

## MANUFACTURES : OHIO

## STATISTICS OF MANUFACTURES FOR THE STATE, CITIES, AND INDUSTRIES

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## INTRODUCTION.

This advance bulletin gives the statistics of manufactures for the state of Ohio 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 Ohio, 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 Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Toledo, and Youngstown. It also gives the same items for all industries combined for every city except Lakewood 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 canvasses 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.**—Ohio, with a gross area of 41,040 square miles, of which 300 represent water surface, and a population in 1910 of 4,767,121, ranks thirty-fifth in area and fourth in population among the states of the Union. Its population was 4,157,545 in 1900 and 3,672,329 in 1890. In 1910 the density of population for the entire state was 117 per square mile, the corresponding figure for 1900 being 102.1. Fifty-five and nine-tenths per cent of the entire population of the state resided in 1910 in incorporated cities and villages having a population of 2,500 or over as against 48.1 per cent in 1900.

In 1910 eight cities in the state had a population of over 50,000, as follows: Cleveland, 560,663; Cincinnati, 363,591; Columbus, 181,511; Toledo, 168,497; Dayton, 116,577; Youngstown, 79,066; Akron, 69,067; and Canton, 50,217. There were also 29 cities having a population of over 10,000 but less than 50,000. (See table on page 14.) These 37 cities contained 45 per cent of the total population of the state and, excluding Lakewood, were credited in 1909 with 74.9 per cent of the total value of its manufactures. Apart from these cities, only 10.9 per cent of the population resided in incorporated places of 2,500 inhabitants or over.

The industrial prominence of Ohio is due in the main to its many natural resources, among the most important of which are a fertile soil, extensive hardwood forests, and abundant supplies of coal, natural gas, and petroleum. Furthermore, the splendid advantages afforded for transportation by water as well as by rail can not be overestimated. Lake Erie and the Erie Canal make a direct outlet to the Atlantic seaboard, and the western Great Lakes and the Sault Ste. Marie Canal furnish a water route to the Northwest states, while the Ohio River, which forms 436 miles of the southern boundary of the state, and its tributary, the Muskingum River, furnish communication with Pennsylvania and the states of the Mississippi Valley.

Two canals, one from Cleveland to Portsmouth and the other from Toledo to Cincinnati, connect Lake Erie with the Ohio River. In 1909 there were 9,079<sup>1</sup> miles of main and branch lines of steam railroad within the borders of the state. The growth of interurban electric systems in the state has stimulated its manufactures and has added greatly to its facilities for local trade. Ohio is the fifth state of the Union in the mileage of steam railways and second in the mileage of electric railways.

**Importance and growth of manufactures.**—Although mining and agriculture are important, Ohio is largely a manufacturing state. Its early industrial development was due in part to its excellent location, since its manufactures received an impetus from the rapid settlement of the Mississippi Valley, which opened a market for manufactured products in which the Eastern states were unable to compete with success. The growth of manufactures in the state has been substantial. In 1849 the total value of products for Ohio, including the products of the neighborhood and hand industries, amounted to \$62,692,279, while in 1909, exclusive of the value of the products of the neighborhood and hand industries, it reached \$1,437,935,817, a figure about twenty-three times that of 60 years before. During the same period the population of the state increased 140.7 per cent and the gross value of products per capita of the total population of the state increased from \$32 to \$302. However, the proportion of the total value of the products of manufacturing industries in the United States which is contributed by Ohio has changed but slightly, having been 6.2 per cent in 1849 and 7 per cent in 1909. In 1849 an average of 51,491 wage earners, representing 2.6 per cent of the total population, were engaged in manufactures, and in 1909 an average of 446,934 wage earners, or 9.4 per cent of the total population, were so engaged. The state ranked fourth among the states of the Union in gross value of manufactured products at each census from 1849 to 1869. In 1879, however, it dropped to the fifth place, a position which it has retained at each subsequent census.

