Yakima, and Aberdeen, each had a population exceeding 10,000. These eight cities contained 45.7 per cent of the total population of the state and were credited with 50.7 per cent of the total value of its manufactures. Only 7.4 per cent of the population resided in cities and towns having between 2,500 and 10,000 inhabitants.

The transportation facilities, already good, are being rapidly extended. Two of the most important railroad systems of the Northwest traverse the state and have their terminals on Puget Sound, one of the best commercial harbors in the United States. The traffic movement on the Columbia River is greater than on any other river west of the Mississippi. Other rivers of the state are navigable to some extent and afford cheap transportation for the products of the inland counties. The development of the interurban trolley lines in eastern Washington has done much to open the fertile valleys of this section to farming and fruit growing. Numerous mountain streams afford abundant water power, and a considerable quantity of bituminous coal is mined in the western and central portions of the state.

Importance and growth of manufactures.—In 1889 there were 1,543 manufacturing establishments in the state which reported products valued at \$41,768,022, and employed 18,677 wage earners, or 5.2 per cent of the total population. The proportion so employed in 1899 and 1909 was 6.1 per cent. In value of manufactured products, Washington ranked twenty-ninth among the states and territories in 1889 and twenty-

not included in the general total for manufacturing industries, in order to avoid interference with comparisons with prior censuses.

Custom sawmills and gristmills.—In order to make the statistics for 1909 comparable with those for 1904 the data for these mills have been excluded from all the tables presenting general statistics, and are given in a separate table at the end of this report.

first in 1909. During this period of 20 years the value of products per capita of the total population of the state increased from \$117 to \$193. The proportion which the manufactures of the state represented of the total value of manufactured products for the United States increased from four-tenths of 1 per cent in 1889 to 1.1 per cent in 1909.

Much of the growth in manufacturing has resulted directly from the development of the state's natural resources. The vast forests of Washington furnish lumber to many parts of the civilized world; its streams and bays support the important salmon-canning industry; and extensive grazing ranges and the luxuriant growth of bunch grass encourage stock raising, upon which the meat-packing and the butter, cheese, and condensed-milk industries depend.

The first table on page 4 gives the most important figures relative to all classes of manufactures combined for 1909, 1904, and 1899, together with the percentages of increase from census to census.

In 1909 the state of Washington had 3,674 manufacturing establishments, which gave employment to an average of 80,118 persons during the year and paid out \$59,593,000 in salaries and wages. Of the persons employed, 69,120 were wage earners. These establishments turned out products to the value of \$220,746,000, in the manufacture of which materials costing \$117,888,000 were utilized. The value added by manufacture was thus \$102,858,000, which figure, as explained in the Introduction, best represents the net wealth created by manufacturing operations during the year.

The statistics presented in this bulletin do not include those for an establishment owned and operated by the Federal Government, the Puget Sound Navy Yard, located at Bremerton. In 1909 this establishment employed an average of 1,065 wage earners, and the products, consisting principally of repair work, were valued at \$1,771,683.

In general, this table brings out the fact that while the manufacturing activities of the state have shown great increases during the past 10 years the development during the more recent five-year period, 1904-1909, was not as rapid as during the preceding five-year period, 1899-1904. The absolute increases, however, for all items shown in the table were larger for the later period than for the earlier one. From 1904 to 1909 the number of establishments increased 33.6 per cent, and the average number of wage earners 52.9 per cent, while the value of products increased 71.4 per cent, and the value added by manufacture 64.2 per

MANUFACTURES—WASHINGTON.

cent. As pointed out in the Introduction, it would be improper to infer that manufactures increased in volume to the full extent indicated by the figures rep-

resenting values, since the increase shown is certainly due, in part, to the increase that has taken place in the price of commodities.

	NUMBER OR AMOUNT.			PER CENT OF INCREASE.	
	1909	1904	1899	1904-1909	1899-1904
Number of establishments.....	3,674	2,751	1,926	33.6	42.8
Persons engaged in manufactures.....	80,118	51,459	(1)	55.7	(1)
Proprietors and firm members.....	3,264	2,602	(1)	25.4	(1)
Salaried employees.....	7,734	3,658	2,103	111.4	73.9
Wage earners (average number).....	69,120	45,199	31,523	52.9	43.4
Primary horsepower.....	297,897	168,342	87,601	77.0	92.2
Capital.....	\$222,261,000	\$96,953,000	\$41,575,000	129.2	133.2
Expenses.....	196,265,000	111,381,000	61,333,000	76.2	81.6
Services.....	59,593,000	34,180,000	19,128,000	74.4	78.7
Salaries.....	9,827,000	4,093,000	2,063,000	140.1	98.4
Wages.....	49,766,000	30,087,000	17,065,000	65.4	76.3
Materials.....	117,888,000	66,166,000	38,277,000	78.2	72.9
Miscellaneous.....	18,784,000	11,035,000	3,928,000	70.2	180.9
Value of products.....	220,746,000	128,822,000	70,831,000	71.4	81.9
Value added by manufacture (value of products less cost of materials).....	102,853,000	62,656,000	32,554,000	64.2	92.5

¹ Figures not available.

The relative importance and growth of the leading manufacturing industries of the state are shown in the following table. It should be borne in mind, in considering this table, that the value of products in

some of the industries involves a certain amount of duplication due to the use of the product of one establishment in the industry as material for another establishment.

INDUSTRY.	Number of establishments.	WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.		PER CENT OF INCREASE. ¹			
		Average number.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.	Value of products.		Value added by manufacture.	
								1904-1909	1899-1904	1904-1909	1899-1904
All industries.....	3,674	69,120	100.0	\$220,746,000	100.0	\$102,853,000	100.0	71.4	81.0	64.2	92.5
Lumber and timber products.....	1,263	43,749	63.3	89,155,000	40.4	52,270,000	50.8	62.1	73.7	36.9	99.1
Flour-mill and gristmill products.....	96	644	0.9	17,853,000	8.1	2,379,000	2.3	21.7	116.5	25.7	68.3
Slaughtering and meat packing.....	14	828	1.2	15,654,000	7.1	1,894,000	1.8	150.4	27.8	128.5	29.3
Canning and preserving.....	80	2,029	2.9	9,595,000	4.3	4,549,000	4.4	135.3	28.3	253.3	31.3
Printing and publishing.....	506	2,624	3.8	9,280,000	4.2	7,062,000	6.9	94.9	141.3	90.4	131.1
Foundry and machine-shop products.....	178	2,439	3.5	7,988,000	3.6	4,264,000	4.1	102.5	70.0	98.0	61.8
Butter, cheese, and condensed milk.....	97	735	1.1	7,271,000	3.3	1,595,000	1.6	142.0	151.5	105.4	132.0
Liquors, malt.....	31	765	1.1	6,903,000	3.1	4,672,000	4.5	54.4	263.3	33.9	272.6
Cars and general shop construction and repairs by steam-railroad companies.....	17	2,716	3.9	4,666,000	2.1	2,182,000	2.1	68.5	87.1	126.3	34.1
Bread and other bakery products.....	298	969	1.4	4,570,000	2.1	2,004,000	1.9	176.0	153.2	163.0	128.1
Brick and tile.....	58	1,300	1.9	2,559,000	1.2	1,008,000	1.0	279.1	58.1	262.7	52.0
Confectionery.....	52	612	0.9	2,208,000	1.0	897,000	0.9	68.4	194.6	70.0	176.6
Copper, tin, and sheet-iron products.....	81	583	0.8	1,946,000	0.9	1,043,000	1.0	179.7	90.5	125.8	89.5
Gas, illuminating and heating.....	12	466	0.7	1,684,000	0.8	1,023,000	1.0	167.0	35.1	122.0	197.7
Coffee and spice, roasting and grinding.....	15	131	0.2	1,399,000	0.6	575,000	0.6	122.2	51.3	142.2	41.9
Furniture and refrigerators.....	36	582	0.8	1,389,000	0.6	787,000	0.8	144.5	81.7	135.3	89.3
Marble and stone work.....	38	473	0.7	1,022,000	0.5	753,000	0.7	410,000	206,000	101.8	21.4
Leather goods.....	34	160	0.2	1,012,000	0.5	410,000	0.4	243.6	19.3	160.8	21.4
Awnings, tents, and sails.....	10	121	0.2	828,000	0.4	206,000	0.3	49.4	70.3	36.4	69.9
Carrriages and wagons and materials.....	37	241	0.3	720,000	0.3	401,000	0.4	166.0	77.0	65.3	120.8
Mattresses and spring beds.....	12	166	0.2	718,000	0.3	281,000	0.3	892.6	599.4	113.8	126.3
Food preparations.....	30	121	0.2	695,000	0.3	323,000	0.3	127.7	105.4	16.7	126.3
Tobacco manufactures.....	114	305	0.4	681,000	0.3	441,000	0.4	120.6	133.7	106.4	132.2
Clothing, men's, including shirts.....	10	269	0.4	617,000	0.3	248,000	0.3	25.7	165.0	30.3	130.5
Ice, manufactured.....	25	163	0.2	588,000	0.3	417,000	0.4	12.2	44.3	44.3	.....
Pottery, terra-cotta, and fire-clay products.....	8	289	0.4	523,000	0.2	411,000	0.4	130.4	71.4	117.7	92.7
Lime.....	12	188	0.3	376,000	0.2	207,000	0.3	69.9	186.2	73.0	174.1
Artificial stone.....	41	105	0.2	325,000	0.1	203,000	0.2	.....	.....	.....	.....
Fur goods.....	15	71	0.1	316,000	0.1	172,000	0.2	.....	.....	.....	.....
Paint and varnish.....	5	57	0.1	282,000	0.1	128,000	0.1	.....	.....	.....	.....
Cooperage and wooden goods, not elsewhere specified.....	8	97	0.1	273,000	0.1	139,000	0.1	.....	.....	.....	.....
Patent medicines and compounds and druggists' preparations.....	18	38	0.1	258,000	0.1	152,000	0.1	160.6	62.3	145.2	29.2
All other industries.....	414	5,085	7.4	27,410,000	12.4	8,730,000	8.5	.....	.....	.....	.....

¹ Percentages are based on figures in Table I, and a minus sign (—) denotes a decrease. Where the percentages are omitted, the figures are not comparable.

Although a few industries greatly predominate in importance, it will be seen from Table II, page 22, that there is, on the whole, considerable diversity in the manufacturing activities of the state. The most important industries listed in the preceding table, in which they are arranged in the order of the value of products, call for brief consideration.

Lumber and timber products.—Although 17 states surpassed it in the number of active mills, Washington occupied first place among the states in the quantity of rough lumber produced in 1909, when it reported 8.7 per cent of the total output of lumber for all states and territories; in 1899 the state stood sixth in this respect. This industry embraces logging operations, sawmills, shingle mills, planing mills, and establishments engaged in the manufacture of wooden packing boxes. It does not include mills engaged exclusively in custom sawing for local consumption, statistics for which are given on page 17. In 1909 the establishments in the lumber and timber industry gave employment to an average of 43,749 wage earners, or nearly two-thirds of the total number in all manufacturing industries in the state, and reported products valued at \$89,155,000, or 40.4 per cent of the state total.

Flour-mill and gristmill products.—This classification includes statistics for all mills manufacturing flour, meal, hominy and grits, feed, and offal, but it does not include statistics for factories making fancy cereals or other food preparations as a chief product. In 1909 products valued at \$17,853,000 were reported, and employment was given to an average of 644 wage earners. While from 1904 to 1909 there was an increase of 21.7 per cent in the value of products, the rate of increase was not as large as it was during the earlier five-year period, when it was 116.5 per cent. The data for custom gristmills are not included in the general statistics for the state, but are given separately on page 17.

Slaughtering and meat packing.—This classification includes the wholesale slaughtering and meat-packing establishments and those engaged in the manufacture of sausage only, but not the numerous retail butcher shops which slaughter a large number of animals. From 1904 to 1909 the value of products increased 150.4 per cent, and from 1899 to 1904 the increase was 27.8 per cent. The industry is largely confined to the cities of Seattle, Tacoma, and Spokane.

Canning and preserving.—This industry covers the canning of fruits and vegetables, fish, oysters, clams, etc., the packing of dried fruits by packing houses which make a specialty of such business, the preparation of pickled, smoked, and salted fish, and the manufacture of pickles, preserves, jellies, sauces, etc. It does not include the drying and packing of fruits by the grower on the farm, nor does it include the canning of meats, soups, and similar products in meat-packing

establishments, the statistics for which are included with those for the slaughtering and meat-packing industry. This industry experienced a decrease of 28.9 per cent in value of products from 1899 to 1904. In the following five years, however, there was a rapid growth, the number of establishments increasing from 61 to 80, the average number of wage earners from 689 to 2,029, and the value of products from \$3,617,000 to \$9,595,000, or 165.3 per cent.

Printing and publishing.—All establishments engaged in bookbinding and blank-book making, steel and copper plate engraving, including plate printing, lithographing, job printing, and the printing and publishing of books, newspapers and periodicals, and music are included in this classification. In 1909 printing and publishing was the second industry in the state in number of establishments and in value added by manufacture, third in the average number of wage earners, and fifth in value of products.

Foundry and machine-shop products.—A great diversity of products is included under this heading, which embraces not only foundries and machine shops, but also establishments primarily engaged in the manufacture of hardware, plumber's supplies, steam fittings, and structural ironwork. The industry was really of greater importance in the state than is indicated by the statistics, as some machine shops manufactured a distinctive product and were assigned to other classifications. Among the most important products of this industry in 1909 were milling machinery, logging and mining equipment, and marine machinery and ship parts.

Butter, cheese, and condensed milk.—This industry includes butter factories, cheese factories, and condensed-milk factories. In 1909 the state was third in the production of condensed milk, fifteenth in the output of cheese, and thirteenth in the output of butter. The industry gave employment to an average of 735 wage earners and reported products valued at \$7,271,000, an increase of \$4,278,000, or 142.9 per cent, over the figures for 1904.

Liquors, malt.—In 1909, as in 1904, there were 31 breweries in the state. The average number of wage earners employed increased during this period from 476 to 765. In value of products and in value added by manufacture there were increases of 54.4 per cent and 33.9 per cent, respectively, from 1904 to 1909. The corresponding increases for the previous five-year period were 263.3 per cent and 272.6 per cent, respectively.

Measured by value added by manufacture, the rank of these leading industries is somewhat different from their order when measured by value of products. The lumber and the canning and preserving industries remain in first and fourth places, respectively; the flour-mill and gristmill products industry drops from second to sixth; slaughtering and meat packing from third to tenth; and the butter, cheese,

and condensed-milk industry from seventh to eleventh place. Printing and publishing advances from fifth to second place, and the malt-liquor industry from eighth to third. The railroad repair shop, bakery, and brick and tile industries each advance two places—from ninth, tenth, and eleventh, to seventh, eighth, and ninth, respectively.

This table also shows the percentages of increase for these leading industries in respect to value of products and value added by manufacture where comparative statistics can be given. The manufacture of artificial stone showed the greatest rate of increase, the value of products in 1909 being twenty-five times the value reported in 1904. The manufacture of brick and tile; awnings, tents, and sails; and food preparations each show increases of over 200 per cent from 1904 to 1909, and 14 other industries presented in the table show increases of over 100 per cent.

None of the industries decreased in value of products or value added by manufacture during the period 1904-1909, but the canning and preserving industry decreased in both items from 1899 to 1904.

In addition to the 32 industries presented separately in the preceding table, there are 12 other industries which in 1909 had a value of products in excess of \$500,000. They are included under the head of "All other industries" in the table because in some cases the operations of individual establishments would be disclosed if they were shown separately; in others because the returns do not properly present the true condition of the industry, for the reason that it is more or less interwoven with one or more other industries; and in still others because comparable statistics for the different census years can not be presented on account of changes in classification. These industries are as follows: Bags, other than paper; boots and shoes, including cut stock and findings; cars and general shop construction and repairs by street-railroad companies; cement; jewelry; paper and wood pulp; shipbuilding, including boat building; smelting and refining, copper; smelting and refining, lead; wirework, including wire rope and cable; wood preserving; and wool pulling. Statistics, however, for the street-railroad repair shops and shipbuilding industries are given in Table II, page 22, for 1909.

Persons engaged in manufacturing industries.—The next table shows for 1909 the distribution of the number of persons engaged in manufactures, the average number of wage earners being distributed by sex and age. It should be borne in mind, however, that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

The average number of persons engaged in manufactures during 1909 was 80,118, of whom 69,120 were wage earners. Of the remainder, 6,314 were proprietors and officials, and 4,684 were clerks. Correspond-

ing figures for individual industries will be found in Table II, page 22.

CLASS.	PERSONS ENGAGED IN MANUFACTURES.		
	Total.	Male.	Female.
All classes	80,118	76,342	3,776
Proprietors and officials.....	6,314	6,201	113
Proprietors and firm members.....	3,264	3,178	86
Salaried officers of corporations.....	1,004	1,078	16
Superintendents and managers.....	1,056	1,945	11
Clerks.....	4,684	3,880	804
Wage earners (average number).....	69,120	66,261	2,859
16 years of age and over.....	68,854	66,042	2,812
Under 16 years of age.....	266	219	47

The following table shows for 1909 the percentages of proprietors and officials, clerks, and wage earners, respectively, among the total number of persons employed in manufactures. It covers all industries combined and 14 important industries individually.

INDUSTRY.	Total number.	Per cent of total.		
		Proprietors and officials.	Clerks.	Wage earners (average number).
All industries	80,118	7.9	5.8	86.3
Bread and other bakery products.....	1,514	20.7	9.3	64.0
Brick and tile.....	1,447	8.1	2.1	89.8
Butter, cheese, and condensed milk.....	978	11.6	13.3	75.2
Canning and preserving.....	2,284	5.5	5.7	88.8
Cars and general shop construction and repairs by street-railroad companies.....	2,880	2.5	3.2	94.3
Confectionery.....	780	10.8	10.8	78.5
Copper, tin, and sheet-iron products.....	750	18.1	4.1	77.7
Flour-mill and gristmill products.....	973	15.4	18.4	66.2
Foundry and machine-shop products.....	2,961	10.7	6.9	82.4
Gas, illuminating and heating.....	675	4.0	26.2	68.9
Liquors, malt.....	978	7.8	14.0	78.2
Lumber and timber products.....	47,447	5.1	2.7	92.2
Printing and publishing.....	4,583	17.2	25.6	57.3
Slaughtering and meat packing.....	971	3.0	10.8	86.3
All other industries.....	10,897	13.2	7.3	79.5

Of the total number of persons engaged in all manufacturing industries, 7.9 per cent were proprietors and officials, 5.8 per cent clerks, and 86.3 per cent wage earners. In the bakery industry, in the manufacture of copper, tin, and sheet-iron products, and in printing and publishing the majority of the establishments are small and the work is to a large extent done by the proprietors or their immediate representatives, so that the proportion of persons engaged in these industries falling into the class of proprietors and officials is higher than for most other industries or for all industries combined. The steam-railroad repair shops show the smallest percentage of proprietors and officials, chiefly on account of the large size of the establishments.

The following table shows for 1909 in percentages, for all industries combined, the distribution of the average number of wage earners by age periods and of those 16 years of age and over by sex, calculated in the manner described in the Introduction. It also shows, for some of the important industries separately,

a similar distribution of wage earners as reported for December 15, or the nearest representative day. As a means of judging the importance of the several industries, the average number employed for the year is also given in each case.

according to sex, for 1909, 1904, and 1899. The averages for 1909 are estimated on the basis of the actual number reported for a single representative day. (See Introduction.)

INDUSTRY.	WAGE EARNERS.			
	Average number. ¹	Per cent of total.		
		16 years of age and over.		Under 16 years of age.
		Male.	Female.	
All industries.....	69,120	95.5	4.1	0.4
Bread and other bakery products.....	909	70.4	28.9	0.7
Brick and tile.....	1,300	99.5	0.3	0.2
Butter, cheese, and condensed milk.....	735	84.4	15.0	0.7
Canning and preserving.....	2,029	75.1	23.5	1.4
Cars and general shop construction and repairs by steam-railroad companies.....	2,710	100.0		
Confectionery.....	612	33.7	66.0	0.3
Copper, tin, and sheet-iron products.....	583	98.6	1.2	0.2
Flour-mill and gristmill products.....	644	98.9	1.1	
Foundry and machine-shop products.....	2,430	99.8	(3)	0.2
Gas, illuminating and heating.....	465	100.0		
Liquors, malt.....	765	99.3	0.7	
Lumber and timber products.....	43,740	99.5	0.4	0.1
Printing and publishing.....	2,624	81.8	13.3	5.0
Slaughtering and meat packing.....	828	97.5	2.5	
All other industries.....	8,602	88.2	11.8	0.5

CLASS.	AVERAGE NUMBER OF WAGE EARNERS.					
	1909		1904		1899	
	Number.	Percent distribution.	Number.	Percent distribution.	Number.	Percent distribution.
Total.....	69,120	100.0	45,190	100.0	31,523	100.0
16 years of age and over.....	66,042	95.5	43,782	96.9	30,441	97.2
Male.....	66,042	95.5	43,782	96.9	30,441	97.2
Female.....	2,812	4.1	1,304	2.9	631	2.0
Under 16 years of age.....	236	0.4	113	0.2	251	0.8

This table indicates that during the last 10 years, for all industries combined, there has been a slight decrease in the proportion of male wage earners 16 years of age and over and a decided increase in the proportion of female wage earners 16 years of age and over employed. While the number of children under 16 years of age employed in 1909 was slightly larger than that reported in 1899, they constituted only four-tenths of 1 per cent of the total number in 1909 as compared with eight-tenths of 1 per cent in 1899. In 1909 males 16 years of age and over formed 95.5 per cent of all wage earners, as compared with 96.9 per cent in 1904 and 97.2 per cent in 1899.

Wage earners employed by months.—The next table gives the number of wage earners employed on the 15th of each month during the year 1909 for all industries combined, for the canning and preserving industry (the number employed in the mills and in logging operations being shown separately), and for all other industries combined; it gives also the percentage which the number reported for each month is of the greatest number reported for any month. In Table II, page 22, are shown, for most of the important industries of the state, the largest number and also the smallest number of wage earners reported for any month. The figures are for the 15th day, or the nearest representative day, of the month.

The fluctuations in the average number of wage earners employed in all industries followed closely the changes in the lumber industry, which in each month of the year gave employment to more than one-half of the total number of wage earners reported for all industries. Of the total number of wage earners reported for this industry, approximately two-thirds were employed in the mills and one-third in logging operations. The greatest monthly variation occurred in the mills, 31,773 wage earners being employed in October, the month of maximum employment, and 22,168, or 69.8 per cent of the maximum, in January, the month of minimum employment. April was the month of greatest activity in logging operations. The number employed in the canning

¹ For method of estimating the distribution, by sex and age periods, of the average number in all industries combined, see Introduction.
² Less than one-tenth of 1 per cent.

In all industries combined, 95.5 per cent of the average number of wage earners were males 16 years of age and over; 4.1 per cent, females 16 years of age and over; and but four-tenths of 1 per cent, children under the age of 16. The confectionery, bakery, and canning and preserving industries employed the largest proportions of women, 66 per cent, 28.9 per cent, and 23.5 per cent, respectively; while the proportion of children was greatest in the printing and publishing and in the canning and preserving industries.

In order to compare the distribution of persons engaged in manufactures in 1909 with that shown at the census of 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) The following table makes this comparison according to occupational status:

CLASS.	PERSONS ENGAGED IN MANUFACTURES.				
	1909		1904		Per cent of increase, 1904-1909.
	Number.	Percent distribution.	Number.	Percent distribution.	
Total.....	80,118	100.0	51,459	100.0	55.7
Proprietors and firm members.....	3,204	4.1	2,002	5.1	25.4
Salaried employees.....	7,734	9.7	3,058	7.1	111.4
Wage earners (average number).....	69,120	86.3	45,190	87.8	52.0

Comparable figures are not obtainable for 1899. The table shows a greater percentage of increase in the salaried employees than in either of the other two classes.

The following table shows the average number of wage earners distributed according to age periods, and in the case of those 16 years of age and over

and preserving industry was not sufficiently large to have much influence on the total number reported for the state. The number of wage earners employed ranged from 483 in January to 3,972 in August. Other

seasonal industries, such as the beet-sugar industry, employed too small a number of wage earners to affect to any appreciable extent the general movement of employment in the state.

MONTH.	NUMBER OF WAGE EARNERS.											
	All industries.		Canning and preserving.		Lumber and timber products.						All other industries.	
	Number.	Per cent of maximum.	Number.	Per cent of maximum.	Total.		In mills.		In logging operations.		Number.	Per cent of maximum.
					Number.	Per cent of maximum.	Number.	Per cent of maximum.	Number.	Per cent of maximum.		
January.....	54,710	74.0	483	12.2	33,411	70.9	22,168	69.8	11,243	72.0	20,825	85.5
February.....	60,410	81.7	648	16.3	38,200	81.0	25,164	79.2	13,036	83.5	21,671	88.6
March.....	66,778	90.3	1,015	25.6	43,048	92.6	28,474	89.6	15,174	97.2	22,115	90.8
April.....	71,091	96.1	1,882	47.4	46,236	98.1	30,627	96.4	15,609	100.0	22,973	94.3
May.....	72,717	98.3	2,233	56.2	40,770	90.2	31,430	98.9	15,340	98.3	23,714	97.3
June.....	72,159	97.6	2,291	57.7	45,695	96.0	30,930	97.3	14,765	94.6	24,173	99.2
July.....	70,744	95.7	3,725	93.8	43,062	91.4	30,340	95.5	12,722	81.5	23,957	98.3
August.....	72,990	98.7	3,972	100.0	45,145	95.8	31,378	98.8	13,767	88.2	23,873	98.0
September.....	73,617	99.6	2,926	73.7	46,741	99.2	31,660	99.6	15,081	96.6	23,950	98.3
October.....	73,949	100.0	2,496	62.8	47,133	100.0	31,773	100.0	15,360	98.4	24,320	99.8
November.....	72,614	98.2	1,772	44.6	46,573	98.8	31,213	98.2	15,300	98.4	24,269	99.6
December.....	67,646	91.5	917	23.1	42,368	89.0	28,882	90.9	13,486	80.4	24,300	100.0

Prevailing hours of labor.—In the following table wage earners have been classified according to the hours of labor prevailing in the establishments in which they are employed. In making this classification the average number of wage earners employed

during the year is used, and the number employed in each establishment is classified as a total according to the hours prevailing in that establishment, even though a few employees work a greater or less number of hours.

INDUSTRY.	AVERAGE NUMBER OF WAGE EARNERS IN ESTABLISHMENTS GROUPED ACCORDING TO PREVAILING HOURS OF WORK PER WEEK.								
	Total.	48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
All Industries.....	69,120	5,677	1,725	7,988	1,019	48,781	2,653	270	409
Artificial stone.....	105	47	4	30	3	21			
Awnings, tents, and sails.....	121	37	22	62					
Bread and other bakery products.....	969	22	150	341	42	364	16	21	13
Brick and tile.....	1,300	5		109	12	674	500		
Butter, cheese, and condensed milk.....	735	31		87	16	181	415	3	2
Canning and preserving.....	2,029	101		24	58	1,350	460	18	
Carriages and wagons and materials.....	241	8	4	212		17			
Cars and general shop construction and repairs by steam-railroad companies.....	2,716		574	1,410	23	601	99		
Clothing, men's, including shirts.....	269	255	10			4			
Coffee and spice, roasting and grinding.....	131	64	36	12	12	7			
Confectionery.....	612	34	22	207	221	124	3		1
Cooperage and wooden goods, not elsewhere specified.....	97	1	50			46			
Copper, tin, and sheet-iron products.....	583	470	7	43	43	20			
Flour-mill and gristmill products.....	644	45		45	17	333	27	177	
Food preparations.....	121	26	3	14	37	29			
Foundry and machine-shop products.....	2,439	332	58	1,084	0	47	0		
Fur goods.....	71	14	4	53					
Furniture and refrigerators.....	582	103	14	88		377			
Gas, illuminating and heating.....	465		2		99	267	84	13	
Ice, manufactured.....	163	15		8	55	24	37	0	18
Leather goods.....	160	13		111	13	20		3	
Lime.....	188			1	1	167		16	
Liquors, malt.....	706	613	67	58	0	16		2	
Lumber and timber products.....	43,740	113	32	988	313	42,102	137		61
Marble and stone work.....	473	250	15	140		50			
Mattresses and spring beds.....	166		2	3	18	143			
Paint and varnish.....	57			5	36	16			
Pottery, terra-cotta, and fire-clay products.....	289			78		211			
Printing and publishing.....	2,024	1,878	294	324	37	86		2	
Slaughtering and meat packing.....	828	10		31		776		5	
Tobacco manufactures.....	305	202	36	3		4			
All other industries.....	5,123	913	319	1,497	545	695	817	26	311

It is evident from these figures that for 70.6 per cent of the wage earners employed in the manufacturing industries of Washington the prevailing hours of labor were 60 a week. This large percentage is explained by the general prevalence of 60 hours per week in the predominant lumber industry. In the steam-railroad re-

pair shops and the foundries and machine shops, the greater part of the wage earners were in establishments where 54 hours a week prevailed. In the manufacture of copper, tin, and sheet-iron products, and in the brewery, marble and stone work, printing and publishing, and a number of less important industries, the majority

of the wage earners were employed 48 hours or less per week, while in the butter, cheese, and condensed-milk industry the majority were employed in factories operating between 60 and 72 hours per week.

Location of establishments.—The next table shows the extent to which the manufactures of Washington

are centralized in cities of 10,000 population or over. (See Introduction.) The comparison is confined here, as in other states, to the years 1899 and 1909, in the absence of a Federal census of population by which the grouping of cities in 1904 could be determined.

ITEM.	Year.	Aggregate.	CITIES HAVING A POPULATION OF 10,000 AND OVER.								DISTRICTS OUTSIDE OF CITIES HAVING A POPULATION OF 10,000 AND OVER.	
			Total.		10,000 to 25,000.		25,000 to 100,000.		100,000 and over.		Number or amount.	Per cent of total.
			Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.		
Population.....	1910	1,141,990	521,557	45.7	90,218	8.4	83,748	7.3	341,596	20.9	620,433	54.3
	1900	518,103	176,344	34.0	21,111	4.1	155,233	30.0			341,759	66.0
Number of establishments.....	1909	3,074	1,030	44.4	317	8.6	270	7.5	1,037	28.2	2,044	66.6
	1899	1,920	691	35.9	81	4.2	610	31.7			1,235	64.1
Average number of wage earners..	1909	60,120	27,525	39.8	0,440	9.3	5,765	8.3	15,320	22.2	41,505	60.2
	1899	31,523	10,767	34.2	1,715	5.4	9,052	28.7			20,756	65.8
Value of products.....	1909	\$220,746,421	\$112,003,002	50.7	\$20,105,134	9.1	\$22,440,979	10.2	\$60,448,789	31.5	\$108,742,519	49.3
	1899	70,831,345	32,073,483	45.6	3,593,480	5.1	20,380,003	41.5			37,857,862	53.4
Value added by manufacture.....	1909	102,858,733	49,237,949	47.9	9,317,029	9.1	8,733,843	8.5	31,187,077	30.3	53,620,784	52.1
	1899	32,554,401	13,561,487	41.7	1,419,110	4.4	12,142,371	37.3			18,992,014	58.3

In 1909, 50.7 per cent of the total value of products was reported from cities having over 10,000 inhabitants in 1910 and 39.8 per cent of the average number of wage earners were employed in such cities, as compared with corresponding percentages of 46.6 and 34.2 in 1899. The increase in the relative industrial importance of this class of cities has, however, been somewhat less than the increase in their proportion of the total population. The large percentages of the various totals for manufacturing industries reported from the districts outside such cities are mainly the result of the development of the lumber, canning, and dairy-products industries, which are carried on chiefly in rural territory.

In 1910 the group of cities having between 10,000 and 25,000 inhabitants comprised Everett, Bellingham, Walla Walla, North Yakima, and Aberdeen. Tacoma was the only city having between 25,000 and 100,000 inhabitants, and Seattle and Spokane the only ones having over 100,000 inhabitants.

As a result of the large increases in the population of the various cities, the composition of the different groups shown in the table has changed considerably during the last decade. In 1900 Seattle and Spokane had less than 100,000 inhabitants, so that for 1899 they are included with Tacoma in the group of cities having between 25,000 and 100,000 inhabitants. Aberdeen, Everett, and North Yakima had less than 10,000 inhabitants in 1900, and hence for 1899 were included in the district outside of cities having a population of 10,000 or over. The statistics for cities of over 10,000 inhabitants for 1899 include those for the towns of Fairhaven and New Whatcom, with a combined population of 11,062 in 1900, which in 1903 were united and incorporated as the city of Bellingham.

The group of cities having between 10,000 and 25,000 inhabitants, to which three cities have been added since 1900, shows an increase in its percentage of the

total for every item in 1909, as compared with 1899; and the group comprising cities having between 25,000 and 100,000 inhabitants, which lost two cities during the decade, shows a decrease for every item. The class of cities having over 100,000 inhabitants is shown for the first time for 1909. Of the total value of products reported for the state in 1909, 9.1 per cent was reported from the five cities having between 10,000 and 25,000 inhabitants, 10.2 per cent from Tacoma, and 31.5 per cent from Seattle and Spokane.

The population, for 1910 and 1900, of the eight cities which had 10,000 inhabitants or more in 1910 is given in the following statement:

CITY.	1910	1900
Seattle.....	237,194	80,671
Spokane.....	104,402	39,848
Tacoma.....	83,743	37,714
Everett.....	24,814	7,838
Bellingham.....	24,298	11,002
Walla Walla.....	10,304	10,040
North Yakima.....	14,082	3,154
Aberdeen.....	13,660	3,747

The relative importance in manufactures of the eight cities of 10,000 inhabitants or more in 1910 is shown in the following table, in which the value of products and average number of wage earners are shown separately, so far as available, for 1909, 1904, and 1899:

CITY.	AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.		
	1909	1904	1899	1909	1904	1899
Seattle.....	11,331	6,390	4,440	\$50,560,108	\$25,406,574	\$15,322,531
Tacoma.....	5,795	4,467	3,552	22,440,979	14,263,818	10,301,353
Spokane.....	3,989	2,428	1,080	18,879,591	8,830,852	3,750,119
Everett.....	2,375	(1)	(1)	7,423,087	(1)	(1)
Bellingham ¹	1,566	1,314	1,502	4,590,037	3,293,988	2,620,046
Aberdeen.....	1,509	(1)	(1)	3,590,230	(1)	(1)
Walla Walla.....	388	242	213	2,316,813	1,435,791	904,434
North Yakima.....	602	(1)	(1)	2,175,307	(1)	(1)

¹ Figures not available.

² Not incorporated as Bellingham until 1903. Same area represented by towns of Fairhaven and New Whatcom in 1900.

Each of the five cities for which comparative statistics are given shows an increase in value of products and in average number of wage earners employed for both five-year periods, except that Bellingham shows a decrease in average number of wage earners for the period 1899-1904. The percentages of increase in value of products were on the whole slightly greater from 1904 to 1909 than from 1899 to 1904. The greatest relative gain in this respect for the period 1904-1909, 113.8 per cent, was made by Spokane, which shows a marked growth in practically all industries. The next largest increase, 99 per cent, was made by Seattle, which shows increased activity especially in the lumber, slaughtering, printing, and foundry and machine-shop industries. In the average number of wage earners, Seattle shows the greatest percentage of increase for the period 1904-1909, namely, 77.3 per cent, and Spokane the next largest, 64.3 per cent. Tacoma

shows an increase of 57.4 per cent in value of products and 29.3 per cent in average number of wage earners for the same period, while Walla Walla shows increases of 55.9 per cent and 60.3 per cent, respectively, in these items. The lumber industry leads in importance in all of the cities of the state except Walla Walla, where the flour-mill and gristmill industry predominates.

Character of ownership.—The table that follows has for its purpose the presentation of conditions in respect to the character of ownership, or legal organization, of manufacturing enterprises. For all industries combined, comparative figures are given covering the censuses of 1909 and 1904. Comparative data for 1899 are not available. Figures for 1909 only are presented for several important industries individually. In order to avoid disclosing the operations of individual concerns it is necessary to omit several important industries from this table and the one following.

INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.	INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
ALL INDUSTRIES:									
1909.....	3, 674	69, 120	\$220, 746, 421	\$102, 853, 733	Canning and preserving, 1909—Continued.				
1904.....	2, 751	45, 199	128, 821, 667	62, 655, 502	Per cent of total.....	100.0	100.0	100.0	100.0
Individual:					Individual.....	21.2	8.4	7.0	6.6
1909.....	1, 445	6, 814	20, 580, 962	11, 653, 583	Firm.....	6.2	1.9	4.2	5.2
1904.....	1, 134	6, 032	13, 051, 438	8, 055, 890	Corporation ¹	72.5	89.7	88.8	88.2
Firm:					Flour-mill and gristmill products, 1909.				
1909.....	752	5, 100	14, 250, 330	8, 252, 151	Individual.....	96	644	\$17, 852, 644	\$2, 378, 848
1904.....	617	5, 020	11, 655, 995	6, 704, 870	Individual.....	24	38	720, 140	64, 890
Corporation:					Firm.....	18	63	670, 987	167, 801
1909.....	1, 444	57, 107	185, 171, 875	82, 803, 534	Corporation ¹	64	553	10, 252, 788	2, 116, 157
1904.....	926	34, 107	103, 215, 832	47, 790, 352	Per cent of total.....	100.0	100.0	100.0	100.0
Other:					Individual.....	25.0	5.0	4.0	4.0
1909.....	33	99	743, 248	144, 465	Firm.....	18.7	8.2	4.9	7.1
1904.....	24	40	298, 352	98, 381	Corporation ¹	56.2	85.9	91.0	89.0
Per cent of total:					Foundry and machine-shop products, 1909.				
1909.....	100.0	100.0	100.0	100.0	Individual.....	178	2, 439	\$7, 987, 931	\$4, 263, 909
1904.....	100.0	100.0	100.0	100.0	Individual.....	62	238	608, 682	396, 926
Individual:					Firm.....	37	188	620, 106	350, 987
1909.....	39.3	9.9	9.3	11.3	Corporation.....	79	2, 013	6, 750, 053	3, 509, 996
1904.....	43.0	13.3	10.6	12.9	Per cent of total.....	100.0	100.0	100.0	100.0
Firm:					Individual.....	34.8	9.8	7.6	9.3
1909.....	20.5	7.4	6.5	8.0	Firm.....	20.8	7.7	6.8	8.4
1904.....	22.4	11.1	9.0	10.7	Corporation.....	44.4	82.5	84.5	82.3
Corporation:					Lumber and timber products, 1909.				
1909.....	39.3	82.6	83.0	80.5	Individual.....	1, 263	43, 749	\$89, 154, 820	\$52, 275, 954
1904.....	33.7	75.5	80.1	76.3	Individual.....	322	3, 273	6, 290, 252	4, 078, 610
Other:					Firm.....	284	3, 190	6, 048, 031	3, 905, 700
1909.....	0.9	0.1	0.3	0.1	Corporation.....	657	37, 280	70, 790, 537	44, 231, 572
1904.....	0.0	0.1	0.2	0.2	Per cent of total.....	100.0	100.0	100.0	100.0
Butter, cheese, and condensed milk, 1909.					Individual.....	25.5	7.5	7.1	7.8
Individual.....	97	735	\$7, 271, 047	\$1, 594, 856	Firm.....	22.5	7.3	6.8	7.6
Individual.....	27	58	787, 342	114, 467	Corporation.....	52.0	85.2	86.1	84.6
Firm.....	12	26	510, 173	78, 413	Printing and publishing, 1909.				
Corporation.....	40	610	5, 333, 026	1, 333, 094	Individual.....	506	2, 624	\$9, 286, 188	\$7, 062, 598
Other.....	18	35	640, 506	67, 992	Individual.....	315	882	3, 335, 207	2, 538, 270
Per cent of total.....	100.0	100.0	100.0	100.0	Firm.....	72	233	1, 017, 854	\$75, 807
Individual.....	27.8	7.9	10.8	7.2	Corporation.....	107	1, 498	4, 883, 078	3, 605, 131
Firm.....	12.4	3.5	7.0	4.9	Other.....	12	11	49, 440	43, 390
Corporation.....	41.2	83.8	73.3	83.6	Per cent of total.....	100.0	100.0	100.0	100.0
Other.....	18.6	4.8	8.8	4.3	Individual.....	62.3	33.0	35.9	35.9
Canning and preserving, 1909.					Firm.....	14.2	8.9	11.0	12.4
Individual.....	80	2, 029	\$9, 595, 387	\$4, 549, 884	Corporation.....	21.1	57.1	52.6	51.0
Individual.....	17	170	672, 497	299, 573	Other.....	2.4	0.4	0.5	0.6
Firm.....	6	38	404, 671	238, 370					
Corporation ¹	58	1, 821	8, 518, 310	4, 011, 921					

¹ Includes the group "Other," to avoid disclosure of individual operations.

The most important distinction shown is that between corporate and all other forms of ownership. For all industries combined, 39.3 per cent of the total number of establishments were in 1909 under corporate ownership, as compared with 60.7 per cent under all other forms. The corresponding figures for 1904 were 33.7 per cent and 66.3 per cent, respectively. The

establishments operated by corporations, however, reported 83.9 per cent of the total value of products in 1909, as against 16.1 per cent for those under all other forms of ownership, while in 1904 the corresponding figures were 80.1 per cent and 19.9 per cent, respectively. Establishments operated by individuals show the greatest decrease in relative nu-

merical importance from 1904 to 1909, while those operated by firms show the greatest decrease in relative importance as measured by value of products.

Size of establishment.—The tendency for manufacturing to become concentrated in large establishments, or the reverse, is a matter of interest from the standpoint of industrial organization. In order to throw some light upon it the following table groups the es-

tablishments according to the value of their products. The table also shows the average size of establishments for all industries combined and for certain important industries separately as measured by number of wage earners, value of products, and value added by manufacture. The totals for all industries are shown for the last two censuses, while for the industries presented separately figures are given for 1909 only.

INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.	INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
ALL INDUSTRIES:					Flour-mill and gristmill products, 1909.				
1909.....	3,674	69,120	\$220,746,421	\$102,858,733	Less than \$5,000.....	96	644	\$17,852,944	\$2,378,848
1904.....	2,751	45,199	128,821,687	62,655,502	\$5,000 and less than \$20,000.....	3	1	7,040	1,475
Less than \$5,000:					\$20,000 and less than \$100,000.....	24	24	294,065	55,148
1909.....	902	963	2,307,468	1,630,474	\$100,000 and less than \$1,000,000.....	33	90	1,529,688	260,308
1904.....	765	895	1,662,006	1,353,000	\$1,000,000 and over.....	32	390	10,630,124	1,663,703
\$5,000 and less than \$20,000:					Average per establishment.....	4	139	5,302,027	558,154
1909.....	1,276	5,018	13,824,059	8,598,987	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	977	5,234	10,749,963	9,942,106	Less than \$5,000.....	3.1	0.2	(?)	0.1
\$20,000 and less than \$100,000:					\$5,000 and less than \$20,000.....	25.0	3.7	1.0	2.3
1909.....	1,073	18,671	47,224,421	26,287,103	\$20,000 and less than \$100,000.....	34.4	14.0	8.6	10.0
1904.....	758	14,562	32,957,702	19,105,305	\$100,000 and less than \$1,000,000.....	33.3	60.0	69.5	63.2
\$100,000 and less than \$1,000,000:					\$1,000,000 and over.....	4.2	21.0	30.2	23.5
1909.....	403	37,553	114,920,746	55,916,250	Average per establishment.....	7		\$185,068	\$24,780
1904.....	238	20,411	55,150,420	27,024,134	Foundry and machine-shop products, 1909.				
\$1,000,000 and over:					Less than \$5,000.....	178	2,439	\$7,987,931	\$4,263,909
1909.....	20	6,015	42,379,727	10,410,910	\$5,000 and less than \$20,000.....	42	52	128,740	80,426
1904.....	13	4,047	28,001,570	7,030,717	\$20,000 and less than \$100,000.....	60	230	625,904	387,804
Per cent of total:					\$20,000 and less than \$100,000.....	64	921	2,020,980	1,524,797
1909.....	100.0	100.0	100.0	100.0	\$100,000 and less than \$1,000,000.....	12	1,230	4,600,247	2,204,822
1904.....	100.0	100.0	100.0	100.0	Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000:					Less than \$5,000.....	23.6	2.1	1.6	2.0
1909.....	24.6	1.4	1.1	1.0	\$5,000 and less than \$20,000.....	33.7	9.4	7.8	9.1
1904.....	27.8	2.0	1.5	2.2	\$20,000 and less than \$100,000.....	30.0	37.8	32.9	35.8
\$5,000 and less than \$20,000:					\$100,000 and less than \$1,000,000.....	6.7	50.7	67.7	53.1
1909.....	34.7	8.6	0.3	8.4	Average per establishment.....	14		\$44,870	\$23,055
1904.....	35.5	11.0	8.3	11.1	Lumber and timber products, 1909.				
\$20,000 and less than \$100,000:					Less than \$5,000.....	1,263	43,740	\$89,154,820	\$52,275,954
1909.....	29.2	27.0	21.4	25.0	\$5,000 and less than \$20,000.....	161	923	437,304	322,212
1904.....	27.6	32.2	25.6	30.5	\$20,000 and less than \$100,000.....	390	2,844	4,605,974	3,074,410
\$100,000 and less than \$1,000,000:					\$20,000 and less than \$100,000.....	505	11,068	22,907,212	14,473,202
1909.....	11.0	54.3	52.1	54.4	\$100,000 and less than \$1,000,000.....	204	20,884	57,507,240	32,604,937
1904.....	8.7	45.2	42.8	44.1	\$1,000,000 and over.....	3	1,700	3,617,000	1,711,184
\$1,000,000 and over:					Per cent of total.....	100.0	100.0	100.0	100.0
1909.....	0.5	8.7	10.2	10.1	Less than \$5,000.....	12.7	0.7	0.5	0.6
1904.....	0.5	9.1	21.7	12.2	\$5,000 and less than \$20,000.....	30.9	6.5	5.2	5.9
Average per establishment:					\$20,000 and less than \$100,000.....	40.0	27.4	25.8	27.7
1909.....	19	10	\$60,083	\$27,090	\$100,000 and less than \$1,000,000.....	16.2	61.4	64.5	62.5
1904.....	16	16	46,827	22,770	\$1,000,000 and over.....	0.2	3.0	4.1	3.3
Butter, cheese, and condensed milk, 1909.					Average per establishment.....	35		\$70,590	\$41,390
Less than \$5,000.....	97	735	\$7,271,647	\$1,594,850	Printing and publishing, 1909.				
\$5,000 and less than \$20,000.....	5	2	19,358	3,894	Less than \$5,000.....	508	2,624	\$9,286,188	\$7,062,598
\$20,000 and less than \$100,000.....	27	35	325,382	60,071	\$5,000 and less than \$20,000.....	242	220	647,084	512,531
\$100,000 and less than \$1,000,000.....	15	550	4,554,995	1,192,683	\$20,000 and less than \$100,000.....	200	684	1,859,002	1,440,025
Per cent of total.....	100.0	100.0	100.0	100.0	\$100,000 and less than \$1,000,000.....	54	885	2,200,718	1,080,976
Less than \$5,000.....	5.2	0.3	0.3	0.2	\$1,000,000 and over.....	10	835	4,488,484	3,411,000
\$5,000 and less than \$20,000.....	27.8	4.8	4.5	3.8	Per cent of total.....	100.0	100.0	100.0	100.0
\$20,000 and less than \$100,000.....	51.5	20.1	32.6	21.2	Less than \$5,000.....	47.8	8.4	7.0	7.3
\$100,000 and less than \$1,000,000.....	15.5	74.8	62.6	74.8	\$5,000 and less than \$20,000.....	39.5	26.1	20.0	20.5
Average per establishment.....			\$74,959	\$16,442	\$20,000 and less than \$100,000.....	10.7	33.7	24.7	23.0
Canning and preserving, 1909.					\$100,000 and less than \$1,000,000.....	2.0	31.8	48.3	48.3
Less than \$5,000.....	80	2,029	\$9,595,387	\$4,549,864	Average per establishment.....	6		\$18,352	\$13,058
\$5,000 and less than \$20,000.....	8	14	21,237	11,236	Per cent of total.....				
\$20,000 and less than \$100,000.....	15	111	165,447	92,302	Less than \$5,000.....	10.0	0.7	0.2	0.2
\$100,000 and less than \$1,000,000.....	25	334	1,064,605	458,446	\$5,000 and less than \$20,000.....	18.8	5.5	1.7	2.0
Per cent of total.....	100.0	100.0	100.0	100.0	\$20,000 and less than \$100,000.....	31.2	16.5	11.1	10.1
Less than \$5,000.....	10.0	0.7	0.2	0.2	\$100,000 and less than \$1,000,000.....	40.0	77.4	87.0	87.6
\$5,000 and less than \$20,000.....	18.8	5.5	1.7	2.0	Average per establishment.....	25		\$119,942	\$50,873
\$20,000 and less than \$100,000.....	31.2	16.5	11.1	10.1					
\$100,000 and less than \$1,000,000.....	40.0	77.4	87.0	87.6					
Average per establishment.....			\$119,942	\$50,873					

¹ Includes the group "\$1,000,000 and over."

² Less than one-tenth of 1 per cent.

This table shows that, in 1909, of the 3,674 manufacturing establishments in the state, only 20, or one-half of 1 per cent, manufactured products exceeding \$1,000,000 in value. These establishments, however, employed an average of 6,015 wage earners, or 8.7 per cent of the total number in all establishments, and reported 19.2 per cent of the total value of products and 10.1 per cent of the total value added by manufacture.

On the other hand, the very small establishments—that is, those reporting products valued at less than \$5,000—constituted a considerable proportion (24.6 per cent) of the total number of establishments, but the value of their products amounted to only 1.1 per cent of the total. Nearly three-fourths of the total value of products was reported from establishments having a product valued at not less than \$100,000.

It will be seen from the preceding table that during the five years from 1904 to 1909 the establishments reporting products valued at \$100,000 but less than \$1,000,000 increased considerably in relative importance as measured by average number of wage earners, value of products, and value added by manufacture, while on the other hand all other classes decreased.

The fact that between 1904 and 1909 the average value of products per establishment increased from \$46,827 to \$60,083, and the average value added by manufacture from \$22,776 to \$27,996, can not be taken as in itself indicating a tendency toward concentration. The increased values may be, and proba-

bly are, due wholly or in part to the increase that has taken place in the prices of commodities. The average number of wage earners per establishment increased during this period from 16 to 19.

In some respects, and especially from the standpoint of conditions under which persons engaged in manufactures work, the best classification of establishments to bring out the feature of size is a classification according to the number of wage earners employed. The next table shows for 1909 such a classification for all industries combined and for 14 important industries individually, and gives not only the number of establishments falling into each group but also the average number of wage earners employed.