The first table on the following page 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 Ohio had 15,138 manufacturing establishments, which gave employment to an average of 523,004 persons during the year and paid out \$317,597,000 in salaries and wages. Of the persons employed, 446,934 were wage earners. These establishments turned out products to the value of \$1,437,936,000, to produce which materials costing \$824,202,000 were utilized. The value added by manufacture was thus \$613,734,000, which figure, as explained in the Introduction, best represents the net wealth created by manufacturing operations during the year.

The totals presented in the tables of this bulletin do not include the statistics for an establishment operated by the Federal Government, the National Home for

<sup>1</sup> Interstate Commerce Commission, Statistics of Railways in the United States, 1909.

MANUFACTURES—OHIO.

Disabled Volunteer Soldiers, located outside the corporate limits of Dayton, in Montgomery County. In 1909 this establishment employed an average of 228

wage earners and turned out products, such as uniform clothing, underwear, and bedding, equivalent to \$217,622 in value.

	NUMBER OR AMOUNT.			PER CENT OF INCREASE. <sup>1</sup>	
	1909	1904	1899	1904-1909	1899-1904
Number of establishments.....	15,138	13,785	13,868	9.8	—0.6
Persons engaged in manufactures.....	523,004	417,946	( <sup>2</sup> )	25.1	.....
Proprietors and firm members.....	14,719	13,657	( <sup>2</sup> )	7.8	.....
Salaried employees.....	61,351	39,991	28,109	53.4	42.3
Wage earners (average number).....	446,934	364,298	308,109	22.7	18.2
Primary horsepower.....	1,583,155	1,116,932	783,665	41.7	42.5
Capital.....	\$1,300,733,000	\$856,989,000	\$570,909,000	51.8	50.1
Expenses.....	1,282,845,000	856,206,000	637,576,000	49.8	34.3
Services.....	317,597,000	225,864,000	164,579,000	40.6	37.2
Salaries.....	72,147,000	43,435,000	28,151,000	66.1	54.3
Wages.....	245,450,000	182,429,000	136,428,000	34.5	33.7
Materials.....	824,202,000	527,637,000	409,303,000	56.2	28.9
Miscellaneous.....	141,046,000	102,705,000	63,694,000	37.3	61.2
Value of products.....	1,437,936,000	960,812,000	748,671,000	49.7	28.3
Value added by manufacture (value of products less cost of materials).....	613,734,000	433,175,000	339,368,000	41.7	27.6

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

<sup>2</sup> Figures not available.

In general, this table brings out the fact that the manufacturing industries of Ohio 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 9.8 per cent and the average number of wage earners 22.7 per cent, while the value of products increased 49.7 per cent and the value added by manufacture 41.7 per cent. As pointed out in the Introduction, it would be improper to infer that manufactures had increased in vol-

ume to the full extent indicated by these figures representing values, since a considerable part of the increase shown is certainly due to the increase that has taken place in the price of commodities during the period covered by the statistics. The only decrease shown in the table is in the number of establishments during the period 1899-1904, amounting to six-tenths of 1 per cent.

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. <sup>1</sup>			
		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
<b>All industries.....</b>	<b>15,138</b>	<b>446,934</b>	<b>100.0</b>	<b>\$1,437,936,000</b>	<b>100.0</b>	<b>\$613,734,000</b>	<b>100.0</b>	<b>49.7</b>	<b>28.3</b>	<b>41.7</b>	<b>27.6</b>
Iron and steel, steel works and rolling mills.....	75	38,586	8.6	197,780,000	13.8	58,537,000	9.5	70.6	13.6	73.3	0.8
Foundry and machine-shop products.....	1,218	64,817	14.5	145,837,000	10.1	81,277,000	13.2	40.6	17.3	37.4	19.0
Iron and steel, blast furnaces.....	40	7,295	1.6	83,089,000	5.8	15,274,000	2.5	104.8	1.2	82.2	-50.2
Slaughtering and meat packing.....	158	3,088	0.7	50,804,000	3.5	6,457,000	1.1	74.3	40.4	68.0	30.2
Flour-mill and gristmill products.....	673	2,585	0.6	48,083,000	3.4	6,740,000	1.1	17.7	16.5	28.9	2.7
Printing and publishing.....	1,655	15,756	3.5	41,657,000	2.9	20,753,000	4.8	33.0	31.4	31.4	34.3
Automobiles, including bodies and parts.....	75	12,130	2.7	38,839,000	2.7	20,317,000	3.3	510.9	4,284.8	434.0	4,370.5
Lumber and timber products.....	1,390	13,456	3.0	34,597,000	2.4	14,625,000	2.4	6.1	0.3	-3.7	-3.2
Boots and shoes, including cut stock and findings.....	72	16,020	3.6	31,551,000	2.2	12,079,000	2.1	22.6	41.0	18.0	54.0
Tobacco manufactures.....	1,146	12,631	2.8	28,907,000	2.0	16,832,000	2.7	41.1	20.6	20.6	14.4
Cars and general shop construction and repairs by steam-railroad companies.....	71	20,728	4.6	28,690,000	2.0	14,424,000	2.4	33.9	65.1	28.8	59.8
Liquors, malt.....	105	4,356	1.0	25,332,000	1.8	18,709,000	3.1	17.2	10.0	10.8	12.2
Clothing, men's, including shirts.....	342	9,950	2.2	24,899,000	1.7	11,949,000	1.9	28.5	11.7	27.0	20.0
Bread and other bakery products.....	1,467	5,972	1.3	23,007,000	1.6	9,341,000	1.5	47.1	58.7	41.9	48.6
Carriages and wagons and materials.....	407	8,815	2.0	21,949,000	1.5	10,535,000	1.7	-3.0	5.3	-5.5	4.0
Pottery, terra-cotta, and fire-clay products.....	186	16,519	3.7	21,173,000	1.5	14,712,000	2.4	14.1	56.5	7.2	59.2
Clothing, women's.....	153	8,843	2.0	19,493,000	1.4	9,202,000	1.5	52.2	64.7	52.5	81.0
Copper, tin, and sheet-iron products.....	221	6,598	1.5	19,089,000	1.3	7,464,000	1.2	102.7	75.1	83.3	87.6
Electrical machinery, apparatus, and supplies.....	115	8,073	1.8	18,777,000	1.3	11,551,000	1.9	70.4	69.4	82.8	99.6
Soap.....	44	1,774	0.4	17,077,000	1.2	5,416,000	0.9	44.8	.....	59.5	.....
Paper and wood pulp.....	47	4,673	1.0	16,965,000	1.2	6,067,000	1.0	54.8	67.5	26.2	73.3
Furniture and refrigerators.....	228	8,232	1.8	16,259,000	1.1	9,017,000	1.5	17.6	45.3	8.0	51.3
Stoves and furnaces, including gas and oil stoves.....	102	7,274	1.6	15,358,000	1.1	9,058,000	1.5	50.7	.....	46.4	.....
Agricultural implements.....	55	6,997	1.3	14,440,000	1.0	8,121,000	1.3	12.0	-7.8	12.3	-0.0
Glass.....	45	10,159	2.3	14,358,000	1.0	9,670,000	1.6	59.1	98.5	53.2	87.0
Paint and varnish.....	87	1,535	0.3	13,617,000	1.0	5,047,000	0.8	59.6	27.2	88.7	3.3
Liquors, distilled.....	17	374	0.1	12,011,000	0.8	9,497,000	1.5	-24.8	28.4	-24.4	14.2
Coffee and spice, roasting and grinding.....	39	762	0.2	11,224,000	0.8	2,947,000	0.5	12.7	70.2	26.4	104.4
Petroleum, refining.....	10	1,659	0.4	10,754,000	0.8	2,609,000	0.4	-1.8	30.4	-20.6	48.1
Leather, tanned, curried, and finished.....	36	1,884	0.4	10,128,000	0.7	2,408,000	0.4	55.5	25.7	17.4	45.7

<sup>1</sup> Percentages are based on figures in Table I; a minus sign (—) denotes decrease. Where the percentages are omitted, comparable figures can not be given.