INDUSTRY.	Total.	ESTABLISHMENTS EMPLOYING—								
		No wage earners.	1 to 5 wage earners.	6 to 20 wage earners.	21 to 50 wage earners.	51 to 100 wage earners.	101 to 250 wage earners.	251 to 500 wage earners.	501 to 1,000 wage earners.	Over 1,000 wage earners.
NUMBER OF ESTABLISHMENTS.										
All industries.....	3,674	322	1,694	1,019	334	149	123	30	2	1
Bread and other bakery products.....	298	69	106	20	2	1	1			
Brick and tile.....	58		20	20	10		2			
Butter, cheese, and condensed milk.....	97	6	73	11	3	1				
Canning and preserving.....	80	2	22	35	15	4	2			
Cars and general shop construction and repairs by steam-railroad companies.....	17		2	3	2	3	2			1
Confectionery.....	52	3	30	14	1	3	1			
Copper, tin, and sheet-iron products.....	81	2	49	24	6					
Flour-mill and gristmill products.....	96	5	62	23	5	1				
Foundry and machine-shop products.....	178	10	83	64	13	2	6			
Gas, illuminating and heating.....	12	1	2	5	1	2	1			
Liquors, malt.....	31	3	5	15	5	2				
Lumber and timber products.....	1,203	14	333	491	200	109	94	20	2	
Printing and publishing.....	500	102	312	73	11	0	2			
Slaughtering and meat packing.....	14		4	5	1	1	2	1		
All other industries.....	891	105	495	207	59	12	11	2		
AVERAGE NUMBER OF WAGE EARNERS.										
All industries.....	69,120		4,108	11,750	10,852	10,989	10,009	9,922	1,425	1,085
Bread and other bakery products.....	959		407	270	73	99	120			
Brick and tile.....	1,300		70	213	271		740			
Butter, cheese, and condensed milk.....	735		141	102	121	206	165			
Canning and preserving.....	2,029		70	444	484	302		729		
Cars and general shop construction and repairs by steam-railroad companies.....	2,710		7	43	77	248	575	681		1,085
Confectionery.....	612		80	144	22	262	104			
Copper, tin, and sheet-iron products.....	583		115	204	204					
Flour-mill and gristmill products.....	644		145	266	178	55				
Foundry and machine-shop products.....	2,439		109	720	391	168	965			
Gas, illuminating and heating.....	405		4	51	20	143	241			
Liquors, malt.....	705		13	186	152	134		280		
Lumber and timber products.....	43,749		1,023	5,948	6,428	7,908	14,458	6,550	1,425	
Printing and publishing.....	2,624		659	762	412	404	207			
Slaughtering and meat packing.....	828		7	69	40	61	392	250		
All other industries.....	8,092		1,168	2,202	1,973	899	1,602	668		
PER CENT OF AVERAGE NUMBER OF WAGE EARNERS.										
All industries.....	100.0		5.9	17.0	15.7	15.9	27.5	14.4	2.1	1.6
Bread and other bakery products.....	100.0		42.0	27.9	7.5	10.2	12.4			
Brick and tile.....	100.0		5.4	16.4	20.8		57.4			
Butter, cheese, and condensed milk.....	100.0		19.2	13.9	16.5	28.0	22.4			
Canning and preserving.....	100.0		3.4	21.9	23.9	14.0		35.9		
Cars and general shop construction and repairs by steam-railroad companies.....	100.0		0.3	1.6	2.8	9.1	21.2	25.1		39.9
Confectionery.....	100.0		13.1	23.5	3.0	42.8	17.0			
Copper, tin, and sheet-iron products.....	100.0		19.7	45.3	35.0					
Flour-mill and gristmill products.....	100.0		22.5	41.3	27.0	8.5				
Foundry and machine-shop products.....	100.0		8.2	29.8	10.0	6.5	39.6			
Gas, illuminating and heating.....	100.0		0.9	11.0	5.0	30.8	51.8			
Liquors, malt.....	100.0		1.7	24.3	10.9	17.5		38.6		
Lumber and timber products.....	100.0		2.3	13.6	14.7	18.1	33.0	15.0	3.3	
Printing and publishing.....	100.0		25.1	29.0	15.7	18.8	11.3			
Slaughtering and meat packing.....	100.0		0.8	8.3	4.8	7.4	47.3	31.3		
All other industries.....	100.0		13.5	26.1	22.8	10.4	19.5	7.7		

Of the 3,674 establishments reported for all industries, 8.8 per cent employed no wage earners; 46.1 per cent, from 1 to 5; 27.7 per cent, 6 to 20; and 9.1 per cent, 21 to 50. The most numerous single group consists of the 1,694 establishments employing from

1 to 5 wage earners each, and the next of the 1,019 establishments employing from 6 to 20 wage earners each. There were 33 establishments that employed over 250 wage earners; of these, 2, both of which were lumber mills, employed between 501 and 1,000 wage

earnings each, and 1, a steam-railroad repair shop, more than 1,000 wage earners.

Of the total number of wage earners, 45.5 per cent were in establishments employing over 100 wage earners each. The group having the largest number of wage earners was that comprising establishments employing from 101 to 250 each. This group employed 19,009 wage earners, or 27.5 per cent of the total.

Expenses.—As stated in the Introduction, the census does not purport to furnish figures that can be used for determining the cost of manufacture and profits. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expenses which make up the total.

The following table shows for 1909, in percentages, the distribution of expenses among the classes indicated for all industries combined and for certain important industries separately. The figures on which the percentages are based appear in Table II, page 22.

INDUSTRY.	PER CENT OF TOTAL EXPENSES REPORTED.			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
All industries	5.0	25.4	60.1	9.6
Bread and other bakery products.....	4.6	18.6	67.7	9.2
Brick and tile.....	7.0	47.8	30.3	5.9
Butter, cheese, and condensed milk.....	3.0	6.8	84.7	5.5
Canning and preserving.....	3.8	16.5	65.6	14.1
Cars and general shop construction and repairs by steam-railroad companies.....	3.9	42.6	53.2	0.3
Confectionery.....	7.0	15.0	66.4	11.6
Copper, tin, and sheet-iron products.....	0.2	32.0	55.4	6.5
Flour-mill and gristmill products.....	2.2	2.8	91.7	3.3
Foundry and machine-shop products.....	7.7	28.0	54.7	8.8
Gas, illuminating and heating.....	14.6	10.9	48.1	17.4
Liquors, malt.....	8.0	13.3	42.0	36.7
Lumber and timber products.....	4.5	30.1	46.0	10.5
Printing and publishing.....	20.3	28.4	29.5	21.8
Slaughtering and meat packing.....	1.0	3.8	91.7	2.9
All other industries.....	4.9	17.9	69.4	7.8

This table shows that, for all industries combined, 60.1 per cent of the total expenses was incurred for materials, 30.4 per cent for services—that is, salaries and wages—and but 9.6 per cent for other purposes. As would be expected, these proportions vary greatly in the different industries. The high proportion shown for miscellaneous expenses for the brewery industry results from the fact that internal-revenue taxes are included under this head.

Engines and power.—The following table shows, for all industries combined, the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current), and their total horsepower at the censuses of 1909, 1904, and 1899. It also shows separately the number and horsepower of electric motors, including those operated by current generated in the manufacturing establishments.

The amount of primary power used in the manufacturing industries of Washington increased 92.2 per cent from 1899 to 1904, and 77 per cent from 1904 to 1909. Of the total increase from 1899 to 1909 in primary power, 179,481 horsepower, or 85.3 per cent, was

in that generated by steam. The more general use of gas engines is shown, their number increasing from 31 in 1899 to 178 in 1909, during which time the total indicated horsepower of such engines increased from 189 to 1,494. In 1909 water power formed 2.7 per cent of the total primary horsepower. The figures show that the practice of renting power is on the increase, 10.4 per cent of the total power being rented in 1909, as against 3.1 per cent in 1899—the actual increase being 28,351 horsepower, or more than ten times the amount reported in 1899. The use of electric motors for the purpose of applying the power generated within the establishments is also rapidly increasing, the horsepower of such motors having increased from 575 in 1899 to 12,664 in 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899 ¹	1909	1904	1899 ¹	1909	1904	1899
Primary power, total	6,149	2,257	1,628	267,897	168,342	87,601	100.0	100.0	100.0
Owned.....	3,291	2,257	1,628	206,808	155,933	84,863	80.6	92.6	90.9
Steam.....	2,957	2,038	1,441	257,230	150,312	77,740	86.3	89.3	88.8
Gas.....	178	72	31	1,494	493	189	0.5	0.3	0.2
Water wheels.....	117	103	150	7,842	4,482	6,553	2.6	2.7	7.8
Water motors.....	30	44	(²)	223	100	(²)	0.1	0.1	.....
Other.....	.....	.....	.....	10	480	72	(²)	0.3	0.1
Rented.....	2,858	(²)	(²)	31,089	12,400	2,738	10.4	7.4	3.1
Electric.....	2,858	(²)	(²)	30,951	11,950	2,562	10.4	6.0	2.9
Other.....	.....	.....	.....	138	750	176	(²)	0.4	0.2
Electric motors.	3,564	274	36	43,616	15,290	3,137	100.0	100.0	100.0
Run by current generated by establishments.....	706	274	36	12,664	3,640	575	20.0	23.8	18.3
Run by rented power.....	2,858	(²)	(²)	30,951	11,950	2,562	71.0	76.2	81.7

¹ Includes the neighborhood industries and hand trades, omitted in 1904 and 1909.

² Not reported.

³ Less than one-tenth of 1 per cent.

Fuel.—Closely related to the question of kind of power employed is that of the fuel consumed in generating this power, or otherwise used as material in the manufacturing processes. The following table shows the quantity of each kind of fuel used in 1909, for all industries combined and for certain selected industries:

INDUSTRY.	Anthracite coal (tons).	Bituminous coal (tons).	Coke (tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
All industries ¹	6,268	417,466	47,420	220,787	674,952	80,115
Bread and other bakery products.....	258	2,056	1,043	8,973	3,037	2,207
Brick and tile.....	.....	91,805	213	62,057	402	.....
Butter, cheese, and condensed milk.....	.....	10,151	78	10,846	22,018	.....
Canning and preserving.....	4	8,720	50	14,553	1,631	2,796
Cars and general shop construction and repairs by steam-railroad companies.....	2,082	20,555	88	720	2,863	.....
Flour-mill and gristmill products.....	2	4,091	.....	6,318	8,304	.....
Foundry and machine-shop products.....	100	4,514	8,873	7,451	4,332	832
Gas, illuminating and heating.....	.....	85,907	1,372	.....	53,585	.....
Ice, manufactured.....	150	9,094	.....	11,995	10,652	.....
Liquors, malt.....	3,471	24,159	270	13,549	28,670	.....
Lumber and timber products.....	4	36,741	.....	24,714	20,832	500
Pottery, terra-cotta, and fire-clay products.....	.....	10,271	.....	7,860	10,800	.....
Printing and publishing.....	123	1,136	10	1,700	309	48,150
Slaughtering and meat packing.....	.....	11,805	.....	8,786	50	12
All other industries.....	74	86,945	35,423	41,169	500,822	35,552

¹ In addition there were 288 tons of other varieties of fuel reported.

SUPPLEMENTARY DATA REGARDING IMPORTANT INDUSTRIES.

(With statistics for laundries and custom sawmills and gristmills.)

For certain industries the Census Bureau collects, by means of special schedules, detailed information regarding the quantity and value of products and other information for securing which no provision is made on the general schedule. Certain data of this character for six important industries in Washington are here presented.

Flour-mill and gristmill products.—The fertile plateau of eastern Washington and the western slopes of the Cascades are particularly well adapted to the raising of wheat and other grains, much of which is utilized by the flour mills and gristmills of the state. The following table shows the quantities and values of the different products of the industry for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
Total value	\$17,852,044	\$14,063,012	\$6,773,574
Wheat flour:			
White—			
Barrels.....	2,764,257	2,978,264	1,853,271
Value.....	\$12,287,730	\$10,959,241	\$4,719,797
Graham—			
Barrels.....	39,985	40,023	(1)
Value.....	\$196,965	\$195,089	(1)
Corn meal and corn flour:			
Barrels.....	6,240	7,025	10,220
Value.....	\$23,060	\$21,034	\$29,146
Rye flour:			
Barrels.....	5,500	1,115	4,069
Value.....	\$27,500	\$4,070	\$12,714
Barley meal:			
Pounds.....	517,700	7,164,000	1,478,200
Value.....	\$9,413	\$67,795	\$14,400
Hominy and grits:			
Pounds.....	4,000	27,080	(1)
Value.....	\$100	\$744	(1)
Feed:			
Tons.....	87,375	46,358	54,800
Value.....	\$2,425,940	\$1,080,480	\$1,004,735
Offal:			
Tons.....	102,045	100,362	57,809
Value.....	\$2,362,733	\$1,933,074	\$640,998
All other products.....	\$518,888	\$380,585	\$351,784

¹ Not reported separately.

The most important product of the mills, white flour, increased \$1,328,495, or 12.1 per cent, in value from 1904 to 1909, notwithstanding a decrease in quantity amounting to 214,007 barrels, or 7.2 per cent. Comparatively little corn is raised in Washington, and the corn products of the mills are therefore unimportant. There was a large increase in the quantity and value of rye flour, but a decrease in the output of barley meal. Feed ranked second in value in 1909, having increased 88.5 per cent in quantity and 124.5 per cent in value from 1904 to 1909. Offal, which is principally a by-product of the manufacture of wheat flour, shows, like wheat flour, a decrease in quantity and an increase in value.

The mills of the state reported 1,038 pairs of rolls and 38 runs of stone in 1909, as compared with 875 pairs of rolls and 31 runs of stone in 1904. In 1909 six of the establishments were engaged also in the manufacture of sacks.

Slaughtering and meat packing.—The table which follows gives the quantities and values of the main products and the by-products of the industry for the three census years 1909, 1904, and 1899:

PRODUCT.	1909	1904 ¹	1899 ²
Total value	\$15,653,998	\$6,251,705	\$4,892,857
Beef, fresh:			
Pounds.....	69,288,504	33,548,474	21,418,880
Value.....	\$6,035,883	\$2,253,838	\$1,011,004
Ven, fresh:			
Pounds.....	1,040,493	761,286	936,150
Value.....	\$210,574	\$61,700	\$82,030
Mutton, fresh:			
Pounds.....	13,303,770	8,355,285	6,298,881
Value.....	\$1,361,055	\$610,336	\$479,529
Pork, fresh:			
Pounds.....	16,774,450	8,002,005	6,887,071
Value.....	\$1,876,529	\$669,795	\$612,120
Pork, salted or cured:			
Pounds.....	17,116,659	10,600,124	12,288,100
Value.....	\$2,486,833	\$1,305,726	\$1,267,988
Sausage, fresh or cured.....	\$300,188	\$108,430	\$70,451
Lard:			
Pounds.....	9,050,730	3,783,600	1,082,000
Value.....	\$1,000,633	\$307,468	\$150,855
Hides:			
Number.....	124,887	59,833	47,140
Pounds.....	7,325,034	3,410,270	2,510,962
Value.....	\$902,044	\$317,109	\$232,968
Pelts:			
Number.....	290,298	179,819	(3)
Value.....	\$326,207	\$106,084	(3)
All other products.....	\$1,074,252	\$301,159	\$372,052

¹ Two establishments excluded, to avoid disclosure of individual operations.
² One establishment excluded, to avoid disclosure of individual operations.
³ Not reported separately.

The growth of this industry is best measured by the production of the two staple commodities, beef and pork. The table shows that the output of fresh beef increased 56.6 per cent from 1899 to 1904 and 106.5 per cent from 1904 to 1909. The increases during the corresponding five-year periods for fresh pork were 17.5 per cent and 107.3 per cent, respectively, and for salted or cured pork, although there was a decrease of 11.3 per cent from 1899 to 1904, there was an increase of 39.3 per cent during the decade. The decided increases in the output of all products from 1904 to 1909 have more firmly established the industry among the leading industries of the state. There were 117,522 heaves, 14,218 calves, 290,383 sheep, and 239,352 hogs slaughtered in the wholesale establishments of the state in 1909, as compared with 54,539 heaves, 5,463 calves, 179,819 sheep, and 122,313 hogs slaughtered in 1904.

Canning and preserving.—As shown in the following table, this industry in Washington is largely confined to the canning and curing of fish and the canning of oysters and clams. In recent years this branch of the industry has received a decided impetus through the importation of salmon, halibut, and cod caught in Alaskan waters and brought into the state to be cured, as well as from state and Government aid in scientifically restocking local waters and conserving the natural supplies of fish.

The following table shows the quantities and values of the different products for the years 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
Total value	\$9,595,387	\$3,617,310	\$5,089,857
Fruits and vegetables	\$478,895		
Canned vegetables:			
Cases.....	33,778		
Value.....	\$65,594		
Canned fruits:			
Cases.....	78,936		
Value.....	\$154,392		
Apples—			
Cases.....	22,533		
Value.....	\$42,319		
Berries—		\$173,289	\$63,141
Cases.....	36,540		
Value.....	\$72,832		
Pears—			
Cases.....	11,540		
Value.....	\$26,058		
All other—			
Cases.....	8,304		
Value.....	\$13,183		
Dried fruits (prunes):			
Pounds.....	5,445,017		
Value.....	\$258,909		
Fish and oysters	\$8,024,717	\$3,220,844	\$4,311,417
Canned fish, oysters, etc.:			
Pounds.....	90,312,421	27,108,329	43,419,650
Value.....	\$7,690,370	\$2,402,080	\$3,791,624
Salmon—			
Pounds.....	86,588,258	26,601,429	42,969,114
Value.....	\$7,354,569	\$2,431,605	\$3,745,957
Clams—			
Pounds.....	2,309,271	481,900	289,440
Value.....	\$178,596	\$57,475	\$18,420
Oysters, crabs, and all other fish—			
Pounds.....	1,414,892	25,000	101,096
Value.....	\$167,205	\$3,000	\$27,247
Smoked fish:			
Pounds.....	4,173,700	6,040,560	3,709,800
Value.....	\$415,201	\$565,740	\$225,092
Halibut—			
Pounds.....	101,600	1,550,000	1,757,060
Value.....	\$18,692	\$151,400	\$114,400
Salmon—			
Pounds.....	3,827,000	4,189,560	1,347,400
Value.....	\$389,620	\$405,020	\$93,772
All other—			
Pounds.....	155,100	301,000	596,400
Value.....	\$6,892	\$9,320	\$17,820
Salted fish:			
Pounds.....	9,763,799	3,594,071	8,303,160
Value.....	\$519,143	\$172,018	\$293,801
Cod—			
Pounds.....	4,910,329	876,850	954,409
Value.....	\$201,118	\$40,300	\$45,445
Herring—			
Pounds.....	96,500	750,000	736,260
Value.....	\$3,305	\$26,000	\$15,344
All other—			
Pounds.....	4,756,970	1,967,221	6,612,500
Value.....	\$314,720	\$95,718	\$233,012
All other products	\$401,775	\$214,177	\$716,290

The value of fruits and vegetables canned and preserved formed nearly one-twentieth of the total for the industry in 1909. In the past decade this branch of the industry has shown a remarkable growth, the value of products in 1909 being over seven and one-half times that reported for 1899. Canned vegetables shows the greatest rate of increase both in quantity and in value. The quantity of dried prunes increased 215 per cent from 1904 to 1909.

The year 1904 was not a good season for the fish canneries, and the output of canned salmon, which was the most important item, showed a decrease of 38.1 per cent in that year, as compared with 1899. The quantity of canned salmon reported in 1909, however, represents an increase of 225.5 per cent, as compared with 1904. The greatest production of smoked fish was reported for 1904, the year of least production for canned and salted fish. In 1899 the production of smoked halibut exceeded that of smoked salmon, but

in recent years the latter has furnished by far the greater part of the total output of smoked fish. Of the salted fish products, cod, which shows a decrease of 8.1 per cent in quantity for 1904, as compared with 1899, shows an extraordinary increase (460 per cent) for 1909, as compared with 1904, representing more than one-half of the total output of salted fish in 1909.

Butter, cheese, and condensed milk.—That part of western Washington lying between Puget Sound and the Cascade Range is especially well adapted for dairying, the most important feature being the climatic conditions, which are such that cows can feed on green grass practically all the year. The nine condensed-milk factories reported in 1909 were all located in this part of the state. The growth of the industry as a whole during the past decade has been remarkable, as is indicated by the following table, which shows the quantity and value of the different classes of products for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
Total value	\$7,271,047	\$2,992,570	\$1,190,239
Butter:			
Pounds.....	11,302,591	7,722,911	3,198,421
Value.....	\$3,692,931	\$1,668,682	\$792,778
Packed solid—			
Pounds.....	1,418,368	406,999	1,100,070
Value.....	\$434,227	\$126,974	\$284,775
Prints or rolls—			
Pounds.....	9,884,223	7,255,912	2,098,351
Value.....	\$3,258,704	\$1,841,708	\$508,003
Cream sold:			
Pounds.....	3,009,180	830,662	437,072
Value.....	\$341,081	\$89,095	\$48,977
All other butter-factory products ¹	\$45,330	\$41,125	\$17,382
Cheese:			
Pounds.....	422,200	921,383	1,482,127
Value.....	\$65,597	\$102,601	\$174,025
Full cream—			
Pounds.....	419,200	913,383	1,436,127
Value.....	\$65,207	\$101,061	\$169,285
Part cream—			
Pounds.....	3,000	(?)	(?)
Value.....	\$300	(?)	(?)
Other kinds ² —			
Pounds.....		8,000	46,000
Value.....		\$640	\$4,740
All other cheese-factory products ³	\$270	\$743	\$77
Condensed milk:			
Unsweetened—			
Pounds.....	53,614,242	13,841,906	6,196,500
Value.....	\$2,076,320	\$738,938	\$157,000
All other condensed-milk factory products	\$2,360		
All other products not specified	\$146,252	\$51,642	

¹ Includes skimmed milk and casein.
² Included with full cream cheese.
³ Includes skimmed cheese.
⁴ Includes whey.
⁵ Total condensed-milk product, whether sweetened or unsweetened.

From 1904 to 1909 the production of butter increased 3,579,680 pounds, or 46.4 per cent, as compared with an increase of 4,524,490 pounds, or 141.5 per cent, from 1899 to 1904. Butter put up in prints or rolls formed nearly seven-eighths of the total quantity reported in 1909.

Lumber and timber products.—The heavily wooded areas of the Cascade Mountains and the Olympic Peninsula afford extensive opportunities for lumbering on a large scale. The following statement, which shows the quantities of the principal products of the sawmills and shingle mills for 1909 and 1899, indicates the extent to which the industry has been developed in the state.

PRODUCT.	QUANTITY.	
	1909	1899
Rough lumber..... M feet b. m.	3,862,916	1,429,032
Lath..... thousands..	451,384	145,134
Shingles..... thousands..	8,879,407	4,337,992

The production of rough lumber, already large in 1899, increased 170.3 per cent during the decade. In 1909 the state produced 3,060,983 M feet board measure of Douglas fir, or 63 per cent of the total quantity cut in the United States. In the same year the state was first in the production of cedar, reporting 183,952 M feet, or 53.2 per cent of the total amount cut in the United States; second in the production of western pine, with 266,357 M feet, or 17.8 per cent of the total cut; and third in the production of larch, with 39,795 M feet, or 15.1 per cent of the total. Washington produced nearly three-fifths of all the shingles manufactured in the United States in 1909, and was second among the states in the production of lath, with 12.2 per cent of the total. From 1899 to 1909 the output of shingles increased 104.7 per cent and that of lath 211 per cent. Only 1,779 M feet board measure of hardwood was cut in the state in 1909. There were more mills in the state in 1909 sawing over 50,000 M feet board measure of lumber than were reported for any other state, notwithstanding the fact that 73 mills were reported idle during the year.

Printing and publishing.—The next table shows the number of the different classes of publications in the state and their aggregate circulation in 1909, 1904, and 1899:

PERIOD OF ISSUE.	NUMBER OF PUBLICATIONS.			AGGREGATE CIRCULATION PER ISSUE.		
	1909	1904	1899	1909	1904	1899
Total.....	369	316	206	1,068,554	755,326	307,128
Daily.....	41	29	15	317,158	186,618	84,570
Sunday.....	13	9	7	243,663	130,161	(1)
Semiweekly.....	10	7	2	59,937	85,811	8,360
Weekly.....	208	226	154	252,396	217,845	161,990
Monthly.....	32	42	21	164,624	118,491	41,418
All other classes.....	5	3	5	33,770	10,400	10,800

¹ Included with circulation of daily.

² Includes one triweekly.

As might be expected in a rapidly developing state, the newspapers and periodicals of Washington show a rapid increase in circulation. The aggregate circulation per issue increased 145.9 per cent during the five years from 1899 to 1904, and 41.5 per cent during the following five-year period. The dailies reported the greatest increase in circulation. Semiweeklies decreased in circulation, and monthlies decreased in number of publications from 1904 to 1909.

In 1909 there were published in the state 1 daily in Japanese and 1 in Japanese and English; 1 semiweekly in Japanese; 16 weeklies in languages other than English, of which 5 were in Swedish, 5 in Norwegian, 4 in

German, 1 in Italian, and 1 in Indian and English; and 1 semimonthly in Norwegian.

Laundries.—Statistics for steam laundries are not included in the general tables, or in the totals for manufacturing industries. In 1909 there were 172 such establishments in the state of Washington, 51 of which were in Seattle, 23 in Spokane, 14 in Tacoma, 7 in Everett, 6 in Bellingham, 4 in Walla Walla, and 2 each in Aberdeen and North Yakima. The following statement summarizes the statistics:

Number of establishments.....	172
Persons engaged in the industry.....	3,731
Proprietors and firm members.....	195
Salaried employees.....	272
Wage earners (average number).....	3,264
Primary horsepower.....	3,084
Capital.....	\$2,165,715
Expenses.....	3,046,673
Services.....	2,032,703
Materials.....	546,545
Miscellaneous.....	467,425
Amount received for work done.....	3,814,825

Eighty-six of the 172 establishments were under individual ownership, 47 under firm ownership, and 39 under corporate ownership. Forty-one establishments had receipts for the year's business of less than \$5,000 each; 75, receipts of between \$5,000 and \$20,000; 50, receipts of between \$20,000 and \$100,000; and 6, receipts between \$100,000 and \$1,000,000.

The number of wage earners employed each month and the percentage which this number represented of the greatest number employed in any month were as follows:

MONTH.	WAGE EARNERS.		MONTH.	WAGE EARNERS.	
	Number.	Per cent of maximum.		Number.	Per cent of maximum.
January.....	2,046	80.4	July.....	3,537	96.6
February.....	2,057	80.7	August.....	3,463	100.0
March.....	2,086	81.5	September.....	3,570	97.7
April.....	3,068	83.7	October.....	3,391	92.0
May.....	3,169	86.5	November.....	3,262	89.1
June.....	3,389	92.5	December.....	3,229	88.2

The different kinds of primary power, the number of engines or motors, and the horsepower used in 1909 are shown in the following tabular statement:

KIND.	Number of engines or motors.	Horsepower.
Primary power, total.....		3,084
Owned:		
Steam.....	98	2,392
Gas.....	5	24
Water motors.....	1	2
Rented:		
Electric.....	90	594
Other.....		72

The kind and amount of fuel used are shown in the following statement:

KIND.	Unit.	Quantity.		Custom sawmills.	Custom gristmills.
Anthracite coal.....	Tons.....	8	Number of establishments.....	10	21
Bituminous coal.....	Tons.....	10,279	Persons engaged in the industry.....	25	35
Coke.....	Tons.....	1,883	Proprietors and firm members.....	13	26
Wood.....	Cords.....	34,007	Wage earners (average number).....	12	9
Oil.....	Barrels.....	17,409	Primary horsepower.....	207	410
Gas.....	1,000 feet.....	14,765	Capital.....	\$16,612	\$52,458
Other.....	Tons.....	1,264	Expenses.....	8,308	244,210
			Services.....	7,442	4,855
			Materials.....	167	1,237,127
			Miscellaneous.....	789	2,228
			Value of products.....	13,970	1,266,590

Custom sawmills and gristmills.—Statistics for custom sawmills and gristmills are not included in the general tables, or in the totals for manufacturing industries, but are presented in the following summary:

¹ Includes estimate of all grain ground. A similar estimate for value of lumber sawed by custom sawmills is impracticable.

MANUFACTURES—WASHINGTON.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899.
THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES.

INDUSTRY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaries employed.	Wage earners (average number).							
			Expressed in thousands.										
STATE—All industries.....	1909	3,674	80,118	3,284	7,734	69,120	297,897	\$222,261	\$9,827	\$49,766	\$117,888	\$220,746	\$102,858
	1904	2,751	61,459	2,602	3,658	45,199	168,342	96,953	4,093	30,087	86,166	128,222	62,656
	1899	1,926			2,103	31,523	87,601	41,575	2,063	17,065	38,277	70,831	32,554
Artificial stone.....	1909	41	157	30	13	105	117	277	12	79	122	325	203
	1904	3	14	6		8		20		8	3	13	10
	1899												
Awnings, tents, and sails.....	1909	19	160	17	31	121	42	453	35	88	562	828	266
	1904	9	67	7	14	46	14	77	13	32	139	241	102
	1899	7			13	49		50	8	32	118	202	84
Bread and other bakery products.....	1909	298	1,514	363	182	969	412	1,676	175	704	2,566	4,570	2,004
	1904	165	665	193	18	454	117	445	14	314	894	1,656	762
	1899	65	300	73	31	202		157	10	120	320	654	334
Brick and tile.....	1909	58	1,447	61	86	1,300	4,797	5,188	116	792	651	2,559	1,908
	1904	51	609	52	45	512	1,486	966	37	306	149	675	526
	1899	32	385	29	27	329	624	370	28	180	81	427	346
Butter, cheese, and condensed milk.....	1909	97	978	58	185	735	2,203	2,277	199	457	5,676	7,271	1,595
	1904	88	502	60	68	374	987	801	61	210	2,392	2,993	601
	1899	60	237	56	35	146	526	304	27	81	932	1,190	288
Canning and preserving.....	1909	80	2,284	27	228	2,020	2,433	7,355	292	1,272	5,046	9,595	4,549
	1904	61	834	38	107	689	1,401	2,261	112	380	2,351	3,617	1,266
	1899	60	2,463	58	124	2,281		2,349	100	746	3,238	5,090	1,852
Carriages and wagons and materials.....	1909	37	317	46	30	241	254	538	33	203	319	720	401
	1904	25	249	36	12	201	130	230	11	158	188	482	204
	1899	25			8	132		98	9	80	110	283	173
Cars and general shop construction and repairs by steam-railroad companies.	1909	17	2,880		164	2,716	3,609	3,206	181	1,990	2,484	4,666	2,182
	1904	10	1,390		63	1,327	1,341	1,694	70	860	1,895	2,769	964
	1899	16	1,011		55	956	1,017	945	51	653	761	1,480	719
Clothing, men's, including shirts.....	1909	10	313	9	35	269	81	345	40	100	369	617	248
	1904	11	201	10	21	170	31	154	11	61	147	263	116
	1899												
Coffee and spice, roasting and grinding.....	1909	15	202	4	67	131	280	710	99	76	824	1,399	575
	1904	8	92	9	19	64	104	248	24	38	265	524	259
	1899	14	78	16	21	41		138	24	23	301	388	87
Confectionery.....	1909	52	780	51	117	612	333	1,609	139	296	1,311	2,208	897
	1904	28	556	28	70	458	234	642	80	204	713	1,311	598
	1899	10			34	195		165	41	76	224	445	221
Cooperage and wooden goods, not elsewhere specified.	1909	8	111	3	11	97	912	372	12	61	134	273	139
	1904	4	90	2	2	85	90	294	2	41	61	143	82
	1899	6	54	13	2	39		16	1	12	12	33	21
Copper, tin, and sheet-iron products.....	1909	81	750	85	82	583	207	985	100	521	963	1,046	1,043
	1904	33	297	34	17	246	41	397	21	238	288	727	439
	1899	25			17	217		433	19	146	433	766	333
Flour-mill and gristmill products.....	1909	96	973	61	268	644	11,773	11,677	372	404	15,474	17,853	2,379
	1904	76	840	56	171	613	8,516	6,490	212	410	12,771	14,664	1,893
	1899	60			107	482	5,190	2,027	123	279	5,640	6,774	1,125
Food preparations.....	1909	30	176	29	26	121	157	449	30	72	372	695	323
	1904	6	34	4	5	25	76	52	5	13	24	77	53
	1899												
Foundry and machine-shop products.....	1909	178	2,961	144	378	2,439	5,117	9,367	523	1,907	3,724	7,988	4,264
	1904	112	1,787	88	212	1,487	2,851	3,549	264	1,090	1,701	3,045	2,154
	1899	83			93	1,093		1,642	85	704	1,066	2,321	1,315
Fur goods.....	1909	15	107	16	20	71	14	200	22	55	144	310	172
	1904	11	70	13	6	51	6	120	8	31	53	132	79
	1899	5			3	32		38	1	13	36	77	41
Furniture and refrigerators.....	1909	36	676	42	52	582	1,284	1,177	50	410	602	1,389	787
	1904	23	355	28	21	306	677	366	22	174	300	625	325
	1899	12	248	15	20	213	378	227	14	94	184	413	229
Gas, illuminating and heating.....	1909	12	675		210	465	1,479	13,978	200	273	661	1,684	1,023
	1904	7	197		89	108	454	7,633	74	78	149	692	453
	1899	0	118		37	81	13	1,621	26	42	77	310	239
Ice, manufactured.....	1909	25	231	10	58	163	2,210	1,487	64	140	141	558	417
	1904	12	110	0	11	99	905	486	14	78	41	243	292
	1899	4	40	1	13	35	425	252	14	26	17	104	67
Leather goods.....	1909	34	251	38	53	190	76	569	57	123	602	1,012	410
	1904	30	171	35	19	117	31	206	17	81	203	436	233
	1899	22			10	71		147	11	50	189	354	165
Lime.....	1909	12	218	8	22	188	245	1,282	36	126	100	376	267
	1904	6	106	1	24	171	68	636	34	87	160	335	185
	1899												
Liquors, malt.....	1909	31	978	12	201	765	5,675	11,119	423	709	2,231	6,963	4,672
	1904	31	579	13	90	476	2,907	5,886	105	501	984	4,472	3,488
	1899	25	283	19	53	211	1,047	1,607	82	171	295	1,231	936

¹ Not reported separately.² Excluding statistics for one establishment, to avoid disclosure of individual operations.³ Figures can not be shown without disclosing individual operations.

MANUFACTURES—WASHINGTON.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899—Continued.
THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES—Continued.

INDUSTRY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaries employed.	Wage earners (average number).							
Expressed in thousands.													
STATE—Continued.													
Lumber and timber products.....	1909	1,263	47,447	1,013	2,685	43,749	224,455	\$97,224	\$3,615	\$31,327	\$36,879	\$80,155	\$52,276
	1904	1,099	32,570	1,039	1,403	30,137	128,236	44,799	1,706	10,820	10,418	54,999	35,581
	1899	813	22,374	1,004	802	20,538	63,914	19,858	805	11,092	13,791	31,665	17,874
Marble and stone work.....	1909	38	563	34	50	473	1,210	1,100	68	410	269	1,022	763
	1904	18	232	15	21	100	394	343	21	157	98	418	320
	1899	15	155	13	13	80	155	155	10	58	61	230	169
Mattresses and spring beds.....	1909	12	195	3	26	160	485	505	26	131	437	718	281
	1904	5	161	1	18	132	218	140	16	61	99	269	170
	1899	5	95	7	4	84	.....	39	5	39	75	152	77
Paint and varnish.....	1909	5	74	.....	17	57	221	206	18	51	154	282	128
	1904	6	62	1	27	34	80	121	14	23	92	166	74
	1899	3	16	2	4	10	.....	66	5	7	31	58	27
Patent medicines and compounds and druggists' preparations.	1909	18	72	13	21	38	95	249	26	19	106	258	152
	1904	10	36	5	5	29	.....	32	3	13	37	99	62
	1899	7	44	0	4	34	.....	10	4	22	13	61	48
Pottery, terra-cotta, and fire-clay products....	1909	8	321	1	31	289	1,293	1,023	30	197	112	523	411
	1904	6	182	1	19	162	1,179	987	26	114	121	416	295
	1899	8	149	8	15	120	155	437	18	60	29	157	128
Printing and publishing.....	1909	506	4,583	552	1,407	2,624	2,232	5,807	1,520	2,140	2,224	9,286	7,062
	1904	383	2,837	387	650	1,800	2,035	2,850	524	1,354	1,060	4,705	3,709
	1899	257	1,540	266	267	1,007	.....	1,308	222	543	384	1,975	1,691
Slaughtering and meat packing.....	1909	14	971	4	139	828	1,883	5,103	233	575	13,760	15,654	1,804
	1904	13	402	0	58	335	550	2,284	70	287	5,423	6,252	829
	1899	18	337	18	88	231	474	1,014	81	157	4,252	4,893	641
Tobacco manufactures.....	1909	114	465	128	22	305	.....	367	22	205	240	681	441
	1904	102	373	114	3	256	.....	191	3	175	226	604	378
	1899	57	197	60	4	133	.....	89	3	69	127	294	167
All other industries.....	1909	414	6,280	393	811	5,085	22,343	34,760	1,035	3,733	18,080	27,410	8,736
	1904	299	4,688	308	350	4,030	13,093	11,423	430	2,072	13,735	19,889	6,154
	1899	200	.....	.....	109	2,439	.....	5,507	227	1,475	5,531	8,798	3,267

CITIES OF 50,000 INHABITANTS OR MORE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES.

SEATTLE—All industries.....	1909	751	14,014	621	2,062	11,331	37,732	\$46,472	\$2,750	\$8,569	\$28,019	\$50,569	\$22,550
	1904	467	7,532	415	727	6,390	.....	22,344	853	4,318	14,356	25,406	11,048
	1899	352	.....	.....	623	4,440	.....	7,682	561	2,682	8,864	15,323	6,459
Bread and other bakery products.....	1909	78	461	92	74	295	148	445	65	200	603	1,550	657
	1904	38	177	43	.....	134	.....	130	.....	100	264	405	231
	1899	25	133	27	11	65	.....	63	6	64	143	205	152
Brick and tile.....	1909	5	154	2	15	137	482	203	20	100	37	259	222
	1904	4	65	1	3	61	.....	120	4	29	16	67	51
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Butter, cheese, and condensed milk.....	1909	6	36	5	9	22	55	110	10	10	439	514	75
	1904	5	49	3	7	30	.....	143	6	22	496	562	66
	1899	3	26	4	1	21	.....	39	1	13	193	224	31
Canning and preserving.....	1909	7	85	.....	26	59	233	208	26	44	234	304	160
	1904	4	119	.....	7	112	.....	205	8	65	429	610	181
	1899	14	.....	.....	38	320	.....	435	31	132	874	1,247	373
Carriages and wagons and materials.....	1909	12	130	16	11	109	73	103	13	95	117	208	181
	1904	10	115	10	6	96	.....	125	6	70	100	254	154
	1899	10	93	14	7	72	.....	42	8	47	58	152	94
Clothing, men's, including shirts.....	1909	5	165	2	22	141	47	243	26	58	236	374	138
	1904	4	123	4	10	109	.....	65	7	40	115	188	73
Confectionery.....	1909	20	464	15	66	363	213	1,020	80	100	890	1,491	601
	1904	14	324	17	37	276	.....	332	47	122	456	821	365
	1899	6	.....	.....	25	133	.....	85	32	55	134	306	172
Copper, tin, and sheet-iron products.....	1909	36	429	36	41	352	110	448	55	282	557	1,131	574
	1904	13	141	15	6	120	.....	152	9	125	141	352	211
	1899	10	.....	.....	8	85	.....	70	9	68	81	209	128
Flour-mill and gristmill products.....	1909	7	227	2	70	155	2,305	2,415	112	111	3,872	4,430	558
	1904	6	174	1	23	147	.....	936	35	99	4,158	4,694	436
	1899	6	97	1	23	73	.....	470	22	44	1,110	1,298	188
Foundry and machine-shop products.....	1909	71	1,479	44	205	1,230	2,787	5,023	292	1,023	2,042	4,290	2,248
	1904	41	691	25	104	562	.....	1,540	140	431	670	1,817	947
	1899	134	504	33	46	425	.....	624	39	320	457	1,143	686
Fur goods.....	1909	7	48	4	7	37	4	109	10	32	75	150	75
	1904	5	43	5	6	32	.....	76	8	10	37	61	54
	1899	3	.....	.....	2	21	.....	34	1	9	32	63	31
Furniture and refrigerators.....	1909	17	195	10	10	166	230	173	12	130	140	405	265
	1904	5	31	7	.....	24	.....	12	.....	16	18	52	34
	1899	8	.....	12	10	66	.....	72	4	38	56	147	91

¹ Excluding statistics for two establishments, to avoid disclosure of individual operations.
² Excluding statistics for one establishment, to avoid disclosure of individual operations.
³ Figures can not be shown without disclosing individual operations.

MANUFACTURES—WASHINGTON.

TABLE I.—COMPARATIVE SUMMARY FOR 1900, 1904, AND 1899—Continued.

CITIES OF 50,000 INHABITANTS OR MORE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES—Continued.

INDUSTRY.	CENSUS.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Subsidiary employes.	Wage earners (average number).							
Expressed in thousands.													
SEATTLE—Continued.													
Gloves and mittens, leather.....	1900 1904 1899	3 4 4	31 46 46	5 5 5	3 1 1	23 40 40	3	\$24 29 29	\$3 1 1	\$10 13 13	\$25 36 36	\$53 77 77	\$28 41 41
Ice, manufactured.....	1900 1904 1899	5 4 4	79 60 60			18 5 55	721	828 330 330	23 9 45	53 45 45	68 22 22	225 116 116	157 91 91
Leather goods.....	1900 1904 1899	8 9 7	122 74 74	8 12 12	33 6 4	81 56 31	41	222 84 35	35 6 4	60 37 22	267 86 62	444 191 182	177 105 70
Liquors, malt.....	1900 1904 1899	5 5 5	440 190 190			78 13 176	1,880	4,408 2,216 2,216	185 27 200	300 200 200	877 391 391	2,815 2,122 2,122	1,048 1,731 1,731
Lumber and timber products.....	1900 1904 1899	63 21 17	3,337 1,120 1,120	39 10 10	222 51 83	3,076 1,065 1,252	10,436	7,720 1,848 1,691	321 60 80	2,222 644 776	3,676 657 1,155	7,739 1,835 2,563	4,063 1,178 1,408
Marble and stone work.....	1900 1904 1899	5 3 4	68 38 38	3 2 2	11 2 2	54 34 18	38	89 28 39	12 3 15	47 25 15	81 44 21	218 111 54	137 67 33
Patent medicines and compounds and druggists' preparations.....	1900 1904 1899	8 3 3	42 20 20	4 2 2	14 3 3	24 15 15	54	59 11 11	19 1 4	12 4 4	42 14 14	153 41 41	111 27 27
Printing and publishing.....	1900 1904 1899	133 90 65	1,597 1,080 1,080	117 77 77	438 111 151	1,042 892 463	701	2,542 1,064 520	551 125 125	904 656 245	1,042 511 180	4,000 1,987 894	2,967 1,476 765
Slaughtering and meat packing.....	1900 1904 1899	4 4 8	383 235 186	1 1 6	57 38 48	325 166 132	468	2,308 1,127 570	105 50 45	240 125 80	6,410 3,020 2,607	7,171 3,419 3,072	761 390 405
Tobacco manufactures.....	1900 1904 1899	24 26 15	95 86 53	26 27 18	4 2 2	65 57 33		71 44 25	4 2 1	45 42 19	46 57 36	140 143 88	91 86 52
All other industries.....	1900 1904 1899	222 149 117	3,941 2,564 2,564	181 138 138	628 233 164	3,132 2,443 1,200	7,538	17,461 11,258 2,808	750 290 153	2,323 1,371 726	5,954 2,411 1,596	12,316 5,461 3,436	6,364 3,050 1,840
SPOKANE—All industries.													
	1900 1904 1899	286 188 84	5,294 3,231 3,231	263 184 207	1,042 610 207	3,989 2,428 1,060	9,295	\$16,434 5,407 2,211	\$1,333 561 195	\$3,098 1,669 616	\$10,243 4,700 2,033	\$18,880 8,831 3,766	\$8,637 4,131 1,723
Bread and other bakery products.....	1900 1904 1899	33 18 5	345 183 61	42 22 6	43 216 19	200 161 30	84	503 160 17	66 12 12	170 58 19	686 216 56	1,211 359 128	525 143 70
Carriages and wagons and materials.....	1900 1904 1899	5 3 3	44 30 30	7 3 1	2 1 20	35 20 20	35	131 18 18	3 1 10	28 10 20	46 20 53	69 53 53	53 33 33
Confectionery.....	1900 1904 1899	10 5 3	163 138 63	12 3 4	25 17 7	126 118 52	78	437 208 71	20 10 7	58 53 18	252 166 80	406 271 118	154 106 38
Copper, tin, and sheet-iron products.....	1900 1904 1899	13 6 3	140 71 71	12 5 1	17 6 23	111 60 23	50	318 110 14	20 7 (¹)	120 51 21	105 70 33	408 164 68	213 94 35
Foundry and machine-shop products.....	1900 1904 1899	14 10 5	344 230 112	11 8 5	45 26 10	288 196 97	531	856 402 133	63 33 11	213 148 68	415 230 96	871 515 203	456 285 107
Leather goods.....	1900 1904 1899	6 3 3	48 20 20	5 2 3	14 5 12	20 13 12	11	129 30 26	18 3 3	21 9 8	150 30 31	224 64 52	74 34 21
Liquors, malt.....	1900 1904 1899	4 3 4	117 67 62			25 14 47	883	2,135 1,111 410	50 31 25	113 79 47	380 162 84	1,190 679 445	849 517 361
Lumber and timber products.....	1900 1904 1899	23 24 10	1,422 1,097 375	7 19 2	148 112 38	1,267 966 335	4,238	3,602 1,706 425	186 120 38	632 581 166	1,484 1,467 417	3,362 2,458 740	1,818 991 323
Marble and stone work.....	1900 1904 1899	5 3 3	51 35 35	3 1 10	7 5 10	41 20 10	55	154 64 21	10 6 8	45 29 15	53 13 14	148 77 64	95 64 50
Printing and publishing.....	1900 1904 1899	46 40 15	830 598 120	41 47 14	433 327 32	365 224 74	387	782 346 100	536 224 28	376 104 51	477 265 37	2,120 1,042 211	1,643 847 174
Tobacco manufactures.....	1900 1904 1899	15 16 3	67 66 18	17 19 3	4 47 15	46 47 15		67 34 5	6 37 7	38 50 12	39 50 27	108 125 27	69 75 15
All other industries.....	1900 1904 1899	112 57 30	1,714 746 746	106 55 73	270 96 350	1,320 595 350	2,043	7,320 1,278 980	340 95 63	984 411 196	6,066 2,972 1,173	8,784 3,024 1,702	2,718 952 529

¹ Figures can not be shown without disclosing individual operations.² Excluding statistics for one establishment, to avoid disclosure of individual operations.³ Excluding statistics for two establishments, to avoid disclosure of individual operations.⁴ Less than \$500.

MANUFACTURES—WASHINGTON.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899—Continued.

CITIES OF 50,000 INHABITANTS OR MORE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES—Continued.

INDUSTRY AND CITY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaried employes.	Wage earners (average number).							
TACOMA—All industries.....	1909	276	6,860	216	885	5,705	21,540	\$21,533	\$1,031	\$3,985	\$13,716	\$22,450	\$8,734
	1904	236	5,158	195	500	4,457	.....	11,760	565	2,900	8,157	14,284	6,107
	1899	174	.....	.....	288	3,552	.....	6,790	322	1,955	6,341	10,301	3,960
Expressed in thousands.													
Bread and other bakery products.....	1909	26	214	20	21	164	109	262	22	84	333	567	234
	1904	19	93	24	4	65	.....	39	2	46	110	211	101
	1899	9	40	10	.....	30	.....	19	.....	16	52	91	39
Canning and preserving.....	1909	4	54	1	12	41	75	148	15	41	120	190	70
	1904	6	63	3	16	44	.....	177	15	28	150	230	80
	1899	3	32	3	2	27	.....	27	1	12	40	74	25
Carriages and wagons and materials.....	1909	7	68	4	11	53	96	128	13	36	107	191	84
	1904	² 7	72	8	4	60	.....	54	3	45	46	120	74
	1899	² 5	.....	.....	1	35	.....	33	1	26	31	75	44
Copper, tin, and sheet-iron products.....	1909	13	94	12	13	69	37	142	15	67	89	231	142
	1904	8	61	7	5	49	.....	120	5	48	64	172	108
	1899	7	.....	.....	3	43	.....	73	2	20	48	125	77
Flour-mill and gristmill products.....	1909	5	150	2	38	116	2,630	2,307	64	76	3,430	3,844	414
	1904	4	123	.....	21	102	.....	1,063	27	70	2,009	2,294	225
	1899	5	143	.....	20	123	.....	595	30	60	1,145	1,308	253
Foundry and machine-shop products.....	1909	23	402	16	54	392	640	1,836	71	280	607	1,368	671
	1904	² 15	410	10	42	358	.....	579	48	253	439	898	459
	1899	² 11	371	12	21	338	.....	457	20	177	258	541	283
Furniture and refrigerators.....	1909	7	319	2	32	285	625	812	35	194	348	609	342
	1904	10	198	9	16	173	.....	236	16	97	218	420	202
	1899	4	169	3	10	147	.....	156	10	56	128	266	138
Lumber and timber products.....	1909	31	3,116	12	169	2,035	12,862	7,412	278	1,959	2,889	6,040	3,151
	1904	² 24	1,955	5	135	1,815	.....	4,190	187	1,120	1,310	3,408	2,098
	1899	² 16	1,334	11	55	1,268	.....	3,423	74	664	1,092	2,721	1,029
Printing and publishing.....	1909	42	617	37	287	203	264	603	210	253	247	1,094	847
	1904	² 35	318	32	119	167	.....	324	95	141	119	623	504
	1899	35	.....	.....	67	179	.....	254	56	113	70	401	322
Shipbuilding, including boat building.....	1909	6	40	8	1	31	58	57	2	29	38	90	52
	1904	5	81	6	.....	76	.....	17	.....	65	170	274	104
	1899	3	170	3	7	169	.....	118	11	96	110	210	94
Tobacco manufactures.....	1909	17	100	21	2	77	.....	66	3	47	53	150	97
	1904	15	84	10	1	64	.....	40	1	37	40	125	85
	1899	13	54	14	1	39	.....	20	1	20	41	83	42
All other industries.....	1909	95	1,620	72	245	1,309	4,141	7,670	294	919	5,365	7,995	2,030
	1904	88	1,700	72	143	1,485	.....	4,930	166	956	3,413	5,480	2,067
	1899	63	.....	.....	161	1,154	.....	1,615	110	677	2,792	4,316	1,614

CITIES OF 10,000 TO 50,000 INHABITANTS—ALL INDUSTRIES COMBINED.

Aberdeen.....	1900	43	1,051	26	116	1,509	9,582	\$4,560	\$161	\$905	\$2,172	\$3,590	\$1,418
	¹ 1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	¹ 1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bellingham.....	1900	96	1,795	89	140	1,566	5,176	3,288	158	1,027	2,422	4,600	2,178
	1904	73	1,466	55	97	1,314	.....	2,981	107	858	1,651	3,294	1,643
	² 1899	47	.....	.....	51	1,502	.....	1,710	59	549	1,553	2,629	1,076
Everett.....	1900	94	2,723	77	271	2,375	11,481	6,605	359	1,720	3,859	7,423	3,564
	¹ 1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	¹ 1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Yakima.....	1900	36	723	32	89	692	1,975	2,297	195	374	950	2,175	1,225
	¹ 1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	¹ 1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Walla Walla.....	1900	48	529	39	102	388	1,500	2,336	127	323	1,385	2,317	932
	1904	33	328	31	55	242	.....	1,063	63	181	620	1,486	557
	1899	34	.....	.....	15	213	.....	708	17	132	621	904	343

¹ Figures do not agree with those published in 1904, because it was necessary to revise the totals in order to include data only for those establishments located within the corporate limits of the city.
² Excluding statistics for one establishment, to avoid disclosure of individual operations.
³ Excluding statistics for two establishments, to avoid disclosure of individual operations.
⁴ Figures not available.
⁵ Represents the statistics for Fairhaven and New Whatcom, incorporated as Bellingham in 1903.