INDUSTRY.	Number of establishments.	WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.		PER CENT OF INCREASE. <sup>1</sup>			
		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
Industries—Continued.											
Butter, cheese, and condensed milk.....	325	1,067	0.2	\$0,600,000	0.7	\$2,005,000	0.3	111.0	20.6	132.1	14.6
Brick and tile.....	517	7,406	1.7	9,358,000	0.7	7,154,000	1.2	31.1	54.1	30.0	50.8
Tin plate and terneplate.....	4	676	0.2	7,880,000	0.5	734,000	0.1				
Chemicals.....	33	1,132	0.3	7,742,000	0.5	2,094,000	0.5	68.7	28.4	88.7	6.4
Woolen, worsted, and felt goods, and wool hats.....	20	2,566	0.6	7,690,000	0.5	3,074,000	0.5	114.4	26.0	112.0	26.6
Confectionery.....	114	2,493	0.6	7,307,000	0.5	3,218,000	0.5	55.1	23.2	31.0	34.0
Brass and bronze products.....	82	2,232	0.5	6,572,000	0.5	3,039,000	0.5	96.4	46.0	68.6	43.7
Cars, steam-railroad, not including operations of railroad companies.....	6	2,282	0.5	6,451,000	0.4	2,250,000	0.4	10.5	40.5	3.4	80.7
Hosiery and knit goods.....	30	3,149	0.7	6,433,000	0.4	2,582,000	0.4	60.9	152.2	41.9	134.8
Paper goods, not elsewhere specified.....	28	2,040	0.5	6,307,000	0.4	2,873,000	0.5	58.7	47.0	34.4	63.4
Sewing machines, cases, and attachments.....	4	3,831	0.9	5,972,000	0.4	3,454,000	0.6	53.8	32.8	66.1	40.8
Patent medicines and compounds and druggists' preparations.....	261	905	0.2	5,876,000	0.4	3,971,000	0.6	-20.5	52.2	-24.4	54.6
Safes and vaults.....	10	2,014	0.5	5,438,000	0.4	3,323,000	0.5	12.1	103.3	16.8	121.6
Cutlery and tools, not elsewhere specified.....	70	2,820	0.6	5,036,000	0.4	3,386,000	0.6	41.2	46.1	46.5	47.1
Leather goods.....	86	1,800	0.4	4,930,000	0.3	2,080,000	0.3	-9.3	19.4	-17.2	40.4
Canning and preserving.....	107	2,009	0.4	4,600,000	0.3	1,558,000	0.3	3.8	38.3	-13.0	36.0
Fertilizers.....	27	841	0.2	4,435,000	0.3	1,900,000	0.3	93.8	38.1	110.4	41.1
Musical instruments, pianos and organs and materials.....	30	1,841	0.4	3,928,000	0.3	2,004,000	0.3	6.6	153.9	-2.7	177.9
Marble and stone work.....	108	2,012	0.5	3,847,000	0.3	2,397,000	0.4	-20.9	50.0	-23.4	62.5
Boxes, fancy and paper.....	40	2,530	0.6	3,635,000	0.3	1,704,000	0.3	70.4	51.5	60.6	34.6
Oil, linseed.....	4	213	(?)	3,027,000	0.3	540,000	0.1	51.1	-23.0	100.0	17.3
Gas and electric fixtures and lamps and reflectors.....	56	1,437	0.3	3,563,000	0.2	1,786,000	0.3	177.5	22.8	123.2	37.6
Cooperage and wooden goods, not elsewhere specified.....	113	1,653	0.4	3,516,000	0.2	1,309,000	0.2	-1.2	36.3	-18.3	26.5
Mattresses and spring beds.....	38	961	0.2	3,307,000	0.2	1,025,000	0.3	44.0	135.5	70.8	128.3
Gas, illuminating and heating.....	38	666	0.1	3,080,000	0.2	2,253,000	0.4	-36.0	22.4	-35.0	13.8
Coffins, burlap cases, and undertakers' goods.....	24	1,245	0.3	3,061,000	0.2	1,737,000	0.3	21.3	40.1	28.9	45.1
Flags, banners, regalia, society badges and emblems.....	13	1,262	0.3	3,020,000	0.2	1,517,000	0.2	34.1	25.7	22.9	57.4