TABLE II.—DETAIL STATEMENT FOR

INDUSTRY.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—NUMBER DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.				
					Male.	Female.	Average number.	Number.			Male.	Female.	Male.	Female.			
								Maximum month.	Minimum month.								
1 All industries.....	3,674	80,118	3,264	3,050	3,880	804	69,120	Oct 73,949	Jan 54,719	(1)	(1)	(1)	(1)	(1)	297,897		
2 Artificial stone.....	41	157	39	12	1	.....	105	Oct 147	Jan 68	173	173	.....	.....	.....	117
3 Automobiles, including bodies and parts.....	5	22	6	1	1	.....	14	Jan 18	Jan 12	14	14	.....	.....	.....	15
4 Awnings, tents, and sails.....	19	169	17	17	10	4	121	Jan 157	Jan 96	116	60	56	.....	.....	42
5 Blacking and cleansing and polishing preparations.....	3	6	3	2	.....	.....	1	Aug 2	Jan 1	2	2	.....	.....	.....	2
6 Boxes, fancy and paper.....	6	125	4	8	1	2	110	Dec 136	Jan 98	136	47	85	.....	4	42	
7 Brass and bronze products.....	7	55	3	7	4	1	40	July 47	Feb 25	44	44	.....	.....	.....	60
8 Bread and other bakery products.....	298	1,514	363	41	78	63	969	Nov 1,051	Feb 907	1,047	737	302	7	1	412		
9 Brick and tile.....	58	1,447	61	56	24	6	1,300	Jan 1,690	Jan 854	1,589	1,582	5	2	.....	4,797	
10 Brooms.....	7	60	7	2	7	1	43	Apr 46	Dec 40	46	35	11	.....	.....	47
11 Butter, cheese, and condensed milk.....	97	978	58	55	106	24	735	Jan 884	Jan 603	650	548	97	4	1	2,204		
12 Canning and preserving.....	80	2,284	27	98	108	22	2,029	Aug 3,972	Jan 483	3,011	2,261	707	20	23	2,434		
13 Carriages and wagons and materials.....	37	317	46	22	5	3	241	Aug 285	Feb 209	223	223	.....	.....	.....	254
14 Cars and general shop construction and repairs by steam-railroad companies.....	17	2,880	.....	71	83	10	2,716	Nov 3,042	Apr 2,364	3,135	3,134	1	.....	.....	3,609
15 Cars and general shop construction and repairs by street-railroad companies.....	11	446	.....	9	26	1	410	May 482	Mar 383	410	410	.....	.....	.....	598
16 Clothing, men's, including shirts.....	10	313	9	7	25	3	260	Dec 325	Aug 223	326	25	301	.....	.....	81
17 Coffee and spice, roasting and grinding.....	15	202	4	17	38	12	131	Dec 146	Jan 123	146	88	58	.....	.....	280
18 Coffins, burial cases, and undertakers' goods.....	4	89	4	6	4	1	74	Dec 71	Apr 66	79	72	.....	.....	.....	205
19 Confectionery.....	52	780	51	33	72	12	612	Dec 79	Jan 556	724	244	478	1	1	333		
20 Cooperage and wooden goods, not elsewhere specified.....	8	111	3	8	1	2	97	Nov 143	Feb 71	138	137	1	.....	.....	912
21 Copper, tin, and sheet-iron products.....	81	750	85	51	24	7	583	Oct 662	Jan 505	620	611	8	1	.....	207	
22 Cutlery and tools, not elsewhere specified.....	7	25	10	2	.....	3	10	Feb 11	Jan 10	11	11	.....	.....	.....	45
23 Electroplating.....	3	18	5	.....	.....	.....	13	Oct 15	Jan 12	12	12	.....	.....	.....	20
24 Flour-mill and gristmill products.....	96	973	61	80	163	16	644	Oct 815	Jan 518	742	734	8	.....	.....	11,773
25 Food preparations.....	30	176	29	12	11	3	121	July 193	Dec 97	123	101	21	.....	1	157	
26 Foundry and machine-shop products.....	178	2,961	144	173	171	34	2,439	Nov 2,636	Jan 2,184	2,603	2,597	1	5	.....	5,117	
27 Fur goods.....	15	107	16	9	5	6	71	Oct 111	May 38	110	42	68	.....	.....	14
28 Furnishing goods, men's.....	7	68	14	6	4	3	41	Dec 64	Jan 22	64	9	53	2	.....	30	
29 Furniture and refrigerators.....	36	676	42	28	16	8	582	Jan 628	Jan 488	587	506	11	10	.....	1,284	
30 Gas, illuminating and heating.....	12	675	33	15	24	.....	405	May 523	Oct 408	522	522	.....	.....	.....	1,479
31 Gloves and mittens, leather.....	6	74	9	4	2	.....	60	Dec 72	May 64	72	30	42	.....	.....	10
32 Hand stamps and stencils and brands.....	11	78	11	6	6	4	61	Nov 56	May 47	49	47	2	.....	.....	53
33 Ice, manufactured.....	25	231	10	31	23	4	193	July 198	Jan 120	162	162	.....	.....	.....	2,210
34 Leather goods.....	34	251	38	23	25	5	100	May 170	Jan 150	166	147	8	1	.....	76	
35 Lime.....	12	218	8	9	11	2	188	July 221	Jan 128	185	183	2	.....	.....	245
36 Liquors, malt.....	31	978	12	64	128	9	765	Jan 827	Jan 715	737	732	5	.....	.....	5,675
37 Lumber and timber products.....	1,263	47,447	1,013	1,414	1,095	176	43,749	Oct 47,133	Jan 33,411	50,964	50,714	198	52	.....	224,455	
38 Marble and stone work.....	38	563	34	30	21	5	473	May 570	Dec 354	521	521	.....	.....	.....	1,210
39 Mattresses and spring beds.....	12	195	3	8	13	5	106	Aug 189	Jan 127	176	169	14	3	.....	485	
40 Models and patterns, not including paper patterns.....	7	85	11	3	1	.....	20	Oct 24	Jan 17	20	18	2	.....	.....	63
41 Musical instruments and materials, not specified.....	5	0	0	.....	.....	.....	.....	(2)	(2)	.....	.....	.....	.....	.....	.....
42 Optical goods.....	6	26	2	4	4	2	14	Dec 16	Jan 13	16	15	1	.....	.....	11
43 Paint and varnish.....	5	74	.....	5	8	4	57	May 67	Jan 41	57	55	1	1	.....	231
44 Patent medicines and compounds and druggists' preparations.....	18	72	13	8	13	.....	38	Apr 61	July 30	40	27	12	1	.....	95
45 Photo-engraving.....	9	84	7	6	5	4	62	Oct 71	Jan 51	71	64	6	1	.....	54	
46 Pottery, terra-cotta, and fire-clay products.....	8	321	1	18	10	3	289	July 329	Feb 202	292	292	.....	.....	.....	1,263
47 Printing and publishing.....	566	4,583	552	236	966	205	2,624	Nov 2,687	Jan 2,529	2,718	2,223	360	113	22	2,232		
48 Shipbuilding, including boat building.....	60	900	84	39	28	5	744	May 952	Jan 619	852	851	1	.....	.....	2,165
49 Show cases.....	11	72	12	3	2	1	54	May 63	Apr 50	53	53	.....	.....	.....	92
50 Slaughtering and meat packing.....	14	971	4	34	78	27	828	Dec 956	Jan 772	962	938	24	.....	.....	1,883
51 Stoves and furnaces, including gas and oil stoves.....	9	91	6	7	5	1	72	Oct 90	Feb 59	84	81	2	1	.....	99	
52 Surgical appliances and artificial limbs.....	6	18	6	.....	.....	.....	12	Aug 15	Feb 9	14	13	1	.....	.....	9
53 Tobacco manufactures.....	114	455	128	10	10	2	305	Dec 324	Apr 203	339	278	58	3	.....	.....
54 Umbrellas and canes.....	3	12	5	3	.....	.....	4	Oct 5	Jan 4	5	2	3	.....	.....	.....
55 Wall plaster.....	4	76	.....	7	9	1	59	May 85	Feb 39	59	59	.....	.....	.....	445
56 All other industries.....	217	3,903	178	203	277	67	3,178	.....	.....	.....	.....	.....	.....	.....	18,329

1 No figures given for reasons explained in the Introduction, page 2. See also discussion of wage earners, on page 7.
 2 Same number reported for one or more other months.
 3 No wage earners employed.
 4 All other industries embraced—

Agricultural implements.....	5	Cars, steam-railroad, not including operations of railroad companies.....	1	Explosives.....	2
Artificial flowers and feathers and plumes.....	1	Cars, street-railroad, not including operations of railroad companies.....	1	Fancy articles, not elsewhere specified.....	1
Babbitt metal and solder.....	3	Cement.....	2	Fireworks.....	1
Bags, other than paper.....	1	Chemicals.....	2	Flags, banners, regalia, society badges, and emblems.....	1
Baskets, and rattan and willow ware.....	2	Clothing, women's.....	6	Flavoring extracts.....	3
Beet sugar.....	1	Coke.....	3	Gas and electric fixtures and lamps and reflectors.....	3
Belting and hose, leather.....	2	Cordage and twine and jute and linen goods.....	1	Glass, cutting, staining, and ornamenting.....	6
Bluing.....	1	Cordials and syrups.....	1	Gold and silver, reducing and refining, not from the ore.....	1
Boots and shoes, including cut stock and findings.....	12	Electrical machinery, apparatus, and supplies.....	4	Grease and tallow.....	2
Boxes, cigar.....	1	Emery and other abrasive wheels.....	1	Hair work.....	1
Brushes.....	2	Engraving and die-sinking.....	1	Hats and caps, other than felt, straw, and wool.....	1
Buttons.....	1				
Carpets, rag.....	2				

MANUFACTURES : WEST VIRGINIA

STATISTICS OF MANUFACTURES FOR THE STATE, CITIES, AND INDUSTRIES

Prepared under the supervision of W. M. STEUART, Chief Statistician for Manufactures

INTRODUCTION.

This advance bulletin gives the statistics of manufactures for the state of West Virginia for the calendar year 1909 as shown by the Thirteenth Census. It will be reprinted without change as a part of the Compendium of the Census for West Virginia, and in the final reports of the Thirteenth Census.

The text summarizes the general results of the census inquiry, presenting a series of special tables in which the main facts printed in the general tables are given in convenient form for the state as a whole and for important industries. It also presents tables in which the statistics for the industries of the state as a whole and for a few important industries are classified by character of ownership, size of establishments, number of wage earners, and prevailing hours of labor, information which could not be presented in general tables for each industry without disclosing the facts for individual establishments.

At the end of the bulletin are two general tables.

Table I gives for 1909, 1904, and 1899 the number of establishments and of persons engaged in the industries, primary power, capital, salaries and wages, cost of materials, value of products, and value added by manufacture reported for all industries combined and for certain important industries for the state as a whole. It also gives the same items for all industries combined for the six cities having in 1910 a population of over 10,000 but less than 50,000.

Table II gives statistics in detail for 1909 for the state and for a larger number of industries.

Scope of census: Factory industries.—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 organization, location of establishments, size of establishments, labor force, and similar subjects. When use is made of the data for these purposes, it is imperative that due attention should be given to the limitations of the figures. Particularly is this true when the attempt is made to derive from them figures purporting to show average wages, cost of production, or profits. These limitations will be fully discussed in the general report on manufactures for the United States as a whole. It is impossible to reproduce such discussion in the bulletins relative to the individual states.

The census of 1909, like that of 1904, was confined to manufacturing establishments conducted under the factory system, as distinguished from the neighborhood, hand, and building industries. Where statistics for 1899 are given they have been reduced to a comparable basis by eliminating the latter classes of industries.

The census does not include establishments which were idle during the entire year, or had a value of products of less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions, or in governmental establishments, except those of the Federal Government.

Period covered.—The returns cover the calendar year 1909, or the business year which corresponds most nearly to that calendar year. The statistics cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—The term "establishment" comprises the factories, mills, or plants which are under a common ownership or control, and for which one set of books of account is kept.

If, however, the plants constituting an establishment as thus defined were not all located within the same city or state, separate reports were secured in order that the separate totals might be included in the statistics for each city or state. 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 very different from those covered by the class designation, and, on the other hand, may not include the total product covered by this designation, because some part of this product may be made in establishments in which it is not the product of chief value.

Selected industries.—The general tables at the end of this bulletin give the principal facts separately for the industries of the state. A selection has been made of the leading industries of the state for more detailed consideration. Sometimes an industry of greater importance than some of those selected is omitted because it comprises so few establishments that these detailed presentations would reveal the operations of individual concerns.

Comparisons with previous censuses.—Owing to the changes in industrial conditions it is not always possible to classify establishments by industries in such a way as to permit accurate comparison with preceding censuses. Table I, giving comparable figures for 1909, 1904, and 1899, therefore, does not embrace all the industries shown for 1909 in Table II.

Influence of increased prices.—In considering changes in cost of materials, value of products, and value added by manufacture, 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 can not be taken as an exact measure of increase in the volume of business.

Persons engaged in industry.—At the censuses of 1909, 1904, and 1899 the following general classes of persons engaged in manufacturing industries have been distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks, and (5) wage earners. In the censuses of 1904 and 1899 these five classes were shown according to the three main groups: (1) Proprietors and firm members, (2) salaried officials, clerks, etc., and (3) wage earners. The second group included the three classes of salaried officers of corporations, superintendents and managers, and clerks. In the present census an entirely different

grouping is employed: That into (1) proprietors and officials, (2) clerks, and (3) wage earners. The first group includes proprietors and firm members, salaried officers of corporations, and superintendents and managers.

At this census the number of persons engaged in the industries, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for December 15, or the nearest representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where conditions were exceptional, and particularly in the case of certain seasonal industries, such as canning, the December date could not be accepted as typical, and an earlier date had to be chosen.

In the case of employees other than wage earners the number thus reported on December 15, or other representative day, has been treated as equivalent to the average for the year, since the number of employees of this class does not vary much from month to month in a given industry. In the case of wage earners the average is obtained in the manner explained in the next paragraph.

Wage earners.—In addition to the report by sex and age of the number of wage earners on December 15, or other representative day, a report was obtained of the number employed on the 15th of each month, without distinction of sex or age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported each month by 12. The average thus obtained represents the number of wage earners that would be required to perform the work done if all were constantly employed during the entire year. Accordingly, the importance of any 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 for each separate industry, is not totaled for all industries combined, because in view of the variations of date such a total is believed not 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 particular, totals by sex and age for the wage earners reported for the representative day would be misleading because of the undue weight given to seasonal industries, in some of which, such as canning and preserving, the distribution of the wage earners by sex and age is materially different from that in most industries of more regular operation. In order to determine as nearly as possible the sex and age distribution of the average number of wage earners in the state as a whole, the following procedure has been adopted:

The percentage distribution by sex and age of the wage earners in each industry, for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. This percentage has been applied to the average number of wage earners for the year in that industry, to determine the average number of men, women, and children employed. These calculated averages for the several industries have been added up to give the average distribution for the state as a whole.

In 1899 and 1904 the schedule called for the average number of wage earners of each sex 16 years and over, and the total number under 16 years of age, for each month, and these monthly statements were combined in an annual average. Comparatively few manufacturing concerns, however, keep their books in such way as to show readily the number of men, women, and children (under 16) employed each month. These monthly returns by sex and age were, in fact, largely estimates. It was believed that a more accurate and reliable sex and age distribution could be secured by taking as a basis of estimate the actual numbers employed on a single day.

Prevailing hours of labor.—The census made no attempt to ascertain the number of employees 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 period to another are disregarded, and no attention is given to the fact that a limited number of employees may have hours differing from those of the majority. In the tables all the wage earners of each establishment are counted in the class within which the establishment itself falls. In most establishments, however, all or practically all the employees work the same number of hours, so that these figures give a substantially correct picture of the hours of labor in manufacturing industries.

Capital.—For reasons stated in prior census reports, the statistics of capital secured by the census canvass are so defective as to be without value, except as indicating very general conditions. The instructions on the schedule for securing 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.

Materials.—Cost of materials refers to the materials used during the year, which may be more or less than the materials purchased during the year. The term materials includes fuel, rent of power and heat, mill supplies, and containers, as well as materials forming a constituent part of the product. Fuel includes all fuel used, whether for heat, light, or power, or for the process of manufacture.

Expenses.—Under "Expenses" are included all items of expense incident to the year's business, except interest, whether on bonds or other forms of indebtedness, and allowances for depreciation.

Value of products.—The value of products for any industry includes the total value of all products manufactured in establishments whose products of chief value fall under the industry designation. The amounts given represent the selling value at the factory of all products manufactured during the year, which may differ from the value of the products sold. Amounts received for work on materials furnished by others are included.

Value added by manufacture.—The value of products is not 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 process carried on in the industry itself. Another part of it, and often by far the larger part, represents the value of the materials used, which have been produced by agriculture or mining or by other industrial establishments. For many purposes, therefore, the best measure of the importance of different classes of industry is the value created as the result of the manufacturing operations carried on within the industry. This value is obtained by deducting the cost of the materials consumed from the value of the product. The figure thus obtained is termed in the census reports "value added by manufacture."

There is a further statistical advantage which "value added" has over gross value of products. In combining the value of products for all industries the value of products produced by one establishment and used as materials in another is duplicated, and the total, therefore, gives a greatly exaggerated idea of the wealth created. No such duplication takes place in the total "value added by manufacture."

Cost of manufacture and profits.—Census data do not show the entire cost of manufacture, and consequently can not be used to show profits. No account has been taken of interest and depreciation. Even if the amount of profit could be determined by deducting the expenses from the value of the products, the rate of profit on the investment could not properly be calculated, because of the very defective character of the returns regarding capital.

Primary power.—The figures given for this item show the total of the primary power used by the establishments. They do not cover the power developed by motors operated by such power, the inclusion of which would evidently result in duplication.

Location of establishments.—The Census Bureau has classified establishments by their location in cities or classes of cities. In

interpreting these figures due consideration should be given to the fact that often establishments are located just outside the boundaries of cities, and are necessarily so classified, though locally they are looked upon as constituting a part of the manufacturing interests of the cities.

Laundries.—The census of 1909 was the first to include statistics of laundries. The reports are confined to establishments using

mechanical power. The data are presented separately and are not included in the general total for manufacturing industries, in order to avoid interference with comparisons with prior censuses.

Custom sawmills and gristmills.—In order to make the statistics for 1909 comparable with those for 1904 the data for these mills have been excluded from all the tables presenting general statistics, and are given in a separate table at the end of this report.

INDUSTRIES IN GENERAL.

General character of the state.—West Virginia, with a gross area of 24,170 square miles, of which only 148 represent water surface, and with a population in 1910 of 1,221,119, ranks fortieth among the 49 states and territories of continental United States in area and twenty-eighth in population. The total population was 958,800 in 1900 and 762,794 in 1890. In 1910 the density of population for the entire state was 50.8 per square mile, the corresponding figure for 1900 being 39.9. Eighteen and seven-tenths per cent of the entire population of the state in 1910 resided in cities and incorporated towns having 2,500 inhabitants or over, as against 13.1 per cent in 1900.

There were no cities in the state having a population in 1910 of over 50,000, but there were six cities which had a population of 10,000 or more, as follows: Wheeling, Huntington, Charleston, Parkersburg, Bluefield, and Martinsburg. These six cities contained 11.1 per cent of the total population of the state and were credited with 28.6 per cent of the total value of its manufactures. Apart from these cities, only 7.6 per cent of the population resided in incorporated places of 2,500 inhabitants or over.

The cities and mining districts of the state are well supplied with railway transportation facilities, though certain of the heavily wooded areas are not traversed by railroads. The Ohio River, which is of decided commercial importance, forms the greater part of the western boundary of the state, affording cheap and

adequate shipping facilities, and many of the numerous mountain streams are utilized for rafting lumber.

Importance and growth of manufactures.—West Virginia is in general more a mining than a manufacturing state. Over one-half of the counties have deposits of bituminous coal, in the production of which the state has held a high rank for many years, its output in 1909 being exceeded only by that of Pennsylvania. The state is especially well adapted, however, to the development of manufactures. The vast deposits of coal, the abundance of petroleum and natural gas, the extensive timber areas, and the excellent water-power facilities which are being rapidly developed are directly responsible for much of the growth in manufactures.

Since 1869 the growth of the population of the state has not kept pace with the increase in the importance of its manufacturing industries. During 1869 an average of 11,672 wage earners, representing 2.6 per cent of the population, were employed in manufactures, while in 1909 an average of 63,893 wage earners, or 5.2 per cent of the total population, were so engaged. During the intervening period the gross value of products per capita of the entire population of the state increased from \$55 to \$133.

The following table gives the most important figures relative to all classes of manufactures combined for 1909, 1904, and 1899, together with the percentages of increase from census to census:

	NUMBER OR AMOUNT.			PER CENT OF INCREASE.	
	1909	1904	1899	1904-1900	1899-1904
Number of establishments.....	2,586	2,109	1,824	22.6	15.6
Persons engaged in manufactures.....	71,463	48,880	(¹)	46.2	(¹)
Proprietors and firm members.....	2,599	2,230	(¹)	16.5	(¹)
Salaried employees.....	4,971	2,892	1,744	71.9	65.8
Wage earners (average number).....	63,893	43,758	33,080	46.0	32.3
Primary horsepower.....	217,496	138,578	91,894	56.9	50.8
Capital.....	\$150,923,000	\$86,821,000	\$49,103,000	73.8	76.8
Expenses.....	144,666,000	86,738,000	55,551,000	66.8	56.1
Services.....	38,710,000	24,052,000	14,159,000	60.9	69.9
Salaries.....	5,710,000	2,899,000	1,519,000	97.0	90.8
Wages.....	33,000,000	21,153,000	12,640,000	56.0	67.3
Materials.....	92,878,000	54,419,000	37,228,000	70.7	46.2
Miscellaneous.....	13,078,000	8,267,000	4,164,000	58.2	98.5
Value of products.....	161,950,000	99,041,000	67,007,000	63.5	47.8
Value added by manufacture (value of products less cost of materials).....	69,072,000	44,622,000	29,779,000	54.8	49.8

¹ Figures not available.

The proportion which the manufactures of the state represented of the total value of the products of the

manufacturing industries of the United States increased from 0.6 per cent in 1869 to 0.8 per cent in 1909.

MANUFACTURES—WEST VIRGINIA.

In 1909 the state of West Virginia had 2,586 manufacturing establishments, which gave employment to an average of 71,463 persons during the year and paid out \$38,710,000 in salaries and wages. Of the persons employed, 63,893 were wage earners. These establishments turned out products to the value of \$161,950,000, to produce which materials costing \$92,878,000 were used. The value added by manufacture was thus \$69,072,000, which figure, as explained in the Introduction, best represents the net wealth created by manufacturing operations during the year.

In general, this table brings out the fact that the manufacturing industries of West Virginia as a whole showed a greater development during the more re-

cent five-year period, 1904-1909, than during the preceding five-year period, 1899-1904. During the later period the number of establishments increased 22.6 per cent and the average number of wage earners 46 per cent, while the value of products increased 63.5 per cent and the value added by manufacture 54.8 per cent. As pointed out in the Introduction, it would be improper to infer that manufactures increased in volume to the full extent indicated by these figures regarding values, since the increase shown is certainly due, in part, to the increase that has taken place in the prices of commodities.

The relative importance and growth of the leading manufacturing industries of the state are shown in the following table:

INDUSTRY.	Number of establishments.	WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.		PER CENT OF INCREASE. ¹			
		Average number.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.	Value of products.		Value added by manufacture.	
								1904-1909	1899-1904	1904-1909	1899-1904
All industries.....	2,586	63,893	100.0	\$161,950,000	100.0	\$69,072,000	100.0	63.5	47.8	54.8	40.8
Lumber and timber products.....	1,016	18,043	28.2	28,758,000	17.8	20,082,000	29.1	53.8	54.0	60.7	78.2
Iron and steel, steel works and rolling mills.....	18	5,000	7.9	22,435,000	13.9	6,539,000	9.5	66.7	6.4	38.7	1.0
Leather, tanned, curried, and finished.....	20	1,571	2.5	12,451,000	7.7	2,008,000	3.0	105.4	88.8	50.0	93.0
Glass.....	51	6,190	9.7	7,770,000	4.8	5,483,000	7.9	69.1	145.7	64.2	161.1
Flour-mill and gristmill products.....	207	452	0.7	7,000,000	4.3	1,095,000	1.6	24.1	63.5	10.0	44.3
Coke.....	71	4,426	6.9	7,563,000	4.7	2,551,000	3.7	81.2	18.3	67.1	-2.2
Cars and general shop construction and repairs by steam-railroad companies.....	24	5,052	8.8	6,733,000	4.2	3,070,000	5.3	63.4	39.9	58.8	70.3
Slaughtering and meat packing.....	6	167	0.3	3,764,000	2.3	370,000	0.5	95.2	44.1	45.8	27.4
Foundry and machine-shop products.....	83	1,354	2.1	3,392,000	2.1	1,632,000	2.4	18.5	88.7	12.6	52.2
Pottery, terra-cotta, and fire-clay products.....	16	2,034	3.2	2,079,000	1.7	1,893,000	2.7	108.3	16.4	101.4	6.1
Paper and wood pulp.....	9	1,162	1.8	2,652,000	1.6	909,000	1.4	104.3	145.8	80.1	111.8
Liquors, malt.....	13	415	0.7	2,271,000	1.4	1,652,000	2.4	5.8	92.8	-0.8	82.0
Copper, tin, and sheet-iron products.....	19	916	1.4	2,151,000	1.3	797,000	1.2	170.0		183.0	
Printing and publishing.....	235	1,255	2.0	1,992,000	1.2	1,451,000	2.1	28.2	56.1	20.6	48.7
Bread and other bakery products.....	151	346	0.5	1,470,000	0.9	611,000	0.9	61.2	131.5	58.7	112.7
Clothing, men's, including shirts.....	9	403	0.6	1,469,000	0.9	414,000	0.6	71.8	70.7	49.5	91.0
Patent medicines and compounds and druggists' preparations.....	17	196	0.3	1,292,000	0.8	1,036,000	1.5				
Woolen, worsted, and felt goods, and wool hats.....	13	599	0.9	1,224,000	0.8	429,000	0.6				
Furniture and refrigerators.....	25	578	0.9	965,000	0.6	581,000	0.8	48.9	42.7	51.3	37.6
Brick and tile.....	34	882	1.4	950,000	0.6	675,000	1.0	9.2	99.5	2.3	64.7
Carriages and wagons and materials.....	51	347	0.5	675,000	0.4	357,000	0.5	5.6	30.4	5.3	21.1
Cooperage and wooden goods, not elsewhere specified.....	31	306	0.6	658,000	0.4	324,000	0.5				
Lime.....	13	514	0.8	644,000	0.4	420,000	0.6	455.2		445.5	
Canning and preserving.....	30	271	0.4	605,000	0.4	175,000	0.3	-20.8	-1.3	-53.6	6.2
Bone, carbon, and lamp black.....	10	101	0.2	590,000	0.3	347,000	0.5	117.5		56.3	
Ice, manufactured.....	35	233	0.4	470,000	0.3	365,000	0.5	34.8	196.6	25.0	201.0
Leather goods.....	8	127	0.2	472,000	0.3	195,000	0.3	28.3	15.4	46.6	-2.2
Marble and stone work.....	29	144	0.2	365,000	0.2	231,000	0.3	135.5	-46.6	148.4	-52.8
Mattresses and spring beds.....	7	72	0.1	267,000	0.2	113,000	0.2	88.0		145.7	
Confectionery.....	10	82	0.1	244,000	0.1	97,000	0.1	8.0	130.0	-11.0	211.4
All other industries.....	321	9,335	14.0	37,262,000	23.0	12,441,000	18.0				

¹ Per cent of increase is based on figures in Table I, and a minus sign (-) denotes a decrease. Where percentages are omitted, the figures are not comparable.

It should be borne in mind in considering this table that the value of products in some of the industries involves a certain amount of duplication due to the use of the products of one establishment in the industry as material for another establishment.

Of the industries included under the head of "All other industries" in the table, the tin-plate and terneplate industry is the most important, ranking fourth in the state when measured by value of products. West Virginia, with six mills, which had a total output for 1909 valued at \$9,257,524, was second among the states in this industry. Other statistics for this industry for 1909 are presented in Table II, page 18.

In addition to the 30 industries presented separately in the table, and the tin-plate and terneplate industry, all of which reported products valued at more than \$200,000 in 1909, 24 other industries in the state had a value of products in excess of this amount. These industries are included under the head of "All other industries" in the table, because in some cases the operations of individual establishments would be disclosed if they were shown separately; in others because the returns do not properly present the true condition of the industry, as it is interwoven with one or more other industries; and in still others because comparative statistics for the previous censuses can not

be presented on account of changes in classification. These industries are as follows: Boots and shoes, including cut stock and findings; brooms; cars, steam-railroad, not including operations of railroad companies; chemicals; clothing, women's; cutlery and tools, "not elsewhere specified;" dyeing and finishing textiles; dyestuffs and extracts; electrical machinery, apparatus, and supplies; explosives; galvanizing; gas and electric fixtures and lamps and reflectors; gas, illuminating and heating; hosiery and knit goods; iron and steel, blast furnaces; iron and steel pipe, wrought; liquors, distilled; mineral and soda waters; oil, "not elsewhere specified;" petroleum, refining; smelting and refining, zinc; smelting and refining, not from the ore; tobacco manufactures; and wood, turned and carved.

Although a few industries greatly predominate in importance, it will be seen from Table II, page 18, that there is on the whole considerable diversity in the manufacturing activities of the state. The most important industries listed in the table given above, in which they are arranged in the order of the value of products, call for brief consideration.

Lumber and timber products.—Under this head are included statistics for logging and sawmill operations, for planing mills, and for establishments engaged in the manufacture of wooden packing boxes. The industry afforded employment in 1909 to an average of 18,643 wage earners and turned out products valued at \$28,758,000, these figures representing 29.2 per cent and 17.8 per cent of the respective totals reported for all manufacturing industries of the state. Much of the virgin timber has been cut, but extensive areas in all parts of the state are still wooded. Statistics for the custom sawmills, most of which are small, are not included with the general statistics of this industry, but are shown separately on page 15.

Iron and steel, steel works and rolling mills.—With extensive deposits of coal, and because of the favorable location of that part of the state in which the steel works and rolling mills are situated, West Virginia is particularly well adapted to the manufactures peculiar to this industry. Between 1899 and 1904 practically no change took place in the value of products, but between 1904 and 1909 there was an increase of \$8,980,000, or 66.7 per cent. The industry is second in importance in the state, as measured by value of products.

Leather, tanned, curried, and finished.—With an abundant and convenient supply of oak and hemlock bark there was a marked growth in the leather industry of the state during the decade 1899–1909. Measured by value of products this industry was third in importance among the industries of the state in 1909. Although the number of tanneries decreased from 33 in 1904 to 20 in 1909, there were increases of 625, or 66.1 per cent, in the average number of wage earners;

\$341,000, or 78.6 per cent, in wages; and \$6,389,000, or 105.4 per cent, in the value of products during the same period.

Glass.—The large deposits of white siliceous sand admirably adapted to glass making found in West Virginia and an abundant supply of coal and natural gas have caused a rapid growth in the industry. The number of establishments engaged in this industry increased from 16 in 1899 to 39 in 1904 and to 51 in 1909, when West Virginia reported next to the largest number shown for any state in the Union. During the decade the average number of wage earners increased from 1,949 to 6,190, or more than trebled, and the value of products increased from \$1,872,000 to \$7,779,000, or more than quadrupled.

Flour-mill and gristmill products.—This classification includes statistics for all mills grinding wheat, rye, buckwheat, or corn, as well as those making hominy and grits, but it does not include statistics for factories manufacturing fancy cereals or other food preparations as chief products. In 1909 there were 207 merchant mills in West Virginia, which manufactured products valued at \$7,696,000, or 4.8 per cent of the value of all manufactured products of the state. The figures for the mills doing custom grinding for local consumption are excluded from the general statistics, but they are shown separately on page 15.

Coke.—The industry includes establishments operating coke ovens for the manufacture of coke from coal or slack. The manufacture of coke at gas houses is not included. Since 1899 there has been a decrease in the number of establishments in this industry, but increases have occurred both in the average number of wage earners employed and in the value of products. In 1909 West Virginia occupied second place among the states in the tonnage of coke produced and third in the value of the output. The increased activity of the iron and steel industry during recent years has given an added impetus to the production of coke in the state. The total value of products reported for this industry in 1909 was \$7,563,000, which was more than double that shown for 1899.

Owing to the comparatively simple processes involved in the flour mills and gristmills and in the tanning, currying, and finishing of leather, as well as the extent to which these processes are carried on by machinery, the value added by manufacture and the number of wage earners employed in these industries are not commensurate with the gross value of products. On the other hand, steam-railroad repair shops, which rank seventh, and the manufacture of pottery, terracotta, and fire-clay products, which ranks tenth among the industries shown in the table when measured by value of products, occupy third and sixth positions, respectively, in the number of wage earners employed, and fourth and seventh places, respectively, when measured

by value added by manufacture. In fact, the lumber industry and the steel works and rolling mills are the only two of the six leading industries which hold the same relative rank when measured by value added by manufacture as when measured by value of products. Furthermore, it will be seen that there is considerable change in the order of the other industries shown separately in the table when ranked according to value added by manufacture. The most conspicuous change is in the case of slaughtering and meat packing, which drops from eighth to twenty-first place.

The table on page 4 shows also the percentages of increase for these leading industries in respect to value of products and value added by manufacture where these statistics are comparable. In the case of several of these industries there were increases which indicate exceptional development. The manufacture of lime shows a greater relative gain from 1904 to 1909, both in value of products and in value added by manufacture, than any other of the industries for which comparative figures are presented in the table, each showing increases of about 450 per cent. All of the six leading industries, with the exception of flour mills and gristmills, show large gains in both these respects from 1904 to 1909.

In the canning and preserving industry decreases in the value of products occurred during both five-year periods. Each of the other industries presented separately shows an increase in value of products from 1904 to 1909, and all except three an increase in value added by manufacture. For the preceding five-year period, two industries show a decrease in the former item and three in the latter.

Persons engaged in manufacturing industries.—The following table shows for 1909 the distribution of the number of persons engaged in manufactures, the average number of wage earners being distributed by sex and age. It should be borne in mind, however, that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

CLASS.	PERSONS ENGAGED IN MANUFACTURES.		
	Total.	Male.	Female.
All classes	71,463	66,121	5,342
Proprietors and officials.....	4,508	4,423	85
Proprietors and firm members.....	2,500	2,527	72
Salaried officers of corporations.....	868	562	6
Superintendents and managers.....	1,341	1,334	7
Clerks.....	3,062	2,505	557
Wage earners (average number).....	63,893	59,103	4,700
16 years of age and over.....	62,840	58,335	4,505
Under 16 years of age.....	1,053	858	195

The average number of persons engaged in manufactures during 1909 was 71,463, of whom 63,893 were wage earners. Of the remainder, 4,508 were pro-

prietors and officials and 3,062 were clerks. Corresponding figures for individual industries will be found in Table II, page 18.

The following table shows for 1909 the percentages of proprietors and officials, clerks, and wage earners, respectively, among the total number of persons employed in manufactures. It covers all industries combined and 15 important industries individually.

INDUSTRY.	PERSONS ENGAGED IN MANUFACTURES.			
	Total number.	Per cent of total.		
		Proprietors and officials.	Clerks.	Wage earners (average number).
All industries	71,463	6.3	4.3	89.4
Cars and general shop construction and repairs by steam-railroad companies.....	5,920	1.0	3.5	95.5
Coke.....	4,746	2.9	3.0	93.3
Copper, tin, and sheet-iron products.....	998	3.3	4.0	91.8
Flour-mill and gristmill products.....	884	38.8	10.1	51.1
Foundry and machine-shop products.....	1,633	0.7	7.3	82.0
Glass.....	6,509	2.3	2.6	95.1
Iron and steel, steel works and rolling mills.....	5,445	1.7	5.3	92.9
Leather, tanned, curried, and finished.....	1,088	2.5	4.4	93.1
Liquors, malt.....	524	7.1	13.7	79.2
Lumber and timber products.....	20,790	8.1	2.3	89.6
Paper and wood pulp.....	1,221	2.5	2.3	95.2
Pottery, terra-cotta, and fire-clay products.....	2,149	2.4	2.0	94.6
Printing and publishing.....	1,772	19.2	10.0	70.8
Slaughtering and meat packing.....	209	6.7	13.4	79.9
Tin plate and terneplate.....	1,465	2.1	6.8	91.1
All other industries.....	15,501	8.5	6.0	85.5

Of the total number of persons engaged in all manufacturing industries, 6.3 per cent were proprietors and officials, 4.3 per cent clerks, and 89.4 per cent wage earners. The highest percentage of proprietors and officials shown for any individual industry, 38.8, is for the flour mills and gristmills. Measured by number of persons engaged, the establishments in this industry are generally small and the work is largely done by the proprietors or their immediate representatives, so that the proportion of persons in this industry falling into the class of proprietors and officials is very much higher than for the other industries or for all industries combined. In printing and publishing, where the situation is somewhat similar, proprietors and officials constituted 19.2 per cent of the total number of persons engaged in the industry.

On account of the large average number of wage earners to an individual establishment in the steam-railroad repair shops and in the steel works and rolling mills, these industries show the smallest proportions of proprietors and officials.

The following table shows for 1909 in percentages, for all industries combined, the distribution of the average number of wage earners by age periods, and for those 16 years of age and over by sex, calculated in the manner described in the Introduction. It also shows, for some of the important industries separately, a similar distribution of wage earners as reported for December 15, or the nearest representative day. As a means of judging the importance of the several in-

dustries, the average number employed for the year is also given in each case.

INDUSTRY.	WAGE EARNERS.			
	Average number. ¹	Per cent of total.		
		16 years of age and over.		Under 16 years of age.
		Male.	Female.	
All industries	63,893	91.3	7.0	1.6
Cars and general shop construction and repairs by steam-railroad companies.....	5,052	99.0	0.3	0.7
Coke.....	4,426	100.0		(²)
Copper, tin, and sheet-iron products.....	916	60.7	32.2	7.1
Flour-mill and gristmill products.....	452	98.9	0.4	0.7
Foundry and machine-shop products.....	1,354	99.8		0.2
Glass.....	6,190	86.1	8.7	5.2
Iron and steel, steel works and rolling mills.....	5,060	99.3	0.2	0.5
Leather, tanned, curried, and finished.....	1,571	100.0		
Liquors, malt.....	415	99.0		1.0
Lumber and timber products.....	18,643	99.4	0.1	0.6
Paper and wood pulp.....	1,162	96.1	3.9	
Pottery, terra-cotta, and fire-clay products.....	2,034	71.3	27.8	0.9
Printing and publishing.....	1,255	72.7	21.8	5.5
Slaughtering and meat packing.....	167	100.0		
Tin plate and terneplate.....	1,335	90.9	8.5	0.7
All other industries.....	13,261	77.2	19.8	2.0

¹ For method of estimating the distribution, by sex and age periods, of the average number in all industries combined, see Introduction.

² Less than one-tenth of 1 per cent.

For all industries combined, 91.3 per cent of the average number of wage earners were males 16 years of age and over; 7 per cent, females 16 years of age and over; and 1.6 per cent, children under the age of 16. In the manufacture of copper, tin, and sheet-iron products nearly one-third of the wage earners were women 16 years of age and over; in the pottery, terra-cotta, and fire-clay industry the proportion was over one-fourth; and in printing and publishing, more than one-fifth.

The manufacture of copper, tin, and sheet-iron products, the glass industry, and printing and publishing show the largest proportions of wage earners under 16 years of age.

In order to compare the distribution of persons engaged in manufactures in 1909 with that shown at the census of 1904 it is necessary to use the classification employed at the earlier census. (See Introduction.) The following table makes this comparison according to occupational status:

CLASS.	PERSONS ENGAGED IN MANUFACTURES.				
	1909		1904		Per cent of increase, 1904-1909.
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total	71,463	100.0	48,880	100.0	46.2
Proprietors and firm members.....	2,500	3.6	2,230	4.6	16.5
Salaried employees.....	4,971	7.0	2,892	5.9	71.0
Wage earners (average number).....	63,893	89.4	43,758	89.5	46.0

Comparable figures are not obtainable for 1899. The table shows a greater percentage of increase in the salaried employees than in the other two classes.

The following table shows the average number of wage earners, distributed according to age periods,

and in the case of those 16 years of age and over according to sex, for 1909, 1904, and 1899. The averages for 1909 are estimated on the basis of the actual number reported for a single representative day. (See Introduction.)

CLASS.	AVERAGE NUMBER OF WAGE EARNERS.					
	1909		1904		1899	
	Number.	Percent distribution.	Number.	Percent distribution.	Number.	Percent distribution.
Total	63,893	100.0	43,758	100.0	33,080	100.0
16 years of age and over..	62,840	98.4	42,627	97.4	32,270	97.6
Male.....	58,335	91.3	39,378	90.0	29,458	89.0
Female.....	4,505	7.1	3,249	7.4	2,812	8.5
Under 16 years of age....	1,053	1.6	1,131	2.6	810	2.4

This table indicates that while there was an actual increase during the 10 years in the number of children under the age of 16 and of females 16 years of age and over employed in the manufacturing industries of the state, the proportion which each of these two classes of wage earners formed of the total was less in 1909 than in 1899. In 1909 males 16 years of age and over formed 91.3 per cent of all wage earners, as compared with 90 per cent in 1904 and 89 per cent in 1899.

Wage earners employed by months.—The following table gives the number of wage earners employed on the 15th of each month during the year 1909 for all industries combined; it gives also the percentage which the number reported for each month is of the greatest number reported for any month. In Table II, page 18, are shown, for practically all of the important industries in the state, the largest number and the smallest number of wage earners reported for any month. The figures are for the 15th day, or the nearest representative day, of the month.

MONTH.	WAGE EARNERS, ALL INDUSTRIES.		MONTH.	WAGE EARNERS, ALL INDUSTRIES.	
	Number.	Per cent of maximum.		Number.	Per cent of maximum.
January.....	56,191	81.2	July.....	62,187	89.0
February.....	57,393	82.0	August.....	65,651	94.0
March.....	60,490	87.4	September.....	68,290	98.7
April.....	62,456	90.3	October.....	69,292	100.0
May.....	62,666	90.0	November.....	68,647	99.2
June.....	65,467	94.6	December.....	68,656	98.3

Such seasonal industries as the brick and tile and canning and preserving industries did not give employment to sufficiently large numbers of wage earners to influence greatly the general movement of employment in the state; and in the glass industry the period of relatively small employment was limited to the two months of July and August. For all industries combined the month of least activity was January, in which the number of wage earners reported represented 81.2 per cent of the number in October, the month of maximum activity.

MANUFACTURES—WEST VIRGINIA.

Prevailing hours of labor.—In the following table wage earners have been classified according to the hours of labor prevailing in the establishments in which they are employed. In making this classification the average number of wage earners employed

during the year is used, and the number employed in each establishment is classified as a total according to the hours prevailing in that establishment, even though a few employees work a greater or less number of hours.

INDUSTRY.	AVERAGE NUMBER OF WAGE EARNERS IN ESTABLISHMENTS GROUPED ACCORDING TO PREVAILING HOURS OF WORK PER WEEK.								
	Total.	48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
All industries.....	63, 893	7, 181	3, 162	6, 503	7, 304	31, 480	6, 209	274	1, 780
Bone, carbon, and lamp black.....	101				5	20		17	50
Bread and other bakery products.....	346	29		27	5	227	8	33	17
Brick and tile.....	882	90	3	60	32	607			
Canning and preserving.....	271			2		261		8	
Carriages and wagons and materials.....	347	3		117	90	136		1	
Cars and general shop construction and repairs by steam-railroad companies.....	5, 052		50	35	1, 614	2, 480	411		1, 053
Clothing, men's, including shirts.....	403			82	236	85			
Colce.....	4, 420	21	38	316	16	3, 060			69
Confectionery.....	82	6		25	20	22			
Cooperage and wooden goods, not elsewhere specified.....	366	18	14	54	42	233		5	
Copper, tin, and sheet-iron products.....	916	8		67	248	593			
Flour-mill and gristmill products.....	452	74	4	17	273	85		22	2
Foundry and machine-shop products.....	1, 354	10	31	512	160	598	34		
Furniture and refrigerators.....	578		12	94	17	453		2	
Glass.....	6, 190	1, 800	2, 282	1, 424	385	263			
Ice, manufactured.....	233			35	5	71	20	33	69
Iron and steel, steel works and rolling mills.....	5, 060	1, 770		812	312	315	1, 842		
Leather goods.....	127			32	94	1			
Leather, tanned, curried, and finished.....	1, 571		1	68	128	1, 374			
Lime.....	514			1		513			
Liquors, malt.....	415	208		120		42	36		
Lumber and timber products.....	18, 043	108	205	364	757	13, 998	3, 148	3	
Marble and stone work.....	144	11	5	70	5	44			
Mattresses and spring beds.....	72	20				43			
Paper and wood pulp.....	1, 162				57	680	320	96	
Patent medicines and compounds and druggists' preparations.....	196	1	181	7		7			
Pottery, terra-cotta, and fire-clay products.....	2, 034	1, 201	217	420	33	163			
Printing and publishing.....	1, 255	661	35	479	41	90			
Slaughtering and meat packing.....	167					21	146		
Tin plate and terneplate.....	1, 335	523		456	356	1			
Woolen, worsted, and felt goods, and wool hats.....	599			4		594			
All other industries.....	8, 000	535	114	785	2, 002	3, 199	200	54	511

These figures show that for more than two-thirds of the wage earners employed in the manufacturing industries of West Virginia the usual hours of labor ranged from 54 to 60 a week, only 16.2 per cent of the total working in establishments where the prevailing hours were less than 54 a week, and 12.9 per cent in establishments where they were more than 60 a week.

Practically one-half, 49.3 per cent, of the wage earners, including the great majority of those engaged in the making of coke, in the tanning, currying, and finishing of leather, and in the lumber industry, are employed 60 hours a week. Nearly all of the wage earners engaged in the manufacture of glass; pottery, terra-cotta, and fire-clay products; and tin plate and terneplate, however, are employed in plants where the prevailing hours are less than 60 a week.

Location of establishments.—The next table shows the extent to which the manufactures of West Virginia are centralized in cities of 10,000 inhabitants or over. (See Introduction.) The comparison is confined here, as in other states, to the years 1899 and 1909, in the absence of a Federal census of population by which the grouping of cities in 1904 could be determined.

In 1909 only 28.6 per cent of the total value of products was reported from the six cities having over 10,000 inhabitants, and 24.3 per cent of the average

number of wage earners were employed in such cities. The figures indicate that the proportion of manufacturing in the outside districts, which was already large in 1899, increased decidedly during the following decade. This increase is the result, in part, of the increased activity in the lumber and in the coke industries, both of which are carried on principally in the outside districts. The fact that the statistics for Bluefield and Martinsburg were included in those for the outside territory in 1899 and in those for the cities in 1909 makes these gains even more conspicuous.

ITEM.	Year.	Total.	LOCATION OF ESTABLISHMENTS.		PER CENT OF TOTAL.	
			In cities with population of 10,000 and over.	Outside districts.	In cities with population of 10,000 and over.	Outside districts.
Population.....	1910 1900	1, 221, 110 958, 800	135, 526 73, 603	1, 085, 503 885, 197	11.1 7.7	88.9 92.3
Number of establishments.....	1909 1899	2, 586 1, 824	435 327	2, 151 1, 497	16.8 17.9	83.2 82.1
Average number of wage earners.....	1909 1899	63, 893 33, 080	15, 501 9, 830	48, 392 23, 250	24.3 29.7	75.7 70.3
Value of products.....	1909 1899	\$161, 940, 526 67, 000, 822	\$46, 302, 723 23, 079, 313	\$115, 640, 803 43, 927, 509	28.6 34.4	71.4 65.6
Value added by manufactures.....	1909 1899	69, 071, 538 29, 778, 509	19, 032, 710 9, 030, 783	50, 038, 828 20, 747, 726	27.6 32.3	72.4 67.7

The population for 1910 and 1900 of the six cities which had 10,000 inhabitants or over in 1910 is given in the following tabular statement:

CITY.	1910	1900	CITY.	1910	1900
Wheeling.....	41,641	38,878	Parkersburg.....	17,842	11,703
Huntington.....	31,161	11,923	Bluefield.....	11,188	4,644
Charleston.....	22,996	11,099	Martinsburg.....	10,698	7,664

The relative importance in manufactures of each of these six cities is shown in the following table, in which the value of products and average number of wage earners are shown separately for 1909, 1904, and 1899:

CITY.	AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.		
	1909	1904	1899	1909	1904	1899
Wheeling ¹	7,809	7,127	6,190	\$27,077,151	\$21,797,475	\$15,074,345
Huntington.....	3,156	2,229	1,717	6,511,260	4,407,153	3,042,565
Parkersburg.....	1,495	1,444	1,237	5,498,452	3,778,139	3,100,588
Charleston ¹	951	887	686	3,235,303	2,100,470	1,261,815
Martinsburg.....	1,420	(²)	(²)	2,515,458	(²)	(²)
Bluefield.....	670	(²)	(²)	1,465,039	(²)	(²)

¹ Figures do not agree with those published in 1904, because it was necessary to revise the totals in order to include data only for those establishments located within the corporate limits of the city.

² Figures not available.

Each of the four cities for which comparative figures are available shows an increase in value of products for each of the five-year periods. The percentages of increase for Huntington and Parkersburg were much greater from 1904 to 1909 than from 1899 to 1904, while those for Wheeling and Charleston were greater during the earlier period. From 1904 to 1909 the greatest relative gain in value of products, 54 per cent, was made by Charleston, as a result in part of the increased output of its flour mills and gristmills, foundries and machine shops, and sawmills and planing mills. The next largest increase, 47.7 per cent, is shown for Huntington, and is due in part to the establishment of new plants manufacturing boots and shoes, malt liquors, and looking-glass and picture frames, and turning and carving wood, as well as to the increased production of the steam-railroad repair shops, steel works and rolling mills, furniture factories, and flour mills and gristmills. Parkersburg shows a gain in value of products of 45.5 per cent, as against 21.9 per cent from 1899 to 1904. The manufacturing activity of this city is due in a measure to its proximity to the

oil fields. The chief industries are foundries and machine-shops, petroleum refining, oil "not elsewhere specified," steam-railroad repair shops, and flour-mill and gristmill products.

Wheeling, the largest and most important city in the state, shows a diversity of manufacturing. The total value of products increased 44.6 per cent during the earlier five-year period, as compared with an increase of only 24.2 per cent from 1904 to 1909. The principal industries in 1909 were galvanizing, steel works and rolling mills, blast furnaces, breweries, and the manufacture of patent medicines, tin plate and terneplate, and tobacco products. These seven industries combined contributed 69.2 per cent of the total value of manufactured products reported for the city.

The two leading industries in Martinsburg were the manufacture of hosiery and knit goods and of woolen goods and in Bluefield, steam-railroad repair shops and flour-mill and gristmill products.

Character of ownership.—The table on the following page has for its purpose the presentation of conditions in respect to the character of ownership or legal organization of manufacturing enterprises. For all industries combined comparative figures are given covering the censuses of 1909 and 1904. Comparative data for 1899 are not available. Figures for 1909 only are presented for several important industries individually. In order to avoid disclosing the operations of individual concerns, it is necessary to omit several important industries from this table and the one following.

The most important distinction shown is that between corporate and all other forms of ownership. For all industries combined, 31.4 per cent of the total number of establishments were in 1909 under corporate ownership, as against 68.6 per cent under all other forms. The corresponding figures for 1904 were 30.3 per cent and 69.7 per cent, respectively. When measured by value of products the establishments under corporate ownership are the more important. In 1909 the establishments operated by corporations reported 86.7 per cent of the total value, as against 13.3 per cent for those under all other forms of ownership, while in 1904 the corresponding figures were 79.7 per cent and 20.3 per cent, respectively. The establishments operated by firms represented 22.4 per cent of the total number of establishments in 1909, as compared with 25.7 per cent in 1904.

INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.	INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
ALL INDUSTRIES:					Foundry and machine-shop products, 1909.....				
1909.....	2,586	63,893	\$161,949,526	\$69,071,538	Individual.....	83	1,364	\$3,391,930	\$1,032,252
1904.....	2,109	43,758	99,040,876	44,621,470	Firm.....	27	144	286,552	155,631
Individual:					Firm.....	18	122	356,851	173,013
1909.....	1,188	6,113	11,086,973	6,226,769	Corporation.....	38	1,088	2,748,527	1,303,108
1904.....	920	4,922	10,014,225	5,520,148	Per cent of total.....	100.0	100.0	100.0	100.0
Firm:					Individual.....	32.5	10.6	8.4	9.5
1909.....	579	4,422	10,293,351	4,948,018	Firm.....	21.7	9.0	10.5	10.6
1904.....	542	3,556	9,557,940	4,369,886	Corporation.....	45.8	80.4	81.0	79.8
Corporation:					Glass, 1909.....				
1909.....	813	53,308	140,385,264	57,737,308	Individual.....	51	6,190	\$7,779,483	\$5,483,555
1904.....	638	35,065	78,951,053	34,439,403	Firm.....	5	44	49,909	37,189
Other:					Firm.....	4	80	72,213	59,101
1909.....	6	52	183,938	158,543	Corporation.....	42	6,066	7,657,301	5,387,295
1904.....	9	215	517,458	291,973	Per cent of total.....	100.0	100.0	100.0	100.0
Per cent of total:					Individual.....	9.8	0.7	0.6	0.7
1909.....	100.0	100.0	100.0	100.0	Firm.....	7.8	1.3	0.9	1.1
1904.....	100.0	100.0	100.0	100.0	Corporation.....	82.4	98.0	98.4	98.2
Individual:					Lumber and timber products, 1909.....				
1909.....	45.9	9.6	6.8	9.0	Individual.....	1,016	18,643	\$28,758,481	\$20,082,304
1904.....	43.6	11.2	10.1	12.4	Firm.....	549	3,249	4,137,001	2,846,554
Firm:					Firm.....	294	3,074	4,353,407	3,199,076
1909.....	22.4	6.9	6.4	7.2	Corporation.....	173	12,320	20,267,413	14,126,764
1904.....	25.7	8.1	9.6	9.8	Per cent of total.....	100.0	100.0	100.0	100.0
Corporation:					Individual.....	54.0	17.4	14.4	14.2
1909.....	31.4	83.4	86.7	83.0	Firm.....	28.9	16.5	15.1	15.5
1904.....	30.3	80.1	79.7	77.2	Corporation.....	17.0	66.1	70.5	70.3
Other:					Printing and publishing, 1909.....				
1909.....	0.2	0.1	0.1	0.2	Individual.....	235	1,255	\$1,992,036	\$1,451,498
1904.....	0.4	0.5	0.5	0.7	Individual.....	132	290	408,579	384,493
Copper, tin, and sheet-iron products, 1909.....					Firm.....	32	87	134,963	101,732
Individual.....	19	916	\$2,150,789	\$706,565	Corporation.....	68	872	1,353,748	960,557
Individual.....	3	14	32,065	16,472	Other.....	3	.....	4,710	4,716
Firm.....	5	17	32,035	19,793	Per cent of total.....	100.0	100.0	100.0	100.0
Corporation.....	11	885	2,084,880	700,300	Individual.....	56.2	23.6	25.0	26.5
Per cent of total.....	100.0	100.0	100.0	100.0	Firm.....	13.6	6.9	0.8	7.0
Individual.....	15.8	1.5	1.0	2.1	Corporation.....	28.9	69.5	68.0	66.2
Firm.....	26.3	1.9	1.5	2.5	Other.....	1.3	.....	0.2	0.3
Corporation.....	57.9	96.6	96.9	95.4	Flour-mill and gristmill products, 1909.....				
Flour-mill and gristmill products, 1909.....					Individual.....	207	452	\$7,695,801	\$1,094,654
Individual.....	90	126	1,517,216	278,870	Individual.....	90	126	1,517,216	278,870
Firm.....	79	106	1,392,351	254,224	Firm.....	79	106	1,392,351	254,224
Corporation.....	38	220	4,786,234	561,560	Corporation.....	38	220	4,786,234	561,560
Per cent of total.....	100.0	100.0	100.0	100.0	Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	43.5	27.9	19.7	25.5	Individual.....	43.5	27.9	19.7	25.5
Firm.....	38.2	23.5	18.1	23.2	Firm.....	38.2	23.5	18.1	23.2
Corporation.....	18.4	48.7	62.2	51.3	Corporation.....	18.4	48.7	62.2	51.3

Size of establishment.—The tendency for manufacturing to become concentrated in large establishments, or the reverse, is a matter of interest from the standpoint of industrial organization. In order to throw some light upon it the next table groups the establishments according to the value of their products. The table also shows the average size of establishments for all industries combined and for certain important industries separately, as measured by number of wage earners, value of products, and value added by manufacture. The totals for all industries are shown for the last two censuses, while for individual industries figures are given for 1909 only.

This table shows that, in 1909, of the 2,586 establishments only 33, or 1.3 per cent, had a value of products exceeding \$1,000,000. These establishments, however, reported 23.1 per cent of the total average number of wage earners, 38.6 per cent of the total value of products, and 27.2 per cent of the total value added by manufacture.

On the other hand, the very small establishments—that is, those having a value of products of less than

\$5,000—constituted a very considerable proportion (41.8 per cent) of the total number of establishments, but the value of their products amounted to only 1.6 per cent of the total. The great bulk of the manufacturing was reported by establishments having a product valued at not less than \$100,000.

It will be seen from the table that during the five years from 1904 to 1909 there was a considerable increase as measured by value of products in the relative importance of the largest establishments—those reporting products of not less than \$1,000,000 in value—and a decrease in that of all other classes.

The fact that the average value of products per establishment increased from \$46,961 to \$62,625, and the average value added by manufacture from \$21,158 to \$26,710, should not be taken as in itself indicating a tendency toward concentration. The increased values shown may be, and probably are, due in part to the increase that has taken place in the prices of commodities.

The average number of wage earners per establishment increased from 21 to 25.

INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.	INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
ALL INDUSTRIES:					Flour-mill and gristmill products, 1909—Continued.				
1909.....	2,586	63,893	\$161,949,526	\$69,071,538	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	2,109	43,758	99,049,676	44,621,470	Less than \$5,000.....	16.4	5.8	1.4	1.0
Less than \$5,000:					\$5,000 and less than \$20,000.....	44.0	23.2	13.5	10.6
1909.....	1,082	1,088	2,548,624	1,734,007	\$20,000 and less than \$100,000.....	32.4	36.3	33.7	38.0
1904.....	775	1,180	1,818,126	1,209,704	\$100,000 and less than \$1,000,000.....	0.3	34.7	51.4	30.6
\$5,000 and less than \$20,000:					Average per establishment.....	.....	2	\$37,178	\$5,288
1909.....	750	4,240	7,566,470	4,362,873	Foundry and machine-shop products, 1909	83	1,354	\$3,301,930	\$1,632,252
1904.....	707	3,914	7,340,887	4,036,852	Less than \$5,000.....	22	45	65,683	37,711
\$20,000 and less than \$100,000:					\$5,000 and less than \$20,000.....	25	146	242,844	100,637
1909.....	462	10,384	21,017,720	10,417,810	\$20,000 and less than \$100,000.....	29	587	1,418,302	731,322
1904.....	443	10,657	10,041,458	10,011,781	\$100,000 and less than \$1,000,000.....	7	370	1,005,011	702,032
\$100,000 and less than \$1,000,000:					Per cent of total.....	100.0	100.0	100.0	100.0
1909.....	250	32,553	68,334,808	33,764,126	Less than \$5,000.....	20.5	3.3	1.0	2.3
1904.....	170	21,487	46,685,216	21,889,469	\$5,000 and less than \$20,000.....	30.1	10.8	7.2	0.8
\$1,000,000 and over:					\$20,000 and less than \$100,000.....	34.9	43.4	41.8	44.8
1909.....	33	14,728	62,481,895	18,801,813	\$100,000 and less than \$1,000,000.....	8.4	42.5	40.1	43.0
1904.....	14	0,520	25,154,989	7,473,574	Average per establishment.....	.....	16	\$10,807	\$10,000
Per cent of total:					Glass, 1909	51	6,190	\$7,770,483	\$5,483,555
1909.....	100.0	100.0	100.0	100.0	Less than \$5,000.....	7	40	37,675	20,340
1904.....	100.0	100.0	100.0	100.0	\$5,000 and less than \$20,000.....	15	765	844,316	570,102
Less than \$5,000:					\$20,000 and less than \$100,000.....	20	5,395	6,807,402	4,875,104
1909.....	41.8	3.1	1.6	2.5	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	30.7	2.7	1.8	2.7	Less than \$5,000.....	13.7	0.6	0.5	0.5
\$5,000 and less than \$20,000:					\$5,000 and less than \$20,000.....	20.4	12.2	10.9	10.6
1909.....	20.4	6.6	4.7	6.3	\$20,000 and less than \$100,000.....	50.0	87.2	88.7	88.9
1904.....	33.5	8.9	7.4	9.0	\$100,000 and less than \$1,000,000.....	.....	121	\$152,539	\$107,521
\$20,000 and less than \$100,000:					Average per establishment.....	.....	.....	.....	.....
1909.....	17.9	16.3	13.0	15.1	Lumber and timber products, 1909	1,016	18,043	\$28,758,481	\$20,082,394
1904.....	24.0	24.4	10.2	22.4	Less than \$5,000.....	524	1,130	1,185,419	880,889
\$100,000 and less than \$1,000,000:					\$5,000 and less than \$20,000.....	204	2,286	2,839,005	2,002,584
1909.....	9.7	50.9	42.2	48.9	\$20,000 and less than \$100,000.....	128	3,379	5,847,802	3,407,986
1904.....	8.1	49.1	46.1	49.1	\$100,000 and less than \$1,000,000.....	70	11,848	18,885,355	13,730,041
\$1,000,000 and over:					Per cent of total.....	100.0	100.0	100.0	100.0
1909.....	1.3	23.1	38.6	27.2	Less than \$5,000.....	51.6	6.1	4.1	4.4
1904.....	0.7	14.9	25.4	16.7	\$5,000 and less than \$20,000.....	28.0	12.3	9.9	10.0
Average per establishment:					\$20,000 and less than \$100,000.....	12.6	18.1	20.3	17.3
1909.....	.....	25	\$62,025	\$26,710	\$100,000 and less than \$1,000,000.....	6.9	63.0	65.7	68.4
1904.....	.....	21	46,961	21,158	Average per establishment.....	.....	18	\$28,306	\$10,706
Copper, tin, and sheet-iron products, 1909	19	916	\$2,150,789	\$798,565	Printing and publishing, 1909	235	1,255	\$1,992,036	\$1,451,498
Less than \$5,000.....	3	3	9,985	6,351	Less than \$5,000.....	168	274	368,047	200,596
\$5,000 and less than \$20,000.....	10	59	136,765	73,394	\$5,000 and less than \$20,000.....	64	315	477,927	370,069
\$20,000 and less than \$100,000.....	6	854	2,094,039	716,820	\$20,000 and less than \$100,000.....	23	600	1,146,062	700,233
Per cent of total.....	100.0	100.0	100.0	100.0	Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	15.8	0.3	0.5	0.8	Less than \$5,000.....	67.2	21.8	18.5	20.0
\$5,000 and less than \$20,000.....	52.0	6.4	6.3	9.2	\$5,000 and less than \$20,000.....	23.0	25.1	24.0	25.5
\$20,000 and less than \$100,000.....	31.6	93.2	93.2	90.0	\$20,000 and less than \$100,000.....	9.8	53.1	57.5	54.4
Average per establishment.....	.....	48	\$113,109	\$41,924	Average per establishment.....	.....	5	\$8,477	\$6,177
Flour-mill and gristmill products, 1909	207	452	\$7,695,801	\$1,094,054					
Less than \$5,000.....	34	26	109,153	20,702					
\$5,000 and less than \$20,000.....	93	105	1,037,257	214,709					
\$20,000 and less than \$100,000.....	67	164	2,594,193	420,012					
\$100,000 and less than \$1,000,000.....	13	157	3,955,198	433,141					

¹ Includes the group "\$20,000 and less than \$100,000."
² Includes the group "Less than \$5,000."

³ Includes the group "\$1,000,000 and over."
⁴ Includes the group "\$100,000 and less than \$1,000,000."

In some respects, and especially from the standpoint of conditions under which persons engaged in manufactures work, the best classification of establishments to bring out the feature of size is a classification according to the number of wage earners employed. The next table shows for 1909 such a classification for all industries combined and for 15 important industries individually, and gives not only the number of establishments falling into each group but also the average number of wage earners employed. Of the 2,586 establishments reported for all industries, 7.7 per cent employed no wage earners; 54.8 per cent, from 1 to 5; 19.4 per cent, from 6 to 20; and 8.1 per cent, from 21 to 50. The most numerous single group consists of the 1,417 establishments employing from 1 to 5 wage earners and the next of the 503 es-

tablishments employing from 6 to 20 wage earners. There were 50 establishments that employed over 250 wage earners each; of these, 18 employed over 500, and 2 employed over 1,000 each, 1 being a steel works and rolling mill and the other a steam-railroad repair shop. Of the total number of wage earners, 39.3 per cent were in establishments employing over 250 wage earners. The single group having the largest number of wage earners was the group comprising the establishments employing from 101 to 250 each. This group employed 14,893 wage earners, or 23.3 per cent of the total. The individual industries listed in this table but not in the preceding one are all industries in which comparatively large establishments do most of the business, as appears from the classification according to the number of wage earners.

INDUSTRY.	ESTABLISHMENTS EMPLOYING—									
	Total.	No wage earners.	1 to 5 wage earners.	6 to 20 wage earners.	21 to 50 wage earners.	51 to 100 wage earners.	101 to 250 wage earners.	251 to 500 wage earners.	501 to 1,000 wage earners.	Over 1,000 wage earners.
All industries.	2,586	200	1,417	503	209	114	93	32	16	2
Cars and general shop construction and repairs by steam-railroad companies.	24			5	2	4	6	4	2	1
Coke.	71		5	9	32	19	4		2	
Copper, tin, and sheet-iron products.	10		9	5	1	1	2	1		
Flour-mill and gristmill products.	207	32	160	13	2					
Foundry and machine-shop products.	83	3	34	30	12	3		1		
Glass.	51		5	4	7	11	18	5	1	
Iron and steel, steel works and rolling mills.	16			1	1	2	3	7	1	1
Leather, tanned, curried, and finished.	20	1	4		5	4	5	1		
Liquors, malt.	13			7	3	3				
Lumber and timber products.	1,016	34	604	231	76	30	32	6	3	
Paper and wood pulp.	9				4	2	2		1	
Pottery, terra-cotta, and fire-clay products.	16		1	3	2	5	4		1	
Printing and publishing.	235	30	161	34	8		2			
Slaughtering and meat packing.	6			5					1	
Tin plate and terneplate.	6				1		4		1	
All other industries.	794	100	434	156	53	30	10	7	4	
AVERAGE NUMBER OF WAGE EARNERS.										
All industries.	63,893		3,266	5,460	7,043	8,140	14,893	11,298	11,095	2,698
Cars and general shop construction and repairs by steam-railroad companies.	5,652			48	79	282	1,069	1,502	1,047	1,535
Coke.	4,426		17	122	1,077	1,220	696		1,285	
Copper, tin, and sheet-iron products.	916		24	57	38	68	325	404		
Flour-mill and gristmill products.	452		277	114	61					
Foundry and machine-shop products.	1,354		87	354	385	202		326		
Glass.	6,190		12	51	214	864	2,647	1,774	628	
Iron and steel, steel works and rolling mills.	5,060			13	44	164	480	2,537	650	1,163
Leather, tanned, curried, and finished.	1,571		4		214	288	750	300		
Liquors, malt.	415			104	84	227				
Lumber and timber products.	18,043		1,455	2,464	2,533	2,226	5,225	1,094	2,740	
Paper and wood pulp.	1,162				139	111	329		583	
Pottery, terra-cotta, and fire-clay products.	2,084		2	41	70	370	701		850	
Printing and publishing.	1,255		390	350	273		236			
Slaughtering and meat packing.	107			59			108			
Tin plate and terneplate.	1,335				38		775		522	
All other industries.	13,201		698	1,677	1,794	2,109	1,534	2,305	2,784	
PER CENT OF AVERAGE NUMBER OF WAGE EARNERS.										
All industries.	100.0		5.1	8.5	11.0	12.7	23.3	17.7	17.4	4.2
Cars and general shop construction and repairs by steam-railroad companies.	100.0			0.8	1.4	5.0	18.9	28.2	18.5	27.2
Coke.	100.0		0.4	2.8	24.3	27.8	15.7		20.0	
Copper, tin, and sheet-iron products.	100.0		2.6	6.2	4.1	7.4	35.5	44.1		
Flour-mill and gristmill products.	100.0		61.3	25.2	13.5					
Foundry and machine-shop products.	100.0		6.4	26.1	28.4	14.0		24.1		
Glass.	100.0		0.2	0.8	3.5	14.0	42.8	28.7	10.1	
Iron and steel, steel works and rolling mills.	100.0			0.3	0.9	3.2	9.7	50.1	12.8	23.0
Leather, tanned, curried, and finished.	100.0		0.3		13.6	18.3	48.3	10.5		
Liquors, malt.	100.0			25.1	20.2	54.7				
Lumber and timber products.	100.0		7.8	13.2	13.6	11.0	28.0	10.7	14.7	
Paper and wood pulp.	100.0				12.0	9.0	28.3		50.2	
Pottery, terra-cotta, and fire-clay products.	100.0		0.1	2.0	3.4	18.2	34.5		41.8	
Printing and publishing.	100.0		31.1	28.4	21.8		18.8			
Slaughtering and meat packing.	100.0			35.3			64.7			
Tin plate and terneplate.	100.0				2.8		58.1		39.1	
All other industries.	100.0		7.5	12.6	13.5	15.0	11.0	17.8	21.0	

Expenses.—As stated in the Introduction, the census does not purport to furnish figures that can be used for determining the cost of manufacture and profits. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expenses which make up the total.

The following table shows, for 1909, in percentages, the distribution of expenses among the classes indicated for all industries combined and for certain important industries separately. The figures on which the percentages are based appear in Table II, page 18.

This table shows that, for all industries combined, 64.2 per cent of the total expenses was incurred for materials, 26.7 per cent for services, that is, salaries and wages, and but 9 per cent for other purposes. As would be expected, these proportions vary greatly in the different industries. The large percentage of miscellaneous expenses in the brewery industry is due

to the inclusion under that head of internal revenue taxes.

INDUSTRY.	PER CENT OF TOTAL EXPENSES REPORTED.			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
All industries.	3.9	22.8	64.2	9.0
Cars and general shop construction and repairs by steam-railroad companies.	3.7	47.1	45.5	3.8
Coke.	3.8	22.8	68.6	4.8
Copper, tin, and sheet-iron products.	4.0	20.0	70.7	5.3
Flour-mill and gristmill products.	1.6	3.0	92.0	2.6
Foundry and machine-shop products.	8.0	27.0	59.2	6.2
Glass.	6.2	51.5	32.0	9.7
Iron and steel, steel works and rolling mills.	2.2	18.8	76.8	2.1
Leather, tanned, curried, and finished.	1.7	6.5	86.6	5.3
Liquors, malt.	8.1	14.4	29.8	47.7
Lumber and timber products.	4.9	38.4	38.0	18.1
Paper and wood pulp.	3.9	19.3	68.1	8.0
Pottery, terra-cotta, and fire-clay products.	6.6	51.9	32.4	9.1
Printing and publishing.	14.3	40.8	34.8	10.1
Slaughtering and meat packing.	1.1	3.4	93.3	2.2
Tin plate and terneplate.	1.6	9.7	84.2	4.6
All other industries.	4.9	17.4	66.0	11.7

Engines and power.—The following table shows, for all industries combined, the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current), and their total horsepower at the censuses of 1909, 1904, and 1899. It also shows separately the number and horsepower of electric motors, including those operated by current generated in the manufacturing establishments.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899 ¹	1909	1904	1899 ¹	1909	1904	1899
Primary power, total	4,527	2,326	1,895	217,400	138,578	91,894	100.0	100.0	100.0
Owned.....	4,078	2,326	1,895	211,913	137,708	91,000	97.4	99.4	99.7
Steam.....	3,330	1,864	1,640	184,501	124,212	84,234	84.9	89.6	91.7
Gas.....	574	312	00	16,705	6,569	1,045	7.7	4.7	1.1
Water wheels.....	143	121	156	10,540	6,274	5,425	4.8	4.5	5.9
Water motors.....	25	20	(²)	71	130	(²)	(³)	0.1	(²)
Other.....					523	005		0.4	1.0
Rented.....	440	(²)	(²)	5,583	870	285	2.0	0.6	0.3
Electric.....	440	(²)	(²)	5,330	776	27	2.5	0.6	(²)
Other.....				253	00	258	0.1	0.1	0.3
Electric motors	1,715	311	20	28,543	5,100	454	100.0	100.0	100.0
Run by current generated by establishment.....	1,266	311	20	23,213	4,423	427	81.3	85.1	94.1
Run by rented power.....	440	(²)	(²)	5,330	776	27	18.7	14.9	5.9

¹ Includes the neighborhood industries and hand trades, omitted in 1904 and 1909.
² Not reported. ³ Less than one-tenth of 1 per cent.

The table indicates that from 1904 to 1909 there was an increase of 78,918 horsepower, or 56.9 per cent, in the total primary power used in manufactures, while from 1899 to 1904 the increase was 46,684 horsepower, or 50.8 per cent. Of the total increase from 1904 to 1909 in primary power used, 60,379 horsepower was in that generated by steam engines, 4,272 horsepower in that generated by water wheels, and 4,554 horsepower in rented electric power. Notwithstanding the decided absolute increases in steam power, the ratio of this class of power to the total primary power has been less at each census since 1899. It constituted 91.7 per cent of the total in 1899, 89.6 per cent in 1904, and 84.9 per cent in 1909. The more

general use of gas engines is shown, there being 574 such engines, with an indicated capacity of 16,705 horsepower, reported in 1909, as against 312 engines, with 6,569 horsepower, in 1904, and 90 engines, with 1,045 horsepower, in 1899. The figures also show that the practice of renting electric power is becoming more common, 5,330 horsepower, or 2.5 per cent of the total power being of this character in 1909, as compared with 776 horsepower, or six-tenths of 1 per cent in 1904. The use of electric motors for the purpose of applying power generated within the establishment is also rapidly increasing, the horsepower of such motors having increased from 427 in 1899 to 4,423 in 1904 and 23,213 in 1909.

Fuel.—Closely related to the question of kind of power employed is that of the fuel consumed in generating this power, or otherwise used as material in the manufacturing processes. The table following shows the quantity of each kind of fuel used in 1909 for all industries combined and for certain selected industries.

INDUSTRY.	Bituminous coal (tons).	Coke (tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
All industries	7,275,075	325,738	14,002	29,010	30,804,329
Bone, carbon, and lamp black.....					12,284,733
Brick and tile.....	72,137	373		2	1,054,911
Cars and general shop construction and repairs by steam-railroad companies.....	65,053	1,038	18	3,300	159,400
Coal.....	6,372,577				0,000
Copper, tin, and sheet-iron products.....	722				180,857
Flour-mill and gristmill products.....	13,980		2,450	434	156,707
Foundry and machine-shop products.....	9,205	8,800	10	40	233,273
Glass.....	3,483			30	5,734,514
Ice, manufactured.....	37,933			021	204,738
Iron and steel, blast furnaces.....	11,349	248,855	80		2,803
Iron and steel, steel works and rolling mills.....	275,223	24,050	240		3,704,375
Leather, tanned, carried, and finished.....	41,357		2,150	3	80,010
Liquors, malt.....	13,841				1,380,520
Lumber and timber products.....	83,955		551	280	132,201
Paper and wood pulp.....	40,442				1,392,857
Pottery, terra-cotta, and fire-clay products.....	18,535				1,270,930
Printing and publishing.....	760			27	05,300
Slaughtering and meat packing.....	7,159		104	5	10,856
Tin plate and terneplate.....	5,011				517,180
All other industries.....	103,500	41,023	0,338	24,007	2,230,816

¹ In addition, there were 6,580 tons of anthracite coal reported, of which 4,018 tons were used in the brick and tile industry and 2,571 tons in other industries; there were also 19 tons of other varieties of fuel reported.

SUPPLEMENTARY DATA REGARDING IMPORTANT INDUSTRIES.

(With statistics for laundries and custom sawmills and gristmills.)

For certain industries the Census Bureau collects, by means of special schedules, details regarding the quantity and cost of materials and the quantity and value of products and other information, for securing which no provision is made on the general schedule. Data of this character for five important industries in West Virginia are here presented.

Lumber and timber products.—This industry, which is the most important in the state, grew rapidly during the decade 1899–1909, and in the latter year reported 3.3 per cent of the total production of rough lumber

in the United States. The following statement gives the quantity of rough lumber, lath, and shingles produced by the sawmills of the state in 1909 and 1899:

PRODUCT.	1909	1899
Rough lumber.....M feet b. m.....	1,472,942	778,051
Lath.....thousands.....	150,820	58,440
Shingles.....thousands.....	6,820	34,350

The quantity of rough lumber increased 89.3 per cent, and that of lath 158.1 per cent, while that of

shingles decreased 80.1 per cent. In West Virginia lath, almost entirely, and shingles, to some extent, are secondary products in the manufacture of lumber, and the output of both is influenced to some extent by local demand.

Of the total of 1,472,942 M feet board measure of rough lumber reported in 1909, 907,547 M feet was hardwood. Of the hardwood sawed, 456,424 M feet was oak, 154,581 M feet yellow poplar, and 119,762 M feet chestnut. The cut of softwood amounted to 565,395 M feet, of which hemlock contributed 279,832 M feet and spruce 242,897 M feet. West Virginia was first among the states in the production of cherry and chestnut lumber, reporting 20.6 per cent and 18 per cent of the respective totals shown for the United States in 1909. The state was second in the output of oak and yellow poplar, third in spruce, fourth in basswood and hemlock, and fifth in maple. In 1909 more than three times as much hemlock was cut in the state as in 1899.

Iron and steel, steel works and rolling mills.—The following table shows the quantity and value of the chief products reported for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
Total value	\$22,435,411	\$13,454,802	\$13,394,911
Rolled, forged, and other classified products:			
Tons.....	609,022	384,932	352,814
Value.....	\$20,000,576	\$11,243,473	\$11,731,561
Plates and sheets, not including nail and tack plates—			
Tons.....	98,322	34,036	
Value.....	\$4,340,006	\$2,052,440	
Black plates for tinning—			30,215
Tons.....	111,152	42,803	
Value.....	\$4,887,291	\$2,098,054	\$2,005,201
Skelp—			
Tons.....	201,704	192,644	
Value.....	\$6,060,225	\$5,103,280	
Other rolled, forged, etc. products:			313,500
Tons.....	197,754	40,948	
Value.....	\$4,772,904	\$1,983,784	\$0,726,270
Miscellaneous iron and steel products, not rolled, including scrap sold and value added to rolling-mill products by further manufacture.....	\$2,200,563	\$2,208,320	
All other products.....	\$156,272	\$3,000	\$1,663,350

Of the combined rolled, forged, and other classified products, which in 1909 contributed 89.5 per cent of the value of all products, skelp was the most important, both in tonnage and value. The increase of 58.2 per cent from 1904 to 1909 in the total tonnage of rolled, forged, and other classified products indicates a decided growth in the industry after the poor business year of 1904.

The tin-plate and terneplate industry is closely allied to the steel works and rolling mills. During 1909 there were 189,239,233 pounds of tin plate, valued at \$6,360,880, and 68,567,923 pounds of terneplate, valued at \$2,561,219, produced in the state. The value of all other products, which include other sheet iron or sheet steel, tinned or terneplated, tagger's tin, etc., was \$335,425. Comparative statistics for 1899 and 1904 can not be given without disclosing the operations of individual establishments, but further statistics for 1909 are shown in Table II, page 18.

Leather, tanned, curried, and finished.—The following table shows the quantity and value of the various products for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
Total value	\$12,450,592	\$6,061,509	\$3,210,753
Sole leather:			
Sides.....	1,933,037	1,262,538	303,054
Value.....	\$10,276,104	\$5,270,545	\$1,742,354
Hemlock—			
Sides.....	713,182	488,306	335
Value.....	\$3,500,895	\$1,474,158	\$1,330
Oak—			
Sides.....	153,495	424,824	105,874
Value.....	\$1,157,270	\$2,362,515	\$1,107,080
Union—			
Sides.....	1,006,360	349,348	107,745
Value.....	\$5,557,090	\$1,413,872	\$633,944
Harness, belting, and rough leather.....	\$1,617,354	\$713,191	\$1,300,203
Work on materials for others.....	426,309	335	1,220
All other products.....	130,675	77,438	67,976

The value of sole leather in 1909 represented 82.5 per cent of the value of all products for the industry in the state. Of the total value reported for this group of products in 1909, union leather contributed 54.1 per cent, hemlock 34.7 per cent, and oak 11.3 per cent, while of the total quantity 55.2 per cent was union leather, 36.9 per cent hemlock, and 7.9 per cent oak. Considerable change has occurred since 1899 in the relative importance, as measured by quantity, of these different kinds of sole leather. In that year oak leather predominated, furnishing 53.8 per cent of the total, while union leather furnished 46.1 per cent, and hemlock one-tenth of 1 per cent. The greatest absolute gain in quantity since 1899 is shown for union leather. From 1904 to 1909 the value of harness, belting, and rough leather more than doubled, and a decided increase also occurred in the amount received for work on materials for others.

Glass.—The following table shows the values of the principal classes of glass products reported in 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
Total value	\$7,779,483	\$4,598,563	\$1,871,795
Building glass.....	2,751,133	1,323,896	101,242
Pressed and blown glass.....	4,306,528	2,820,065	1,379,700
Bottles, jars, etc.....	646,521	652,002	381,847
All other products.....	75,301	52,000	9,000

The value of pressed and blown glass, the most important product in 1909, as measured by value, increased \$1,685,863, or 64.3 per cent, from 1904 to 1909; that of building glass, \$1,427,237, or 107.8 per cent; and that of bottles, jars, etc., \$44,519, or 7.4 per cent.

In 1909 the active equipment of the glass factories of the state consisted of 37 furnaces, with a total capacity of 339 pots; 33 continuous tanks, with a total capacity of 422 rings; and 12 intermittent or day tanks, with a total capacity of 96 tons. In addition there were 2 furnaces, 2 continuous tanks, and 2 intermittent or day tanks, which were idle during the year.

Flour-mill and gristmill products.—The next table gives the quantity and value of the principal products reported for 1909, 1904, and 1899.

PRODUCT.	1909	1904	1899
Total value.....	\$7,695,801	\$6,200,291	\$3,792,629
Wheat flour:			
White—			
Barrels.....	632,309	625,866	590,917
Value.....	\$3,606,285	\$3,387,142	\$2,284,571
Graham—			
Barrels.....	1,823	804	(1)
Value.....	\$0,628	\$3,014	(1)
Corn meal and corn flour:			
Barrels.....	318,293	339,872	334,275
Value.....	\$986,375	\$841,827	\$711,068
Rye flour:			
Barrels.....	600	58	680
Value.....	\$2,354	\$234	\$1,656
Buckwheat flour:			
Pounds.....	4,496,700	2,213,610	3,315,025
Value.....	\$120,061	\$61,138	\$68,530
Barley meal:			
Pounds.....	26,640		2,300
Value.....	\$568		\$30
Hominy and grits:			
Pounds.....	301,200	2,172,000	101,000
Value.....	\$5,772	\$20,708	\$2,025
Feed:			
Tons.....	74,385	52,563	21,350
Value.....	\$2,262,265	\$1,281,168	\$404,700
Offal:			
Tons.....	27,148	20,059	26,253
Value.....	\$609,477	\$588,982	\$315,911
All other products.....	\$33,016	\$7,078	\$3,163

¹ Not reported separately.

This table shows increases from 1904 to 1909 in the quantities of all classes of products except corn meal and corn flour, hominy and grits, and offal, and from 1899 to 1904 in all except rye flour, buckwheat flour, and barley meal. Wheat flour, which contributed 47 per cent of the total value of all flour-mill and gristmill products manufactured in 1909, showed but little increase either in quantity or in value in 1909, as compared with 1904, but a larger increase in both items when compared with 1899. The largest relative increase in quantity from 1904 to 1909 is shown for buckwheat flour, the production of which increased 2,283,180 pounds, or 103.1 per cent. West Virginia is among the leading states in the manufacture of this product. In 1909 the mills of the state were equipped with 1,073 pairs of rolls and 237 runs of stone. Four mills manufactured barrels.

Laundries.—Statistics for steam laundries are not included in the general tables or in the totals for manufacturing industries. In 1909 there were 43 such establishments in West Virginia, 5 of which were in Wheeling, 4 in Charleston, 3 each in Huntington and Parkersburg, and 2 each in Bluefield and Martinsburg. The following statement summarizes the statistics:

Number of establishments.....	43
Persons engaged in the industry.....	793
Proprietors and firm members.....	41
Salaried employees.....	73
Wage earners (average number).....	679
Primary horsepower.....	1,048
Capital.....	\$415,216
Expenses.....	462,687
Services.....	297,741
Materials.....	102,057
Miscellaneous.....	62,889
Amount received for work done.....	581,865

Of the 43 establishments reported, 18 were operated by corporations, 14 by individuals, and 11 by firms. Ten establishments had receipts for the year's business of less than \$5,000; 22, of \$5,000 but less than \$20,000; and 11, of \$20,000 but less than \$100,000.

The number of wage earners employed each month and the percentage which this number represented of the greatest number employed in any month were as follows:

MONTH.	WAGE EARNERS.		MONTH.	WAGE EARNERS.	
	Number.	Per cent of maximum.		Number.	Per cent of maximum.
January.....	633	88.8	July.....	713	100.0
February.....	644	90.3	August.....	708	99.3
March.....	644	90.3	September.....	712	99.9
April.....	654	91.7	October.....	689	96.6
May.....	684	95.9	November.....	677	95.0
June.....	696	97.6	December.....	694	97.3

The different kinds of primary power, the number of engines or motors, and the horsepower used in 1909 are shown in the following tabular statement:

KIND.	Number of engines or motors.	Horsepower.
Primary power, total.....		1,048
Owned:		
Steam.....	33	752
Gas.....	8	160
Rented:		
Electric.....	11	131
Other.....		15

The kind and amount of fuel used are shown in the following statement:

KIND.	Unit.	Quantity.
Bituminous coal.....	Tons.....	3,369
Gas.....	1,000 feet.....	145,661

Custom sawmills and gristmills.—Statistics for custom sawmills and gristmills are not included in the general tables or in the totals for manufacturing industries, but are presented in the following summary:

	Custom sawmills.	Custom gristmills.
Number of establishments.....	187	437
Persons engaged in the industry.....	596	737
Proprietors and firm members.....	282	579
Salaried employees.....	2	
Wage earners (average number).....	312	158
Primary horsepower.....	3,403	7,793
Capital.....	\$223,076	\$564,023
Expenses.....	95,974	1,244,564
Services.....	75,133	28,135
Materials.....	3,707	1,203,590
Miscellaneous.....	17,074	12,839
Value of products.....	208,092	1,495,457

¹ Includes estimate of all grain ground. A similar estimate for value of lumber sawed by custom sawmills is impracticable.

MANUFACTURES—WEST VIRGINIA.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899.

THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES.

INDUSTRY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaried employes.	Wage earners (average number).							
STATE—All industries	1909	2,586	71,463	2,599	4,971	63,893	217,496	\$150,923	\$5,710	\$33,000	\$92,978	\$161,950	\$69,072
	1904	2,109	48,880	2,230	2,892	43,758	138,576	86,821	2,899	21,153	54,419	99,041	44,622
	1899	1,824	.....	.....	1,744	33,080	81,894	49,103	1,519	12,640	37,228	67,007	29,779
Expressed in thousands.													
Bone, carbon, and lamp black.....	1909	16	137	1	35	101	641	1,913	35	66	240	506	347
	1904	10	90	1	29	60	310	774	24	34	52	274	222
Bread and other bakery products.....	1909	151	559	162	51	346	411	652	34	188	859	1,470	611
	1904	111	415	131	21	203	198	298	8	127	527	912	385
	1899	58	202	64	27	111	.....	191	12	41	213	394	181
Brick and tile.....	1909	34	979	17	80	882	4,983	2,300	73	383	275	950	675
	1904	37	840	29	48	763	3,447	1,962	56	330	210	870	600
	1899	42	620	48	22	550	1,680	610	18	184	97	436	339
Canning and preserving.....	1909	30	345	49	25	271	484	390	24	58	430	605	175
	1904	19	394	30	37	327	424	353	34	84	387	764	377
	1899	14	620	11	44	565	.....	370	43	84	419	774	355
Carriages and wagons and materials.....	1909	51	446	62	37	347	893	671	41	180	318	675	357
	1904	38	383	43	20	311	1,117	493	30	155	300	639	339
	1899	53	.....	.....	15	312	.....	437	13	133	210	490	280
Cars and general shop construction and repairs by steam-railroad companies.....	1909	24	5,020	.....	208	5,652	5,304	2,117	247	3,170	3,093	6,733	3,670
	1904	24	4,427	.....	172	4,255	2,469	1,054	129	2,114	1,809	4,120	2,311
	1899	23	2,695	.....	90	2,605	834	1,040	68	1,357	1,587	2,944	1,357
Clothing, men's, including shirts.....	1909	9	469	3	63	403	210	637	48	126	1,055	1,469	414
	1904	9	358	8	36	314	98	537	34	76	578	855	277
	1899	13	95	1	6	88	21	210	6	29	356	561	145
Coke.....	1909	71	4,740	2	318	4,420	5,307	12,821	281	1,664	5,012	7,563	2,551
	1904	74	2,764	.....	231	2,533	3,507	8,064	160	1,004	2,647	4,174	1,527
	1899	77	3,340	1	268	3,131	4,056	4,453	127	890	1,907	3,529	1,562
Confectionery.....	1909	10	100	4	23	82	38	97	20	33	147	244	97
	1904	10	123	4	21	98	38	119	22	33	117	226	109
	1899	9	.....	.....	2	48	.....	52	2	16	63	98	35
Cooperage and wooden goods, not elsewhere specified.....	1909	31	410	30	23	300	1,013	483	23	168	334	658	324
	1904	18	127	15	7	105	195	107	4	42	148	221	73
	1899	14	.....	.....	3	150	.....	90	2	67	144	357	213
Copper, tin, and sheet-iron products.....	1909	19	998	14	68	916	973	1,600	77	383	1,354	2,151	797
	1904	11	403	11	17	375	150	491	24	142	460	771	261
	1899	19	.....	.....	2	36	.....	44	2	19	41	88	47
Flour-mill and gristmill products.....	1909	207	884	288	144	452	0,950	3,766	113	210	6,601	7,606	1,665
	1904	194	780	301	79	400	8,339	2,623	66	183	5,213	6,200	987
	1899	185	.....	.....	22	254	7,356	1,420	14	125	3,109	3,793	684
Foundry and machine-shop products.....	1909	83	1,633	68	211	1,354	3,539	3,453	230	820	1,760	3,392	1,632
	1904	76	1,469	48	143	1,278	2,892	2,000	149	721	1,413	2,863	1,456
	1899	65	.....	.....	61	685	.....	1,021	58	344	721	1,517	766
Furniture and refrigerators.....	1909	25	666	17	71	578	1,409	1,361	75	253	384	995	581
	1904	19	554	12	34	508	971	759	37	107	264	648	384
	1899	8	413	6	24	383	520	493	30	135	175	454	279
Glass.....	1909	51	6,509	13	366	6,199	5,233	7,369	435	3,628	2,296	7,779	5,483
	1904	39	3,867	5	189	3,673	2,340	4,300	209	2,054	1,259	4,599	3,340
	1899	16	2,040	6	85	1,949	938	1,338	98	780	593	1,872	1,279
Ice, manufactured.....	1909	35	365	23	49	233	5,554	1,595	41	113	111	476	365
	1904	30	217	5	36	176	2,764	1,287	28	94	61	353	292
	1899	8	100	1	19	80	607	413	14	40	22	119	67
Iron and steel, steel works and rolling mills.....	1909	16	5,445	.....	385	5,060	46,598	16,270	460	3,887	15,896	22,435	6,530
	1904	12	4,516	.....	107	4,409	34,250	8,716	142	2,813	8,742	13,455	4,713
	1899	8	4,056	.....	81	3,975	23,416	7,122	108	2,066	8,729	13,395	4,666
Leather goods.....	1909	8	150	10	13	127	120	237	12	53	277	472	195
	1904	9	109	14	9	86	44	189	8	34	235	368	133
	1899	10	.....	.....	6	159	.....	160	9	39	183	310	136
Leather, tanned, curried, and finished.....	1909	20	1,688	13	194	1,571	5,305	18,164	291	775	10,383	12,451	2,068
	1904	33	1,043	40	48	946	2,973	8,761	89	434	4,769	6,062	1,293
	1899	40	739	38	37	664	1,713	5,050	63	224	2,541	3,211	670
Lime.....	1909	13	550	15	21	514	1,000	546	17	188	224	644	420
	1904	5	134	3	11	120	10	161	9	52	39	116	77
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liquors, malt.....	1909	13	524	1	108	415	6,110	4,748	168	208	619	2,271	1,652
	1904	10	401	1	60	331	2,438	3,550	88	227	481	2,146	1,665
	1899	8	318	2	60	256	519	1,714	71	117	198	1,113	915
Lumber and timber products.....	1909	1,016	20,799	1,226	930	18,643	62,356	30,333	1,090	8,632	8,676	28,758	20,682
	1904	765	13,257	1,032	606	11,619	37,585	14,603	574	5,390	6,202	18,067	12,495
	1899	697	.....	.....	326	8,834	27,156	7,884	254	2,068	5,000	12,073	7,013

¹ Excluding statistics for one establishment, to avoid disclosure of individual operations.

² Not reported separately.

MANUFACTURES—WEST VIRGINIA.

TABLE I.—COMPARITIVE SUMMARY FOR 1909, 1904, AND 1899—Continued.

THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES—Continued.

INDUSTRY AND CITY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaries employed.	Wage earners (average number).							
Expressed in thousands.													
STATE—Continued.													
Marble and stone work.....	1909	29	203	30	20	144	469	\$227	\$23	\$87	\$184	\$365	\$231
	1904	13	92	15	12	65	167	80	8	31	62	155	93
	1899	18	.....	.....	.....	237	.....	138	10	94	93	200	197
Mattresses and spring beds.....	1909	7	92	6	14	72	263	181	11	39	154	267	113
	1904	4	76	4	4	68	125	64	2	25	90	142	46
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paper and wood pulp.....	1909	9	1,221	2	57	1,162	11,025	3,603	97	478	1,683	2,052	969
	1904	7	585	3	37	545	4,575	2,215	47	230	700	1,283	538
	1899	0	305	2	22	281	4,785	926	20	98	274	528	254
Patent medicines and compounds and druggists' preparations.	1909	17	301	12	63	196	76	462	116	39	256	1,292	1,036
	1904	^a 11	59	6	18	35	.....	217	15	9	49	135	86
	1899	5	11	4	3	4	.....	18	1	1	11	77	66
Pottery, terra-cotta, and fire-clay products....	1909	16	2,149	6	100	2,034	1,674	2,921	160	1,250	780	2,679	1,893
	1904	17	1,346	5	71	1,270	1,074	2,267	135	634	340	1,283	940
	1899	14	1,339	13	57	1,269	1,837	1,610	52	500	210	1,165	886
Printing and publishing.....	1909	235	1,772	237	280	1,255	1,560	2,455	222	634	541	1,992	1,451
	1904	222	1,316	214	158	944	1,195	1,754	125	480	351	1,554	1,203
	1899	178	1,103	180	107	810	.....	1,148	83	334	226	1,035	809
Slaughtering and meat packing.....	1909	6	209	4	38	167	1,321	1,116	39	123	3,385	3,764	379
	1904	^a 6	108	6	29	133	635	478	20	74	1,068	1,928	260
	1899	3	103	3	10	84	350	313	12	43	1,134	1,338	204
Woolen, worsted, and felt goods, and wool hnts.	1909	13	640	10	31	599	1,327	1,106	31	222	795	1,224	429
	1904	^a 12	324	13	21	290	726	426	24	106	218	409	251
	1899	^a 33	412	12	10	384	1,118	684	17	99	310	507	188
All other industries.....	1909	321	10,566	274	987	9,335	32,290	27,833	1,257	4,840	24,821	37,202	12,441
	1904	264	8,243	222	563	7,458	22,616	17,994	599	3,224	14,926	22,741	7,815
	1899	214	.....	.....	340	5,176	.....	10,145	300	1,904	8,524	14,650	6,126

CITIES OF 10,000 OR MORE INHABITANTS—ALL INDUSTRIES COMBINED.

Bluefield.....	1909	15	748	5	73	670	1,648	\$948	\$74	\$377	\$889	\$1,465	\$570
	^a 1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	^a 1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Charleston.....	1909	63	1,153	47	155	951	4,100	2,825	158	469	2,137	3,235	1,098
	^a 1904	54	1,043	42	119	887	.....	2,228	116	403	998	2,160	1,102
	1899	48	.....	.....	73	680	.....	1,054	64	257	659	1,262	663
Huntington.....	1909	67	3,489	30	297	3,156	8,800	4,917	274	1,681	3,382	6,511	3,129
	1904	44	2,359	24	106	2,229	.....	2,762	95	1,033	2,076	4,407	1,731
	1899	29	.....	.....	82	1,717	.....	2,198	71	812	2,498	3,043	1,145
Martinsburg.....	1909	39	1,551	28	103	1,420	1,598	2,100	99	520	1,277	2,515	1,238
	^a 1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	^a 1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Parkersburg.....	1909	75	1,706	61	210	1,495	4,031	4,424	221	767	3,560	5,498	1,938
	1904	68	1,652	52	159	1,444	.....	3,310	164	604	2,488	3,778	1,290
	1899	72	.....	.....	107	1,237	.....	2,858	108	508	1,880	3,101	1,215
Wheeling.....	1909	176	8,744	116	810	7,809	29,486	19,297	1,075	4,427	16,025	27,077	11,052
	^a 1904	195	7,841	151	593	7,127	.....	17,893	600	3,793	12,480	21,797	9,308
	1899	178	.....	.....	407	6,190	.....	12,275	409	2,670	8,406	15,074	6,668

¹ Figures can not be shown without disclosing individual operations.
² Excluding statistics for two establishments, to avoid disclosure of individual operations.
³ Excluding statistics for one establishment, to avoid disclosure of individual operations.
⁴ Figures not available.
⁵ Figures do not agree with those published in 1904, because it was necessary to revise the totals in order to include data only for those establishments located within the corporate limits of the city.

TABLE II.—DETAIL STATEMENT FOR

INDUSTRY.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—NUMBER DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.		Under 16.				
					Male.	Female.		Maximum month.	Minimum month.		Male.	Female.	Male.	Female.			
															Number.		
1 All industries.....	2,586	71,463	2,599	1,909	2,505	557	63,893	Oc 69,202	Ja 56,191	(1)	(1)	(1)	(1)	(1)	217,496		
2 Artificial stone.....	20	119	24	6	8	2	79	Je 97	Ja 35	105	101	2	2	.....	132	
3 Bone, carbon, and lamp black.....	16	137	1	28	5	2	101	Ja 104	No 95	102	102	.....	.....	.....	641
4 Brass and bronze products.....	3	66	1	15	.....	9	41	Mh 43	Ap 37	42	42	.....	.....	.....	140
5 Bread and other bakery products.....	151	559	102	16	16	19	346	So 369	Ja 319	372	336	26	9	1	411		
6 Brick and tile.....	34	979	17	44	34	2	832	Je 1,170	Fe 386	915	902	3	10	.....	4,983	
7 Canning and preserving.....	30	345	49	10	10	5	271	Se 944	Ap 65	613	211	463	74	165	484		
8 Carriages and wagons and materials.....	51	446	62	23	8	7	347	My 373	Au 331	362	357	1	4	.....	893	
9 Cars and general shop construction and repairs by steam-railroad companies.....	24	5,920	.....	58	205	5	5,652	No 6,140	Ap 5,211	5,901	5,845	15	41	.....	5,394
10 Cars and general shop construction and repairs by street-railroad companies.....	8	96	.....	5	3	.....	88	So 94	De 83	83	83	.....	.....	.....	85
11 Clothing, men's, including shirts.....	9	499	3	15	33	15	403	Oc 444	Je 371	433	78	352	.....	3	210	
12 Coke.....	71	4,746	2	134	174	10	4,426	De 5,073	Jy 4,069	5,072	5,071	.....	1	.....	5,307
13 Confectionery.....	10	109	4	8	12	3	82	No 98	Au 70	94	47	47	.....	.....	38
14 Cooperage and wooden goods, not elsewhere specified.....	31	419	30	16	5	2	366	Oc 380	Mh 351	390	338	45	8	5	1,013		
15 Copper, tin, and sheet-iron products.....	19	998	14	19	31	18	916	Se 1,108	Ja 746	863	542	288	31	32	973		
16 Flour-mill and gristmill products.....	207	884	288	55	77	12	462	Ja 466	Ja 437	479	474	2	3	.....	9,950	
17 Foundry and machine-shop products.....	83	1,633	68	91	96	24	1,354	De 1,572	Mh 1,126	1,596	1,592	.....	4	.....	3,530
18 Furniture and refrigerators.....	25	666	17	26	39	6	578	De 654	Jy 477	662	643	11	8	.....	1,469	
19 Glass.....	51	6,509	13	135	121	50	6,190	De 7,669	Jy 3,316	7,055	6,589	609	341	56	5,233		
20 Ice, manufactured.....	35	305	23	30	17	2	233	Jy 351	Ja 130	214	213	.....	1	.....	5,554
21 Iron and steel, steel works and rolling mills.....	16	5,445	.....	95	205	25	5,060	Se 6,288	Ja 3,409	6,403	6,356	15	32	.....	46,508
22 Kaolin and ground earths.....	3	70	.....	7	3	2	58	Mh 63	Ja 51	57	57	.....	.....	.....	795
23 Leather goods.....	8	150	10	4	8	1	127	Ja 128	Jy 116	128	112	16	.....	.....	120
24 Leather, tanned, curried, and finished.....	20	1,688	13	30	72	2	1,571	Au 1,760	Fe 1,431	1,658	1,658	.....	.....	.....	5,305
25 Lime.....	13	550	15	10	10	1	514	No 595	Ja 384	622	618	.....	4	.....	1,000
26 Liquors, malt.....	13	524	1	36	70	2	415	Au 477	Fe 376	400	396	.....	4	.....	6,110
27 Lumber and timber products.....	1,016	20,799	1,226	449	403	78	18,643	Je 19,584	Ja 16,288	21,185	21,051	12	122	.....	62,356	
28 Marble and stone work.....	29	203	30	11	17	1	144	De 178	Ja 108	183	183	.....	.....	.....	469
29 Mattresses and spring beds.....	7	92	6	6	4	4	72	No 82	Ap 62	70	59	17	.....	.....	263
30 Paper and wood pulp.....	9	1,221	2	29	24	4	1,102	Au 1,311	Ap 1,050	1,202	1,155	47	.....	.....	11,025
31 Patent medicines and compounds and druggists' preparations.....	17	301	12	28	16	49	190	De 295	Ja 136	294	30	204	.....	.....	76
32 Pottery, terra-cotta, and fire-clay products.....	16	2,140	6	40	40	23	2,034	De 2,235	Ja 1,760	2,245	1,600	624	15	0	1,674		
33 Printing and publishing.....	235	1,772	237	103	136	41	1,255	De 1,311	Fe 1,228	1,314	955	287	60	3	1,560		
34 Salt.....	3	123	1	5	5	2	110	No 120	Au 91	116	116	.....	.....	.....	335
35 Shipbuilding, including boat building.....	3	117	4	3	3	.....	107	No 153	Ja 81	149	149	.....	.....	.....	128
36 Slaughtering and meat packing.....	6	209	4	10	26	2	167	Au 172	Ap 164	165	165	.....	.....	.....	1,321
37 Stoves and furnaces, including gas and oil stoves.....	6	79	.....	6	4	2	67	No 90	Jy 44	70	74	5	.....	.....	165
38 Tin plate and terneplate.....	6	1,405	.....	31	86	13	1,335	Je 1,444	Ja 1,150	1,476	1,341	125	10	.....	890
39 Wall plaster.....	4	29	2	4	1	1	21	Oc 24	Mh 10	23	23	.....	.....	.....	155
40 Woolen, worsted, and felt goods, and wool hats.....	13	640	10	17	11	3	599	My 622	So 552	629	370	231	15	13	1,327		
41 All other industries.....	265	8,432	242	246	407	108	7,429	.....	.....	.....	.....	.....	.....	.....	29,465

¹ No figures given for reason explained in the Introduction, page 2. See also discussion of wage earners on page 7.

² Same number reported for one or more other months.

³ All other industries embrace—

Agricultural implements.....	2	Cement.....	1	Explosives.....	3
Awnings, tents, and sails.....	1	Chemicals.....	2	Fancy articles, not elsewhere specified.....	1
Blackening and cleansing and polishing preparations.....	1	Clothing, women's.....	7	Firearms and ammunition.....	3
Bluing.....	1	Coffee and spice, roasting and grinding.....	4	Flavoring extracts.....	3
Boots and shoes, including cut stock and findings.....	2	Coffins, burial cases, and undertakers' goods.....	1	Food preparations.....	1
Boxes, fancy and paper.....	3	Cutlery and tools, not elsewhere specified.....	4	Furnishing goods, men's.....	2
Brooms.....	3	Dyeing and finishing textiles.....	1	Galvanizing.....	1
Butter, cheese, and condensed milk.....	2	Dyestuffs and extracts.....	3	Gas and electric fixtures and lamps and reflectors.....	1
Cars, steam-railroad, not including operations of railroad companies.....	1	Electrical machinery, apparatus, and supplies.....	5	Gas, illuminating and heating.....	4
		Enameling and japanning.....	2	Glass, cutting, staining, and ornamenting.....	6

MANUFACTURES—WEST VIRGINIA.