Pumps, not including steam pumps.....	20	807	0.2	2,747,000	0.2	1,476,000	0.2	308.8	248.2	225.1	340.8
Millinery and lace goods.....	31	1,357	0.3	2,744,000	0.2	1,285,000	0.2	360.4	8.8	317.2	37.5
Cordage and twine and jute and linen goods.....	8	791	0.2	2,728,000	0.2	744,000	0.1	-16.1	0.9	1.6	15.8
Bags, paper.....	8	557	0.1	2,393,000	0.2	755,000	0.1	58.2	110.4	35.3	168.3
Bicycles, motorcycles, and parts.....	6	942	0.2	2,308,000	0.2	1,242,000	0.2	121.7	-74.6	112.7	-68.4
Ice, manufactured.....	97	802	0.2	2,270,000	0.2	1,700,000	0.3	86.5	108.7	84.4	107.0
Pireams and ammunition.....	5	813	0.2	2,215,000	0.2	1,024,000	0.2	15.4	130.8	32.0	102.2
Clocks and watches, including cases and materials.....	9	1,456	0.3	1,981,000	0.1	1,455,000	0.2	6.0	27.4	20.0	16.4
Cars, street-railroad, not including operations of railroad companies.....	4	734	0.2	1,955,000	0.1	861,000	0.1	6.9	230.8	13.4	147.2
Ink, printing.....	8	183	(?)	1,907,000	0.1	1,008,000	0.2	44.6	86.6	20.4	174.7
Salt.....	8	648	0.1	1,807,000	0.1	717,000	0.1	54.7	42.8	42.0	28.2
Explosives.....	11	358	0.1	1,710,000	0.1	615,000	0.1	-6.7	38.6	8.3	2.0
Cars and general shop construction and repairs by street-railroad companies.....	40	1,318	0.3	1,601,000	0.1	890,000	0.1	883.1	-30.9	600.7	-24.5
Lime.....	39	1,273	0.3	1,620,000	0.1	1,022,000	0.2	21.4		27.4	
Grindstones.....	9	1,277	0.3	1,408,000	0.1	1,113,000	0.2	189.7	-42.0	107.6	-40.5
Cement.....	0	867	0.2	1,405,000	0.1	827,000	0.1	-2.9		-15.1	
Artificial stone.....	200	802	0.2	1,378,000	0.1	879,000	0.1	209.0		215.1	
Butter, reworking.....	5	47	(?)	1,350,000	0.1	128,000	(?)	28.7		-33.0	
Liquors, vinous.....	20	149	(?)	1,304,000	0.1	580,000	0.1	-2.3	66.5	-9.0	72.7
Shoddy.....	4	438	0.1	1,257,000	0.1	515,000	0.1	1.5	-16.2	77.0	-27.4
Jewelry.....	35	356	0.1	1,255,060	0.1	630,000	0.1	92.2	-24.4	50.0	21.5
Dairymen's, poulterers', and apiarists' supplies.....	18	479	0.1	1,149,000	0.1	622,000	0.1	34.9		43.6	
Belting and hose, leather.....	8	107	(?)	1,080,000	0.1	285,000	(?)	43.4	-0.9	40.4	2.5
Umbrellas and canes.....	15	287	0.1	1,005,000	0.1	398,000	0.1	20.6	67.9	15.4	72.5
Wall plaster.....	23	259	0.1	935,000	0.1	501,000	0.1	-9.8		-23.5	
Coke.....	4	240	0.1	851,000	0.1	211,000	(?)	228.6	1.6	137.1	-28.9
Hats and caps, other than felt, straw, and wool.....	25	406	0.1	804,000	0.1	382,000	0.1	25.2	-30.1	3.2	14.2
Boxes, cigar.....	31	531	0.1	711,000	(?)	351,000	0.1	6.3	3.7	19.0	-3.3
Blacking and cleansing and polishing preparations.....	49	103	(?)	672,000	(?)	375,000	0.1	342.1	-3.2	316.7	(?)
Models and patterns, not including paper patterns.....	74	441	0.1	670,000	(?)	511,000	0.1	73.6	-5.2	55.8	-0.9
Show cases.....	14	349	0.1	668,000	(?)	361,000	0.1	-10.8	206.3	-17.0	302.8
Screws, machine.....	6	324	0.1	598,000	(?)	420,000	0.1	-24.0		-14.6	
Photo-engraving.....	20	277	0.1	570,000	(?)	467,000	0.1	79.4	38.4	63.9	54.1
All other industries.....	1,580	53,102	11.0	185,872,000	12.9	82,608,000	13.5				

<sup>1</sup> Percentages are based on figures in Table I; a minus sign (-) denotes decrease. Where the percentages are omitted, comparable figures can not be given.  
<sup>2</sup> Less than one-tenth of 1 per cent. <sup>3</sup> Value added the same both years.

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.

The foregoing table specifies 90 industries or industry groups which had in 1909 a product in excess of \$500,000 in value. Of these industries there are 4 whose product exceeds \$50,000,000 in value, 8 with

a product between \$25,000,000 and \$50,000,000 in value, and 18 with a product between \$10,000,000 and \$25,000,000 in value, making an aggregate of 30 industries each of which had a product exceeding \$10,000,000 in value. Mention is also made of 14 other industries with a product between \$5,000,000 and \$10,000,000 in value, 37 with a product of \$1,000,000 to \$5,000,000 in value, and 9 with a product between \$500,000 and \$1,000,000 in value.

Of the industries included under the head of "All other industries," rubber goods "not elsewhere specified," which covers the manufacture of such articles as rubber tires, clothing, mats, type, springs, tubing, brushes, and bands, is the most important. It is shown separately for 1909 in Table II, page 54, but comparative statistics for the different census years can not be given on account of changes in classification. The classification as used at the census of 1904 was "Rubber and elastic goods," but in 1909 the same classes of establishments were distributed and included with other establishments under two headings: "Rubber goods, not elsewhere specified," and "Suspenders, garters, and elastic woven goods," the latter being a subclass of men's furnishing goods. A total of 37 establishments in the state were engaged primarily during 1909 in the manufacture of rubber goods, employing an average of 10,382 wage earners and turning out products valued at \$53,911,000. These figures represent 2.3 per cent of the wage earners and 3.7 per cent of the products reported for all industries in the state combined. This industry ranked fourth in 1909, as measured by value of products, among the industries in the state, having grown decidedly during recent years, mainly on account of the increased demand for rubber tires, the value of which represented over one-half of the total value of products reported for the industry.

In addition to the industries presented separately in the above table and the manufacture of rubber goods, there are 34 important industries in the state which had a value of product in 1909 in excess of \$1,000,000, distributed as follows: Twenty-nine with \$1,000,000 but less than \$5,000,000, 3 with \$5,000,000 but less than \$10,000,000, and 2 with \$10,000,000 and over.<sup>1</sup> These industries are included under the head of "All other industries" in the table, in some instances 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 industries of similar character; and for still others because comparative statistics can not be presented for either 1904 or 1899 on account of changes in classification or because such figures would disclose the operations of individual establishments. However, for several of these industries, namely, the manufacture of babbitt

metal and solder, woven and rubber belting and hose, brooms, brushes, men's furnishing goods, shipbuilding, including boat building, and the manufacture of signs and advertising novelties, the statistics for 1909 are presented separately in Table II, page 54.