THE STATE, BY INDUSTRIES: 1909.

Capital.	EXPENSES.										Value of products.	Value added by manufacture.	
	Total.	Services.			Materials.		Miscellaneous.						
		Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.			
1	\$150,922,588	\$144,665,844	\$3,233,498	\$2,470,194	\$33,000,355	\$8,793,336	\$84,084,652	\$215,354	\$2,013,941	\$2,201,287	\$8,647,027	\$161,949,526	\$69,071,538
2	328,898	131,105	0,570	8,331	33,753	3,830	51,301	450	437	283	18,045	163,623	108,393
3	1,313,226	420,050	31,350	3,780	60,240	110,983	132,055	5,077	5,682	.....	04,274	590,058	347,020
4	236,803	162,109	16,023	3,008	20,747	2,508	08,441	225	586	12,576	7,845	193,315	92,276
5	651,601	1,151,506	17,625	16,504	187,994	24,088	834,602	10,820	3,955	172	40,746	1,469,011	611,221
6	2,300,220	831,675	52,607	20,605	383,010	167,088	108,203	60	7,573	118	92,342	950,364	675,073
7	389,743	557,517	7,701	16,706	57,617	3,258	426,730	335	1,624	205	43,242	604,704	174,797
8	670,757	568,719	30,010	10,504	180,099	7,113	310,071	8,860	3,234	.....	17,829	675,478	357,394
9	2,116,664	6,733,578	75,107	171,731	3,169,662	86,219	2,976,507	.....	15,207	13,743	225,312	6,732,575	3,669,759
10	97,568	106,240	4,480	1,600	58,466	600	39,711	.....	475	720	107	106,240	65,938
11	637,224	1,342,063	13,734	33,775	126,340	7,042	1,047,362	2,175	3,524	72,000	35,142	1,460,318	414,014
12	12,820,051	7,306,687	154,532	126,154	1,664,152	4,720,282	202,191	.....	51,203	.....	208,173	7,563,410	2,550,946
13	96,804	213,611	8,915	11,011	32,543	1,235	145,958	5,395	463	33	8,057	244,270	97,076
14	482,550	562,258	17,714	5,130	168,133	2,024	332,078	1,213	2,650	75	33,232	658,379	324,277
15	1,689,772	1,016,281	38,106	38,420	383,323	24,770	1,329,445	2,434	4,996	.....	94,778	2,150,789	706,565
16	3,765,932	7,107,296	50,188	62,563	210,283	48,888	6,552,250	8,734	18,521	507	155,353	7,605,801	1,094,654
17	3,452,797	2,073,062	104,308	74,047	819,017	65,454	1,694,224	7,887	14,748	.....	132,087	3,391,930	1,632,252
18	1,360,762	826,750	37,767	37,635	253,284	7,190	377,149	120	5,858	70	107,608	964,700	580,352
19	7,368,665	7,045,692	240,939	194,408	3,628,117	400,055	1,895,873	5,885	25,607	28,778	625,970	7,779,483	5,483,655
20	1,594,863	319,050	29,499	11,877	113,181	62,718	47,887	2,164	8,500	1,069	42,989	475,527	364,022
21	16,275,615	20,087,832	219,541	240,450	3,887,340	754,436	15,141,864	.....	63,331	.....	380,870	22,435,411	6,539,111
22	174,397	106,126	9,980	2,200	44,592	12,099	30,127	.....	1,400	.....	4,720	115,855	72,729
23	236,530	363,244	3,500	8,100	52,711	1,615	275,303	4,380	1,102	.....	16,443	471,530	194,612
24	18,164,283	11,989,075	120,180	80,788	774,022	84,708	10,298,493	.....	37,004	44,640	548,940	12,450,592	2,067,391
25	545,630	441,050	8,938	8,125	188,403	150,094	73,273	425	1,408	.....	10,173	644,408	420,231
26	4,748,015	2,073,739	100,846	66,900	298,404	84,650	34,430	.....	337,640	.....	650,882	2,270,981	1,051,983
27	30,332,900	22,460,731	683,051	400,892	8,631,652	223,790	8,452,207	17,933	188,585	1,014,800	1,941,731	28,758,481	20,082,394
28	226,582	271,377	12,742	10,145	86,630	2,853	131,040	1,613	1,284	600	23,864	364,683	230,184
29	180,510	218,026	6,550	4,420	39,461	1,425	152,268	2,860	583	.....	10,469	267,462	113,769
30	3,603,392	2,471,610	61,217	30,046	478,113	204,818	1,478,601	.....	23,392	16,000	173,423	2,652,037	908,618
31	461,974	1,045,243	92,315	23,951	39,421	1,338	254,513	4,314	2,025	300	626,460	1,291,713	1,035,862
32	2,021,056	2,421,204	92,585	67,429	1,255,844	167,810	617,838	4,830	10,619	.....	204,339	2,678,673	1,893,025
33	2,455,140	1,553,698	117,495	104,873	634,488	26,389	514,149	39,845	12,580	16,030	87,840	1,992,030	1,451,498
34	150,934	120,732	0,000	3,540	45,533	27,632	41,517	.....	1,325	.....	1,185	131,414	62,265
35	158,407	128,854	4,000	1,988	57,248	235	59,851	30	731	.....	4,771	151,150	61,070
36	1,115,912	3,027,819	16,500	22,394	123,560	20,193	3,304,634	1,380	4,985	.....	74,377	3,703,888	379,061
37	171,774	106,151	7,536	3,768	33,685	2,347	45,121	690	914	.....	12,090	107,106	59,638
38	2,497,863	8,752,686	50,253	87,532	347,102	42,375	7,324,891	.....	10,553	.....	389,890	9,257,524	1,890,258
39	109,005	142,678	4,500	720	11,248	1,131	113,674	400	261	.....	10,744	186,459	71,654
40	1,105,810	1,116,107	21,159	0,756	221,613	18,301	776,263	70	3,135	.....	65,875	1,224,247	429,888
41	23,911,102	24,278,154	504,285	437,418	3,686,921	1,211,115	15,710,750	65,135	1,135,308	78,508	1,353,645	20,847,887	9,926,013

³All other industries embrace—Continued.

Glue.....	1	Mineral and soda waters.....	63	Smelting and refining, not from the ore.....	1
Grindstones.....	1	Models and patterns, not including paper patterns.....	1	Tobacco manufactures.....	80
Hats, fur-felt.....	1	Oil, not elsewhere specified.....	1	Vinegar and elder.....	17
History and knit goods.....	2	Paint and varnish.....	1	Wirework, including wire rope and cable.....	1
Iron and steel, blast furnaces.....	3	Paper goods, not elsewhere specified.....	1	Wood distillation, not including turpentine and resin.....	1
Iron and steel pipe, wrought.....	1	Petroleum, refining.....	1	Wood, turned and carved.....	6
Liquors, distilled.....	2	Photo-engraving.....	1		
Looking-glass and picture frames.....	1	Smelting and refining, zinc.....	1		

MANUFACTURES : WISCONSIN

STATISTICS OF MANUFACTURES FOR THE STATE, CITIES, AND INDUSTRIES

Prepared under the supervision of W. M. STEUART, Chief Statistician for Manufactures

INTRODUCTION.

This advance bulletin gives the statistics of manufactures for the state of Wisconsin for the calendar year 1909 as shown by the Thirteenth Census. It will be reprinted without change as a part of the Compendium of the Census for Wisconsin, and in the final reports of the Thirteenth Census.

The text summarizes the general results of the census inquiry, presenting a series of special tables in which the main facts printed in the general tables are given in convenient form for the state as a whole and for important industries. It also presents tables in which the statistics for the industries of the state as a whole and for a few important industries are classified by character of ownership, size of establishments, number of wage earners, and prevailing hours of labor, information which could not be presented in general tables for each industry without disclosing the facts for individual establishments.

At the end of the bulletin are two general tables.

Table I gives for 1909, 1904, and 1899 the number of establishments and of persons engaged in the industries, primary power, capital, salaries and wages, cost of materials, value of products, and value added by manufacture reported for all industries combined and for certain important industries (1) for the state as a whole and (2) for the city of Milwaukee. It also gives the same items for all industries combined for every city having in 1910 a population of over 10,000 but less than 50,000.

Table II gives statistics in detail for 1909 for the state and for a larger number of industries.

Scope of census: Factory industries.—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 organization, location of establishments, size of establishments, labor force, and similar subjects. When use is made of the data for these purposes, it is imperative that due attention should be given to the limitations of the figures. Particularly is this true when the attempt is made to derive from them figures purporting to show average wages, cost of production, or profits. These limitations will be fully discussed in the general report on manufactures for the United States as a whole. It is impossible to reproduce such discussion in the bulletins relative to the individual states.

The census of 1909, like that of 1904, was confined to manufacturing establishments conducted under the factory system, as distinguished from the neighborhood, hand, and building industries. Where statistics for 1899 are given they have been reduced to a

comparable basis by eliminating the latter classes of industries. The census does not include establishments which were idle during the entire year, or had a value of products of less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions, or in governmental establishments, except those of the Federal Government.

Period covered.—The returns cover the calendar year 1909, or the business year which corresponds most nearly to that calendar year. The statistics cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—The term "establishment" comprises the factories, mills, or plants which are under a common ownership or control, and for which one set of books of account is kept.

If, however, the plants constituting an establishment as thus defined were not all located within the same city or state, separate reports were secured in order that the separate totals might be included in the statistics for each city or state. 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 very different from those covered by the class designation, and, on the other hand, may not include the total product covered by this designation, because some part of this product may be made in establishments in which it is not the product of chief value.

Selected industries.—The general tables at the end of this bulletin give the principal facts separately for the industries of the state. A selection has been made of the leading industries of the state for more detailed consideration. Sometimes an industry of greater importance than some of those selected is omitted because it comprises so few establishments that these detailed presentations would reveal the operations of individual concerns.

Comparisons with previous censuses.—Owing to the changes in industrial conditions it is not always possible to classify establishments by industries in such a way as to permit accurate comparison with preceding censuses. Table I, giving comparable figures for 1909, 1904, and 1899, therefore, does not embrace all the industries shown for 1909 in Table II.

Influence of increased prices.—In considering changes in cost of materials, value of products, and value added by manufacture, 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 can not be taken as an exact measure of increase in the volume of business.

Persons engaged in industry.—At the censuses of 1909, 1904, and 1899 the following general classes of persons engaged in manufacturing industries have been distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks, and (5) wage earners. In the censuses of 1904 and 1899 these five classes were shown according to the three main groups: (1) Proprietors and firm members, (2) salaried officials, clerks, etc., and (3) wage earners. The second group included the three classes of salaried officers of corporations, superintendents and

managers, and clerks. In the present census an entirely different grouping is employed: That into (1) proprietors and officials, (2) clerks, and (3) wage earners. The first group includes proprietors and firm members, salaried officers of corporations, and superintendents and managers.

At this census the number of persons engaged in the industries, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for December 15, or the nearest representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where conditions were exceptional, and particularly in the case of certain seasonal industries, such as canning, the December date could not be accepted as typical and an earlier date had to be chosen.

In the case of employees other than wage earners the number thus reported on December 15, or other representative day, has been treated as equivalent to the average for the year, since the number of employees of this class does not vary much from month to month in a given industry. In the case of wage earners the average is obtained in the manner explained in the next paragraph.

Wage earners.—In addition to the report by sex and age of the number of wage earners on December 15, or other representative day, a report was obtained of the number employed on the 15th of each month, without distinction of sex or age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported each month by 12. The average thus obtained represents the number of wage earners that would be required to perform the work done if all were constantly employed during the entire year. Accordingly, the importance of any 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 for each separate industry, is not totaled for all industries combined, because in view of the variations of date such a total is believed not 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 particular, totals by sex and age for the wage earners reported for the representative day would be misleading because of the undue weight given to seasonal industries, in some of which, such as canning and preserving, the distribution of the wage earners by sex and age is materially different from that in most industries of more regular operation. In order to determine as nearly as possible the sex and age distribution of the average number of wage earners in the state as a whole, the following procedure has been adopted:

The percentage distribution by sex and age of the wage earners in each industry, for December 15, or the nearest representative day, has been calculated from the actual numbers reported for that date. This percentage has been applied to the average number of wage earners for the year in that industry, to determine the average number of men, women, and children employed. These calculated averages for the several industries have been added up to give the average distribution for the state as a whole.

In 1899 and 1904 the schedule called for the average number of wage earners of each sex 16 years and over, and the total number under 16 years of age, for each month, and these monthly statements were combined in an annual average. Comparatively few manufacturing concerns, however, keep their books in such way as to show readily the number of men, women, and children (under 16) employed each month. These monthly returns by sex and age were, in fact, largely estimates. It was believed that a more accurate and reliable sex and age distribution could be secured by taking as a basis of estimate the actual numbers employed on a single day.

Prevailing hours of labor.—The census made no attempt to ascertain the number of employees 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 period to another are disregarded, and no attention is given to the fact that a limited number of employees may have hours differing from those of the majority. In the tables all the wage earners of each establishment are counted in the class within which the establishment itself falls. In most establishments, however, all or practically all the employees work the same number of hours, so that these figures give a substantially correct picture of the hours of labor in manufacturing industries.

Capital.—For reasons stated in prior census reports, the statistics of capital secured by the census canvass are so defective as to be without value, except as indicating very general conditions. The instructions on the schedule for securing 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.

Materials.—Cost of materials refers to the materials used during the year, which may be more or less than the materials purchased during the year. The term materials includes fuel, rent of power and heat, mill supplies, and containers, as well as materials forming a constituent part of the product. Fuel includes all fuel used, whether for heat, light, or power, or for the process of manufacture.

Expenses.—Under "Expenses" are included all items of expense incident to the year's business, except interest, whether on bonds or other forms of indebtedness, and allowances for depreciation.

Value of products.—The value of products for any industry includes the total value of all products manufactured in establishments whose products of chief value fall under the industry designation. The amounts given represent the selling value at the factory of all products manufactured during the year, which may differ from the value of the products sold. Amounts received for work on materials furnished by others are included.

Value added by manufacture.—The value of products is not 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 process carried on in the industry itself. Another part of it, and often by far the larger part, represents the value of the materials used, which have been produced by agriculture or mining or by other industrial establishments. For many purposes, therefore, the best measure of the importance of different classes of industry is the value created as the result of the manufacturing operations carried on within the industry. This value is obtained by deducting the cost of the materials consumed from the value of the product. The figure thus obtained is termed in the census reports "value added by manufacture."

There is a further statistical advantage which "value added" has over gross value of products. In combining the value of products for all industries the value of products produced by one establishment and used as materials in another is duplicated, and the total, therefore, gives a greatly exaggerated idea of the wealth created. No such duplication takes place in the total "value added by manufacture."

Cost of manufacture and profits.—Census data do not show the entire cost of manufacture, and consequently can not be used to show profits. No account has been taken of interest and depreciation. Even if the amount of profit could be determined by deducting the expenses from the value of the products, the rate of profit on the investment could not properly be calculated, because of the very defective character of the returns regarding capital.

Primary power.—The figures given for this item show the total of the primary power used by the establishments. They do not cover the power developed by motors operated by such power, the inclusion of which would evidently result in duplication.

Location of establishments.—The Census Bureau has classified establishments by their location in cities or classes of cities. In interpreting these figures due consideration should be given to the

fact that often establishments are located just outside the boundaries of cities, and are necessarily so classified, though locally they are looked upon as constituting a part of the manufacturing interests of the cities.

Laundries.—The census of 1909 was the first to include statistics of laundries. The reports are confined to establishments using mechanical power. The data are presented separately and are

not included in the general total for manufacturing industries, in order to avoid interference with comparisons with prior censuses.

Custom sawmills and gristmills.—In order to make the statistics for 1909 comparable with those for 1904 the data for these mills have been excluded from all the tables presenting general statistics, and are given in a separate table at the end of this report.

INDUSTRIES IN GENERAL.

General character of the state.—Wisconsin, with a gross area of 56,066 square miles, of which 810 represent water surface, ranks twenty-fifth in size among the states and territories of continental United States. Its population in 1910 was 2,333,860, as compared with 2,069,042 in 1900 and 1,693,330 in 1890. It ranked thirteenth among the 49 states and territories as regards population both in 1910 and in 1900. The density of population of the state was 42.2 per square mile in 1910, the corresponding figure for 1900 being 37.4.

Of the entire population of the state, 43 per cent resided in cities and incorporated towns having a population of 2,500 inhabitants or over, as against 38.2 per cent in 1900.

Milwaukee, with a population of 373,857, is the only city in the state having a population of over 50,000, but 17 cities, Superior, Racine, Oshkosh, La Crosse, Sheboygan, Madison, Green Bay, Kenosha, Fond du Lac, Eau Claire, Appleton, Wausau, Beloit, Marinette, Janesville, Manitowoc, and Ashland have a population of over 10,000 but less than 50,000. These 18 cities contain 32.3 per cent of the total population of the state, and were credited with 61.8 per cent of the total value of its manufactures in 1909. Only 10.8 per cent of the population of the state in 1909 resided in cities having between 2,500 and 10,000 inhabitants.

Lake Michigan, Lake Superior, and the Mississippi and Fox Rivers, together with the numerous railroads of the state, afford excellent transportation facilities and give communication with all parts of the United States and Canada.

Importance and growth of manufactures.—While Wisconsin is largely an agricultural state, the advance in the relative importance of its manufacturing industries, as measured by value of products, has been marked. In 1849 it ranked nineteenth among the states in this respect, while in 1909 it occupied eighth place. During 1849 the manufacturing industries of the state gave employment to an average of 6,089 wage earners, representing 2 per cent of the total population, as against an average of 182,583 wage earners, or 7.8 per cent of the total population in 1909. During this period the gross value of products per capita of the total population of the state increased from \$30 to \$253. The proportion which the manufactures of Wisconsin represented of the total value of the products of manufacturing industries in the United States was nine-tenths of 1 per cent in 1849, as against 2.9 per cent in 1909.

The following table gives the most important figures relative to all classes of manufactures combined for 1909, 1904, and 1899, together with the percentages of increase from census to census:

	NUMBER OR AMOUNT.			PER CENT OF INCREASE.	
	1909	1904	1899	1904-1909	1899-1904
Number of establishments.....	9,721	8,558	7,841	13.6	9.1
Persons engaged in manufactures.....	213,426	173,572	(1)	23.0	(1)
Proprietors and firm members.....	8,556	7,961	(1)	7.5	(1)
Salaried employees.....	22,287	14,220	10,480	56.7	35.7
Wage earners (average number).....	182,583	151,391	137,525	20.6	10.1
Primary horsepower.....	554,179	440,234	364,380	25.9	20.8
Capital.....	\$605,657,000	\$412,647,000	\$286,061,000	46.8	44.3
Expenses.....	525,747,000	359,899,000	283,755,000	46.1	26.8
Services.....	119,642,000	86,970,000	66,189,000	37.6	31.4
Salaries.....	25,737,000	15,498,000	10,493,000	66.1	47.7
Wages.....	93,905,000	71,472,000	55,696,000	31.4	28.3
Materials.....	346,357,000	227,255,000	185,695,000	52.4	22.4
Miscellaneous.....	59,748,000	45,674,000	31,871,000	30.8	43.3
Value of products.....	590,306,000	411,140,000	326,753,000	43.6	25.8
Value added by manufacture (value of products less cost of materials).....	243,949,000	183,885,000	141,058,000	32.7	30.4

¹ Figures not available.

In 1909 the state of Wisconsin had 9,721 manufacturing establishments, which gave employment to an average of 213,426 persons during the year and paid out \$119,642,000 in salaries and wages. Of the persons employed, 182,583 were wage earners.

These establishments turned out products to the

value of \$590,306,000, to produce which materials costing \$346,357,000 were used. The value added by manufacture was thus \$243,949,000, which figure, as explained in the Introduction, best represents the net wealth created by manufacturing operations during the year.

MANUFACTURES—WISCONSIN.

The statistics for the state do not include the operations of the United States shipyard located at Fountain City. This establishment, which is engaged principally in the building of barges, reported products to the value of \$22,289 in 1909.

In general, this table brings out the fact that the manufacturing industries of Wisconsin as a whole showed a greater development during the more recent 5-year period 1904-1909 than during the preceding 5-year period 1899-1904. During the later period the number of establishments increased 13.6 per cent and

the average number of wage earners 20.6 per cent, while the value of products increased 43.6 per cent, and the value added by manufacture 32.7 per cent. As pointed out in the Introduction, it would be improper to infer that manufactures increased in volume to the full extent indicated by these figures regarding values, since the increase shown is due, in part, to the increase that has taken place in the price of commodities.

The relative importance and growth of the leading manufacturing industries of the state are shown in the following table:

INDUSTRY.	Number of establishments.	WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.		PER CENT OF INCREASE. ¹			
		Average number.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.	Value of products.		Value added by manufacture.	
								1904-1909	1899-1904	1904-1909	1899-1904
All industries.....	9,721	182,583	100.0	\$590,300,000	100.0	\$243,949,000	100.0	43.6	25.8	32.7	30.4
Lumber and timber products.....	1,020	34,093	18.7	57,969,000	9.8	32,382,000	13.3	-1.0	-14.3	-4.0	0.7
Foundry and machine-shop products.....	444	24,219	13.3	54,124,000	9.2	31,500,000	12.9	72.5	20.0	78.0	29.7
Butter, cheese, and condensed milk.....	2,030	2,803	1.6	53,843,000	9.1	5,837,000	2.4	79.5	49.1	62.0	2.7
Leather, tanned, curried, and finished.....	32	7,548	4.1	44,008,000	7.6	0,830,000	4.0	72.8	28.7	64.7	48.1
Liquors, malt.....	136	5,061	2.8	32,126,000	5.4	24,228,000	9.9	12.0	47.0	3.1	55.1
Flour-mill and gristmill products.....	322	1,184	0.6	31,667,000	5.4	4,629,000	1.9	11.7	19.0	28.7	10.8
Slaughtering and meat packing.....	48	1,890	1.0	27,217,000	4.6	3,814,000	1.6	64.3	17.2	52.7	31.0
Paper and wood pulp.....	57	7,467	4.1	25,962,000	4.4	9,209,000	3.8	45.5	63.8	29.6	71.9
Furniture and refrigerators.....	114	11,118	6.1	18,656,000	3.2	9,861,000	4.0	50.8	30.6	49.3	27.3
Cars and general shop construction and repairs by steam-railroad companies.....	22	8,994	4.9	14,332,000	2.4	5,050,000	2.3	120.1	3.2	64.4	23.7
Boots and shoes, including cut stock and findings.....	68	5,431	3.0	13,602,000	2.3	4,849,000	2.0	98.7	31.9	90.8	39.5
Printing and publishing.....	833	5,360	2.9	11,861,000	2.0	8,475,000	3.5	28.2	44.4	28.2	41.2
Automobiles, including bodies and parts.....	30	4,268	2.4	11,440,000	1.9	0,100,000	2.5	510.1	.....	493.2	.....
Agricultural implements.....	45	2,764	1.5	11,411,000	1.9	7,474,000	3.1	13.2	27.8	14.0	42.7
Iron and steel, steel works and rolling mills.....	14	2,124	1.2	10,733,000	1.8	2,827,000	1.2	45.5	22.9	-1.8	10.3
Malt.....	25	450	0.2	9,597,000	1.6	1,774,000	0.7	9.8	113.7	-1.6	97.0
Clothing, men's, including shirts.....	94	4,252	2.3	9,405,000	1.6	3,957,000	1.6	40.2	44.8	25.2	46.1
Carriages and wagons and materials.....	286	3,437	1.9	8,899,000	1.5	3,736,000	1.5	10.0	15.0	-6.5	10.4
Hosiery and knit goods.....	61	4,282	2.3	7,843,000	1.3	3,950,000	1.6	67.5	98.5	47.0	102.8
Copper, tin, and sheet-iron products.....	105	2,780	1.5	7,130,000	1.2	2,480,000	1.0	174.6	-23.0	147.3	-29.0
Bread and other bakery products.....	607	1,751	1.0	0,872,000	1.2	2,849,000	1.2	27.7	48.7	27.8	27.0
Tobacco manufactures.....	775	2,391	1.3	6,142,000	1.0	3,635,000	1.5	-3.2	29.8	-12.0	30.4
Food preparations.....	28	520	0.3	5,535,000	0.9	2,691,000	1.1	150.3	05.0	125.9	23.9
Leather goods.....	48	2,090	1.1	5,382,000	0.9	2,372,000	1.0	32.7	62.3	46.1	55.3
Canning and preserving.....	83	1,776	1.0	4,807,000	0.8	1,840,000	0.8	46.1	142.2	43.9	94.7
Iron and steel, blast furnaces.....	5	758	0.4	4,794,000	0.8	876,000	0.4	55.9	6.0	6.3	-6.9
Confectionery.....	38	1,780	1.0	4,414,000	0.7	1,747,000	0.7	88.0	64.9	62.2	77.9
Marble and stone work.....	136	2,593	1.4	4,114,000	0.7	2,897,000	1.2	105.8	15.0	124.1	20.7
Gas, illuminating and heating.....	49	1,063	0.6	4,001,000	0.7	2,612,000	1.1	37.4	108.4	24.9	94.4
Electrical machinery, apparatus, and supplies.....	80	1,409	0.8	3,836,000	0.7	2,385,000	1.0	20.1	245.7	0.7	284.8
Stoves and furnaces, including gas and oil stoves.....	12	1,893	1.0	3,737,000	0.6	2,168,000	0.9	52.8	.....	55.0	.....
Gloves and mittens, leather.....	23	1,642	0.9	2,799,000	0.5	1,622,000	0.5	26.7	335.7	33.0	362.8
Cooperage and wooden goods, not elsewhere specified.....	48	1,208	0.7	2,393,000	0.4	1,274,000	0.5	-22.2	6.5	-7.1	-9.4
Woolen, worsted, and felt goods, and wool hats.....	33	1,046	0.6	2,230,000	0.4	854,000	0.3	-3.0	23.9	-4.9	29.8
Patent medicines and compounds and druggists' preparations.....	62	299	0.1	1,707,000	0.3	1,262,000	0.5	38.4	82.9	44.0	95.3
Paint and varnish.....	12	194	0.1	1,526,000	0.3	483,000	0.2	45.0	18.8	70.1	37.9
Fur goods.....	40	413	0.2	1,524,000	0.3	507,000	0.2	67.7	6.8	30.6	33.6
Gas and electric fixtures and lamps and reflectors.....	13	552	0.3	1,466,000	0.2	750,000	0.3	155.0	82.5	173.0	91.7
Mattresses and spring beds.....	21	504	0.3	1,444,000	0.2	580,000	0.2	-59.1	92.9	-71.0	211.2
Dairyman's, poultryer's, and apiarist's supplies.....	22	526	0.3	1,329,000	0.2	618,000	0.3	264.1	.....	216.9	.....
Boxes, fancy and paper.....	15	824	0.5	1,317,000	0.2	678,000	0.3	164.5	106.0	138.7	130.7
Lime.....	43	776	0.4	1,272,000	0.2	765,000	0.3	62.9	.....	68.6	.....
Brick and tile.....	108	1,027	0.6	1,191,000	0.2	909,000	0.4	-35.6	2.9	-29.8	21.5
Paper goods, not elsewhere specified.....	111	329	0.2	888,000	0.2	393,000	0.2	188.9	.....	110.2	.....
Clothing, women's.....	19	565	0.3	928,000	0.2	425,000	0.2	10.5	208.8	9.8	120.3
Musical instruments, pianos and organs and materials.....	11	369	0.2	893,000	0.2	403,000	0.2	385.3	922.2	529.7	433.3
Coffins, burial cases, and undertakers' goods.....	8	340	0.2	754,000	0.1	370,000	0.2	131.3	89.5	111.4	60.2
Artificial stone.....	119	377	0.2	624,000	0.1	389,000	0.2	457.1	.....	455.7	.....
Brooms and brushes.....	44	243	0.1	562,000	0.1	262,000	0.1	49.1	29.1	40.4	43.4
Millinery and lace goods.....	7	307	0.2	556,000	0.1	218,000	0.1	0.2	4.9	-8.4	3.5
Chemicals.....	6	76	(2)	513,000	0.1	271,000	0.1	93.6	4.3	111.7	4.1
Fancy articles, not elsewhere specified.....	5	343	0.2	477,000	0.1	252,000	0.1	8.6	1,538.5	5.4	1,738.5
Mirrors.....	5	87	(2)	315,000	0.1	117,000	(2)	89.2	.....	148.9	.....
Photo-engraving.....	10	171	0.1	312,000	0.1	209,000	0.1	88.0	225.5	82.2	239.5
Buttons.....	13	158	0.1	290,000	0.1	198,000	0.1	74.7	103.5	85.0	143.2
Cutlery and tools, not elsewhere specified.....	16	118	0.1	285,000	0.1	102,000	0.1	80.4	6.0	105.1	2.6
Boxes, cigar.....	7	186	0.1	285,000	(2)	144,000	(2)	14.0	2.1	24.1	12.6
Pens, fountain, stylographic, and gold.....	5	47	(2)	245,000	(2)	126,000	(2)	31.9	.....	13.5	.....
Jewelry.....	13	78	(2)	240,000	(2)	159,000	0.1	90.5	65.8	73.9	120.0
All other industries.....	725	12,269	6.7	45,714,000	7.7	21,018,000	8.6	.....	.....	.....	.....

¹ Per cent of increase is based on figures in Table I, and a minus sign (-) denotes decrease. Where the percentages are omitted, comparable figures can not be given.
* Less than one-tenth of 1 per cent.

It should be borne in mind, in considering this table, that the value of products in some of the industries involves a certain amount of duplication due to the use of the product of one establishment in the industry as the material for another establishment.

Although a few industries greatly predominate in importance, it will be seen from Table II that there is, on the whole, considerable diversity in the manufacturing activities of the state. The most important industries listed in the table given above, in which they are arranged in the order of the value of products, call for brief consideration.

Lumber and timber products.—This classification embraces logging operations, sawmills, planing mills, and establishments manufacturing wooden packing boxes. Although this industry has decreased in importance during the last decade in consequence of the depletion of the forests of the state, it is still the leading manufacturing industry of Wisconsin, giving employment in 1909 to an average of 34,093 wage earners, or 18.7 per cent of the total number of wage earners employed in the manufacturing industries of the state, and reporting products valued at \$57,969,000, or 9.8 per cent of the total value of the state's manufactures.

Foundry and machine-shop products.—This industry embraces, in addition to the foundries and machine shops, the establishments engaged in the manufacture of gas machines and gas and water meters; hardware; cast-iron and cast-steel pipe; plumbers' supplies; steam fittings and heating apparatus; and structural ironwork. The industry is really of greater importance in the state than is indicated by the statistics, as some machine shops manufactured distinctive products, and, as a result, were assigned to other classifications. In 1909 the industry gave employment to an average of 24,219 wage earners, or 13.3 per cent of the total for all manufacturing industries in Wisconsin, and reported products to the value of \$54,124,000, or 9.2 per cent of the state total.

Butter, cheese, and condensed milk.—This is a flourishing industry in Wisconsin, the value of its products increasing 79.5 per cent from 1904 to 1909 and 49.1 per cent from 1899 to 1904. Of the 2,630 establishments reported in 1909, 853 manufactured butter as their chief product, 1,771 cheese, and 6 condensed milk, as compared with 902 butter factories, 1,454 cheese factories, and 4 condensed-milk establishments in 1904.

Leather, tanned, curried, and finished.—Although the number of tanneries decreased from 42 in 1899 to 32 in 1909, the number of wage earners in the industry increased 43.4 per cent and the value of products 122.5 per cent. This industry has advanced from fifth place among the manufacturing industries of the state in value of products in 1899 to fourth place in 1909.

Malt and malt liquors.—The value of the products of the breweries of Wisconsin increased 12 per cent from 1904 to 1909, and that of the products of the malt establishments 9.8 per cent. Combined, the two classes of establishments gave employment to 5,407

wage earners in 1904 and 5,517 in 1909. In the latter year Wisconsin reported 8.6 per cent of the total value of malt liquors and 25.1 per cent of the total value of malt reported for the United States, ranking third among the states in the production of malt liquors and second in the output of malt.

Flour-mill and gristmill products.—This industry, which ranked sixth among the industries of the state in 1909 as measured by value of products, contributed 5.4 per cent of the value of all manufactured products of Wisconsin in that year. Owing to the comparatively simple processes involved in this industry and the extent to which these processes are carried on by machinery, the value added by manufacture is not commensurate with the gross value of products.

Slaughtering and meat packing.—This classification includes establishments engaged in wholesale slaughtering and meat packing and those engaged in the manufacture of sausage only. From 1904 to 1909 the number of establishments nearly doubled, while the value of products increased 64.3 per cent.

Paper and wood pulp.—In 1909 this industry was sixth in importance in the state when measured by the average number of wage earners employed. The value of the products of the mills in that year was \$25,962,000, an increase of 45.5 per cent over the value reported in 1904.

Furniture and refrigerators.—This industry gave employment to an average of 11,118 wage earners, representing 6.1 per cent of the total employed in all manufacturing industries in the state in 1909. Wisconsin reported 7.8 per cent of the total value of products for the industry for the United States as a whole.

Cars and general shop construction and repairs by steam-railroad companies.—This classification represents the work done in the car shops of steam-railroad companies, and is practically confined to repairs to the rolling stock and equipment. The statistics do not include minor repairs made in round-houses. In 1909 the industry gave employment to an average of 8,994 wage earners, ranking fourth in this respect among the manufacturing industries of the state. The value of work done in 1909 was reported as \$14,332,000.

Boots and shoes, including cut stock and findings.—This is one of the rapidly growing industries of the state. During the decade from 1899 to 1909 there was an increase of 84.6 per cent in the average number of wage earners employed and of 162.1 per cent in value of products.

Automobiles, including bodies and parts.—This industry has developed in Wisconsin almost entirely since 1899. In 1904 there were 6 establishments with products valued at \$1,875,000, while in 1909 there were 30 establishments, giving employment to an average of 4,298 wage earners and reporting products valued at \$11,440,000.

In addition to the 51 industries presented separately in the above table for which products valued at more

than \$500,000 are reported, there are 24 other industries each of which had a value of products in 1909 in excess of this amount.¹ These are included under the head of "All other industries" in the table in some cases because the operations of individual establishments would be disclosed if they were shown separately; in others because the returns do not properly present the true condition of the industry, for the reason that it is more or less interwoven with one or more other industries; and in still others because comparative statistics can not be presented for either 1904 or 1899 without disclosing the operations of individual establishments, or on account of changes in classification. The statistics for 1909, however, for the manufacture of blacking and cleansing and polishing preparations and of brass and bronze products, and for the shipbuilding industry, including boat building, are presented in Table II, page 28.

The relative importance of the leading industries shown in the above table when measured by value added by manufacture differs considerably, on the whole, from their relative importance as measured by value of products, although the lumber and timber products and foundry and machine-shop industries hold first and second place, respectively, on either basis. The brewery industry, however, which ranks fifth in value of products, becomes third in rank according to value added by manufacture; the furniture and refrigerator industry becomes fourth instead of ninth; and printing and publishing seventh instead of twelfth. On the other hand, the butter, cheese, and condensed-milk industry, which is third in value of products, drops to tenth place in value added by manufacture; the flour-mill and gristmill industry becomes thirteenth instead of sixth; and slaughtering and meat packing sixteenth instead of seventh.

The preceding table gives also the percentages of increase for these leading industries in respect to value of products and value added by manufacture in all cases where comparative statistics can be presented. The largest relative increase in value of products from 1904 to 1909 reported for any of the industries shown separately in the table was that of 510.1 per cent for the automobile industry, which includes the manufacture of bodies and parts. This industry also shows an exceptionally large rate of increase in value added by manufacture, 492.2 per cent. The greatest rate of increase in value added by manufacture, however, reported for any of the industries shown in the table was

¹ These industries are:

Bags, other than paper.
Bags, paper.
Beet sugar.
Blacking and cleansing and polishing preparations.
Boots and shoes, rubber.
Brass and bronze products.
Butter, reworking.
Clothing, horse.
Coffee and spice, roasting and grinding.
Coke.
Enameling and japanning.
Explosives.

Glue.
Hats, straw.
Instruments, professional and scientific.
Liquors, distilled.
Matches.
Mineral and soda waters.
Rubber goods, not elsewhere specified.
Shipbuilding, including boat building.
Soap.
Steam packing.
Windmills.
Wirework, including wire rope and cable.

that for the manufacture of pianos and organs and materials, 529.7 per cent. The rate of increase in gross value of products for this industry was also very high, amounting to 385.3 per cent. From 1899 to 1904 the manufacture of fancy articles, not elsewhere specified, showed the greatest rates of increase both in value of products and in value added by manufacture. Other industries which showed remarkable rates of increase both in value of products and in value added by manufacture during the more recent five-year period are the manufacture of artificial stone; dairy-men's, poulterers', and apiarists' supplies; paper goods, "not elsewhere specified;" copper, tin, and sheet-iron products; boxes, fancy and paper; gas and electric fixtures and lamps and reflectors; and food preparations.

Of all the different industries for which separate figures are given only the lumber and timber products industry shows a decrease in value of products for both five-year periods. Five other industries, however, show decreases in value of products from 1904 to 1909, and one other a decrease from 1899 to 1904. Ten industries show decreases in value added by manufacture from 1904 to 1909 and three decreases from 1899 to 1904.

Persons engaged in manufacturing industries.—The following table shows, for 1909, the distribution of the number of persons engaged in manufactures, the average number of wage earners being distributed by sex and age. It should be borne in mind, however, that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

CLASS.	PERSONS ENGAGED IN MANUFACTURES.		
	Total.	Male.	Female.
All classes	213,426	186,360	27,076
Proprietors and officials.....	14,622	14,204	828
Proprietors and firm members.....	8,556	8,327	229
Salaries officers of corporations.....	2,351	2,209	52
Superintendents and managers.....	3,715	3,668	47
Clerks.....	16,221	12,055	3,266
Wage earners (average number).....	182,583	159,101	23,482
16 years of age and over.....	178,316	156,734	21,582
Under 16 years of age.....	4,267	2,367	1,900

The average number of persons engaged in manufactures during 1909 was 213,426, of whom 182,583 were wage earners. Of the remainder, 14,622 were proprietors and officials and 16,221 were clerks. Corresponding figures for individual industries will be found in Table II, page 28.

The following table shows for 1909 the percentage of proprietors and officials, clerks, and wage earners, respectively, among the total number of persons

employed in manufactures. It covers all industries combined and 32 important industries individually.

INDUSTRY.	PERSONS ENGAGED IN MANUFACTURES.			
	Total number.	Per cent of total.		
		Proprietors and officials.	Clerks.	Wage earners (average number).
All industries.....	213,426	6.9	7.6	85.5
Agricultural implements.....	4,095	3.6	30.3	66.0
Automobiles, including bodies and parts.....	4,647	2.7	4.8	92.5
Boots and shoes, including cut stock and findings.....	5,902	2.4	6.5	91.1
Bread and other bakery products.....	2,719	27.5	8.1	64.4
Brick and tile.....	1,219	13.9	1.8	84.2
Butter, cheese, and condensed milk.....	5,101	40.8	3.7	55.5
Canning and preserving.....	2,044	8.9	4.2	86.9
Carrriages and wagons and materials.....	4,044	10.4	4.6	85.0
Cars and general shop construction and repairs by steam-railroad companies.....	9,419	1.6	2.9	95.5
Clothing, men's, including shirts.....	4,841	3.4	8.8	87.8
Confectionery.....	2,292	3.5	17.8	78.7
Cooperage and wooden goods, not elsewhere specified.....	1,315	5.6	2.6	91.9
Copper, tin, and sheet-iron products.....	3,253	6.7	7.8	85.5
Electrical machinery, apparatus, and supplies.....	1,004	6.6	19.4	74.0
Flour-mill and gristmill products.....	1,931	25.1	13.6	61.3
Foundry and machine-shop products.....	28,075	4.2	9.5	80.3
Furniture and refrigerators.....	12,161	2.6	6.0	91.4
Gas, illuminating and heating.....	1,505	12.2	17.1	70.0
Gloves and mittens, leather.....	1,782	2.0	5.0	92.1
Hosiery and knit goods.....	4,050	2.7	5.4	91.0
Iron and steel, steel works and rolling mills.....	2,285	1.8	5.3	93.0
Leather goods.....	2,460	4.6	9.8	85.7
Leather, tanned, curried, and finished.....	7,977	1.3	4.1	94.6
Liquors, malt.....	4,076	6.4	10.3	83.3
Lumber and timber products.....	37,134	5.0	3.2	91.8
Marble and stone work.....	2,898	7.2	3.3	80.5
Paper and wood pulp.....	7,678	2.0	3.2	94.8
Printing and publishing.....	7,800	15.4	10.4	68.2
Slaughtering and meat packing.....	2,203	4.3	12.2	83.5
Stoves and furnaces, including gas and oil stoves.....	2,110	2.2	12.6	85.2
Tobacco manufactures.....	3,380	20.0	3.3	70.7
Woolen, worsted, and felt goods, and wool hats.....	1,178	5.0	5.3	88.8
All other industries.....	20,933	8.4	10.4	81.3

Of the total number of persons engaged in all manufacturing industries, 6.9 per cent were proprietors and officials, 7.6 per cent clerks, and 85.5 per cent wage earners. The highest percentage of proprietors and officials shown for any individual industry, 40.8, is for the establishments engaged in the manufacture of butter, cheese, and condensed milk. In this industry and also in the bakery, flour-mill and gristmill, and tobacco manufacturing industries, the majority of the establishments are small and the work is, to a large extent, done by the proprietors or their immediate representatives, so that the proportion of the persons engaged in these industries falling in the class of proprietors and officials is very much higher than for most other industries or for all industries combined.

On account of the large average number of wage earners in the steam-railroad repair shops, the steel works and rolling mills, the tanneries, the paper and pulp mills, and the establishments manufacturing stoves and furnaces, these industries show the smallest proportions of proprietors and officials.

The following table shows, for 1909, in percentages, for all industries combined the distribution of the average number of wage earners by age periods, and for those 16 years of age and over by sex, calculated in the manner described in the Introduction. It also

shows, for some of the important industries separately, a similar distribution of wage earners as reported for December 15, or the nearest representative day. As a means of judging the importance of the several industries the average number employed for the year is also given in each case.

INDUSTRY.	Average number. ¹	WAGE EARNERS.		
		Per cent of total.		
		16 years of age and over.		Under 16 years of age.
Male.	Female.			
All industries.....	182,583	85.8	11.8	2.3
Agricultural implements.....	2,704	95.0	1.6	1.5
Automobiles, including bodies and parts.....	4,208	99.1	0.3	0.6
Boots and shoes, including cut stock and findings.....	5,431	57.7	33.7	8.6
Bread and other bakery products.....	1,751	77.3	10.5	3.3
Brick and tile.....	1,027	97.8	0.1	2.1
Butter, cheese, and condensed milk.....	2,803	97.1	2.2	0.7
Canning and preserving.....	1,776	97.0	28.9	3.2
Carrriages and wagons and materials.....	3,437	98.5	0.9	0.7
Cars and general shop construction and repairs by steam-railroad companies.....	8,994	99.0	0.1	.....
Clothing, men's, including shirts.....	4,252	22.3	73.3	4.5
Confectionery.....	1,780	25.2	54.8	19.9
Cooperage and wooden goods, not elsewhere specified.....	1,208	98.3	0.8	0.9
Copper, tin, and sheet-iron products.....	2,780	81.8	17.2	1.0
Electrical machinery, apparatus, and supplies.....	1,400	93.5	5.8	0.6
Flour-mill and gristmill products.....	1,184	99.5	0.4	0.1
Foundry and machine-shop products.....	24,210	98.3	0.8	0.9
Furniture and refrigerators.....	11,118	92.9	3.4	3.7
Gas, illuminating and heating.....	1,003	99.2	0.8	.....
Gloves and mittens, leather.....	1,042	31.3	62.9	5.8
Hosiery and knit goods.....	4,282	17.7	71.7	10.6
Iron and steel, steel works and rolling mills.....	2,124	99.7	.....	0.3
Leather goods.....	2,090	71.7	23.6	4.7
Leather, tanned, curried, and finished.....	7,548	95.7	3.9	0.4
Liquors, malt.....	5,061	93.8	6.2	.....
Lumber and timber products.....	34,093	98.0	0.9	1.1
Marble and stone work.....	2,593	100.0	.....	(²)
Paper and wood pulp.....	7,407	87.2	12.6	0.2
Printing and publishing.....	5,360	68.8	25.7	5.5
Slaughtering and meat packing.....	1,800	93.2	5.1	1.6
Stoves and furnaces, including gas and oil stoves.....	1,803	96.9	.....	3.1
Tobacco manufactures.....	2,301	73.1	26.3	0.5
Woolen, worsted, and felt goods, and wool hats.....	1,046	40.5	53.5	5.9
All other industries.....	21,800	76.3	20.1	3.0

¹ For method of estimating the distribution, by sex and age periods, of the average number in all industries combined, see Introduction.
² Less than one-tenth of 1 per cent.

For all industries combined, 85.8 per cent of the average number of wage earners were males 16 years of age and over; 11.8 per cent females 16 years of age and over; and 2.3 per cent children under the age of 16. The proportions of women and of children were high in several important industries. In the manufacture of men's clothing, 73.3 per cent of the wage earners were women 16 years of age and over; in the confectionery industry, 54.8 per cent; in leather gloves and mittens, 62.9 per cent; in hosiery and knit goods, 71.7 per cent; and in the manufacture of woolen, worsted, and felt goods, and wool hats, 53.5 per cent. In the confectionery industry 19.9 per cent, and in the hosiery and knitting mills 10.6 per cent, of the wage earners were under 16 years of age.

In order to compare the distribution of persons engaged in manufactures in 1909 with that shown at the census of 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) The next table makes this comparison according to occupational status.

CLASS.	PERSONS ENGAGED IN MANUFACTURES.				
	1909		1904		Per cent of increase, 1904-1909.
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	213,426	100.0	173,572	100.0	23.0
Proprietors and firm members.....	3,556	4.0	7,901	4.6	7.5
Salaried employees.....	22,287	10.4	14,220	8.2	56.7
Wage earners (average number)....	182,583	85.5	151,391	87.2	20.6

Comparable figures are not obtainable for 1899. The table shows a greater percentage of increase in the number of salaried employees than in the other two classes.

The table in the next column shows the average number of wage earners, distributed according to age periods, and, in the case of those 16 years of age and over, according to sex, for 1909, 1904, and 1899. The averages for 1909 are estimated on the basis of the actual number reported for a single representative day. (See Introduction.)

This table indicates that, for all industries combined, there has been a decrease during the 10 years in the employment of children under 16 years of age, although from 1904 to 1909 the total number of children employed increased slightly. There has been no great change in the proportions of male and female wage earners 16 years of age and over. In 1909, males 16 years of age and over formed 85.8 per cent of all wage

earners, as compared with 85.4 per cent in 1904 and 86 per cent in 1899.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS.					
	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	182,583	100.0	151,391	100.0	137,525	100.0
16 years of age and over.....	178,316	97.7	147,244	97.3	131,972	96.0
Male.....	156,734	85.8	129,274	85.4	118,332	86.0
Female.....	21,582	11.8	17,970	11.9	13,640	9.9
Under 16 years of age.....	4,267	2.3	4,147	2.7	5,553	4.0

Wage earners employed by months.—The following table gives the number of wage earners employed on the 15th day of each month during the year 1909 for all industries combined, for the canning and preserving and the lumber and timber products industries, and for all other industries combined; it gives also the percentage which the number reported for each month is of the greatest number reported for any month. In Table II, page 28, are shown, for practically all of the important industries in the state, the largest number and the smallest number of wage earners reported for any month. The figures are for the 15th day, or the nearest representative day, of the month. The wage earners for the lumber industry are divided in the table in such a manner as to show separately the number engaged in the mills and in the logging operations.

MONTH.	WAGE EARNERS.											
	All industries.		Canning and preserving.		Lumber and timber products.						All other industries.	
	Number.	Per cent of maximum.	Number.	Per cent of maximum.	Total.		In mills.		In logging operations.		Number.	Per cent of maximum.
					Number.	Per cent of maximum.	Number.	Per cent of maximum.	Number.	Per cent of maximum.		
January.....	174,937	90.9	292	4.5	30,756	96.0	19,631	66.0	17,125	100.0	137,880	88.4
February.....	173,091	92.5	313	4.8	38,284	100.0	21,769	77.2	16,515	96.4	139,494	89.4
March.....	179,007	93.0	332	5.8	30,538	95.0	23,778	84.4	12,810	74.8	142,037	91.0
April.....	173,561	90.1	612	9.3	31,194	81.5	20,061	92.5	5,133	30.0	141,755	96.9
May.....	176,625	91.7	904	13.8	31,955	83.5	27,016	95.8	4,939	28.8	143,766	92.1
June.....	186,691	93.9	1,280	19.5	33,002	88.6	28,186	100.0	5,716	33.4	145,500	93.3
July.....	184,290	95.7	6,560	100.0	32,613	85.2	27,190	96.5	5,423	31.7	145,117	93.0
August.....	185,556	96.4	5,455	83.2	31,850	83.2	26,163	92.8	5,687	33.3	148,242	95.0
September.....	185,592	96.4	2,536	38.7	32,004	83.6	24,978	88.0	7,026	41.0	151,652	96.8
October.....	188,064	98.0	1,303	20.8	33,243	86.8	23,733	84.2	9,510	55.5	154,058	98.7
November.....	191,447	99.4	931	14.2	34,920	91.2	22,140	78.5	12,780	74.0	155,590	96.7
December.....	192,527	100.0	688	10.5	35,815	93.6	20,043	71.1	15,772	92.1	156,024	100.0

Canning and preserving and the lumber and timber industries are the only seasonal industries of importance in Wisconsin. Most of the activity in the canning and preserving industry occurs in July, August, and September, the season when the fruits and vegetables canned reach the proper stage of maturity. The greatest number of wage earners employed in this industry in any one month was 6,560 in July, while the least number, 292, representing but 4.5 per cent of the maximum, was reported for January. In the lumber industry as a whole the number employed in April, the month of least employment, was only 18.5 per cent less than that in February, the month of

greatest employment. The number employed in the logging operations alone varied much more than this, however, the number in May being only 28.8 per cent of the number in January. Employment in the mills was more steady, the number of wage earners in January, the month of least activity, being 69.6 per cent of the number in June, the month of greatest activity. The small variation in the industry as a whole, when compared with the variations in the two branches, is due to the fact that the period of least employment in one branch of the industry is the period of greatest employment in the other branch.

Prevailing hours of labor.—In the following table wage earners have been classified according to the hours of labor prevailing in the establishments in which they are employed. In making this classification the average number of wage earners employed

during the year is used and the number employed in each establishment is classified as a total according to the hours prevailing in that establishment, even though a few employees work a greater or less number of hours.