The first 11 industries noted in the preceding table represent about one-half of the gross value of manufactured products in the state, but there are a large number which are of considerable importance. Furthermore, it will be seen from Table II that there is a wide diversity in the manufacturing activities of the state, since of the 264 classifications used for compiling statistics of manufactures for 1909 in the United States, 218 were represented in Ohio. The leading products of the state for which comparable figures are presented are those of steel works and rolling mills, foundries and machine shops, blast furnaces, and slaughtering and meat-packing establishments. Fourteen industries or groups of industries important in Ohio call for special consideration.

*Iron and steel.*—The steel works and rolling mills and the blast furnaces rank first and third, respectively, among the industries of the state. With these may be grouped, for convenience of presentation, the tin-plate and terneplate industry. Combined, the three allied industries gave employment in 1909 to an average of 46,557 wage earners, and turned out products valued at \$289,368,000, or 10.4 per cent and 20.1 per cent of the respective totals for all manufactures in the state. These figures also represent an increase over 1899 in the number of wage earners of 12,183, or 35.4 per cent, and in the value of products of \$144,409,000, or 99.6 per cent. The classification, "Steel works and rolling mills," includes establishments engaged in the manufacture of steel and the hot rolling of iron and steel. It also includes the making of forgings and castings and the manufacture of rolled iron and steel into more highly finished forms when conducted as a part of the rolling-mill operations, as well as the few forges and bloomeries which are still extant. Blast furnaces include establishments engaged in the manufacture of pig iron from the ore.

The plating of sheet metal with tin or with terne mixture (an alloy of lead and tin) is treated as a separate industry, notwithstanding the fact that nearly all of the establishments so engaged roll their plates. The tin-plate and terneplate departments of the steel works and rolling mills, however, have been treated as separate establishments. Measured by value of products, Ohio ranks second among the states of the Union in the combined industries, and also in each of the two leading branches, and third in tin plate and terneplate, contributing \$197,780,000, or 20.1 per cent of the total value reported in 1909 for all steel works and rolling mills in the United States; \$83,699,000, or 21.4 per cent of the total for all blast furnaces; and \$7,889,000, or 16.4 per cent of the total for all tin-plate and terneplate mills. In the value of products each of the three industries showed remark-

<sup>1</sup> These industries are:

Awings, tents, and sails.  
Babbitt metal and solder.  
Bags, other than paper.  
Belting and hose, woven and rubber.  
Brooms.  
Brushes.  
Carrriages and sleds, children's.  
Cash registers and calculating machines.  
Clothing, horse.  
Cordials and sirups.  
Flavoring extracts.  
Food preparations.  
Furnishing goods, men's.  
Galvanizing.  
Grease and tallow.  
House-furnishing goods, not elsewhere specified.  
Iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills.

Iron and steel forgings.  
Iron and steel pipe, wrought.  
Locomotives, not made by railroad companies.  
Matches.  
Mineral and soda waters.  
Oil, cottonseed, and cake.  
Ollcloth and linoleum.  
Roofing materials.  
Scales and balances.  
Shipbuilding, including boat building.  
Signs and advertising novelties.  
Stationery goods, not elsewhere specified.  
Waste.  
Wire.  
Wirework, including wire rope and cable.  
Wood, turned and carved.

able gains from 1899 to 1909, the largest percentage of increase, 107.3 per cent, being shown for blast furnaces. Ohio is not important in the production of iron ore, but the output of the great ore mines of the Lake Superior region is largely handled at the state's lake ports and the necessary coke required for the operation of blast furnaces is readily procurable from the near-by Connellsville (Pa.) ovens.