INDUSTRY.	AVERAGE NUMBER OF WAGE EARNERS IN ESTABLISHMENTS GROUPED ACCORDING TO PREVAILING HOURS OF WORK PER WEEK.								
	Total.	48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
All Industries.....	182,583	12,057	4,420	20,756	40,010	93,072	5,366	4,732	2,170
Agricultural implements.....	2,704				1,006	798			
Artificial stone.....	377	9	6	35	10	303			
Automobiles, including bodies and parts.....	4,298	4		273	2,121	985		915	
Boots and shoes, including cut stock and findings.....	6,431	3	28	430	1,458	3,512			
Boxes, cigar.....	180	94		22	43	27			
Boxes, fancy and paper.....	824		17	411	76	320			
Bread and other bakery products.....	1,751	60	180	136	27	1,081	108	44	10
Brick and tile.....	1,027		20	18	38	911	40		
Brooms.....	101	6	19	2	18	50			
Brushes.....	142	2		83	45	12			
Butter, cheese, and condensed milk.....	2,803	251	22	68	192	760	1,103	94	307
Buttons.....	188	6		2		180			
Canning and preserving.....	1,776		47	13	125	1,051	217	251	72
Carriages and wagons and materials.....	3,437	8		119	1,241	2,000			
Cars and general shop construction and repairs by steam-railroad companies.....	8,094	124	977	7,120		208	400		96
Chemicals.....	76					76			
Clothing, men's, including shirts.....	4,252	884	89	1,700	1,251	322			
Clothing, women's.....	565	14	44	443		64			
Coffins, burial cases, and undertakers' goods.....	349			6		332	11		
Confectionery.....	1,780	5		350	409	1,016			
Cooperage and wooden goods, not elsewhere specified.....	1,208	219	6	75	137	771			
Copper, tin, and sheet-iron products.....	2,780	318		68	1,054	1,340			
Cutlery and tools, not elsewhere specified.....	118			8	58	52			
Dairymen's, poultryers' and apiarists' supplies.....	526		7	3	28	488			
Electrical machinery, apparatus, and supplies.....	1,409	7	41	351	630	71			
Fancy articles, not elsewhere specified.....	343	4		3	143	193			
Flour-mill and gristmill products.....	1,184	248	5	4	2	837	70	10	2
Food preparations.....	520	1	263	8	60	162	1	41	
Foundry and machine-shop products.....	24,219	44	205	511	14,549	8,816	4		
Fur goods.....	413	56	40	124	32	101			
Furniture and refrigerators.....	11,118	40	20	151	1,121	9,780			
Gas and electric fixtures and lamps and reflectors.....	552	5		171	8	368			
Gas, illuminating and heating.....	1,093	9		14	49	703	35		253
Gloves and mittens, leather.....	1,042	53	64	188	875	462			
Hosiery and knit goods.....	4,282	24	96	920	2,870	360			
Iron and steel, blast furnaces.....	758								758
Iron and steel, steel works and rolling mills.....	2,124	10		10	102	977		1,025	
Jewelry.....	78	3	14	57		4			
Leather goods.....	2,090	25	73	321	1,082	594	4		
Leather, tanned, curried, and finished.....	7,548			13	717	6,818			
Lime.....	770	1		0	15	620	120	1	4
Liquors, malt.....	5,061	3,423	2	614	36	913	64	4	5
Lumber and timber products.....	34,993	230	74	808	1,202	31,217	547	9	6
Malt.....	450			50	25	168	186	7	20
Marble and stone work.....	2,593	468	400	903	40	978			
Mattresses and spring beds.....	504	61			127	310			
Millinery and lace goods.....	307		41	21		245			
Mirrors.....	87			10	30	47			
Musical instruments, pianos and organs and materials.....	369	2	5		1	361			
Paint and varnish.....	194			33	161	10			
Paper and wood pulp.....	7,467	601				3,195	1,442	2,043	120
Paper goods, not elsewhere specified.....	329			25	120	179	11		
Patent medicines and compounds and druggists' preparations.....	269	106	64	50	3	40			
Photo-engraving.....	171	138	32			1			
Printing and publishing.....	5,360	2,219	744	1,013	333	415	22		14
Slaughtering and meat packing.....	1,800	135		734		1,021			
Stoves and furnaces, including gas and oil stoves.....	1,803		74		941	788			
Tobacco manufactures.....	2,391	1,803	21	173	31	288	15		
Woolen, worsted, and felt goods, and wool hats.....	1,046	2		3	376	665			
All other industries.....	12,300	206	488	1,407	3,778	4,798	853	288	428

More than five-sixths (84.3 per cent) of the wage earners employed in the manufacturing industries of Wisconsin work in establishments where the prevailing hours of labor range from 54 to 60 a week, inclusive, only 9 per cent of the total being employed in establishments where the prevailing hours are less than 54 a week, and only 6.7 per cent in establishments where they are more than 60 a week.

While in many of the larger industries employment is mainly confined to a week of between 54 and 60 hours, the 60-hour week so predominates in a number of the more important industries, including the lumber and timber products, that these are the prevailing hours for more than one-half of the total number of wage earners in all manufacturing industries of the state. For the large majority of the wage earners in

the breweries and the tobacco factories a week of 48 hours or less prevails, while the majority of those in printing and publishing establishments work less than 54 hours a week. For most of those employed in the butter, cheese, and condensed-milk factories and in the blast furnaces, on the other hand, the hours of labor are over 60 a week. The week of over 60 hours is also common in the steel works and rolling mills and in the paper and pulp mills.

Location of establishments.—The next table shows the extent to which the manufactures of Wisconsin are centralized in cities of 10,000 population or over and also the proportions in districts outside of these cities. (See Introduction.)

The population in 1900 was used as a basis in making a classification for 1904 as well as for 1899, but the classification for 1909 was made on the basis of the population in 1910.

ITEM.	Year.	Aggregate.	CITIES HAVING A POPULATION OF 10,000 AND OVER.								DISTRICTS OUTSIDE OF CITIES HAVING A POPULATION OF 10,000 AND OVER.	
			Total.		10,000 to 25,000.		25,000 to 100,000.		100,000 and over.		Number or amount.	Per cent of total.
			Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.	Number or amount.	Per cent of total.		
Population.....	1910 1900	2,333,860 2,009,042	752,948 599,845	32.3 29.0	160,061 107,158	6.9 9.5	219,030 117,372	9.4 5.7	373,857 285,315	16.0 13.8	1,580,912 1,469,197	67.7 71.0
Number of establishments.....	1909 1904 1899	9,721 8,558 7,841	3,830 2,950 2,700	34.3 34.5 34.4	688 919 811	7.1 10.7 10.3	878 504 470	9.0 5.9 6.0	1,764 1,527 1,419	18.1 17.8 18.1	6,301 5,608 5,141	65.7 65.5 65.6
Average number of wage earners.	1909 1904 1899	182,583 151,391 137,525	113,662 89,699 82,050	62.3 59.2 59.7	24,466 30,972 25,944	13.4 20.5 18.9	29,694 15,331 14,892	16.3 10.1 10.8	59,502 43,366 41,220	32.6 28.6 30.0	68,921 61,722 55,469	37.7 40.8 40.3
Value of products.....	1909 1904 1899	\$590,305,538 411,139,681 326,752,378	\$304,736,784 240,001,611 194,071,599	61.8 60.6 59.6	\$73,322,285 71,368,506 49,548,271	12.4 17.4 16.2	\$83,090,869 30,607,840 34,269,220	14.1 6.6 10.5	\$208,323,630 137,094,965 110,854,102	35.3 33.9 33.9	\$225,568,754 162,138,670 132,081,279	38.2 39.4 40.4
Value added by manufacture....	1909 1904 1899	243,948,955 183,884,589 141,057,485	150,063,857 117,727,841 88,077,429	65.2 64.0 62.9	30,451,355 32,170,680 23,127,403	12.5 17.5 16.4	40,110,205 18,650,629 14,380,564	16.4 10.1 10.2	88,502,207 66,891,532 51,100,402	36.3 36.4 36.3	84,885,098 66,150,748 52,380,650	34.8 36.0 37.1

In 1909, 61.8 per cent of the total value of manufactured products for the state was reported from cities having over 10,000 inhabitants, and 62.3 per cent of the average number of wage earners in manufacturing industries were employed in such cities. The figures indicate that, while very little relative change took place during the 10 years, the manufacturing industries of the cities in question grew somewhat more rapidly than those of the districts outside, although the percentage of manufacturing establishments located outside of such cities was slightly larger in 1909 than in 1899.

Although all of the cities having between 10,000 and 25,000 inhabitants in 1910, except Ashland and Marinette, show decided increases in value of products during the decade, the fact that the population of Green Bay, Madison, and Sheboygan, which were included in this group for 1899, increased to such an extent that for 1909 they fall in the group comprising the cities having between 25,000 and 100,000 inhabitants, has caused a decrease in the relative industrial importance of the former group, and an increase in that of the latter. The percentages of the average number of wage earners and value of products for the state reported from Milwaukee were somewhat larger in 1909 than in 1899, while the percentage of the value added by manufacture was slightly smaller.

Of the total value of products reported for the state in 1909, 12.4 per cent was reported from the 10 cities having between 10,000 and 25,000 inhabitants, 14.1 per cent from the 7 cities having between 25,000 and 100,000 inhabitants, and 35.3 per cent from Milwaukee.

The population in 1910 and 1900 of the 18 cities which had 10,000 inhabitants or over in 1910 is given in the following tabular statement:

CITY.	1910	1900	CITY.	1910	1900
Milwaukee.....	373,857	285,315	Fond du Lac....	18,797	15,110
Superior.....	40,384	31,091	Eau Claire.....	18,310	17,517
Racine.....	38,002	29,102	Appleton.....	16,773	15,085
Oshkosh.....	33,062	28,284	Wausau.....	16,560	12,354
La Crosse.....	30,417	28,895	Beloit.....	15,125	10,436
Sheboygan.....	26,398	22,962	Marinette.....	14,610	16,195
Madison.....	25,531	19,164	Janesville.....	13,804	13,185
Green Bay.....	25,230	18,684	Manitowoc.....	13,027	11,780
Kenosha.....	21,371	11,000	Ashland.....	11,594	13,074

The relative importance in manufactures of each of these 18 cities is shown in the following table, in which the value of products and average number of wage earners are shown separately for 1909, 1904, and 1899:

CITY.	AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.		
	1909	1904	1899	1909	1904	1899
Milwaukee ¹	59,502	43,366	41,220	\$208,323,630	\$137,094,965	\$110,854,102
Racine.....	8,381	6,504	6,138	24,672,609	16,458,065	11,076,160
Kenosha.....	6,449	4,354	3,090	23,181,672	12,362,600	7,333,653
Oshkosh.....	5,778	4,840	4,226	14,730,252	8,652,462	8,080,909
La Crosse.....	3,329	2,644	2,763	14,103,148	8,139,432	7,076,581
Sheboygan ¹	5,988	5,903	4,992	11,299,029	9,751,116	6,006,757
Fond du Lac.....	2,707	2,566	1,520	8,226,908	5,599,006	2,806,742
Appleton.....	2,125	2,480	1,661	6,734,405	6,672,457	3,861,284
Superior.....	1,847	1,343	1,765	6,574,457	6,351,981	6,835,496
Wausau.....	2,092	1,945	1,710	6,286,532	4,644,457	3,386,557
Green Bay.....	2,570	2,111	1,427	6,235,209	4,873,027	2,709,251
Manitowoc.....	1,525	1,321	975	5,038,887	4,427,816	1,935,442
Beloit.....	2,086	2,471	1,845	5,885,601	4,485,224	2,799,637
Eau Claire.....	2,524	1,985	1,758	5,854,733	3,601,558	3,876,386
Madison.....	1,792	1,470	1,365	5,467,105	3,201,143	2,689,019
Janesville.....	1,451	1,348	1,398	5,155,731	3,846,038	3,184,426
Marinette.....	1,491	1,645	2,485	3,300,378	3,033,390	4,411,250
Ashland.....	1,116	1,361	1,812	2,748,438	4,210,365	3,599,861

¹ Figures do not agree with those published in 1904, because it was necessary to revise the total in order to include data only for those establishments located within the corporate limits of the city.

Every city except Marinette and Ashland shows an increase in the value of products from 1904 to 1909, and all but Superior, Eau Claire, and Marinette an increase from 1899 to 1904. The greatest percentage of gain from 1904 to 1909, 87.5, was in Kenosha and the greatest from 1899 to 1904, 128.8, in Manitowoc.

Milwaukee, the largest and most important city in the state, shows an increase of 51 per cent in value of manufactured products and of 37.2 per cent in the average number of wage earners employed in manufacturing industries from 1904 to 1909. The city ranked eleventh among the cities of the United States in value of manufactured products in 1899, twelfth in 1904, and tenth in 1909. It reported 35.3 per cent of the total value of products of the state in 1909 and employed 32.6 per cent of the total number of wage earners. More than one-third of the total value of the foundry and machine-shop products of the state; about three-fifths of the value of products for the leather, brewery, and printing and publishing industries; nine-tenths of that for the fur-goods and the paint and varnish industries; and the entire output of the millinery and lace-goods industry were reported from Milwaukee. The value of the products for the steel works and rolling mills in the state was mostly reported from Milwaukee, but the statistics for the industry for the city can not be shown without disclosing individual operations. In 1909 Milwaukee held first place among the cities of the United States in the value of leather (tanned, curried, and finished), and third place in that of malt liquors brewed.

The paper and pulp mills were by far the most important manufacturing industry of Appleton, contributing 58.7 per cent of the value of all manufactured products of the city. Of the total value of manufactured products for Beloit, the foundries and machine shops contributed 80.4 per cent. The blast furnaces constituted the most important industry of Ashland, while in Eau Claire the lumber and timber products and the paper and wood-pulp industries predominated. The chief industry of Fond du Lac was the tanning, currying, and finishing of leather; in Green Bay the flour mills and gristmills and the paper and pulp mills are most important; and in Janesville the manufacture of agricultural implements is the leading industry. The principal industries in Kenosha were the tanning, currying, and finishing of leather and the manufacture of furniture and refrigerators and of automobiles, including bodies and parts; in La Crosse, flour mills and gristmills and breweries; in Madison, the foundry and machine-shop and the printing and publishing

industries and the manufacture of agricultural implements and of electrical machinery, apparatus, and supplies; in Manitowoc, the malt industry; in Marinette, the lumber and timber products industry; in Oshkosh, the lumber and timber products and the match industries; in Racine, the manufacture of agricultural implements, automobiles, including bodies and parts, and carriages and wagons and materials; in Sheboygan, the manufacture of furniture and refrigerators and the tanning, currying, and finishing of leather; in Superior, flour mills and gristmills; and in Wausau, the lumber and timber products and flour-mill and gristmill industries.

Character of ownership.—The table on the following page has for its purpose the presentation of conditions in respect to the character of ownership or legal organization of manufacturing enterprises. For all industries combined, comparative figures are given covering the censuses of 1909 and 1904. Comparative data for 1899 are not available. Figures for 1909 only are presented for several important industries individually. In order to avoid disclosing the operations of individual concerns it is necessary to omit several important industries from this table and the one following.

The most important distinction shown is that between corporate and all other forms of ownership. The establishments operated by corporations, though constituting only 24.9 per cent of the total number of establishments in 1909, reported 79.8 per cent of the total value of products. In 1904 such establishments constituted 23.1 per cent of the total number and reported 75.6 per cent of the total value of products. The establishments operated by individuals and firms show decreases in their proportions of the total for every item covered by the table, while those under "Other" forms of ownership, which are principally those operated by cooperative associations, have grown in relative importance. In both years, corporations controlled about four-fifths of the manufacturing activities of the state, as measured either by average number of wage earners, value of products, or value added by manufacture. Although in only 7 out of the 15 industries shown separately in this table were a majority of the establishments under corporate ownership, the butter, cheese, and condensed milk industry was the only one in which such establishments did not do the greater part of the business. This latter industry is peculiar in its organization, most of the establishments being operated by individuals or by cooperative associations.

MANUFACTURES—WISCONSIN.

INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.	INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
ALL INDUSTRIES:					Flour-mill and gristmill products, 1909.....	322	1,184	\$31,667,434	\$4,629,206
1909.....	9,721	182,583	\$590,305,538	\$243,948,956	Individual.....	143	180	4,004,813	570,230
1904.....	8,558	151,391	411,139,661	183,884,589	Firm.....	104	341	7,907,070	1,108,328
Individual:					Corporation.....	75	663	19,574,051	2,950,648
1909.....	4,074	14,256	53,714,983	18,126,304	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	4,418	15,224	43,600,849	17,362,072	Individual.....	44.4	15.2	12.9	12.3
Firm.....	1,424	11,264	45,998,129	16,141,068	Firm.....	32.3	28.8	25.3	23.9
1904.....	1,557	15,391	48,031,872	17,020,404	Corporation.....	23.3	56.0	61.8	63.7
Corporation:					Foundry and machine-shop products, 1909.....	444	24,219	\$54,124,000	\$31,590,204
1909.....	2,422	156,027	471,360,437	207,588,444	Individual.....	120	523	1,085,554	643,515
1904.....	1,981	119,697	310,912,592	148,200,671	Firm.....	76	845	1,794,170	1,200,000
Other:					Corporation.....	248	22,851	51,244,270	20,737,669
1909.....	901	1,036	19,231,989	2,692,149	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	602	1,079	8,585,368	1,201,842	Individual.....	27.0	2.2	2.0	2.0
Per cent of total:					Firm.....	17.1	3.5	3.3	3.8
1909.....	100.0	100.0	100.0	100.0	Corporation.....	55.9	94.4	94.7	94.1
1904.....	100.0	100.0	100.0	100.0	Furniture and refrigerators, 1909.....	114	11,118	\$18,655,535	\$9,860,222
Individual:					Individual.....	24	342	465,550	264,267
1909.....	51.2	7.8	9.1	7.4	Firm.....	9	196	381,632	208,800
1904.....	51.6	10.1	10.6	9.4	Corporation.....	81	10,580	17,808,053	9,387,005
Firm.....	14.6	6.2	7.8	6.6	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	18.2	10.2	11.7	9.3	Individual.....	21.1	3.1	2.5	2.7
Corporation:					Firm.....	7.9	1.8	2.0	2.1
1909.....	24.9	85.5	79.8	85.1	Corporation.....	71.1	95.2	95.5	95.2
1904.....	23.1	79.1	75.6	80.0	Hosiery and knit goods, 1909.....	61	4,282	\$7,843,389	\$3,956,193
Other:					Individual.....	22	97	119,081	50,949
1909.....	9.3	0.6	3.3	0.9	Firm.....	3	19	61,709	26,684
1904.....	7.0	0.7	2.1	0.7	Corporation.....	36	4,166	7,662,599	3,872,560
Agricultural implements, 1909.....	45	2,704	\$11,411,303	\$7,473,967	Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	13	41	124,187	68,772	Individual.....	30.1	2.3	1.5	1.4
Firm.....	5	35	78,916	37,558	Firm.....	4.9	0.4	0.8	0.7
Corporation.....	27	2,628	11,208,200	7,367,637	Corporation.....	65.0	97.3	97.7	97.9
Per cent of total.....	100.0	100.0	100.0	100.0	Leather, tanned, curried, and finished, 1909.....	32	7,548	\$44,667,076	\$9,339,091
Individual:					Individual.....	3	10	17,560	11,728
1909.....	28.9	1.5	1.1	0.9	Firm.....	8	1,423	8,805,151	1,706,347
1904.....	11.1	1.3	0.7	0.5	Corporation.....	21	6,115	35,754,065	8,121,016
Firm.....	11.1	1.3	0.7	0.5	Per cent of total.....	100.0	100.0	100.0	100.0
Corporation.....	60.0	97.2	98.2	98.0	Individual.....	9.4	0.1	(¹)	0.1
Boots and shoes, including out stock and findings, 1909.....	68	5,431	\$13,602,234	\$4,849,398	Firm.....	25.0	18.9	19.9	17.3
Individual.....	16	191	365,121	139,964	Corporation.....	65.6	81.0	80.0	82.5
Firm.....	4	117	264,201	109,846	Liquors, malt, 1909.....	136	5,061	\$32,125,919	\$24,228,235
Corporation.....	48	5,123	12,972,822	4,600,488	Individual.....	38	224	1,013,956	700,969
Per cent of total.....	100.0	100.0	100.0	100.0	Firm.....	24	124	546,928	367,845
Individual:					Corporation.....	74	4,713	30,565,935	23,159,430
1909.....	23.5	3.5	2.7	2.9	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	5.9	2.2	1.9	2.3	Individual.....	27.0	4.4	3.2	2.9
Firm.....	5.9	2.2	1.9	2.3	Firm.....	17.6	2.4	1.7	1.5
Corporation.....	70.6	94.3	95.4	94.9	Corporation.....	54.4	93.1	95.1	95.6
Butter, cheese, and condensed milk, 1909.....	2,630	2,863	\$53,843,249	\$5,837,619	Lumber and timber products, 1909.....	1,020	34,093	\$57,909,170	\$32,381,700
Individual.....	1,242	709	19,332,700	1,737,532	Individual.....	471	2,988	4,699,295	2,789,288
Firm.....	236	293	5,056,410	568,060	Firm.....	239	2,412	3,904,610	2,267,332
Corporation.....	283	808	10,438,592	1,850,258	Corporation.....	310	28,693	49,305,265	27,325,080
Other.....	869	993	19,015,547	1,684,779	Per cent of total.....	100.0	100.0	100.0	100.0
Per cent of total.....	100.0	100.0	100.0	100.0	Individual.....	46.2	8.8	8.1	8.6
Individual:					Firm.....	23.4	7.1	6.7	7.0
1909.....	47.2	26.9	35.0	29.8	Corporation.....	30.4	84.2	85.2	84.4
1904.....	9.0	10.2	9.4	6.7	Printing and publishing, 1909.....	833	5,360	\$11,860,044	\$8,474,588
Firm.....	10.8	28.2	19.4	26.6	Individual.....	501	1,301	2,189,286	1,051,255
Other.....	33.0	34.7	35.3	34.0	Firm.....	125	486	814,780	502,961
Carriages and wagons and materials, 1909.....	286	3,437	\$8,899,171	\$3,736,572	Corporation.....	191	3,567	8,778,576	6,172,877
Individual.....	184	457	987,057	537,027	Other.....	16	0	78,002	57,495
Firm.....	70	249	820,030	315,095	Per cent of total.....	100.0	100.0	100.0	100.0
Corporation.....	32	2,731	7,090,675	2,883,850	Individual.....	60.1	24.3	18.5	19.5
Per cent of total.....	100.0	100.0	100.0	100.0	Firm.....	15.0	0.1	0.9	7.0
Individual:					Corporation.....	22.9	66.6	74.0	72.8
1909.....	64.3	13.3	11.1	14.4	Other.....	1.9	0.1	0.7	0.7
1904.....	24.5	7.2	6.2	8.4	Slaughtering and meat packing, 1909.....	48	1,890	\$27,216,864	\$3,813,429
Firm.....	11.2	79.5	79.7	77.2	Individual.....	24	122	1,200,368	254,723
Clothing, men's, including shirts, 1909.....	94	4,252	\$9,405,184	\$3,956,977	Firm.....	14	82	897,687	185,202
Individual.....	53	739	443,847	335,842	Corporation.....	10	1,670	25,058,909	3,373,504
Firm.....	10	474	1,080,409	462,752	Per cent of total.....	100.0	100.0	100.0	100.0
Corporation.....	31	3,039	7,874,938	3,158,383	Individual.....	50.0	6.5	4.6	6.7
Per cent of total.....	100.0	100.0	100.0	100.0	Firm.....	29.2	4.9	3.3	4.9
Individual:					Corporation.....	20.8	88.7	92.1	88.5
1909.....	56.4	17.4	4.7	8.5	Copper, tin, and sheet-iron products, 1909.....	105	2,780	\$7,136,453	\$2,480,265
1904.....	10.6	11.1	11.6	11.7	Individual.....	49	170	434,887	201,656
Firm.....	10.6	11.1	11.6	11.7	Firm.....	30	230	583,781	300,051
Corporation.....	33.0	71.5	83.7	79.8	Corporation.....	26	2,380	6,117,785	1,969,558
Copper, tin, and sheet-iron products, 1909.....	105	2,780	\$7,136,453	\$2,480,265	Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	49	170	434,887	201,656	Individual.....	46.7	6.1	6.1	8.1
Firm.....	30	230	583,781	300,051	Firm.....	28.0	8.3	8.2	12.5
Corporation.....	26	2,380	6,117,785	1,969,558	Corporation.....	24.8	85.6	85.7	70.4

¹Less than one-tenth of 1 per cent.

Size of establishment.—The tendency for manufacturing to become concentrated in large establishments, or the reverse, is a matter of interest from the standpoint of industrial organization. In order to throw some light upon it, the following table groups the establishments according to the value of their products. The table also shows the average size of es-

tablishments for all industries combined and for certain important industries separately, as measured by number of wage earners, value of products, and value added by manufacture. The totals for all industries are shown for the last two censuses, while for the individual industries figures are given for 1909 only.

Table with columns: INDUSTRY AND VALUE OF PRODUCTS, Number of establishments, Average number of wage earners, Value of products, Value added by manufacture. Rows include ALL INDUSTRIES, Carriages and wagons and materials, Clothing, mens', including shirts, Copper, tin, and sheet-iron products, Flour-mill and gristmill products, Foundry and machine-shop products, Furniture and refrigerators, Hosiery and knit goods, Agricultural implements, Boots and shoes, Butter, cheese, and condensed milk.

1 Includes the group "\$1,000,000 and over."

MANUFACTURES—WISCONSIN.

INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.	INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
Hosiery and knit goods, 1909—Continued.					Lumber and timber products—Continued.				
Per cent of total.....	100.0	100.0	\$100.0	\$100.0	Per cent of total.....	100.0	100.0	\$100.0	\$100.0
Less than \$5,000.....	29.5	0.7	0.5	0.5	Less than \$5,000.....	40.1	2.1	1.6	2.0
\$5,000 and less than \$20,000.....	16.4	2.0	1.4	1.3	\$5,000 and less than \$20,000.....	28.5	5.8	5.1	5.6
\$20,000 and less than \$100,000.....	21.3	10.9	8.0	8.2	\$20,000 and less than \$100,000.....	18.6	17.5	14.8	15.1
\$100,000 and less than \$1,000,000.....	32.8	86.4	90.2	90.0	\$100,000 and less than \$1,000,000.....	12.0	60.5	59.8	59.7
Average per establishment.....		70	\$128,550	\$64,856	\$1,000,000 and over.....	0.8	14.1	18.8	17.7
					Average per establishment.....		33	\$50,833	\$31,747
Leather, tanned, curried, and finished, 1909.					Printing and publishing, 1909.				
\$5,000 and less than \$20,000.....	3	7,548	\$4,667,676	\$9,839,091	Less than \$5,000.....	833	5,360	\$11,860,644	\$8,474,588
\$100,000 and less than \$1,000,000.....	8	60	171,551	49,192	\$5,000 and less than \$20,000.....	493	705	1,212,110	934,731
\$1,000,000 and over.....	13	824	5,577,500	1,128,010	\$20,000 and less than \$100,000.....	233	1,231	2,116,030	1,584,241
Per cent of total.....	100.0	100.0	100.0	100.0	\$100,000 and less than \$1,000,000.....	82	1,614	3,553,981	2,563,239
Less than \$5,000.....	25.0	0.8	0.4	0.5	Average per establishment.....	25	1,810	4,978,523	3,362,377
\$5,000 and less than \$20,000.....	10.0	10.0	11.6	11.6	Per cent of total.....	100.0	100.0	100.0	100.0
\$20,000 and less than \$100,000.....	40.6	88.3	87.1	88.1	Less than \$5,000.....	50.2	13.2	10.2	11.0
\$100,000 and over.....	34.4	230	\$1,305,805	\$307,472	\$5,000 and less than \$20,000.....	28.0	23.0	17.8	18.7
Average per establishment.....					\$20,000 and less than \$100,000.....	9.8	30.1	30.0	30.2
					\$100,000 and less than \$1,000,000.....	3.0	33.8	42.0	40.0
					Average per establishment.....		6	\$14,238	\$10,174
Liquors, malt, 1909.					Slaughtering and meat packing, 1909.				
Less than \$5,000.....	136	5,061	\$32,125,910	\$24,228,235	Less than \$5,000.....	48	1,890	\$27,216,864	\$3,813,429
\$5,000 and less than \$20,000.....	5	4	10,273	10,338	\$5,000 and less than \$20,000.....	11	11	32,508	9,366
\$20,000 and less than \$100,000.....	37	110	430,460	290,072	\$20,000 and less than \$100,000.....	10	22	131,086	32,378
\$100,000 and less than \$1,000,000.....	68	525	2,547,394	1,824,832	\$100,000 and less than \$1,000,000.....	11	43	597,963	115,264
\$1,000,000 and over.....	31	1,167	7,928,183	5,812,795	\$1,000,000 and over.....	12	336	3,204,495	653,015
Per cent of total.....	100.0	100.0	100.0	100.0	Average per establishment.....	4	1,478	23,250,812	3,093,406
Less than \$5,000.....	3.7	0.1	(*)	(*)	Per cent of total.....	100.0	100.0	100.0	100.0
\$5,000 and less than \$20,000.....	27.2	2.4	1.3	1.2	Less than \$5,000.....	22.0	0.6	0.1	0.2
\$20,000 and less than \$100,000.....	42.6	10.4	7.0	7.5	\$5,000 and less than \$20,000.....	20.8	1.2	0.5	0.8
\$100,000 and less than \$1,000,000.....	22.8	28.1	24.7	24.0	\$20,000 and less than \$100,000.....	22.9	2.3	2.2	3.0
\$1,000,000 and over.....	3.7	64.1	68.0	67.2	\$100,000 and less than \$1,000,000.....	25.0	17.8	11.8	17.1
Average per establishment.....		37	\$236,220	\$178,140	\$1,000,000 and over.....	8.3	78.2	85.4	78.8
					Average per establishment.....		30	\$567,018	\$79,446
Lumber and timber products, 1909.					Lumber and timber products—Continued.				
Less than \$5,000.....	1,020	34,093	\$57,969,170	\$32,381,700	Less than \$5,000.....	409	718	801,949	630,325
\$5,000 and less than \$20,000.....	201	1,970	2,972,757	1,807,104	\$5,000 and less than \$20,000.....	190	5,971	8,502,021	4,851,382
\$20,000 and less than \$100,000.....	100	5,971	8,502,021	4,851,382	\$100,000 and less than \$1,000,000.....	122	20,032	34,655,747	19,540,702
\$100,000 and less than \$1,000,000.....	122	4,793	10,376,796	5,716,097	\$1,000,000 and over.....	8	4,793	10,376,796	5,716,097

* Includes the group "\$1,000,000 and over."

* Includes the group "\$20,000 and less than \$100,000."

* Less than one-tenth of 1 per cent.

This table shows that of the 9,721 establishments in 1909 only 86, or nine-tenths of 1 per cent, had a value of products exceeding \$1,000,000. These establishments, however, employed an average of 52,740 wage earners, or 28.9 per cent of the total number in all establishments, and reported 38.6 per cent of the total value of products and 37.2 per cent of the total value added by manufacture.

On the other hand, the very small establishments—that is, those having a value of products of less than \$5,000—while constituting 31.6 per cent of the total number of establishments, reported only 1.3 per cent of the total value of products. Nearly four-fifths of the manufacturing of the state, measured by value of products, was reported by establishments having a product valued at not less than \$100,000.

It will be seen from the above table that during the five years from 1904 to 1909 there was a considerable increase in the relative importance, as measured by value of products, of the largest establishments—those reporting products of not less than \$1,000,000 in value—and a decrease in that of the remaining classes.

The fact that between 1904 and 1909 the average value of products per establishment increased from \$48,042 to \$60,725, and the average value added by manufacture from \$21,487 to \$25,095, can not be

taken as in itself indicating a tendency toward concentration. The increased values shown may be, and probably are, due in part to the increase that has taken place in the prices of commodities. The average number of wage earners per establishment increased from 18 to 19.

In some respects, and especially from the standpoint of conditions under which persons engaged in manufactures work, the best classification of establishments to bring out the feature of size is a classification according to the number of wage earners employed. The next table shows for 1909 such a classification for all industries combined and for 32 important industries individually, and gives not only the number of establishments falling into each group, but also the average number of wage earners employed.

Of the 9,721 establishments reported for all industries, 13.8 per cent employed no wage earners; 59.8 per cent employed from 1 to 5; 13.7 per cent from 6 to 20; and 5.5 per cent from 21 to 50. The most numerous single group consists of the 5,818 establishments employing from 1 to 5 wage earners each, and the next of the 1,343 establishments employing no wage earners. There were 149 establishments that employed over 250 wage earners; of these, 49 employed over 500 each and 12 over 1,000 each.

Of the total number of wage earners, 64.5 per cent were in establishments employing over 100 wage earners. The single group having the largest number of wage earners was that comprising the establish-

ments employing from 101 to 250 wage earners. These establishments reported the employment of 36,767 wage earners, or 20.1 per cent of the total number.

INDUSTRY.	Total.	ESTABLISHMENTS EMPLOYING—								
		No wage earners.	1 to 5 wage earners.	6 to 20 wage earners.	21 to 50 wage earners.	51 to 100 wage earners.	101 to 250 wage earners.	251 to 500 wage earners.	501 to 1,000 wage earners.	Over 1,000 wage earners.
NUMBER OF ESTABLISHMENTS.										
All industries.....	9,721	1,343	5,818	1,327	538	314	232	100	37	12
Agricultural implements.....	45	5	17	10	4	2	4	2	1	1
Automobiles, including bodies and parts.....	30	.....	12	9	2	1	2	.....	3	1
Boots and shoes, including cut stock and findings.....	68	.....	13	11	14	13	13	3	1	.....
Bread and other bakery products.....	667	139	480	41	3	2	2	.....	.....	.....
Brick and tile.....	108	1	59	30	6	2	1	.....	.....	.....
Butter, cheese, and condensed milk.....	2,030	447	2,144	34	3	2	.....	.....	.....	.....
Canning and preserving.....	83	4	10	30	18	7	2	.....	.....	.....
Carriages and wagons and materials.....	286	65	163	38	11	1	5	2	1	.....
Cars and general shop construction and repairs by steam-railroad companies.....	22	.....	3	1	1	5	6	3	2	1
Clothing, men's, including shirts.....	94	2	15	43	15	11	4	3	1	.....
Confectionery.....	38	4	11	5	10	4	1	3	.....	.....
Cooperage and wooden goods, not elsewhere specified.....	48	6	19	11	8	1	2	1	.....	.....
Copper, tin, and sheet-iron products.....	105	2	60	26	4	2	3	.....	2	.....
Electrical machinery, apparatus, and supplies.....	30	.....	13	7	5	2	1	2	.....	.....
Flour-mill and gristmill products.....	322	54	237	23	3	5	.....	.....	.....	.....
Foundry and machine-shop products.....	444	30	165	112	57	41	18	12	6	3
Furniture and refrigerators.....	114	2	16	22	28	20	16	8	2	1
Gas, illuminating and heating.....	49	.....	27	13	5	3	.....	.....	1	.....
Gloves and mittens, leather.....	23	.....	5	5	3	4	4	2	.....	.....
Hosiery and knit goods.....	61	5	15	13	8	7	9	3	1	.....
Iron and steel, steel works and rolling mills.....	14	.....	1	3	4	3	1	1	1	1
Leather goods.....	48	3	16	13	4	3	7	2	.....	.....
Leather, tanned, curried, and finished.....	32	.....	5	4	5	5	4	4	3	2
Liquors, malt.....	136	2	56	53	14	4	3	1	2	1
Lumber and timber products.....	1,020	20	537	210	104	59	57	27	4	2
Marble and stone work.....	136	10	76	29	10	2	8	.....	.....	.....
Paper and wood pulp.....	57	.....	3	3	9	18	20	7	.....	.....
Printing and publishing.....	833	144	500	136	33	14	6	.....	.....	.....
Slaughtering and meat packing.....	48	2	30	4	6	3	1	.....	2	.....
Stoves and furnaces, including gas and oil stoves.....	12	.....	1	.....	2	5	2	1	1	.....
Tobacco manufactures.....	775	248	415	99	11	.....	2	.....	.....	.....
Woolen, worsted, and felt goods, and wool hats.....	33	2	13	4	3	10	1	.....	.....	.....
All other industries.....	1,310	146	673	270	125	63	27	13	3	.....
AVERAGE NUMBER OF WAGE EARNERS.										
All industries.....	182,583	10,201	14,866	17,422	22,337	36,767	33,765	24,553	23,732	.....
Agricultural implements.....	2,704	.....	42	135	127	179	684	507	940	.....
Automobiles, including bodies and parts.....	4,298	.....	30	114	92	84	400	2,549	1,029	.....
Boots and shoes, including cut stock and findings.....	5,431	.....	25	136	435	917	2,007	990	921	.....
Bread and other bakery products.....	1,751	.....	836	397	99	106	313	.....	.....	.....
Brick and tile.....	1,027	.....	146	442	173	143	123	.....	.....	.....
Butter, cheese, and condensed milk.....	2,863	.....	2,369	285	104	115	.....	.....	.....	.....
Canning and preserving.....	1,776	.....	41	484	583	441	227	.....	.....	.....
Carriages and wagons and materials.....	3,437	.....	341	411	355	68	328	850	578	.....
Cars and general shop construction and repairs by steam-railroad companies.....	8,094	.....	11	9	23	418	890	978	1,199	5,406
Clothing, men's, including shirts.....	4,252	.....	40	550	493	757	648	872	883	.....
Confectionery.....	1,780	.....	18	46	327	285	142	962	.....	.....
Cooperage and wooden goods, not elsewhere specified.....	1,208	.....	36	105	240	74	254	499	.....	.....
Copper, tin, and sheet-iron products.....	2,780	.....	181	288	121	109	563	1,518	.....	.....
Electrical machinery, apparatus, and supplies.....	1,409	.....	41	79	189	124	222	754	.....	.....
Flour-mill and gristmill products.....	1,184	.....	442	253	117	372	.....	.....	.....	.....
Foundry and machine-shop products.....	24,219	.....	395	1,338	1,834	2,900	3,081	4,085	3,778	6,803
Furniture and refrigerators.....	11,118	.....	37	320	953	1,459	2,280	2,892	1,318	1,859
Gas, illuminating and heating.....	1,063	.....	48	159	141	191	.....	.....	524	.....
Gloves and mittens, leather.....	1,642	.....	17	56	97	263	562	647	.....	.....
Hosiery and knit goods.....	4,282	.....	34	161	307	513	1,379	1,072	816	.....
Iron and steel, steel works and rolling mills.....	2,124	.....	5	38	111	236	140	.....	568	1,026
Leather goods.....	2,069	.....	51	158	134	195	1,025	536	.....	.....
Leather, tanned, curried, and finished.....	7,548	.....	16	50	157	393	724	1,496	1,907	2,305
Liquors, malt.....	5,061	.....	188	621	493	284	458	334	1,199	1,484
Lumber and timber products.....	34,093	.....	1,184	2,353	3,278	4,209	6,446	9,107	2,261	2,255
Marble and stone work.....	2,593	.....	148	327	353	120	1,263	373	.....	.....
Paper and wood pulp.....	7,467	.....	.....	39	316	1,298	3,880	2,434	.....	.....
Printing and publishing.....	5,360	.....	1,139	1,379	1,116	1,038	688	.....	.....	.....
Slaughtering and meat packing.....	1,890	.....	67	37	197	187	110	.....	1,292	.....
Stoves and furnaces, including gas and oil stoves.....	1,803	.....	2	.....	68	318	350	348	717	.....
Tobacco manufactures.....	2,391	.....	859	930	328	.....	274	.....	.....	.....
Woolen, worsted, and felt goods, and wool hats.....	1,046	.....	24	42	110	720	150	.....	.....	.....
All other industries.....	21,890	.....	1,398	3,055	3,951	3,812	4,156	3,933	1,585	.....

INDUSTRY.	Total.	ESTABLISHMENTS EMPLOYING—							
		No wage earners.	1 to 5 wage earners.	6 to 20 wage earners.	21 to 50 wage earners.	51 to 100 wage earners.	101 to 250 wage earners.	251 to 500 wage earners.	501 to 1,000 wage earners.	Over 1,000 wage earners.
PER CENT OF AVERAGE NUMBER OF WAGE EARNERS.									
All industries.....	100.0	5.6	8.1	9.5	12.2	20.1	18.5	13.4	12.5
Agricultural implements.....	100.0	1.6	5.0	4.7	6.6	25.3	22.1	34.8	23.9
Automobiles, including bodies and parts.....	100.0	0.7	2.7	2.1	2.0	9.3	18.2	50.3	17.0
Boots and shoes, including cut stock and findings.....	100.0	0.5	2.5	8.0	16.9	37.0	17.9	12.0	1.0
Bread and other bakery products.....	100.0	47.7	22.7	5.7	6.1	17.9	12.0	1.0	1.0
Brick and tile.....	100.0	14.2	43.0	16.8	13.9	12.0	1.0	1.0	1.0
Butter, cheese, and condensed milk.....	100.0	82.4	10.0	3.6	4.0	1.0	1.0	1.0	1.0
Canning and preserving.....	100.0	2.3	27.3	32.8	24.8	12.8	1.0	1.0	1.0
Carriages and wagons and materials.....	100.0	9.9	12.0	10.3	2.0	24.1	24.9	16.8	1.0
Cars and general shop construction and repairs by steam-railroad companies.....	100.0	0.1	0.1	0.3	4.6	9.9	10.9	13.3	60.8
Clothing, men's, including shirts.....	100.0	0.9	13.1	11.6	17.8	15.2	20.5	20.8	1.0
Confectionery.....	100.0	1.0	2.6	18.4	16.0	8.0	54.0	1.0	1.0
Cooperage and wooden goods, not elsewhere specified.....	100.0	3.0	8.7	19.9	6.1	21.0	41.3	1.0	1.0
Copper, tin, and sheet-iron products.....	100.0	6.5	10.4	4.4	3.9	20.3	54.0	1.0	1.0
Electrical machinery, apparatus, and supplies.....	100.0	2.9	5.6	13.4	8.8	15.8	53.5	1.0	1.0
Flour-mill and gristmill products.....	100.0	37.3	21.4	9.9	31.4	1.0	1.0	1.0	1.0
Foundry and machine-shop products.....	100.0	1.6	5.5	7.6	12.0	12.7	16.9	15.6	28.1
Furniture and refrigerators.....	100.0	0.3	2.9	8.6	13.1	20.5	26.0	11.9	16.7
Gas, illuminating and heating.....	100.0	4.5	15.0	13.3	18.0	1.0	1.0	40.3	1.0
Gloves and mittens, leather.....	100.0	1.0	3.4	5.9	16.0	34.2	30.4	1.0	1.0
Hosiery and knit goods.....	100.0	0.8	3.8	7.2	12.0	32.2	25.0	19.1	1.0
Iron and steel, steel works and rolling mills.....	100.0	0.2	1.8	5.2	11.1	6.6	1.0	26.7	48.3
Leather goods.....	100.0	2.4	7.5	6.4	9.3	48.8	25.5	1.0	1.0
Leather, tanned, curried, and finished.....	100.0	0.2	0.7	2.1	5.2	9.6	19.8	25.3	37.2
Liquors, malt.....	100.0	3.7	12.3	9.7	5.6	9.0	6.6	23.7	29.3
Lumber and timber products.....	100.0	3.5	6.9	9.6	12.3	27.7	26.7	6.6	6.6
Marble and stone work.....	100.0	5.7	12.6	13.6	5.0	48.7	14.4	1.0	1.0
Paper and wood pulp.....	100.0	1.0	0.5	4.2	17.4	45.3	32.6	1.0	1.0
Printing and publishing.....	100.0	21.2	25.7	20.8	19.4	12.8	1.0	1.0	1.0
Slaughtering and meat packing.....	100.0	3.5	2.0	10.4	9.0	5.8	1.0	68.4	1.0
Stoves and furnaces, including gas and oil stoves.....	100.0	0.1	1.0	3.8	17.6	10.4	10.3	39.8	1.0
Tobacco manufactures.....	100.0	35.9	38.9	13.7	1.0	11.5	1.0	1.0	1.0
Woolen, worsted, and felt goods, and wool hats.....	100.0	2.3	4.0	10.5	68.8	14.3	1.0	1.0	1.0
All other industries.....	100.0	6.4	14.0	18.0	17.4	19.0	18.0	7.2	1.0

Expenses.—As stated in the Introduction, the census does not purport to furnish figures that can be used for determining the cost of manufacture and profits. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expenses which make up the total. The next table shows in percentages, for 1909, the distribution of expenses among the classes indicated for all industries combined and for certain important industries separately. The figures on which the percentages are based appear in Table II, page 28.

This table shows that, for all industries combined, 65.9 per cent of the total expenses were incurred for materials, 22.8 per cent for services, that is, salaries and wages, and 11.4 per cent for other purposes. As would be expected, these proportions vary greatly in the different industries. The expense for services was greatest in the brick and tile industry, in which it represented 57.8 per cent of the total expenses, and in the marble and stone work industry, in which it formed 56.6 per cent of the total. In such industries as the manufacture of butter, cheese, and condensed milk, the flour-mill and gristmill industry, and slaughtering and meat packing, where the processes of manufacture are comparatively simple, the cost of materials forms by far the most important element of expense. The proportion of miscellaneous expenses is greatest

in the brewery industry because of the inclusion under this head of internal-revenue taxes.

INDUSTRY.	PER CENT OF TOTAL EXPENSES REPORTED.			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
All industries.....	4.9	17.9	65.9	11.4
Agricultural implements.....	14.7	15.7	41.1	28.5
Automobiles, including bodies and parts.....	4.6	28.6	50.0	16.7
Boots and shoes, including cut stock and findings.....	5.1	17.9	70.0	6.9
Bread and other bakery products.....	3.2	16.5	71.6	8.0
Brick and tile.....	0.1	51.7	28.0	13.6
Butter, cheese, and condensed milk.....	0.4	3.7	64.0	1.9
Canning and preserving.....	5.2	14.9	61.1	10.9
Carriages and wagons and materials.....	4.7	23.7	63.4	8.3
Cars and general shop construction and repairs by steam-railroad companies.....	2.8	36.5	61.5	0.2
Clothing, men's, including shirts.....	7.1	16.9	62.9	13.0
Confectionery.....	10.8	12.5	65.0	11.7
Cooperage and wooden goods, not elsewhere specified.....	4.7	29.6	53.7	11.9
Copper, tin, and sheet-iron products.....	6.6	18.0	70.6	4.7
Electrical machinery, apparatus, and supplies.....	16.4	25.3	44.8	13.4
Flour-mill and gristmill products.....	1.3	2.4	91.6	4.8
Foundry and machine-shop products.....	9.3	31.5	48.6	10.7
Furniture and refrigerators.....	7.5	30.1	51.5	10.9
Gas, illuminating and heating.....	10.8	22.1	52.5	14.6
Gloves and mittens, leather.....	5.7	22.5	64.5	7.2
Hosiery and knit goods.....	7.6	23.6	58.0	10.8
Iron and steel, steel works and rolling mills.....	2.3	14.2	79.8	3.6
Leather goods.....	0.0	19.1	62.3	9.6
Leather, tanned, curried, and finished.....	1.7	9.5	83.0	5.0
Liquors, malt.....	5.0	12.2	31.6	56.7
Lumber and timber products.....	4.0	31.4	50.1	13.0
Marble and stone work.....	5.5	51.1	34.1	9.3
Paper and wood pulp.....	3.2	17.1	73.4	6.3
Printing and publishing.....	15.3	29.5	34.3	20.9
Slaughtering and meat packing.....	1.5	4.0	90.6	3.9
Stoves and furnaces, including gas and oil stoves.....	9.3	30.4	47.5	12.8
Tobacco manufactures.....	3.6	21.6	48.9	25.8
Woolen, worsted, and felt goods, and wool hats.....	6.3	19.0	68.8	5.8
All other industries.....	5.6	14.6	65.8	14.0

Engines and power.—The following table shows, for all industries combined, the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current), and their total horsepower at the censuses of 1909, 1904, and 1899. It also shows separately the number and horsepower of electric motors, including those operated by current generated in the manufacturing establishments.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899 ¹	1909	1904	1899 ¹	1909	1904	1899
Primary power, total	11,501	6,894	6,417	554,179	440,234	364,380	100.0	100.0	100.0
Owned.....	7,660	6,804	6,417	627,431	420,810	360,542	95.2	97.6	98.9
Steam.....	4,074	4,626	4,579	377,037	303,874	262,642	68.0	69.0	72.1
Gas.....	1,578	1,037	520	19,531	11,356	4,358	3.5	2.6	1.2
Water wheels.....	1,073	1,180	1,300	129,560	112,526	93,122	23.4	25.6	25.6
Water motors.....	35	51	(²)	181	130	(²)	(³)	(³)	(²)
Other.....				1,132	1,015	420	6.2	0.4	0.1
Rented.....	3,901	(²)	(²)	26,748	10,424	3,838	4.8	2.4	1.1
Electric.....	3,901	(²)	(²)	25,450	8,558	2,426	4.6	1.9	0.7
Other.....				1,280	1,866	1,412	0.2	0.4	0.4
Electric motors	11,402	2,969	551	114,725	48,878	13,137	100.0	100.0	100.0
Run by current generated by establishment.....	7,501	2,969	551	89,206	40,320	10,711	77.8	82.5	81.5
Run by rented power.....	3,901	(²)	(²)	25,450	8,558	2,426	22.2	17.5	18.5

¹ Includes the neighborhood industries and hand trades, omitted in 1904 and 1909.
² Not reported.
³ Less than one-tenth of 1 per cent.

All forms of primary power except "Other" rented power increased during the decade as a whole, although "Other" owned power decreased between 1904 and 1909. The greatest increase, 114,395 horsepower, or 43.6 per cent, was in that generated by steam engines; such power formed only 68 per cent of the total primary power in 1909, however, as compared with 69 in 1904 and 72.1 in 1899. Water power, developed by water wheels, stands second in importance, and shows an increase of 36,428 horsepower, or 39.1 per cent, although it represented a somewhat smaller proportion of the total in 1909 than in 1899. The more general use of gas engines is shown by their increase in number from 529 in 1899 to 1,578 in 1909, and in horsepower from 4,358 to 19,531. The figures also show that the practice of renting electric

power is becoming more common, 4.6 per cent of the total power being of this character in 1909, as against 1.9 per cent in 1904 and seven-tenths of 1 per cent in 1899. The use of electric motors for the purpose of applying power by means of current generated within the establishments is also rapidly growing, the horsepower of such motors having increased from 10,711 in 1899 to 40,320 in 1904 and to 89,266 in 1909.

Fuel.—Closely related to the question of kind of power employed is that of the fuel consumed in generating this power, or otherwise used as material in the manufacturing processes. The following table shows the quantity of each kind of fuel used in 1909 for all industries and for certain selected industries:

INDUSTRY.	Anthracite coal (tons).	Bituminous coal (tons).	Coke (tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
All industries	92,450	3,037,787	450,412	350,405	230,361	289,400
Agricultural implements.....	841	10,506	5,482	73	9,201	808
Automobiles, including bodies and parts.....	1,030	21,606	100	11	1,344	6,920
Boots and shoes, including cut stock and findings.....	934	10,127	10	77	440	3,533
Bread and other bakery products.....	1,800	2,429	4,407	15,370	137	37,003
Brick and tile.....	324	106,053	2,184	31,278	324	288
Butter, cheese, and condensed milk.....	1,085	71,557	140	67,455	1,014	.....
Canning and preserving.....	355	13,444	.....	537	580	330
Carriages and wagons and materials.....	2,284	24,012	2,379	793	1,554	1,371
Cars and general shop construction and repairs by steam-railroad companies.....	3,550	113,175	369	542	3,365	.....
Clothing, men's, including shirts.....	654	3,104	10	90	68	8,791
Confectionery.....	1,061	5,740	1,768	87	.....	5,402
Copperware and wooden goods, not elsewhere specified.....	40	2,315	157	525	31	236
Copper tin and sheet-iron products.....	115	14,435	1,002	28	8,687	20,087
Electrical machinery, apparatus, and supplies.....	345	14,407	729	14	6,282	3,074
Flour-mill and gristmill products.....	3,057	40,254	7	14,380	1,947	1,224
Foundry and machine-shop products.....	0,544	267,070	60,431	4,042	56,865	68,312
Furniture and refrigerators.....	1,281	65,187	3,237	7,456	987	2,905
Gas, illuminating and heating.....	496	180,477	20,063	64	36,856	17,190
Gloves and mittens, leather.....	241	1,342	15	6	1	8,329
Hosiery and knit goods.....	1,321	14,379	4	36	262	362
Iron and steel, blast furnaces.....	110	8,002	328,786	125	14,600	120
Iron and steel, steel works and rolling mills.....	158	117,043	3,171	112	48,042	.....
Leather goods.....	148	5,461	20	534	54	3,515
Leather, tanned, curried, and finished.....	2,745	136,480	10	695	.....	845
Lime.....	.....	22,483	.....	116,053	200	.....
Liquors, malt.....	7,015	177,878	238	12,034	170	1,844
Lumber and timber products.....	885	45,508	70	5,036	1,372	1,720
Marble and stone work.....	157	18,747	31	127	347	2,230
Paper and wood pulp.....	.....	432,234	.....	37,678	4,756	.....
Printing and publishing.....	1,007	7,888	431	3,035	1,042	18,071
Slaughtering and meat packing.....	751	45,081	.....	674	60	636
Stoves and furnaces, including gas and oil stoves.....	607	7,661	5,178	201	906	425
Tobacco manufactures.....	1,000	1,480	300	909	12	252
Woolen, worsted, and felt goods, and wool hats.....	16	13,838	.....	452	56	.....
All other industries.....	45,501	988,476	10,000	24,461	27,837	81,780

NOTE.—In addition there were 47,001 tons of other varieties of fuel reported.

SUPPLEMENTARY DATA REGARDING IMPORTANT INDUSTRIES.

(With statistics for laundries and custom sawmills and gristmills.)

For certain industries the Census Bureau collects, by means of special schedules, details regarding the quantity and value of materials and products and other information for securing which no provision is made on the general schedule. Data of this character for ten important industries in Wisconsin are here presented.

Lumber and timber products.—The following is a statement of the production of rough lumber, lath, and shingles in 1909 and 1899:

PRODUCT.	QUANTITY.	
	1909	1899
Rough lumber.....M feet b. m.	2,025,038	3,389,166
Lath.....thousands..	290,845	418,011
Shingles.....thousands..	392,863	904,427

In 1899 Wisconsin ranked first as a lumber-producing state, but by 1909 its forests had become so far depleted as to cause the state to drop to eighth place. The decrease in the cut of rough lumber during the decade amounted to 1,364,128 M feet board measure, or 40.2 per cent, while the production of lath decreased 118,166,000, or 28.3 per cent, and that of shingles 601,564,000, or 60.5 per cent.

Of the total cut for 1909, 1,399,398 M feet board measure were sawed from softwoods of which 709,347 M feet were hemlock and 612,327 M feet white pine. The chief varieties of hardwoods, ranking in importance in the order named, were birch, basswood, maple, oak, and elm. Considerable quantities of spruce, cedar, tamarack, beech, and ash were also cut.

Butter, cheese, and condensed milk.—The next table shows the quantity and value of the various products of the butter, cheese, and condensed-milk factories in 1909, 1904, and 1899.

Wisconsin ranks first among the states in the value of the products of the butter, cheese, and condensed-milk industry, having displaced New York from first place since 1904. The industry is third among the manufacturing industries of the state in value of products.

Of the three branches into which this industry is divided, the butter factories reported 56.2 per cent of the total value of products in 1909, 62.2 per cent in 1904, and 62.3 per cent in 1899; the cheese factories, 39.4 per cent in 1909, 35.1 per cent in 1904, and 36.5 per cent in 1899; and the condensed-milk factories, 4.1 per cent in 1909, 2.7 per cent in 1904, and 1.1 per cent in 1899. In 1909 Wisconsin ranked first among the states in the value of butter and of cheese produced, and fifth in that of condensed milk.

The quantity of butter produced increased 16.5 per cent from 1904 to 1909 and 44.2 per cent from 1899 to

1904. Of the total value of the butter produced in 1909 that of butter packed solid represented 73.9 per cent and that of the product put up in prints and rolls 26.1 per cent.

The output of cheese increased 35.3 per cent from 1904 to 1909, and 40.7 per cent from 1899 to 1904. Of the total output in 1909, 99.3 per cent was full-cream cheese.

PRODUCT.	1909	1904	1899
Total value.....	\$53,843,240	\$20,094,791	\$20,120,147
Butter:			
Packed solid—			
Pounds.....	77,137,253	69,160,500	55,826,290
Value.....	\$21,833,972	\$14,145,383	\$10,714,115
Prints or rolls—			
Pounds.....	26,747,431	10,980,376	5,987,212
Value.....	\$7,713,163	\$4,287,819	\$1,207,709
Cream sold:			
Pounds.....	4,490,508	731,721	2,010,508
Value.....	\$545,723	\$61,623	\$123,578
All other butter-factory products ¹	\$100,633	\$102,380	\$490,036
Cheese:			
Full cream—			
Pounds.....	147,071,501		
Value.....	\$21,070,010		
Part cream—			
Pounds.....	229,892	100,423,850	77,448,680
Value.....	\$10,405	\$10,488,833	\$7,281,181
Other kinds ² —			
Pounds.....	704,255		
Value.....	\$92,225		
All other cheese-factory products ³	\$80,982	\$45,404	\$72,213
Condensed milk:			
Sweetened—			
Pounds.....	10,661,772	10,380,850	3,466,516
Value.....	\$1,240,398	\$735,504	\$231,225
Unsweetened—			
Pounds.....	13,912,114	1,124,366	.....
Value.....	\$977,841	\$62,735	.....
All other condensed-milk-factory products.....	\$15,890	.....	.....
All other products.....	\$102,908	\$5,000	.....

¹ Includes skimmed milk sold and casein.² Includes skimmed-milk cheese.³ Includes whey.

The production of condensed milk increased 165.5 per cent from 1904 to 1909, and 232.2 per cent from 1899 to 1904. In 1899 there was no unsweetened condensed milk reported. In 1904, 9.8 per cent, and in 1909, 45.5 per cent, of the condensed milk was unsweetened.

Flour-mill and gristmill products.—The next table shows the quantity and value of the principal products of the merchant mills in 1909, 1904, and 1899.

Wheat flour was the principal product of the industry throughout the period covered by the table, contributing 56.6 per cent of the total value of products for the industry in 1909, 62.1 per cent in 1904, and 63.6 per cent in 1899. While the total value of products increased 11.7 per cent during the five years 1904 to 1909, owing chiefly to the general increase in the prices of such commodities, there were actual decreases in the output of white flour, corn meal and corn flour, buckwheat flour, and offal.

In 1909 the mills of the state were equipped with 3,158 pairs of rolls and 248 runs of stone, as compared with 4,072 pairs of rolls and 361 runs of stone in 1904. In 1909 four mills manufactured barrels.

PRODUCT.	1909	1904	1899
Total value	\$31,667,434	\$28,352,237	\$23,700,874
Wheat flour:			
White—			
Barrels.....	3,467,316	3,726,363	
Value.....	\$17,764,405	\$17,531,813	
Graham—			4,638,608
Barrels.....	32,649	18,010	
Value.....	\$144,504	\$79,190	\$15,082,163
Corn meal and corn flour:			
Barrels.....	85,532	95,801	232,072
Value.....	\$237,740	\$246,651	\$403,005
Rye flour:			
Barrels.....	549,350	547,007	611,295
Value.....	\$2,194,220	\$1,990,327	\$1,672,630
Buckwheat flour:			
Pounds.....	9,330,781	15,980,819	13,205,256
Value.....	\$300,929	\$416,517	\$309,024
Barley meal:			
Pounds.....	5,817,400	3,439,960	5,901,000
Value.....	\$91,494	\$38,110	\$73,373
Feed:			
Tons.....	269,793	243,510	333,391
Value.....	\$7,033,082	\$4,910,055	\$4,849,278
Offal:			
Tons.....	132,991	185,342	94,365
Value.....	\$3,053,366	\$3,033,598	\$1,037,622
All other products.....	\$797,514	\$100,000	\$273,780

Slaughtering and meat packing.—The following table shows the quantity and value of the principal products reported at the censuses of 1909, 1904, and 1899:

PRODUCT.	1909	1904 ¹	1899 ¹
Total value	\$27,216,864	\$18,598,919	\$14,141,931
Beef, fresh:			
Pounds.....	35,859,863	28,643,346	24,282,329
Value.....	\$2,605,870	\$1,712,783	\$1,622,676
Veal, fresh:			
Pounds.....	9,615,384	2,594,829	1,866,512
Value.....	\$1,110,373	\$201,725	\$157,079
Mutton, fresh:			
Pounds.....	2,000,498	2,389,517	1,564,793
Value.....	\$194,705	\$172,180	\$129,023
Pork, fresh:			
Pounds.....	48,204,738	35,997,546	24,797,944
Value.....	\$4,802,343	\$2,447,493	\$1,463,007
Pork, salted or cured:			
Pounds.....	106,390,708	100,474,432	108,781,273
Value.....	\$11,699,374	\$8,345,852	\$7,241,055
Sausage, fresh or cured.....	\$2,476,466	\$1,448,005	\$1,095,130
All other fresh meat:			
Pounds.....	1,440,143	350,000	200,983
Value.....	\$103,902	\$26,500	\$18,407
Lard:			
Pounds.....	19,173,185	16,859,540	21,959,975
Value.....	\$2,120,334	\$1,193,044	\$1,225,846
Tallow and oleo stock and stearin:			
Pounds.....	1,530,500	(²)	(²)
Value.....	\$125,075	(²)	(²)
Fertilizers and fertilizer materials:			
Tons.....	5,703	3,192	3,237
Value.....	\$151,984	\$73,795	\$48,324
Hides:			
Number.....	90,268	60,459	68,472
Pounds.....	4,613,282	3,556,022	2,892,795
Value.....	\$590,057	\$323,231	\$290,905
Pelts:			
Number.....	47,917	55,846	(²)
Value.....	\$53,386	\$57,553	(²)
All other products.....	\$1,182,995	\$566,758	\$840,510

¹ Excluding statistics for two establishments, to avoid disclosure of individual operations.
² Figures not available.

Variation in the quantity of production best indicates the activity of this industry. During the decade the production of fresh beef in Wisconsin increased 47.7 per cent, that of fresh pork 94.6 per cent, that of fresh veal 432.3 per cent, that of fresh mutton 31.7 per cent, and number of hides 31.8 per cent, while that of salted or cured pork decreased 2.2 per cent, and that of lard 12.7 per cent. There were 73,049 beesves, 129,207 calves, 48,518 sheep, and 1,078,361 hogs slaughtered

by the establishments in this industry in the state in 1909, as compared with 59,659 beesves, 34,507 calves, 58,374 sheep, and 938,418 hogs slaughtered in 1904.

Leather, tanned, curried, and finished.—The following table shows the quantity and value of the principal materials and products reported for this industry at the censuses of 1909, 1904, and 1899:

MATERIAL OR PRODUCT.	1909	1904	1899
Materials used, total cost	\$34,828,585	\$10,870,887	\$16,040,304
Hides, all kinds:			
Number.....	2,471,848	2,457,195	2,106,986
Cost.....	\$10,373,708	\$11,027,774	\$9,394,950
Skins:			
Calf and kip—			
Number.....	6,986,673	3,633,271	2,810,911
Cost.....	\$12,370,806	\$4,816,820	\$3,545,063
All other—			
Number.....	1,186,702	149,808	247,019
Cost.....	\$1,321,192	\$179,929	\$409,599
Fuel and rent of power.....	\$380,034	\$253,840	\$112,393
All other materials.....	\$4,307,845	\$3,053,418	\$2,589,792
Products, total value	\$44,667,676	\$25,845,123	\$20,074,373
Leather:			
Sole.....	\$4,414,972	\$4,231,785	\$4,500,714
Hemlock—			
Sides.....	558,474	1,038,181	1,028,888
Value.....	\$2,886,899	\$3,074,010	\$4,491,748
Union and chrome—			
Sides.....	280,897	53,350	2,100
Value.....	\$1,529,073	\$257,709	\$4,000
Upper, other than calf or kip skins.....	\$10,777,905	\$5,681,841	\$3,820,138
Grain, satin, pebble, patent, and enameled leather—			
Sides.....	3,001,814	1,027,329	1,308,648
Value.....	\$9,765,814	\$4,763,787	\$3,303,777
Finished splits—			
Number.....	2,097,549	1,406,386	979,638
Value.....	\$1,011,701	\$918,054	\$522,361
Calf and kip skins—			
Number.....	7,016,966	3,564,723	2,797,925
Value.....	\$17,906,021	\$9,940,331	\$4,862,420
Harness—			
Sides.....	1,331,925	1,504,944	961,906
Value.....	\$7,947,575	\$6,097,651	\$4,194,372
Glove.....	\$1,355,618	\$870,321	\$342,072
All other.....	\$1,848,224	\$1,470,550	\$1,793,761
All other products.....	\$727,112	\$537,010	\$533,176
Amount received for work on materials for others.....	\$247,549	\$15,025	\$21,120

¹ Includes coll, goat, and sheep skins.

The increase in the cost of all materials from 1899 to 1904 was 23.9 per cent, and from 1904 to 1909, 75.3 per cent. The number of hides used increased 17.3 per cent during the decade, while the number of skins used increased 166.4 per cent.

Every product enumerated in the table, except hemlock sole leather, shows a large increase in value during the 10 years. The decrease in the output of hemlock sole leather was accompanied by a marked increase in that of union and chrome sole leather, an increase not great enough, however, to compensate for the decrease in the hemlock product. The percentage of decrease in the total output of sole leather amounted to 23.1 from 1904 to 1909, and 33.1 from 1899 to 1904. The output of grain, satin, pebble, patent, and enameled leather more than doubled between 1899 and 1909, and its value nearly trebled, while both the number and the value of finished splits of upper leather about doubled during the same time. Calf and kip skins, which contributed nearly 40 per cent of the total value of products in 1909, show the greatest absolute gain in value of any of the products during the last five years, and

also, with the exception of union and chrome sole leather, the greatest relative gain. There was a decrease of 11.5 per cent between 1904 and 1909 in the number of sides of harness leather produced, but an increase of 31 per cent in their value.

Boots and shoes.—The number of pairs of the different kinds of boots and shoes made in 1909, 1904, and 1899 are shown in the following table:

KIND.	NUMBER OF PAIRS.		
	1909	1904	1899
Boots and shoes.....	6,777,363	3,951,542	3,230,082
Men's.....	4,055,496	2,064,125	1,428,720
Boys' and youths'.....	652,109	548,867	330,007
Women's.....	1,442,341	737,507	1,226,184
Misses' and children's.....	627,417	600,033	245,821
Slippers.....	204,872	209,942	202,697
Men's, boys', and youths'.....	39,018	41,288	17,732
Women's, misses', and children's.....	165,854	228,654	184,865
Infants' shoes and slippers.....	145,310	(1)	(1)
All other.....	169,075	180,984	98,948

¹ Not reported separately.

The increase in the total output of boots and shoes from 1904 to 1909 was 2,825,821 pairs, or 71.5 per cent, and from 1899 to 1904, 720,860 pairs, or 22.3 per cent. An increased production is shown for each class of boots and shoes for the decade as a whole, that in men's being the greatest. Women's boots and shoes show a decrease of 488,567 pairs from 1899 to 1904, which, however, was more than offset by the increase from 1904 to 1909. Of the total output of boots and shoes in 1909, 59.8 per cent were men's, 9.6 per cent boys' and youths', 21.3 per cent women's, and 9.3 per cent misses' and children's.

The following table shows the number of pairs of the different kinds of boots and shoes made in 1909, classified according to method of manufacture:

KIND.	NUMBER OF PAIRS, BY METHOD OF MANUFACTURE.				
	Total.	Machine or hand welt.	McKay.	Wire screw, or metal fastened.	All other methods.
Boots and shoes.....	6,777,363	1,752,838	1,963,483	2,488,531	572,511
Men's.....	4,055,496	1,353,362	433,309	2,175,069	93,758
Boys' and youths'.....	652,109	79,093	249,607	297,750	25,660
Women's.....	1,442,341	320,383	750,338	15,703	355,917
Misses' and children's.....	627,417	(1)	530,139	(1)	97,278
Slippers.....	204,872	45,721	107,834	(1)	51,317
Men's, boys', youths'.....	39,018	4,658	22,184	(1)	12,176
Women's, misses', children's.....	165,854	41,063	85,650	(1)	39,141
Infants' shoes and slippers.....	145,310	4,000	(1)	(1)	141,310
All other.....	169,075	5,674	(1)	100,201	54,200

¹ Included under "All other methods," to avoid disclosing the operations of individual establishments.

The wire screw or metal fastening was the method most employed in the manufacture of men's and of boys' and youths' boots and shoes, and the McKay process the most common in the manufacture of the remaining classes shown separately in the table. Of the total output of boots and shoes, those made by the machine or hand welt process formed 25.9 per cent, those made by the McKay process 29 per cent, those made with wire screws or metal fastenings 36.7 per cent, and those made by all other methods 8.4 per cent.

Paper and wood pulp.—The following table shows for this industry the quantity and cost of the materials used, the quantity and value of the products reported, and the number and capacity of the principal machines used for the census years 1909, 1904, and 1899:

MATERIAL, PRODUCT, AND EQUIPMENT.	1909	1904	1899
Materials used, total cost.....	\$16,692,565	\$10,692,290	\$6,712,749
Pulp wood.....	\$4,325,839	\$2,502,802	\$1,136,051
Wood pulp, purchased:			
Tons.....	167,416	107,470	73,231
Cost.....	\$5,511,750	\$3,355,155	\$2,240,801
Ground—			
Tons.....	64,959	43,514	33,089
Cost.....	\$1,457,025	\$876,180	\$708,130
Soda fiber—			
Tons.....	7,573	5,154	4,890
Cost.....	\$338,621	\$218,608	\$204,021
Sulphite fiber—			
Tons.....	84,884	58,511	33,252
Cost.....	\$3,716,104	\$2,200,367	\$1,328,710
Rags, including cotton and flax waste and sweepings:			
Tons.....	10,741	24,615	20,040
Cost.....	\$506,554	\$692,331	\$717,400
Old and waste paper:			
Tons.....	20,607	8,412	7,725
Cost.....	\$501,019	\$160,626	\$165,777
All other paper stock.....	\$136,496	\$314,253	\$139,162
All other materials, including fuel.....	\$5,531,907	\$3,628,033	\$2,313,480
Products, total value.....	\$25,962,099	\$17,844,174	\$10,805,576
News paper:			
Tons.....	169,151	121,740	90,075
Value.....	\$7,201,706	\$5,187,635	\$3,253,201
Book, cover, plate, and coated paper:			
Tons.....	58,705	52,283	25,609
Value.....	\$3,881,708	\$2,839,787	\$1,644,663
Writing paper:			
Tons.....	27,370	17,333	113,001
Value.....	\$3,271,402	\$2,066,243	\$1,450,109
Wrapping paper:			
Tons.....	98,083	94,454	46,850
Value.....	\$5,083,757	\$4,200,058	\$2,048,805
Tissues:			
Tons.....	10,835	5,080	2,000
Value.....	\$988,510	\$571,378	\$250,331
Other paper products:			
Tons.....	24,506	4,706	7,217
Value.....	\$914,835	\$205,650	\$351,072
Wood pulp made for sale or for consumption in mills other than where produced:			
Tons.....	111,683	89,277	63,657
Value.....	\$3,711,517	\$2,754,283	\$1,856,033
All other products.....	\$905,658	\$19,214	\$2,162
Wood pulp produced (including that used in mills where manufactured), total tons.....	321,213	241,537	137,088
Ground.....	169,822	124,740	77,305
Soda fiber.....		3,744	
Sulphite fiber.....	154,391	113,047	59,783
Equipment:			
Paper machines:			
Total number.....	90	93	75
Capacity, yearly, tons.....	431,763	345,879	222,646
Fourdriner—			
Number.....	91	88	68
Capacity per 24 hours, tons.....	1,315	1,112	(*)
Cylinder—			
Number.....	8	5	7
Capacity per 24 hours, tons.....	108	36	(*)
Pulp:			
Grinders—			
Number.....	233	167	174
Capacity, yearly, tons.....	270,561	193,720	(*)
Digesters—			
Number.....	53	50	43
Capacity, yearly, tons.....	167,121	141,325	(*)

¹ Includes 3,659 tons of "Other fine paper," valued at \$464,678.

² Not reported.

³ Not reported separately.

The total cost of all materials increased 56.1 per cent from 1904 to 1909, and 59.3 per cent from 1899 to 1904. Of the wood pulp purchased in 1909, 41.3 per cent was ground, 4.8 per cent soda fiber, and 53.9 per cent sulphite fiber. There was a slight decrease in the quantity of rags purchased and an increase in the consumption of old and waste paper.

The total value of the products of the industry increased 45.5 per cent from 1904 to 1909 and 63.8 per cent from 1899 to 1904. All classes of products increased in both quantity and value during the decade. In 1909 news paper represented 33.7 per cent of the total value of paper products, book paper 18.2 per cent, writing paper 15.3 per cent, wrapping paper 23.8 per cent, tissues 4.6 per cent, and other paper products 4.3 per cent. Of the 321,213 tons of wood pulp produced in 1909, 51.9 per cent was ground and 48.1 per cent sulphite fiber. There is an element of duplication in the industry in the item of wood pulp produced for sale, since much of it is sold to paper mills within the state, by which it is used and reported in the value of products. The equipment of the mills has been increased during the decade.

Printing and publishing.—The following table shows the number and aggregate circulation of the various classes of newspapers and periodicals published in Wisconsin in 1909, 1904, and 1899:

PERIOD OF ISSUE.	NUMBER OF PUBLICATIONS.			AGGREGATE CIRCULATION PER ISSUE.		
	1909	1904	1899	1909	1904	1899
Total.....	677	711	608	2,121,662	2,077,826	1,426,499
Daily.....	65	65	60	401,886	307,118	213,882
Sunday.....	8	9	13	130,778	126,238	(1)
Semiweekly.....	23	37	22	42,708	194,230	162,095
Weekly.....	512	538	463	1,012,502	902,407	771,574
Monthly.....	50	52	42	468,088	500,046	189,948
All other classes.....	13	10	5	65,700	47,727	88,100

¹ Included with circulation of daily.

The newspaper and periodical branch of the industry in Wisconsin shows a decided growth for the last decade, as measured by aggregate circulation. The total number of publications was also considerably larger in 1909 than in 1899, in spite of a decrease from 1904 to 1909. The weeklies show the greatest increase in number, and the monthlies the greatest increase in circulation. There were decreases during the decade as a whole in the number of Sunday publications and in the circulation of the semiweeklies and of the publications included under the head of "All other classes," although the circulation of the latter increased somewhat between 1904 and 1909.

In 1909, 10 of the 65 daily papers, with an aggregate circulation of 105,042, were issued as morning editions. Of the 677 publications reported, 107 were printed in foreign languages. These included 6 dailies, of which 4 were printed in German and 2 in Polish; 1 Sunday edition printed in German; 14 semi-weeklies, 13 of which were printed in German and 1 in Dutch; 73 weeklies, of which 56 were in German, 6 in Bohemian, 4 in Norwegian, 3 in Polish, 2 in Swedish, 1 in Italian and English, and 1 in Norwegian and Danish; 8 monthlies, 4 of which were in German, 1 in Bohemian, 1 in Norwegian, 1 in German and English, and 1 in Norwegian and Danish; and 5 belonging to other classes, 2 of which were in German, 2 in German and English, and 1 in English, German, French, and

Spanish. These publications in foreign languages reported an aggregate circulation per issue of 667,073, representing 31.4 per cent of the total for the state.

Automobiles, including bodies and parts.—The following table shows the number and value of the different products of this industry in 1909 and 1904:

PRODUCT.	1909		1904	
	Number.	Value.	Number.	Value.
Total value.....		\$11,440,242		¹ \$1,875,259
Automobiles (gasoline).....	5,591	7,085,562	2,390	² 1,856,604
Runabouts, touring cars, and cabs.....	5,550	7,050,862	2,378	1,846,294
Delivery wagons and trucks.....	32	34,700	12	10,400
All other products, including bodies and parts and repair work.....		4,354,680		18,565

¹ Excluding the statistics for two establishments engaged in the manufacture of automobile bodies and parts, to avoid disclosure of individual operations.
² Electric machines included to avoid disclosure of individual operations.

A rapid development is shown by the above table to have taken place in the manufacture of automobiles and of automobile bodies and parts. The number of automobiles manufactured increased from 2,390 in 1904 to 5,591 in 1909, a gain of 133.9 per cent. Of those built in 1909, 5,559 were passenger and 32 business machines.

Carriages and wagons and materials.—The following table shows the number and value of the principal products of the carriage and wagon factories of the state in 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
Total value.....	\$8,899,171	\$8,089,491	\$7,033,945
Carriages (family and pleasure):			
Number.....	24,726	23,466	36,323
Value.....	\$1,510,006	\$1,520,841	\$2,022,008
Wagons:			
Number.....	92,011	83,916	70,210
Value.....	\$4,853,561	\$4,306,693	\$3,308,465
Business—			
Number.....	11,564	12,910	(1)
Value.....	\$732,544	(1)	(1)
Farm—			
Number.....	80,376	70,814	(1)
Value.....	\$4,102,301	(1)	(1)
Government, municipal, etc.—			
Number.....	71	102	(1)
Value.....	\$18,716	(1)	(1)
Public conveyances:			
Number.....	00	103	101
Value.....	\$33,300	\$39,720	\$31,900
Sleighs and sleds:			
Number.....	17,720	15,365	17,451
Value.....	\$309,310	\$343,509	\$325,106
All other products, including parts and repair work.....	\$2,003,814	\$1,788,728	\$1,345,876

¹ Figures not available.

In 1909 the value of carriages represented 17.1 per cent of the total value of products, that of wagons 54.5 per cent, that of public conveyances four-tenths of 1 per cent, and that of sleighs and sleds 4.5 per cent. Farm wagons were the most important product manufactured, contributing 46.1 per cent of the total value of products for the industry in 1909. While there was a slight increase in the number of carriages built in 1909 as compared with 1904, there was a slight decrease in their value. Both the number and value of carriages show a considerable decrease as compared with 1899, this being the result of the increasing use of the automobile.

MANUFACTURES—WISCONSIN.

Laundries.—Statistics for steam laundries are not included in the general tables or in the totals for manufacturing industries. There were 147 such establishments in the state in 1909, of which 33 were in Milwaukee, 3 in Appleton, 3 in Beloit, 3 in Janesville, 4 in Kenosha, 4 in La Crosse, 3 in Madison, 3 in Manitowoc, 3 in Oshkosh, and 5 in Racine. The following statement summarizes the statistics:

Number of establishments.....	147
Persons engaged in the industry.....	2,332
Proprietors and firm members.....	159
Salaried employees.....	159
Wage earners (average number).....	2,014
Primary horsepower.....	2,373
Capital.....	\$1,379,730
Expenses.....	1,435,339
Services.....	863,595
Materials.....	331,907
Miscellaneous.....	239,837
Amount received for work done.....	1,840,327

Seventy-seven of the 147 establishments were operated by individuals, 38 by firms, and 32 by corporations. Forty-nine establishments reported receipts for the year's business of less than \$5,000 each; 75, receipts of between \$5,000 and \$20,000; and 23, receipts of between \$20,000 and \$100,000.

The number of wage earners employed each month and the percentage which this number represented of the greatest number employed in any month were as follows:

MONTH.	WAGE EARNERS.		MONTH.	WAGE EARNERS.	
	Number.	Per cent of maximum.		Number.	Per cent of maximum.
January.....	1,021	89.8	July.....	2,136	99.9
February.....	1,917	89.7	August.....	2,138	100.0
March.....	1,930	90.6	September.....	2,105	98.5
April.....	1,937	90.6	October.....	2,030	94.9
May.....	1,987	92.9	November.....	2,009	94.0
June.....	2,035	95.2	December.....	2,018	94.4

The different kinds of primary power, the number of engines or motors, and the horsepower used in 1909 are shown in the following tabular statement:

KIND.	Number of engines or motors.	Horsepower.
Primary power, total.....		2,373
Owned:		
Steam.....	123	2,104
Gas.....	7	33
Rented:		
Electric.....	40	220
Other.....		16

The kind and amount of fuel used are shown in the following statement:

KIND.	Unit.	Quantity.
Anthracite coal.....	Tons.....	170
Bituminous coal.....	Tons.....	25,349
Coke.....	Tons.....	214
Wood.....	Cords.....	1,772
Oil.....	Barrels.....	306
Gas.....	1,000 feet.....	0,973

Custom sawmills and gristmills.—Statistics for custom sawmills and gristmills are not included in the general tables or in the totals for manufacturing industries, but are presented in the following summary:

	Custom sawmills.	Custom gristmills.
Number of establishments.....	251	371
Persons engaged in the industry.....	732	638
Proprietors and firm members.....	307	447
Salaried employees.....	2	9
Wage earners (average number).....	303	182
Primary horsepower.....	6,030	15,078
Capital.....	\$432,029	\$1,607,710
Expenses.....	150,320	1,493,307
Services.....	119,291	79,967
Materials.....	5,450	1,480,845
Miscellaneous.....	28,573	48,494
Value of products.....	201,736	1,578,680

¹ Includes estimate of all grain ground. A similar estimate for value of lumber sawed by custom sawmills is impracticable.

MANUFACTURES—WISCONSIN.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899—Continued.
THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES—Continued.

INDUSTRY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaried employes.	Wage earners (average number).							
Expressed in thousands.													
STATE—Continued.													
Electrical machinery, apparatus, and supplies.	1909 1904 1899	30 23 7	1,904 1,014 584	16 14 1	479 396 56	1,400 1,204 527	2,333 2,173 430	\$4,686 6,329 982	\$532 451 04	\$820 073 222	\$1,451 1,020 350	\$3,836 3,194 924	\$2,385 2,174 565
Fancy articles, not elsewhere specified..	1909 1904 1899	6 10 14	384 370 28	3 7 4	38 34	343 320 24	312 311	434 306 18	32 25	113 90 5	225 200 13	477 430 26	252 230 13
Flour-mill and gristmill products.....	1909 1904 1899	322 389 358	1,931 2,096	380 511	361 234 220	1,184 1,351 1,275	31,903 42,211	10,063 10,546 8,419	371 253 246	695 720 650	27,038 24,750 20,023	31,667 28,352 23,701	4,020 3,560 3,078
Food preparations.....	1909 1904 1899	28 16 15	809 467 364	26 11 9	257 94 96	520 362 240	2,738 765	2,166 1,330 656	315 162 70	243 156 113	2,844 1,020 372	5,535 2,211 1,333	2,691 1,191 901
Foundry and machine-shop products...	1909 1904 1899	444 362 315	28,075 17,469 15,824	294 320 294	3,562 1,819 945	24,210 15,330 14,585	33,709 22,160	80,808 48,390 24,700	4,291 2,193 1,142	14,001 8,589 7,070	22,534 13,623 12,340	54,124 31,370 26,018	31,590 17,747 13,678
Fur goods.....	1909 1904 1899	40 24 14	524 418	38 22	73 40 30	413 356 418	197 157	1,328 660 460	60 36 25	210 155 151	927 452 509	1,524 909 851	567 457 342
Furniture and refrigerators.....	1909 1904 1899	114 107 85	12,161 10,353 8,862	50 66 49	693 585 461	11,118 9,702 8,342	18,667 13,813	21,229 16,340 10,929	1,285 674 405	5,136 3,750 2,747	8,705 5,765 4,282	18,656 12,370 9,471	9,861 6,605 5,189
Gas and electric fixtures and lamps and reflectors.	1909 1904 1899	13 9 4	634 284	7 5	75 35 11	552 244 150	353 97	791 304 155	70 32 11	358 119 60	707 207 170	1,466 575 315	759 278 145
Gas, illuminating and heating.....	1909 1904 1899	49 33 25	1,565 1,184 655	100	342 273 123	1,003 911 532	3,278 2,859 681	25,452 13,809 7,375	285 221 80	583 464 268	1,389 819 321	4,001 2,011 1,397	2,612 2,092 1,076
Gloves and mittens, leather.....	1909 1904 1899	23 21 19	1,782 1,480 306	11 12 23	129 72 24	1,642 1,396 310	301 226 88	2,054 1,207 220	145 82 18	573 487 78	1,637 1,319 319	2,799 2,269 507	1,162 870 188
Hosiery and knit goods.....	1909 1904 1899	61 50 39	4,659 4,476 2,881	28 18 26	340 205 125	4,282 4,253 2,730	2,312 2,112 1,160	6,183 4,404 2,671	508 235 150	1,570 1,187 602	3,887 2,298 1,186	7,843 4,970 2,608	3,956 2,681 1,322
Iron and steel, blast furnaces.....	1909 1904 1899	5 4 5	817 521 577	..... ..... .....	59 39 26	758 482 551	12,975 5,875 4,100	6,145 2,640 1,637	163 63 42	407 257 308	3,018 2,251 2,015	4,704 3,075 2,900	876 824 885
Iron and steel, steel works and rolling mills.	1909 1904 1899	14 10 7	2,285 2,048 1,435	..... ..... .....	161 133 65	2,124 1,915 1,370	10,064 11,126 6,230	6,678 3,490 3,928	232 156 74	1,409 1,125 909	7,006 4,501 3,395	10,733 7,379 6,006	2,827 2,878 2,010
Jewelry.....	1909 1904 1899	13 12 5	103 92 60	14 11 8	11 4 5	78 77 37	23 41	151 74 29	8 4 4	42 41 26	87 38 36	240 126 70	153 88 40
Leather goods.....	1909 1904 1899	48 39 45	2,450 2,023	38 31 153	313 173 154	2,090 1,824 1,540	1,442 1,105	4,560 3,072 1,891	434 228 168	922 737 439	3,010 2,433 1,464	5,382 4,050 2,400	2,372 1,623 1,045
Leather, tanned, curried, and finished..	1909 1904 1899	32 33 42	7,977 5,905 5,535	23 27 43	406 322 230	7,548 5,556 5,262	17,112 9,816 6,076	49,412 30,409 18,284	907 458 315	3,983 2,687 2,242	34,829 19,871 16,040	44,068 25,845 20,074	9,839 5,974 4,034
Lime.....	1909 1904 1899	43 35	875 613	25 30	74 39	776 544	1,984 1,200	2,297 1,408	88 34	412 255	507 327	1,272 781	765 454
Liquors, malt.....	1909 1904 1899	136 139 147	6,076 5,612 4,527	100 106 139	915 634 484	5,061 4,872 3,904	23,248 15,504 13,401	69,083 53,349 35,318	1,394 924 726	3,045 2,880 1,927	7,808 5,185 4,237	32,120 23,632 19,395	24,228 23,507 15,158
Lumber and timber products.....	1909 1904 1899	1,020 777 951	37,134 36,961	1,046 774	1,995 1,730 1,036	34,093 34,457 30,529	124,286 101,881	68,309 43,450 55,820	2,355 1,907 1,086	16,059 16,074 15,940	25,687 24,583 34,606	57,990 58,531 68,272	32,383 33,048 33,706
Malt.....	1909 1904 1899	25 20 17	584 673 425	12 22 7	116 535 360	7,042 5,043	7,042	16,211 13,098 3,648	217 176 86	318 355 210	7,823 6,937 3,175	6,507 8,740 4,000	1,774 1,893 915
Marble and stone work.....	1909 1904 1899	136 74 103	2,898 1,275	148 83	157 85 117	2,593 1,107 956	4,847 2,605	3,743 2,021 1,900	106 106 93	1,827 699 487	1,217 706 654	4,114 1,999 1,725	2,897 1,293 1,071
Mattresses and spring beds.....	1909 1904 1899	21 20 14	603 1,561	12 15	87 181 39	504 1,415 1,040	917 2,181	1,633 1,939 1,157	86 126 69	241 785 411	854 1,508 1,180	1,444 3,523 1,829	586 2,020 649
Millinery and lace goods.....	1909 1904 1899	7 4 6	323 377 295	3 3 10	13 30 18	307 344 267	163 93	310 283 284	20 39 28	147 123 96	338 317 299	556 555 520	218 238 230
Mirrors.....	1909 1904 1899	5 3	97 94	1	9 7	87 57	190 100	138 90	15 6	49 26	199 120	316 167	117 47

¹ Excluding statistics for two establishments, to avoid disclosure of individual operations.
² Not reported separately.
³ Figures can not be shown without disclosing individual operations.

MANUFACTURES—WISCONSIN.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899—Continued.
THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES—Continued.

INDUSTRY.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaried employes.	Wage earners (average number).							
Expressed in thousands.													
STATE—Continued.													
Musical instruments, pianos and organs and materials.	1909 1904 1899	11 3 3	443 92 18	26 3 3	48 5 15	369 84 14	339 731 14	\$754 41 25	\$54 4 7	\$202 45 7	\$490 120 0	\$893 184 18	\$403 64 12
Paint and varnish.....	1909 1904 1899	12 9 5	288 192 127	5 6 6	89 34 43	194 152 78	935 731 463	1,200 930 463	93 30 29	99 70 28	1,043 764 676	1,526 1,048 882	483 284 206
Paper and wood pulp.....	1909 1904 1899	57 52 47	7,878 6,627 4,442	1 2 3	410 287 199	7,407 6,338 4,240	130,903 105,940 70,876	33,738 24,409 10,580	731 435 308	3,801 2,088 1,040	16,603 10,602 6,713	25,962 17,844 10,806	9,260 7,152 4,183
Paper goods, not elsewhere specified....	1909 1904 1899	11 4 3	380 154 154	5 3 3	46 11 11	329 140 140	744 377 377	598 268 268	67 21 21	122 43 43	595 155 155	988 342 342	393 187 187
Patent medicines and compounds and druggists' preparations.	1909 1904 1899	62 58 43	610 399 399	53 54 54	294 83 297	260 202 207	219 113 113	1,288 761 623	275 85 52	118 77 108	445 362 228	1,707 1,233 674	1,262 871 440
Pens, fountain, stylographic, and gold..	1909 1904 1899	5 3 3	94 87 87	2 2 2	45 28 29	47 29 29	18 10 10	254 130 130	30 17 17	22 14 14	122 77 77	248 188 188	126 111 111
Photo-engraving.....	1909 1904 1899	10 5 4	232 132 56	9 2 3	52 27 2	171 103 51	99 35 22	116 60 22	47 16 2	130 70 27	40 20 8	312 100 51	266 146 43
Printing and publishing.....	1909 1904 1899	833 707 630	7,860 7,036 7,036	864 860 583	1,636 1,137 4,413	5,300 5,099 4,413	5,293 5,064 5,064	10,703 8,020 0,474	1,505 1,009 543	2,013 2,435 1,831	3,386 2,642 1,727	11,801 10,252 0,408	8,475 6,610 4,081
Slaughtering and meat packing.....	1909 1904 1899	48 23 10	2,263 1,762 1,660	56 26 26	317 1,580 1,501	1,890 1,580 1,501	3,283 2,457 4,081	6,620 4,887 4,081	386 197 164	1,042 182 611	23,403 14,072 12,244	27,217 16,500 14,142	3,814 2,497 1,808
Stoves and furnaces, including gas and oil stoves.	1909 1904 1899	12 11 11	2,116 1,629 1,629	1 5 5	312 165 165	1,803 1,350 1,350	1,631 914 914	3,086 2,501 2,501	307 184 184	1,003 660 660	1,509 1,052 1,052	3,737 2,445 2,445	2,168 1,393 1,393
Tobacco manufactures.....	1909 1904 1899	775 767 628	3,380 3,868 3,054	831 840 687	158 200 98	2,301 2,810 2,260	286 457 475	2,905 3,153 2,316	187 201 129	1,106 1,196 903	2,507 2,186 1,697	6,142 6,346 4,888	3,635 4,160 3,191
Woolen, worsted, and felt goods, and wool hats.	1909 1904 1899	33 29 35	1,178 1,228 1,228	23 27 27	100 64 65	1,040 1,137 1,003	3,050 2,476 2,476	2,574 2,346 2,300	127 84 87	381 381 310	1,376 2,208 1,163	2,230 2,208 1,855	854 898 692
All other industries.....	1909 1904 1899	725 619 654	14,955 12,538 12,538	651 582 1,008	2,045 1,148 1,008	12,259 10,808 11,323	30,132 27,045 27,045	47,009 29,017 21,541	2,178 1,300 1,000	6,199 6,358 4,020	24,696 15,390 12,538	45,714 28,236 25,152	21,018 12,846 12,014

CITIES OF 50,000 INHABITANTS OR MORE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES.

MILWAUKEE—All industries..	1909 1904 1899	1,784 1,527 1,419	68,933 49,843 49,843	1,472 1,393 1,393	7,959 5,084 4,077	50,502 43,306 41,280	94,254	\$219,391 161,494 105,504	\$9,405 5,837 4,305	\$31,437 20,809 17,102	\$119,821 71,103 59,694	\$208,324 137,065 110,654	\$88,503 66,892 51,160
Artificial stone.....	1909 1904 1899	0 4 4	65 36 36	2 5 5	18 8 8	80 23 23	238	180 73 73	10 5 5	47 13 13	00 24 24	161 72 72	101 48 48
Boots and shoes, including out stock and findings.	1909 1904 1899	20 27 22	3,258 1,788 1,788	13 20 20	272 99 103	2,073 1,609 1,708	1,481	5,312 2,054 1,455	334 98 98	1,235 632 525	4,050 2,040 1,694	7,800 3,182 2,693	2,850 1,142 809
Bread and other bakery products.....	1909 1904 1899	318 256 249	1,442 1,558 1,007	331 258 248	136 133 98	975 1,167 721	509	3,105 1,771 947	114 104 68	528 492 267	2,213 2,100 1,000	3,824 3,510 2,158	1,611 1,410 1,008
Brooms and brushes.....	1909 1904 1899	21 17 20	204 102 136	17 15 23	39 20 0	148 121 104	96	178 146 69	25 18 7	67 58 32	158 62 99	339 233 179	181 141 80
Carriages and wagons and materials...	1909 1904 1899	23 34 20	205 475 475	31 44 8	6 19 243	168 412 243	310	383 725 517	8 17 8	103 219 111	376 400 149	566 881 367	190 361 218
Clothing, men's, including shirts.....	1909 1904 1899	66 84 80	3,096 2,203 1,990	61 91 87	353 189 174	2,692 1,923 1,699	344	4,505 2,757 2,353	423 254 190	975 621 465	3,467 2,394 1,504	0,278 4,700 3,637	2,811 2,396 1,743
Clothing, women's.....	1909 1904 1899	14 9 6	440 249 191	11 11 11	38 22 10	301 210 161	45	247 148 101	57 25 14	139 80 49	352 140 54	660 334 189	317 185 135
Confectionery.....	1909 1904 1899	14 12 10	1,560 761 761	8 5 65	338 74 65	1,214 682 495	910	1,941 780 451	305 80 61	356 184 111	1,530 871 648	3,093 1,380 989	1,227 509 341

¹ Excluding statistics for one establishment, to avoid disclosure of individual operations.
² Excluding statistics for three establishments, to avoid disclosure of individual operations.
³ Figures can not be shown without disclosing individual operations.
⁴ Excluding statistics for two establishments, to avoid disclosure of individual operations.
⁵ Not reported separately.
⁶ Figures do not agree with those published in 1904, because it was necessary to revise the totals in order to include data only for those establishments located within the corporate limits of the city.

MANUFACTURES—WISCONSIN.

TABLE II.—DETAIL STATEMENT FOR THE

INDUSTRY.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—NUMBER DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.
		Total.	Proprietors and firm members.	Salaried officers, supts. and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.				
					Male.	Female.	Average number.	Number.			Male.	Female.	Male.	Female.			
								Maximum month.	Minimum month.								
1 Marble and stone work.....	136	2,898	148	61	80	16	2,593	Se	3,141	Ja	1,700	2,432	2,431	1	4,847		
2 Mattresses and spring beds.....	21	603	12	26	47	14	504	No	562	Ja	431	551	440	92	917		
3 Millinery and lace goods.....	7	323	3	7	5	1	307	Mh	522	Jy	123	322	114	107	163		
4 Mirrors.....	5	97	1	7	1	1	87	Oc	93	Jy	82	92	92	190			
5 Models and patterns, not including paper patterns.	20	150	10	9	7	3	112	No	125	Ja	100	124	103	7	190		
6 Musical instruments and materials, not specified.	4	7	5				2	Ja ¹	2	De ¹	2	2	2		1		
7 Musical instruments, pianos and organs and materials.	11	443	20	21	15	12	360	Se	407	Mh	298	387	371	8	330		
8 Optical goods.....	3	40	2	1	6	10	21	Ja ¹	21	De ²	21	21	18	1	9		
9 Paint and varnish.....	12	288	5	19	63	7	194	Ap	211	De	173	184	161	23	935		
10 Paper and wood pulp.....	57	7,878	1	160	210	40	7,467	De	7,716	Ja	7,161	7,629	6,655	958	136,903		
11 Paper goods, not elsewhere specified..	11	380	5	17	22	7	329	De	346	Je	319	344	201	124	744		
12 Patent medicines and compounds and druggists' preparations.	62	616	53	50	173	71	260	No	301	Jy	230	313	112	190	219		
13 Pens, fountain, stylographic, and gold	5	94	2	6	21	18	47	Jy ²	48	Ja	46	48	47	1	18		
14 Photo-engraving.....	10	232	9	17	14	21	171	Ja ²	179	Jy	161	175	161	5	66		
15 Printing and publishing.....	833	7,860	864	349	905	382	5,360	De	5,632	Ap	5,249	5,638	3,878	1,449	5,293		
16 Shipbuilding, including boat building	52	1,023	52	22	33	10	906	De	1,105	Mh	795	1,150	1,140	2	3,506		
17 Signs and advertising novelties.....	3	64		6	20	2	36	At	41	Fe ²	34	38	22	13	52		
18 Slaughtering and meat packing.....	48	2,263	56	41	216	60	1,890	Ja	2,600	Se	1,612	1,776	1,650	91	3,283		
19 Stoves and furnaces, including gas and oil stoves.	12	2,116	1	46	218	48	1,803	Se	1,996	Ja	1,451	1,716	1,663	53	1,631		
20 Surgical appliances and artificial limbs	9	40	9	6	2	4	28	An	35	Ja ²	22	29	12	17	12		
21 Tobacco manufactures.....	775	3,380	831	48	95	15	2,391	De	2,460	Je	2,322	2,530	1,851	666	286		
22 Woolen, worsted, and felt goods, and wool hats.	33	1,178	23	47	53	9	1,046	Je	1,116	Oc	975	1,116	462	507	3,059		
23 All other industries ³	522	11,279	476	448	914	241	9,200								24,834		

¹ Same number reported throughout the year.
² Same number reported for one or more other months.
³ All other industries embrace—

Artificial flowers and feathers and plumes.....	1	Charcoal.....	3	Flavoring extracts.....	11
Awnings, tents, and sails.....	16	Chocolate and cocoa products.....	1	Foundry supplies.....	1
Axle grease.....	1	Clocks and watches, including cases and materials.	1	Fuel, manufactured.....	1
Babbitt metal and solder.....	2	Clothing, horse.....	5	Furs, dressed.....	8
Bags, other than paper.....	3	Clothing, men's, buttonholes.....	2	Galvanizing.....	1
Bags, paper.....	2	Coffee and spice, roasting and grinding.....	9	Glass.....	1
Baking powders and yeast.....	1	Coke.....	2	Glass, cutting, staining, and ornamenting.....	13
Baskets, and rattan and willow ware.....	4	Cordials and syrups.....	1	(Glucose and starch.....	1
Beet sugar.....	4	Cork, cutting.....	1	Glue.....	2
Belting and hose, leather.....	2	Cotton goods, including cotton small wares.....	3	Gold and silver, reducing and refining, not from the ore.....	1
Bicycles, motorcycles, and parts.....	5	Drug grinding.....	1	Graphite and graphite refining.....	1
Billiard tables and materials.....	1	Dyestuffs and extracts.....	1	Grease and tallow.....	11
Boots and shoes, rubber.....	1	Emery and other abrasive wheels.....	2	Hair work.....	1
Butter, reworking.....	1	Enameling and japanning.....	2	Hammocks.....	3
Carpets and rugs, other than rag.....	1	Engraving and diesinking.....	2	Hand stamps and stencils and brands.....	4
Carriages and sleds, children's.....	6	Explosives.....	1	Hats, straw.....	1
Cars, steam-railroad, not including operations of railroad companies.....	2	Fertilizers.....	1	House-furnishing goods, not elsewhere specified.....	3
Cash registers and calculating machines.....	1	Files.....	2	Ice, manufactured.....	3
Cement.....	1	Fire extinguishers, chemical.....	1	Ink, writing.....	1
		Flags, banners, regalia, society badges and emblems	3		

MANUFACTURES—WISCONSIN.

STATE, BY INDUSTRIES: 1909—Continued.

	EXPENSES.										Value of products.	Value added by manu- facture.	
	Capital.	Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.			Other.
1	\$3,743,141	\$3,571,179	\$103,738	\$87,000	\$1,820,537	\$72,743	\$1,144,258	\$14,270	\$18,182	\$7,785	\$201,057	\$4,113,005	\$2,800,004
2	1,632,766	1,345,240	43,435	42,599	241,262	15,302	843,079	6,322	7,009	11,117	135,115	1,443,565	585,184
3	319,141	519,368	13,748	6,209	146,829	5,117	332,400	2,007	1,718	.....	11,100	550,449	218,842
4	138,038	270,203	14,028	523	48,948	4,411	194,909	3,080	504	.....	12,707	315,940	116,536
5	103,716	151,080	10,132	8,109	65,222	5,094	40,860	5,137	600	1,767	14,169	185,432	139,478
6	6,130	4,082	.....	.....	1,980	42	2,469	300	8	.....	123	11,241	8,730
7	753,643	820,820	34,047	19,594	202,223	9,373	480,788	8,100	4,228	394	61,473	802,057	402,706
8	23,282	40,409	1,800	5,704	11,564	617	13,193	4,940	312	.....	2,279	52,338	38,528
9	1,260,288	1,352,230	45,038	47,153	99,127	15,173	1,027,500	4,836	4,706	71	107,672	1,525,896	483,223
10	33,737,744	22,746,558	484,297	246,771	3,891,469	1,616,021	15,076,544	2,060	290,000	23,164	1,106,632	25,062,000	9,269,534
11	598,413	867,576	48,030	18,268	121,700	9,450	582,672	11,423	3,125	.....	69,218	987,807	392,775
12	1,288,435	1,337,706	91,568	183,965	118,242	5,743	430,353	15,252	4,221	27,967	451,515	1,706,879	1,201,783
13	254,316	229,703	10,200	20,150	22,309	1,019	121,063	1,308	372	.....	53,222	248,311	126,220
14	116,583	272,814	25,223	21,040	130,205	6,590	39,481	7,907	320	13,096	28,277	312,180	206,103
15	10,793,425	9,893,531	628,045	370,191	2,913,124	150,555	3,235,501	228,581	55,674	360,508	1,414,762	11,860,044	8,474,588
16	3,024,759	1,542,168	41,615	27,435	540,181	30,288	782,250	2,450	18,587	1,872	91,484	1,809,022	1,081,084
17	47,840	65,416	5,935	8,052	14,384	1,985	24,653	360	157	300	8,990	76,541	49,903
18	6,629,094	25,843,283	114,105	271,467	1,041,772	130,301	23,273,134	31,060	23,894	10,000	947,550	27,216,864	3,813,429
19	3,985,602	3,302,892	90,198	216,897	1,002,684	62,534	1,506,417	3,875	18,833	573	400,971	3,737,206	2,168,256
20	69,616	92,531	7,200	1,065	10,839	729	52,350	3,037	294	120	15,947	100,731	47,652
21	2,995,217	5,123,000	80,442	106,209	1,106,095	20,586	2,480,823	59,108	704,696	389	558,601	6,141,786	3,634,377
22	2,573,827	2,000,125	73,570	52,981	380,927	47,291	1,328,500	3,812	14,852	.....	98,126	2,229,708	853,851
23	37,169,304	31,592,668	850,773	892,241	4,450,573	2,192,242	17,362,522	92,903	2,425,004	43,181	3,273,269	36,463,905	10,999,141

* All other industries embrace—Continued.

Instruments, professional and scientific.....	4	Paving materials.....	1	Stereotyping and electrotyping.....	2
Iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills.....	1	Photographic apparatus and materials.....	3	Straw goods, not elsewhere specified.....	1
Iron and steel forgings.....	1	Pottery, terra-cotta, and fire-clay products.....	3	Toys and games.....	3
Iron and steel, nails and spikes, cut and wrought, including wire nails, not made in steel works or rolling mills.....	1	Pumps, not including steam pumps.....	1	Type founding and printing materials.....	2
Kaolin and ground earths.....	2	Rubber goods, not elsewhere specified.....	3	Umbrellas and canes.....	3
Lead, bar, pipe, and sheet.....	1	Safes and vaults.....	1	Upholstering materials.....	14
Liquors, distilled.....	4	Sand and emery paper and cloth.....	1	Vault lights and ventilators.....	1
Liquors, vinous.....	1	Scales and balances.....	2	Vinegar and cider.....	7
Looking-glass and picture frames.....	5	Screws, machine.....	1	Wall paper.....	1
Matches.....	1	Shoddy.....	1	Wall plaster.....	3
Mats and matting.....	2	Show cases.....	2	Washing machines and clothes wringers.....	2
Mineral and soda waters.....	160	Smelting and refining, zinc.....	1	Wheelbarrows.....	3
Mucilage and paste.....	3	Smelting and refining, not from the ore.....	1	Windmills.....	7
Oil, essential.....	2	Soap.....	16	Window shades and fixtures.....	1
Oil, linseed.....	1	Soda-water apparatus.....	1	Wire.....	2
Oil, not elsewhere specified.....	7	Sporting and athletic goods.....	2	Wirework, including wire rope and cable.....	18
Paper patterns.....	1	Springs, steel, car and carriage.....	2	Wood distillation, not including turpentine and rosin.....	1
		Stationary goods, not elsewhere specified.....	2	Wood, turned and carved.....	24
		Statuary and art goods.....	6		
		Steam packing.....	4		

MANUFACTURES : WYOMING

STATISTICS OF MANUFACTURES FOR THE STATE, CITIES, AND INDUSTRIES

Prepared under the supervision of W. M. STEUART, Chief Statistician for Manufactures

INTRODUCTION.

This advance bulletin gives the statistics of manufactures for the state of Wyoming for the calendar year 1909 as shown by the Thirteenth Census. It will be reprinted without change as a part of the state Compendium of the Census for Wyoming and in the final reports of the Thirteenth Census.

The text summarizes the general results of the census inquiry, presenting a series of special tables in which the main facts printed in the general tables are given in convenient form for the state as a whole and for important industries. It also presents tables in which the statistics for the industries of the state as a whole and for a few important industries are classified by character of ownership, size of establishments, number of wage earners, and prevailing hours of labor, information which could not be presented in general tables for each industry without disclosing the facts for individual establishments.

At the end of the bulletin are two general tables.

Table I gives for 1909, 1904, and 1899 the number of establishments and of persons engaged in the industries, primary power, capital, salaries and wages, cost of materials, value of products, and value added by manufacture, for all industries combined and for certain important industries in the state. It also gives the same items for 1909 for all industries combined for Cheyenne, the only city having a population of 10,000 and over in 1910.

Table II gives statistics in greater detail for 1909 for the state and for a larger number of industries.

Scope of census: Factory industries.—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 organization, location of establishments, size of establishments, labor force, and similar subjects. When use is made of the data for these purposes it is imperative that due attention should be given to the limitations of the figures. Particularly is this true when the attempt is made to derive from them figures purporting to show average wages, cost of production, or profits. These limitations will be fully discussed in the general report on manufactures for the United States as a whole. It is impossible to reproduce such discussion in the bulletins relative to the individual states.

The census of 1909, like that of 1904, was confined to manufacturing establishments conducted under the factory system, as distinguished from the neighborhood, hand, and building industries. Where statistics for 1899 are given they have been reduced

to a comparable basis by eliminating the latter classes of industries. The census does not include establishments which were idle during the entire year or had a value of products of less than \$500, or the manufacturing done in educational, eleemosynary, and penal institutions, or in governmental establishments, except those of the Federal Government.

Period covered.—The returns cover the calendar year 1909, or the business year which corresponds most nearly to that calendar year. The statistics cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—The term "establishment" comprises the factories, mills, or plants which are under a common ownership or control, and for which one set of books of account is kept.

If, however, the plants constituting an establishment as thus defined were not all located within the same city or state, separate reports were secured in order that the separate totals might be included in the statistics for each city or state. 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 very different from those covered by the class designation, and, on the other hand, may not include the total product covered by this designation, because some part of this product may be made in establishments in which it is not the product of chief value.

Selected industries.—The general tables at the end of this bulletin give the principal facts separately for the industries of the state. A selection has been made of the leading industries of the state for more detailed consideration. Sometimes an industry of greater importance than some of those selected is omitted because it comprises so few establishments that these detailed presentations would reveal the operations of individual concerns.

Comparisons with previous censuses.—Owing to the changes in industrial conditions it is not always possible to classify establishments by industries in such a way as to permit accurate comparison with preceding censuses. Table I, giving comparable figures for 1909, 1904, and 1899, therefore, does not embrace all the industries shown for 1909 in Table II.

Influence of increased prices.—In considering changes in cost of materials, value of products, and value added by manufacture, 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 can not be taken as an exact measure of increase in the volume of business.

Persons engaged in industry.—At the censuses of 1909, 1904, and 1899, the following general classes of persons engaged in manufacturing industries have been distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks, and (5) wage earners. In the censuses of 1904 and 1899 these five classes were shown according to the three main groups: (1) Proprietors and firm members, (2) salaried officials, clerks, etc., and (3) wage earners. The second group included the

three classes of salaried officers of corporations, superintendents and managers, and clerks. In the present census an entirely different grouping is employed: that into (1) proprietors and officials, (2) clerks, and (3) wage earners. The first group includes proprietors and firm members, salaried officers of corporations, and superintendents and managers.

At this census the number of persons engaged in the industries, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for December 15, or the nearest representative day. The 15th of December was selected as representing for most industries normal conditions of employment, but where conditions were exceptional, and particularly in the case of certain seasonal industries, the December date could not be accepted as typical and an earlier date had to be chosen.

In the case of employees other than wage earners the number thus reported on December 15 or other representative day has been treated as equivalent to the average for the year, since the number of employees of this class does not vary much from month to month in a given industry. In the case of wage earners the average is obtained in the manner explained in the next paragraph.

Wage earners.—In addition to the report by sex and age of the number of wage earners on December 15 or other representative day, a report was obtained of the number employed on the 15th of each month, without distinction of sex or age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported each month by 12. The average thus obtained represents the number of wage earners that would be required to perform the work done if all were constantly employed during the entire year. Accordingly, the importance of any 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 for each separate industry, is not totaled for all industries combined, because in view of the variations of date such a total is believed not 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 particular, totals by sex and age for the wage earners reported for the representative day would be misleading because of the undue weight given to seasonal industries, in some of which, such as canning and preserving, the distribution of the wage earners by sex and age is materially different from that in most industries of more regular operation. In order to determine as nearly as possible the sex and age distribution of the average number of wage earners in the state as a whole, the following procedure has been adopted:

The percentage distribution by sex and age of the wage earners in each industry, for December 15 or the nearest representative day, has been calculated from the actual numbers reported for that date. This percentage has been applied to the average number of wage earners for the year in that industry, to determine the average number of men, women, and children employed. These calculated averages for the several industries have been added up to give the average distribution for the state as a whole.

In 1899 and 1904 the schedule called for the average number of wage earners of each sex 16 years and over, and the total number under 16 years of age, for each month, and these monthly statements were combined in an annual average. Comparatively few manufacturing concerns, however, keep their books in such way as to show readily the number of men, women, and children (under 16) employed each month. These monthly returns by sex and age were, in fact, largely estimates. It was believed that a more accurate and reliable sex and age distribution could be secured by taking as a basis of estimate the actual numbers employed on a single day.

Prevailing hours of labor.—The census made no attempt to

ascertain the number of employees 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 period to another are disregarded, and no attention is given to the fact that a limited number of employees may have hours differing from those of the majority. In the tables all the wage earners of each establishment are counted in the class within which the establishment itself falls. In most establishments, however, all or practically all the employees work the same number of hours, so that these figures give a substantially correct picture of the hours of labor in manufacturing industries.

Capital.—For reasons stated in prior census reports, the statistics of capital secured by the census canvass are so defective as to be without value, except as indicating very general conditions. The instructions on the schedule for securing 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.

Materials.—Cost of materials refers to the materials used during the year, which may be more or less than the materials purchased during the year. The term materials includes fuel, rent of power and heat, mill supplies, and containers, as well as materials forming a constituent part of the product. Fuel includes all fuel used, whether for heat, light, or power, or for the process of manufacture.

Expenses.—Under "Expenses" are included all items of expense incident to the year's business, except interest, whether on bonds or other forms of indebtedness, dividends on stock, and allowances for depreciation.

Value of products.—The value of products for any industry includes the total value of all products manufactured in establishments whose products of chief value fall under the industry designation. The amounts given represent the selling value at the factory of all products manufactured during the year, which may differ from the value of the products sold. Amounts received for work on materials furnished by others are included.

Value added by manufacture.—The value of products is not 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 process carried on in the industry itself. Another part of it, and often by far the larger part, represents the value of the materials used, which have been produced by agriculture or mining or by other industrial establishments. For many purposes, therefore, the best measure of the importance of different classes of industry is the value created as the result of the manufacturing operations carried on within the industry. This value is obtained by deducting the cost of the materials consumed from the value of the product. The figure thus obtained is termed in the census reports "value added by manufacture."

There is a further statistical advantage which "value added" has over gross value of products. In combining the value of products for all industries the value of products produced by one establishment and used as materials in another is duplicated, and the total, therefore, gives a greatly exaggerated idea of the wealth created. No such duplication takes place in the total "value added by manufacture."

Cost of manufacture and profits.—Census data do not show the entire cost of manufacture, and consequently can not be used to show profits. No account has been taken of interest and depreciation. Even if the amount of profit could be determined by deducting the expenses from the value of the products the rate of profit on the investment could not properly be calculated, because of the very defective character of the returns regarding capital.

Primary power.—The figures given for this item show the total of the primary power used by the establishments. They do not

cover the power developed by motors operated by such power, the inclusion of which would evidently result in duplication.

Location of establishments.—The Census Bureau has classified establishments by their location in cities or classes of cities. In interpreting these figures due consideration should be given to the fact that often establishments are located just outside the boundaries of cities, and are necessarily so classified, though locally they are looked upon as constituting a part of the manufacturing interests of the cities.

Laundries.—The census of 1909 was the first to include statistics of laundries. The reports are confined to establishments using mechanical power. The data are presented separately and are not included in the general total for manufacturing industries, in order to avoid interference with comparisons with prior censuses.

Custom sawmills.—In order to make the statistics for 1909 comparable with those for 1904, the data for these mills have been excluded from all the tables presenting general statistics, and are given in a separate table at the end of this report.

INDUSTRIES IN GENERAL.

General character of the state.—Wyoming, with a land area of 97,575 square miles, ranks eighth in area among the states and territories of continental United States. Its population in 1910 was 145,965, as compared with 92,531 in 1900 and 62,555 in 1890. It ranked forty-eighth among the 49 states and territories as regards population both in 1910 and 1900.

The state has but one city having a population of over 10,000, Cheyenne, with a population of 11,320. The density of population for the entire state is 1.5 per square mile, the corresponding figure for 1900 being 1.0. There are no navigable streams in the state, and railroad facilities are poor, the central and northwestern portions being entirely without railroads.

Importance and growth of manufactures.—The manufactures of Wyoming are not of great importance, the number of establishments reported and the variety of industries represented being small. More than two-thirds of the entire increase in the value of products for the past five years was due to the growth in the output of less than 20 of the establishments. Outside of them, the remainder of the establishments, which are distributed throughout the state, are comparatively small and all practically are engaged in manufacturing for local consumption.

The following table gives the more important figures relative to all classes of manufactures combined for the state as returned at the censuses of 1909, 1904, and 1899, together with percentages of increase from census to census:

	NUMBER OR AMOUNT.			PER CENT OF INCREASE.	
	1909	1904	1899	1904-1909	1899-1904
Number of establishments.....	268	169	139	58.6	21.6
Persons engaged in manufactures.....	3,393	2,163	(¹)	56.9	(¹)
Proprietors and firm members.....	263	150	(¹)	75.3	(¹)
Salaried employees.....	263	179	87	46.9	105.7
Wage earners (average number).....	2,807	1,834	2,000	56.3	² 11.0
Primary horsepower.....	7,628	3,604	3,820	111.7	² 5.7
Capital.....	\$6,195,000	\$2,696,000	\$2,048,000	129.8	31.6
Expenses.....	5,594,000	3,189,000	2,825,000	75.4	12.9
Services.....	2,392,000	1,467,000	1,300,000	63.1	12.8
Salaries.....	311,000	206,000	91,000	51.0	126.4
Wages.....	2,081,000	1,261,000	1,209,000	65.0	4.3
Materials.....	2,608,000	1,301,000	1,370,000	100.5	² 5.0
Miscellaneous.....	594,000	421,000	155,000	41.1	171.6
Value of products.....	6,249,000	3,523,000	3,269,000	77.4	7.8
Value added by manufacture (value of products less cost of materials).....	3,641,000	2,222,000	1,899,000	63.9	17.0

¹ Figures not available.

² Decrease.

In 1909 the state of Wyoming had 268 manufacturing establishments operating under the factory system, which gave employment to an average of 3,393 persons during the year and paid out \$2,392,000 in salaries and wages. Of the persons employed, 2,867 were wage earners. These establishments turned out products to the value of \$6,249,000, to produce which materials costing \$2,608,000 were consumed. The value added by manufacture was thus \$3,641,000, which figure, as explained in the Introduction, best represents the net wealth created by manufacturing operations during the year.

In general, this table brings out the fact that the manufacturing industries of Wyoming as a whole showed a greater development during the five-year period 1904-1909 than during the period 1899-1904. During the more recent period the total number of establishments in the state increased 58.6 per cent and the average number of wage earners 56.3 per cent, while the value of products increased 77.4 per cent and the value added by manufacture 63.9 per cent. As pointed out in the Introduction, it would be improper to infer that manufactures increased in volume during the period 1904-1909 to the extent indicated by these

STATISTICS OF MANUFACTURES—WYOMING.

figures regarding values, since the increase shown is certainly due, in part, to the increase that has taken place in the price of commodities.

The relative importance and growth of the leading manufacturing industries of the state are shown in the following table:

INDUSTRY.	Number of establishments.	WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.		PER CENT OF INCREASE. ¹			
		Average number.	Percent distribution.	Amount.	Percent distribution.	Amount.	Percent distribution.	Value of products.		Value added by manufacture.	
								1904-1909	1899-1904	1904-1909	1899-1904
All industries	268	2,867	100.0	\$6,249,000	100.0	\$3,641,000	100.0	77.4	7.1	68.9	17.0
Cars and general shop construction and repairs by steam-railroad companies.....	9	1,690	58.9	2,337,000	37.4	1,629,000	44.7	42.5	40.2	47.2	60.4
Lumber and timber products.....	63	948	22.0	751,000	12.0	553,000	15.2	61.5	238.5	37.9	25.0
Flour-mill and gristmill products.....	13	29	1.0	740,000	11.9	163,000	4.5	102.7	34.0	130.8	16.1
Printing and publishing.....	65	102	5.6	490,000	7.8	400,000	11.0	56.8	86.3	53.3	84.8
Butter, cheese, and condensed milk.....	4	20	0.7	209,000	4.3	58,000	1.6	136.0	.....	205.3	.....
Bread and other bakery products.....	33	38	1.3	239,000	3.8	107,000	2.9	102.6	435.3	174.4	387.5
Liquors, malt.....	3	27	0.9	227,000	3.6	181,000	5.0	320.4	1.9	304.1	4.9
All other industries.....	78	253	8.8	1,190,000	19.0	590,000	15.1	111.7	237.1	89.0	132.5

¹ Per cent of increase is based on figures in Table I.

² Decrease.

It should be borne in mind, in considering this table, that the value of products in some of the industries involves a certain amount of duplication due to the use of the products of one establishment as material for another establishment.

The most important industries listed in this table, in which they are arranged in the order of the value of products, call for brief consideration.

Cars and general shop construction and repairs by steam-railroad companies.—This industry, first in importance in the state, represents the work done in the car shops operated by steam-railroad companies and is exclusive of minor repairs in roundhouses. The operations of the industry consist almost wholly of repairs to the rolling stock and equipment of the companies reporting. Employment was given on an average to 1,690 wage earners, or 58.9 per cent of the total for the state, and the value of products, \$2,337,000, formed 37.4 per cent of the corresponding total for all industries. In 1909 the value added by manufacture for this industry alone represented 44.7 per cent of the total for the state.

Lumber and timber products.—This industry, which not only embraces establishments engaged in logging, but sawmills and planing mills during the five-year period 1899-1904 showed a decrease in value of products and value added by manufacture, but during the more recent period 1904-1909 the industry practically regained all it had lost in 1904, as compared with 1899.

Flour-mill and gristmill products.—The value of products for this industry in 1909 represented 11.9 per cent of the total value of products for the state. Owing to the comparatively simple processes involved in this industry and the extent to which they are carried on by machinery, the value added by manufacture is not commensurate with the gross value of products or the number of establishments.

Printing and publishing.—In 1909 the establishments classified under this head included 61 establishments publishing newspapers and periodicals and 4 establishments doing book and job work exclusively.

Measured by value added by manufacture the four leading industries held generally the same relative rank as when measured by value of products, though printing and publishing becomes third in order instead of flour-mill and gristmill products, which, in turn, becomes fifth.

This table shows also the percentages of increase for these leading industries in respect to value of products and value added by manufacture. The malt-liquor industry showed a greater rate of increase from 1904 to 1909 in both value of products and value added by manufacture than any other of the specified industries, namely, 320.4 per cent and 364.1 per cent, respectively. Remarkable increases both in gross value of products and in value added by manufacture are also shown for the bakeries, the creameries, and the flour mills and gristmills. All of the industries specified showed an increase in value of products and value added by manufacture from 1904 to 1909. From 1899 to 1904, however, the lumber industry showed a decrease in both items and the malt-liquor industry in value added by manufacture.

In addition to the seven industries presented separately there are five industries each of which had a value of products in 1909 in excess of \$100,000. They are included under the head of "All other industries" either because, if they were shown separately the operations of individual establishments would be disclosed, or because comparable statistics for the different census years were not available. These five industries comprise the manufacture of brooms, leather goods, wall plaster, and also the steel works and rolling mills, and the slaughtering and meat-packing establishments.

Persons engaged in manufacturing industries.—The following table shows the distribution of the number of persons engaged in manufactures, the average number of wage earners being distributed by sex and age. It should be borne in mind, however, that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

CLASS.	PERSONS ENGAGED IN MANUFACTURES.		
	Total.	Male.	Female.
All classes.....	3,393	3,313	80
Proprietors and officials.....	370	361	9
Proprietors and firm members.....	203	257	6
Salaried officers of corporations.....	19	10	.....
Superintendents and managers.....	88	85	3
Clerks.....	156	131	25
Wage earners (average number).....	2,867	2,821	46
16 years of age and over.....	2,855	2,810	45
Under 16 years of age.....	12	11	1

The average number of persons engaged in manufactures during 1909 was 3,393. Of these, 2,867 were wage earners. About 70 per cent of the remainder were proprietors and officials and the rest were clerks. Corresponding figures for individual industries will be found in Table II.

The following table shows the percentage of proprietors and officials, clerks, and wage earners, respectively, and the total number of persons employed in manufactures. It covers all industries combined and four important industries individually.

INDUSTRY.	PERSONS ENGAGED IN MANUFACTURES.			
	Total number.	Per cent of total.		
		Proprietors and officials.	Clerks.	Wage earners (average number).
All industries.....	3,393	10.9	4.6	84.5
Cars and general shop construction and repairs by steam-railroad companies.....	1,806	1.4	5.0	93.6
Flour-mill and gristmill products.....	45	28.0	6.7	64.4
Lumber and timber products.....	766	13.4	2.0	84.6
Printing and publishing.....	275	32.4	3.7	58.9
All other industries.....	501	27.0	4.6	67.5

Of the total number of persons engaged in all manufacturing industries, 10.9 per cent were proprietors and officials, 4.6 per cent clerks, and 84.5 per cent wage earners. In the printing and publishing and the flour-mill and gristmill industries the majority of the establishments are comparatively small and the work is largely done by the proprietors or their immediate representatives. Therefore the proportion of persons engaged in the industry falling in the class of proprietors and officials is very much higher than for most other industries or for all industries combined. The smallest proportion for this class is shown for the railroad repair shops, and is due to the

fact that corporations which operate these establishments report no proprietors, in addition to which general officials are not as a rule assigned to the supervision of this particular branch of work.

The following table shows in percentages for all industries combined, the distribution of the average number of wage earners by age periods and sex, calculated in the manner described in the Introduction. It also shows, for some of the important industries separately, the percentage distribution, by age periods and sex, of wage earners as reported for December 15 or the nearest representative day. As a means of judging the importance of the several industries the average total number employed for the year is also given in each case.

INDUSTRY.	WAGE EARNERS.			
	Average number. ¹	Per cent of total.		
		16 years of age and over.		Under 16 years of age.
Male.	Female.			
All industries.....	2,867	98.0	1.6	0.4
Cars and general shop construction and repairs by steam-railroad companies.....	1,690	100.0	.....	.....
Flour-mill and gristmill products.....	29	100.0	.....	.....
Lumber and timber products.....	648	99.4	0.2	0.5
Printing and publishing.....	162	74.1	21.0	4.9
All other industries.....	338	96.7	3.0	0.3

¹For method of estimating the distribution, by sex and age periods, of the average number in all industries combined, see Introduction.

Of the 2,867 wage earners, 98.4 per cent were male and 1.6 per cent female; 99.6 per cent were 16 years of age or over and but four-tenths of 1 per cent under 16 years.

The largest number of women and children are employed in the printing and publishing industry. Of the 162 wage earners shown in that industry 120 were males and 34 were females 16 years of age and over and 8 were males under 16 years of age.

In order to compare the distribution of persons engaged in manufactures in 1909 with that shown in the census of 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) The following table makes this comparison according to occupational status:

CLASS.	PERSONS ENGAGED IN MANUFACTURES.				
	1909		1904		Per cent of increase, 1904-1909.
	Number.	Percent distribution.	Number.	Percent distribution.	
Total.....	3,393	100.0	2,163	100.0	56.9
Proprietors and firm members.....	203	7.3	150	6.9	75.3
Salaried employees.....	203	7.3	179	8.3	46.9
Wage earners (average number).....	2,867	84.5	1,834	84.8	56.3

Comparable figures are not obtainable for 1899. The table shows a greater percentage of increase in the proprietors and firm members than in either of

STATISTICS OF MANUFACTURES—WYOMING.

the other two classes. This is probably due to the fact that the increase in the number of establishments was mostly in small establishments operated under individual ownership in which practically all work is performed by the proprietors.

The following table shows the average number of wage earners, distributed according to age periods, and, in the case of those 16 years of age and over, according to sex, for 1909, 1904, and 1899. The averages for 1909 are estimated on the basis of the actual number reported for a single representative day. (See Introduction.)

CLASS.	AVERAGE NUMBER OF WAGE EARNERS.					
	1909		1904		1899	
	Number.	Percent distribution.	Number.	Percent distribution.	Number.	Percent distribution.
Total.....	2,867	100.0	1,834	100.0	2,060	100.0
16 years of age and over..	2,855	99.6	1,826	99.6	2,045	99.3
Male.....	2,810	98.0	1,793	97.8	2,030	98.5
Female.....	45	1.6	33	1.8	15	0.7
Under 16 years of age....	12	0.4	8	0.4	15	0.7

This table indicates that for all industries combined there has been very little change during the 10 years in the employment of women and children. In 1909 males 16 years of age and over formed 98 per cent of all wage earners, as compared with 97.8 per cent in 1904, and 98.5 per cent in 1899.

Wage earners employed by months.—The following table gives the number of wage earners employed on

the 15th of each month during the year 1909, for all industries combined, for the lumber industry, and for all other industries combined; it also gives the percentage which the number reported for each month is of the greatest number reported for any month. In Table (II), page (14), is shown, for each industry in the state, the largest number and also the smallest number of employees reported for any month. The number for each month relates to the 15th day or the nearest representative day of that month.

While the lumber industry is conducted throughout the year in Wyoming, yet on account of climatic conditions it is to a certain extent a seasonal industry, giving employment to a larger number of persons during the summer months. It is the second industry of the state in respect to the number of wage earners employed, and the variation in its totals affects to a considerable extent the total for all industries combined. From 439 wage earners in February the number in this industry steadily increased until September, when it reached 815, the largest number employed in any one month. When the two branches of this industry are considered separately, the table shows that both in the mills and in logging operations the largest number of wage earners was employed during the month of September. In the mills the smallest number was employed in March, while January shows the smallest number employed in logging operations. Outside the lumber industry the number of wage earners varies from a minimum of 2,042 in February to a maximum of 2,437 in December.

MONTH.	NUMBER OF WAGE EARNERS.									
	All industries.		Lumber and timber products.						All other industries.	
			Total.		In mills.		In logging operations.			
	Number.	Per cent of maximum.	Number.	Per cent of maximum.	Number.	Per cent of maximum.	Number.	Per cent of maximum.	Number.	Per cent of maximum.
January.....	2,406	79.6	441	54.1	124	36.5	317	66.7	2,055	84.3
February.....	2,481	79.1	430	53.9	115	33.8	324	68.2	2,042	83.8
March.....	2,642	84.2	565	69.3	109	32.1	456	96.0	2,077	85.2
April.....	2,642	84.2	587	72.0	163	47.9	424	89.3	2,055	84.3
May.....	2,783	88.7	622	76.3	196	57.6	426	89.7	2,161	88.7
June.....	2,938	95.1	715	87.7	259	76.2	456	96.0	2,268	93.1
July.....	2,957	94.3	749	91.9	286	84.1	463	97.5	2,208	90.6
August.....	3,042	97.0	790	96.9	321	94.4	469	98.7	2,252	92.4
September.....	3,132	99.8	815	100.0	340	100.0	475	100.0	2,317	95.1
October.....	3,031	96.6	722	88.6	262	77.1	460	96.8	2,309	94.7
November.....	3,137	100.0	705	86.5	240	70.6	465	97.0	2,432	98.8
December.....	3,065	97.7	628	77.1	163	47.9	465	97.0	2,437	100.0

Prevailing hours of labor.—In the following table wage earners have been classified according to hours of labor prevailing in the establishments in which they are employed. In making this classification the average number of wage earners employed during the year is used, and the number employed in each establishment is classified as a total, according to the hours prevailing in that establishment, even though

some few employees work a greater or less number of hours.

It is evident from these figures that for the great majority of the wage earners employed in the manufacturing industries of Wyoming the prevailing hours of labor range from 60 to 72 a week, or from 10 to 12 hours a day, only 16.9 per cent of the total being employed in establishments operating less than 10 hours

STATISTICS OF MANUFACTURES—WYOMING.

a day. There were no establishments operating more than 72 hours a week.

Of the total number of wage earners, 58.9 per cent were employed in the railroad repair shops. Practi-

cally all of these shops operate between 60 and 72 hours per week. The lumber industry is mainly on a 10-hour-per-day basis.

INDUSTRY.	AVERAGE NUMBER OF WAGE EARNERS IN ESTABLISHMENTS GROUPED ACCORDING TO PREVAILING HOURS OF WORK PER WEEK.								
	Total.	48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
All industries.....	2,867	228	34	203	19	762	1,566	35	.....
Cars and general shop construction and repairs by steam-railroad companies.....	1,000	.....	13	130	.....	.....	1,541	.....	.....
Flour-mill and gristmill products.....	20	3	.....	.....	.....	20	.....	.....	.....
Lumber and timber products.....	648	8	10	6	4	611	9	.....	.....
Printing and publishing.....	102	94	11	35	6	10	.....	.....	.....
All other industries.....	338	123	.....	20	9	129	16	35	.....

Location of establishments.¹—The next table shows to what extent manufacturing in the state is carried on in the city of Cheyenne.

ITEM.	Year.	Total.	LOCATION OF ESTABLISHMENTS.		PER CENT OF TOTAL.	
			Cheyenne.	Outside districts.	Cheyenne.	Outside districts.
Population.....	1910	145,065	11,320	134,645	7.8	92.2
	1900	92,531	14,087	78,444	15.2	84.8
Number of establishments.	1909	268	22	246	8.2	91.8
	1904	169	18	151	10.7	89.3
	1899	130	17	122	12.2	87.8
Average number of wage earners.	1909	2,867	853	2,014	29.8	70.2
	1904	1,834	552	1,282	30.1	69.9
	1899	2,000	423	1,577	20.5	79.5
Value of products..	1909	\$6,249,078	\$1,577,023	\$4,672,055	25.2	74.8
	1904	3,523,260	924,697	2,598,563	26.2	73.8
	1899	3,208,555	722,457	2,486,098	22.1	77.9
Value added by manufacture.	1909	3,640,889	960,049	2,680,840	26.6	73.4
	1904	3,222,487	616,975	1,605,512	27.8	72.2
	1899	1,898,825	433,909	1,464,916	22.9	77.1

The figures in this table indicate that comparatively little change has taken place during the two intercensal periods. Although the city of Cheyenne shows a small relative increase as measured by value of products, value added by manufacture, and average number of wage earners for the 10-year period, there was a decrease in these items in 1909, as compared with 1904. In 1909 this city, with 8.2 per cent of the total number of establishments in the state and 29.8 per cent of the average number of wage earners, produced 25.2 per cent of the total value of products. With the exception of the car shops, which in 1909 gave employment to almost nine-tenths of the total average number of wage earners reported for all manufacturing industries in the city, the establishments are only such as are necessary to meet local requirements.

Character of ownership.—The table that follows has for its purpose the presentation of conditions in respect to the character of ownership, or legal organization, of manufacturing enterprises. For all industries combined comparative figures are given covering the census of 1909 and 1904. Comparative data

for 1899 are not available. Figures for 1909 only are presented for two important industries. In order to avoid disclosing the operations of individual concerns it is necessary to omit two important industries from this and the following table.

INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
ALL INDUSTRIES:				
1909.....	268	2,867	\$6,249,078	\$3,640,889
1904.....	169	1,834	3,523,260	2,222,487
Individual:				
1909.....	151	378	924,093	585,561
1904.....	80	146	555,377	284,565
Firm:				
1909.....	49	80	650,285	216,926
1904.....	28	47	216,525	101,663
Corporation:				
1909 ¹	68	2,409	4,664,800	2,838,402
1904 ¹	55	1,641	2,751,358	1,836,259
Per cent of total:				
1909.....	100.0	100.0	100.0	100.0
1904.....	100.0	100.0	100.0	100.0
Individual:				
1909.....	56.3	13.2	14.8	16.1
1904.....	50.9	8.0	15.8	12.8
Firm:				
1909.....	18.3	2.8	10.6	6.0
1904.....	16.6	2.6	6.1	4.6
Corporation:				
1909.....	25.4	84.0	74.0	78.0
1904.....	32.5	89.5	78.1	82.0
Lumber and timber products,				
1909.....	63	648	\$751,249	\$563,744
1904.....	30	205	230,440	190,067
Individual.....	20	45	70,416	51,898
Firm.....	4	308	450,303	305,779
Corporation.....	.....	.....	.....	.....
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	61.9	31.6	30.7	35.4
Firm.....	31.7	6.9	9.4	9.4
Corporation.....	6.3	61.4	60.0	55.2
Printing and publishing, 1909.....	65	162	\$489,544	\$399,472
Individual.....	37	94	158,430	134,776
Firm.....	9	12	51,684	34,913
Corporation ¹	19	86	279,421	229,783
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	56.9	39.5	32.4	33.7
Firm.....	13.8	7.4	10.6	8.7
Corporation.....	20.2	53.1	57.1	57.5

¹ Includes the group "Other," to avoid disclosure of individual operations.

The most important distinction shown is that between corporate and all other forms of ownership. For all industries combined, 25.4 per cent of the total number of establishments were in 1909 under corporate ownership, as against 74.6 per cent under all other forms. The corresponding figures for 1904 were 32.5 per cent and 67.5 per cent, respectively. This

¹ See Introduction.

large decrease in the proportion of establishments operated by corporations was accompanied by a decrease in the proportion of the total average number of wage earners, value of products, and value added by manufacture reported by such establishments. The decrease in the relative importance of the number of establishments under corporate ownership is due principally to the large increase during the five-year period in the number of establishments operated by individuals, namely, from 86, or 50.9 per cent of the total, in 1904 to 151, or 56.3 per cent of the total, in 1909.

Size of establishment.—The tendency for manufacturing to become concentrated in large establishments, or the reverse, is a matter of interest from the standpoint of industrial organization. In order to throw some light upon it, the table which follows groups the establishments according to the value of their products. The table also shows the average size of establishments for all industries combined and for two important industries separately as measured by number of wage earners, value of products, and value added by manufacture. The totals for all industries are shown for the last two censuses, while for two important industries figures are given for 1909 only.

This table shows that, in 1909, of the 268 manufacturing establishments in the state, only 17, or 6.3 per cent, had a value of product exceeding \$100,000. These establishments, however, employed an average of 2,215 wage earners, or 77.3 per cent of the total number in all establishments, and reported 67.5 per cent of the total value of products, and 66.3 per cent of the total value added by manufacture.

On the other hand, small establishments—that is, those having a value of product of less than \$5,000—constituted a considerable proportion (52.6 per cent) of the total number of establishments, but the value of their products amounted to only 5.5 per cent of the total. The great bulk of the manufacturing was carried on in establishments whose products were not less than \$100,000 in value.

The five years from 1904 to 1909 witnessed a marked gain in the relative importance of the larger establishments as measured by value of products, the proportion of the total value of products for the state reported by such establishments increasing from slightly more than one-half to a little more than two-thirds.

INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
ALL INDUSTRIES:				
1909.....	268	2,867	\$9,349,078	\$3,640,869
1904.....	169	1,834	3,523,260	2,222,487
Less than \$5,000:				
1909.....	141	161	343,444	242,297
1904.....	74	72	180,100	130,834
\$5,000 and less than \$20,000:				
1909.....	86	231	771,778	489,792
1904.....	61	202	562,058	359,248
\$20,000 and less than \$100,000:				
1909.....	24	299	913,075	494,471
1904.....	23	229	950,524	427,925
\$100,000 and less than \$1,000,000:				
1909 ¹	17	2,215	4,220,781	2,414,329
1904.....	8	1,331	1,829,678	1,304,489
Per cent of total:				
1909.....	100.0	100.0	100.0	100.0
1904.....	100.0	100.0	100.0	100.0
Less than \$5,000:				
1909.....	52.6	5.6	5.5	6.7
1904.....	43.8	3.9	5.1	5.9
\$5,000 and less than \$20,000:				
1909.....	32.1	8.1	12.4	13.5
1904.....	37.9	11.0	16.0	16.2
\$20,000 and less than \$100,000:				
1909.....	9.0	9.1	14.6	13.6
1904.....	13.6	12.5	27.0	19.3
\$100,000 and less than \$1,000,000:				
1909.....	6.3	77.3	67.5	66.3
1904.....	4.7	72.6	51.9	58.7
Average per establishment:				
1909.....		11	\$23,317	\$13,585
1904.....		11	20,848	13,151
Lumber and timber products,				
1909.....	63	648	\$751,249	\$553,744
Less than \$5,000.....	48	77	93,200	73,993
\$5,000 and less than \$20,000.....	11	62	94,292	67,553
\$100,000 and less than \$1,000,000 ²	4	519	563,757	412,198
Per cent of total:				
1909.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	74.2	12.0	12.4	13.4
\$5,000 and less than \$20,000.....	17.5	8.0	12.6	12.2
\$100,000 and less than \$1,000,000.....	8.3	80.0	75.0	74.4
Average per establishment.....				
		10	11,926	8,790
Printing and publishing, 1909.....				
Less than \$5,000.....	66	169	\$489,544	\$389,478
\$5,000 and less than \$20,000.....	36	44	90,321	83,393
\$20,000 and less than \$100,000.....	24	75	219,923	179,139
	5	43	170,300	136,950
Per cent of total.....				
Less than \$5,000.....	100.0	100.0	100.0	100.0
\$5,000 and less than \$20,000.....	55.4	27.2	20.3	20.9
\$20,000 and less than \$100,000.....	36.9	46.3	44.9	44.6
	7.7	26.5	34.8	34.3
Average per establishment.....				
		2	\$7,531	\$6,140

¹ Includes the group "\$1,000,000 and over."

² Includes the group "\$20,000 and less than \$100,000."

In some respects, and especially from the standpoint of conditions under which persons engaged in manufactures work, the best classification of establishments to bring out the feature of size is a classification according to the number of wage earners employed. The next table shows such a classification for all industries combined and for four important industries, and gives not only the number of establishments falling in each group but also the average number of wage earners employed.

INDUSTRY.	Total.	ESTABLISHMENTS EMPLOYING—								
		No wage earners.	1 to 5 wage earners.	6 to 20 wage earners.	21 to 50 wage earners.	51 to 100 wage earners.	101 to 250 wage earners.	251 to 500 wage earners.	501 to 1,000 wage earners.	Over 1,000 wage earners.
NUMBER OF ESTABLISHMENTS.										
All industries	268	40	191	25	1	2	8		1	
Cars and general shop construction and repairs by steam-railroad companies ..	9		2			1	5		1	
Flour-mill and gristmill products.....	13	3	9	1						
Lumber and timber products.....	63	2	53	5			3			
Printing and publishing.....	65	7	52	6						
All other industries.....	118	28	77	11	1	1				
AVERAGE NUMBER OF WAGE EARNERS.										
All industries	2,867		364	239	34	130	1,347		753	
Cars and general shop construction and repairs by steam-railroad companies ..	1,690		20	9		74	843		753	
Flour-mill and gristmill products.....	29		20	9						
Lumber and timber products.....	648		94	50			504			
Printing and publishing.....	162		112	50						
All other industries.....	338		138	110	34	50				
PER CENT OF AVERAGE NUMBER OF WAGE EARNERS.										
All industries	100.0		12.7	8.3	1.2	4.5	47.0		26.3	
Cars and general shop construction and repairs by steam-railroad companies ..	100.0		1.2	0.3		4.4	49.9		44.0	
Flour-mill and gristmill products.....	100.0		69.0	31.0						
Lumber and timber products.....	100.0		14.5	7.7			77.8			
Printing and publishing.....	100.0		69.1	30.9						
All other industries.....	100.0		40.8	32.5	10.1	16.6				

The per cent distribution of the number of establishments is not shown in this table; of the 268 establishments reported for all industries combined, 95.5 per cent of the establishments employed no wage earners at all or under 21 wage earners each, leaving but 4.5 per cent that employed more than that number. The most numerous single group consists of the 191 establishments employing from 1 to 5 wage earners, the next being the 40 establishments having no wage earners. There were 9 establishments that employed over 100 wage earners; only 1 employed over 500.

Of the total number of wage earners, 73.3 per cent were in establishments employing over 100 wage earners. The largest number of employees was in the group employing from 101 to 250 wage earners. This group, which is made up of the railroad repair-shop and the lumber industries, employed 1,347 wage earners, or 47 per cent of the total.

Expenses.—As stated in the Introduction, the census does not purport to furnish figures that can be used for determining the cost of manufacture and profits. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expenses going to make up the total.

The table following shows, in percentages, the distribution of expenses among the classes indicated for all industries combined and for certain important industries separately. The figures on which the percentages are based appear in Table II.

This table shows that, for all industries combined, 46.6 per cent of the total expenses was incurred for materials, 42.8 per cent for services—that is, salaries and wages—and but 10.6 per cent for other purposes. As would be expected, these proportions vary greatly in the different industries.

INDUSTRY.	PER CENT OF TOTAL EXPENSES REPORTED.			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
All industries	5.6	37.2	46.6	10.6
Cars and general shop construction and repairs by steam-railroad companies ..	5.4	56.0	30.3	8.2
Flour-mill and gristmill products.....	1.7	3.3	90.9	4.1
Lumber and timber products.....	8.1	50.4	31.7	9.8
Printing and publishing.....	15.5	40.8	26.1	17.6
All other industries.....	4.2	17.9	62.5	15.5

Engines and power.—The table following shows, for all industries combined, the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current), and their total horsepower at the censuses of 1909, 1904, and 1899. It also shows separately the number and horsepower of electric motors, including those operated by current generated in the manufacturing establishments.

STATISTICS OF MANUFACTURES—WYOMING.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899 ⁽¹⁾	1909	1904	1899 ¹	1909	1904	1899
Primary power, total	268	109	97	7,628	3,604	3,820	100.0	100.0	100.0
Owned.....	184	109	97	7,114	3,558	3,813	93.3	98.7	99.8
Steam.....	128	69	60	6,467	2,712	3,184	84.8	75.2	83.4
Gas and oil.....	37	24	14	182	88	42	2.4	2.4	1.1
Water wheels.....	14	12	14	456	372	534	6.0	10.3	14.0
Water motors.....	5	4	(2)	9	10	(2)	0.1	0.3	(2)
Other.....				376	53			10.4	1.4
Rented.....	84	(2)	(2)	514	46	7	6.7	1.3	0.2
Electric.....	84	(2)	(2)	514	46	7	6.7	1.3	0.2
Electric motors.....	108	11	8	801	132	87	100.0	100.0	100.0
Run by current generated by establishment.....	24	11	8	287	86	80	35.8	65.2	92.0
Run by rented power.....	84	(2)	(2)	514	46	7	64.2	34.8	8.0

¹ Includes the neighborhood industries and hand trades omitted in 1904 and 1909.
² Not reported.

During the period 1904-1909 there was an increase in all classes of primary power shown separately in the table except that generated by water motors, the totals

for which are comparatively insignificant. At each of the three censuses steam is shown to be the predominant primary power, in 1909 representing nearly seven-eighths of the total. Of the total increase in primary power (1904 to 1909) 93.3 per cent was steam.

Fuel.—Closely related to the question of kind of power employed is that of the fuel used in generating this power, or otherwise as material in the manufacturing processes. The following table shows the quantity of each kind of fuel used in 1909:

INDUSTRY.	Anthracite coal (tons).	Bituminous coal (tons).	Coke (tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
All industries.....	631	590,915	307	1,137	1,356	100
Cars and general shop construction and repairs by steam-railroad companies.....	4	552,801	108	151	973	
Flour-mill and gristmill products.....		8,007		19		
Lumber and timber products.....		181				
Printing and publishing.....		565		47	137	100
All other industries.....	617	29,358	199	929	212	

SUPPLEMENTARY DATA REGARDING IMPORTANT INDUSTRIES.

(With statistics for laundries and custom sawmills.)

For certain industries the Census Bureau collects, by means of special schedules, details regarding the quantity and value of materials and products which do not appear on the general schedule. Data for three important industries in Wyoming are here presented.

Lumber and timber products.—Measured by value of products, the lumber industry is second in importance in Wyoming. The following is a statement of the quantity of products of the sawmills, by classes, reported at the censuses of 1909 and 1899:

PRODUCT.	1909	1899 ¹
Rough lumber..... M feet, b. m.	28,602	16,963
Shingles..... thousands.	900	2,185
Lath..... thousands.	1,224	620

¹ Does not include reports for establishments with a product less than \$500.

Rough lumber and lath each show a large increase in quantity during the decade covered by this table, but for shingles a decrease is shown. The values reported for both lath and shingles are, however, small, and these products are of comparatively little importance. In 1909 the cut of rough lumber consisted almost entirely of softwoods, chiefly western pine and lodgepole pine.

Flour-mill and gristmill products.—The tabular statement following gives the quantity and value of products for this industry for 1909 and 1904.

As shown in the table, white flour is the principal product reported, contributing 66.7 per cent of the total value of all products reported for the industry in 1909 and 79.9 per cent in 1904. Each class of products shows a large relative increase in both quantity and value during this five-year period, but except in

the case of white flour, feed, and offal, the figures are comparatively small.

PRODUCT.	QUANTITY.		VALUE.	
	1909	1904	1909	1904
All products			\$746,899	\$288,653
Wheat flour..... barrels..	99,537	43,758	605,204	226,754
White..... barrels..	98,056	43,708	497,030	226,604
Graham..... barrels..	1,481	50	7,334	160
Corn meal..... barrels..	1,033	74	4,004	204
Rye flour..... barrels..	500		2,500	
Feed..... tons..	5,168	549	126,092	13,044
Offal..... tons..	4,084	2,300	88,921	43,651
All other.....			18,498	

Laundries.—Statistics for steam laundries are not included in the general tables. In 1909 there were 14 such establishments in the state of Wyoming, 3 of which were in Cheyenne. The following statement summarizes the statistics:

Number of establishments.....	14
Persons engaged in the industry.....	203
Proprietors and firm members.....	20
Salaried employees.....	12
Wage earners (average number).....	171
Primary horsepower.....	319
Capital.....	\$99,573
Expenses.....	149,361
Services.....	89,303
Materials.....	38,238
Miscellaneous.....	21,820
Amount received for work done.....	216,847

The most common form of organization was the firm, with seven establishments, the individual form having six establishments, and the corporate form one establishment. Two establishments had receipts for the year's business less than \$5,000; eight, \$5,000 but less than \$20,000; four, \$20,000 but less than \$100,000.

STATISTICS OF MANUFACTURES—WYOMING.

The number of persons employed each month and the per cent which this number represented of the greatest number employed in any one month were as follows:

MONTH.	WAGE EARNERS.		MONTH.	WAGE EARNERS.	
	Number.	Per cent of maximum.		Number.	Per cent of maximum.
January.....	162	87.6	July.....	180	97.3
February.....	159	85.9	August.....	185	100.0
March.....	163	88.1	September.....	179	96.8
April.....	170	91.9	October.....	167	90.3
May.....	174	94.1	November.....	168	90.8
June.....	174	94.1	December.....	172	93.0

The different kinds of primary power, the number of engines, and the amount of horsepower used in 1909 are shown in the following tabular statement:

KIND.	Number of engines.	Horsepower.
Primary power, total.....		319
Owned—Steam.....	10	221
Rented—Electric.....	21	98

The kind and amount of fuel used are shown in the following statement:

KIND.	Unit.	Quantity.
Bituminous coal.....	Tons.....	3,865
Wood.....	Cords.....	10
Oil.....	Barrels.....	32
Gas.....	1,000 feet.....	632

Custom sawmills.—Statistics for custom sawmills are not included in the general tables, but are presented in the following summary:

Number of establishments.....	4
Persons engaged in the industry.....	10
Proprietors and firm members.....	8
Wage earners (average number).....	2
Primary horsepower.....	58
Capital.....	\$4,025
Expenses.....	1,911
Services.....	698
Materials.....	215
Miscellaneous.....	998
Value of products.....	4,960

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899.

THE STATE—ALL INDUSTRIES COMBINED AND SELECTED INDUSTRIES.

INDUSTRY:	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horsepower.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Total.	Proprietors and firm members.	Salaries employed.	Wage earners (average number).							
STATE—All industries.....	1909	268	3,393	263	263	2,867	7,628	\$6,195	\$311	\$2,081	\$2,608	\$6,249	\$3,641
	1904	169	2,163	150	179	1,834	3,804	2,896	206	1,261	1,301	3,523	2,222
	1899	139	(¹)	(¹)	87	2,060	3,820	2,048	91	1,209	1,370	3,269	1,599
Bread and other bakery products.....	1909	33	77	35	4	38	31	124	3	33	132	230	107
	1904	19	38	21		17	(¹) 7	30		14	52	91	39
	1899	4	10	4		6		3		2	9	17	8
Butter, cheese, and condensed milk.....	1909	4	27			20	70	115	11	17	211	269	58
	1904	5	17	3	3	11	83	38	3	7	95	114	19
	1899	(²)											
Cars and general shop construction and repairs by steam-railroad companies.....	1909	0	1,806		110	1,000	1,550	2,046	127	1,309	708	2,337	1,620
	1904	0	1,288		70	1,212	1,488	901	91	884	593	1,640	1,107
	1899	7	881		28	853	1,041	592	20	623	460	1,170	690
Flour-mill and gristmill products.....	1909	13	45	7	0	20	885	440	11	21	583	746	163
	1904	11	31	0	6	16	501	222	5	11	219	284	65
	1899	8	(¹)	(¹)	8	14	(¹)	157	10	11	155	211	56
Liquors, malt.....	1909	3	36	1	8	27	172	266	18	25	46	227	181
	1904	3	21	1	5	15	112	107	6	11	15	54	39
	1899	4	24	3	2	10	50	80	2	12	12	53	41
Lumber and timber products.....	1909	63	766	85	33	648	2,251	1,075	50	314	198	751	553
	1904	32	370	41	24	305	707	345	28	151	94	465	401
	1899	34	(¹)	(¹)	18	692	(¹)	502	10	305	217	750	539
Printing and publishing.....	1909	65	275	60	53	162	138	437	54	141	90	490	400
	1904	47	180	38	20	119	96	200	33	84	52	313	261
	1899	40	(¹)	(¹)	6	94	(¹)	156	6	52	34	168	134
All other industries.....	1909	78	361	75	33	253	2,522	1,602	37	221	640	1,190	550
	1904	43	212	37	36	130	520	727	40	99	271	562	291
	1899	42	(¹)	(¹)	25	382	(¹)	552	34	204	463	894	431

THE CITY OF CHEYENNE—ALL INDUSTRIES COMBINED.

CHEYENNE.....	1909	22	956	12	91	858	1,233	\$1,870	\$111	\$618	\$607	\$1,577	\$970
	1904	18	623	11	60	552	(¹)	740	66	412	308	925	617
	1899	17	(¹)	(¹)	18	423	(¹)	580	17	341	289	722	433

¹ Figures not available.

² Figures can not be shown without disclosing individual operations.

STATISTICS OF MANUFACTURES—WYOMING.

TABLE II.—DETAIL STATEMENT FOR

INDUSTRY.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—NUMBER DEC. 15, OR NEAREST REPRESENTATIVE DAY.				Primary horsepower.
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.		Under 16.			
					Male.	Female.		Maximum month.	Minimum month.		Male.	Female.	Male.	Female.		
															Number.	
1 All industries.....	268	3,393	263	107	131	25	2,867	No 8,137	Fe 2,481					7,023		
2 Artificial stone.....	6	10	6				4	Je 10	Ja ¹ 0	20	20					
3 Bread and other bakery products.....	33	77	35	1	2	1	38	Au ² 46	My 24	44	42	1	1	31		
4 Brick and tile.....	13	47	10	3			34	Jy 98	Ja ¹ 0	108	108			129		
5 Butter, cheese, and condensed milk.....	4	27		4	2	1	20	Au ² 24	Fe ² 18	19	16	3		73		
6 Carriages and wagons and materials.....	10	22	14				8	No ² 9	Jy ² 6	9	9			10		
7 Cars and general shop construction and repairs by steam-railroad companies.....	9	1,806		25	82	9	1,600	De 1,885	Jy 1,578	1,888	1,888			1,550		
8 Flour-mill and gristmill products.....	13	45	7	6	2	1	29	No 32	Ap 26	30	30			885		
9 Leather goods.....	10	44	8	2			34	Jy ² 35	Fe ² 33	34	34			1		
10 Liquors, malt.....	3	36	1	6	2		27	My ² 29	De ² 25	25	25			172		
11 Lumber and timber products.....	63	766	85	18	14	1	648	So 815	Fe 439	803	798	1	4	2,251		
12 Printing and publishing.....	65	275	60	29	15	9	162	Oo 170	Fe ² 158	170	126	36	8	133		
13 Tobacco manufactures.....	10	20	11				18	Au 21	Fe 14	19	16	3				
14 All other industries ³	20	209	26	13	12	3	155							2,382		

¹ None reported for one or more other months.
² Same number reported for one or more other months.
³ All other industries embrace—

Brooms.....	1	Gas, illuminating and heating.....	1	Mineral and soda water.....	14
Chemicals.....	1	Iron and steel, steel works and rolling mills.....	1	Slaughtering and meat packing.....	1
Confectionery.....	2	Lime.....	2	Wall plaster.....	2
Foundry and machine-shop products.....	2	Marble and stone work.....	2		

STATISTICS OF MANUFACTURES—WYOMING.

WYOMING, BY INDUSTRIES: 1909.

	Capital.	EXPENSES.										Value of products.	Value added by manufacture.
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
1	\$8,195,109	\$5,594,221	\$175,880	\$184,793	\$2,080,768	\$187,286	\$2,420,903	\$33,425	\$55,989	\$19,855	\$485,527	\$6,249,078	\$3,640,889
2	17,210	8,634	.....	.....	3,307	.....	4,831	10	70	102	305	11,364	6,533
3	124,433	180,955	900	1,065	33,307	0,379	125,705	5,714	906	.....	5,929	230,485	107,401
4	95,690	49,892	1,900	.....	30,341	14,300	579	140	414	.....	2,221	69,535	54,659
5	115,344	247,325	7,230	3,480	17,203	3,859	207,461	100	259	.....	7,583	208,802	57,542
6	32,740	31,239	.....	.....	7,978	577	21,838	300	201	.....	285	41,624	19,209
7	2,045,541	2,336,677	49,230	77,969	1,309,374	70,127	638,323	.....	11,906	.....	179,748	2,336,678	1,628,228
8	440,398	641,112	8,200	2,700	21,035	7,565	575,473	100	2,025	100	23,314	746,209	163,201
9	108,411	96,734	3,000	.....	28,105	716	59,073	1,540	1,221	.....	3,079	130,103	70,314
10	265,750	189,697	15,540	2,100	25,218	5,826	39,833	.....	22,960	.....	78,070	227,496	181,837
11	1,074,886	622,984	35,700	14,695	314,009	1,357	100,148	169	0,039	0,175	45,792	751,249	553,744
12	437,204	345,712	34,240	10,471	140,684	0,148	80,024	12,597	2,548	1,528	44,272	489,544	399,472
13	20,625	46,863	.....	.....	14,925	272	24,109	1,765	3,170	.....	2,022	80,594	30,213
14	1,416,871	796,477	19,940	12,443	134,827	67,190	446,609	10,870	3,571	8,750	92,307	\$76,245	362,476