*Foundry and machine-shop products.*—Products of great diversity enter into the group of foundry and machine-shop products, which includes not only the output of general foundries and machine shops, but also that of establishments engaged in the manufacture of bells, gas machines and gas and water meters, hardware, plumbers' supplies, steam fittings and heating apparatus, structural ironwork, and cast-iron and cast-steel pipe, all of which, with the exception of the last named, were shown under separate headings at the census of 1904. The foundry and machine-shop industry in its broadest sense is of even greater importance in the state than is indicated by the statistics placed under this specific title, for the reason that some machine shops manufacture a special product, such as locomotives, electrical machinery, stoves and furnaces, cash registers and calculating machines, and sewing machines, which are assigned to other classifications. A number of the most important establishments included under this head were engaged in the manufacture of machinery and appliances for handling coal, ore, dirt, and stone, and the manufacture of steam boilers, air and gas compressors and pumping machinery, cast-iron pipe and fittings, and structural and ornamental ironwork. The foundry and machine-shop industry gave employment to an average of 64,817 wage earners in 1909, which was 14.5 per cent of the total reported for all manufactures, and was the largest number shown for any of the industries specified in the table. The total value of products, \$145,837,000, in 1909 was \$42,124,000, or 40.6 per cent, more than that reported in 1904. Ohio is the third state of the Union in manufactures of this class.

*Slaughtering and meat packing.*—This classification includes establishments doing wholesale slaughtering and meat packing and those engaged in the manufacture of sausage only. It does not include the numerous slaughterhouses killing for the retail trade, which slaughter a large number of animals. The earliest packing houses in the state were flatboats on the Ohio River, and, as early as 1803 beef and pork were shipped from Cincinnati to New Orleans.<sup>1</sup> The pioneer establishment of the western packing industry, as now understood, was founded in Cincinnati about 1818.<sup>2</sup> Cincinnati has long been the chief center of the slaughtering and meat-packing industry in the state, but the proportion of the total value of such products for the state which this city contributed

has been growing smaller during the last decade, being 49.9 per cent in 1899, 46.3 per cent in 1904, and 38 per cent in 1909. Cleveland ranked second, with products in 1909 valued at \$17,192,000, or 33.8 per cent of the total for the industry in the state. The value of products for this industry in Ohio increased from \$20,768,000 in 1899 to \$29,155,000 in 1904, and \$50,804,000 in 1909, when the total was \$30,036,000, or 144.6 per cent, greater than in 1899. The percentages of increase during the five-year period 1904-1909 in value of products and value added by manufacture were nearly twice as great as during the preceding five-year period, 1899-1904. Of the 158 establishments reported for the industry as a whole in 1909, 68 were engaged in both wholesale slaughtering and meat packing, 69 in slaughtering only, and 21 in the manufacture of sausage only, the value of the output of these three branches representing 83.4 per cent, 14.6 per cent, and 2 per cent, respectively, of the total value for the combined industry. For the last two censuses Ohio has ranked eighth among the states in this industry, having risen from ninth place in 1899.

*Flour-mill and gristmill products.*—The statistics for all merchant mills grinding wheat, rye, buckwheat, corn, or other grain are included in this classification. It does not, however, include factories making fancy cereals or other food preparations as a chief product or mills doing custom grinding exclusively, the statistics for the latter mills being presented separately on page 38. Flour and grist milling is one of the oldest industries in Ohio, flour having been sent to New Orleans from this state as early as 1803.<sup>1</sup> Owing to the large quantities of cereals raised in Ohio and its close proximity to the other great grain-growing states, this industry has retained its prominence among the manufacturing industries of the state. As early as 1849 there were 1,062 flour mills and gristmills in the state and the total output was valued at \$14,372,000. In 1899 the value of the output had reached \$35,078,000, an increase for the 50 years of \$20,706,000, or 144.1 per cent. The value of flour-mill and gristmill products was \$40,856,000 in 1904 and \$48,093,000 in 1909, representing an increase of \$5,778,000, or 16.5 per cent, for the five-year period 1899-1904, and one of \$7,237,000, or 17.7 per cent, for the five-year period 1904-1909. Notwithstanding these gains, the rank of Ohio among the states in this industry, as measured by value of products, dropped from third place in 1899 to fourth place in 1904 and to fifth place in 1909.

*Clothing.*—While neither the manufacture of men's clothing nor of women's clothing is among the first twelve industries of Ohio, the two industries considered together had a combined output for 1909 valued at \$44,362,000, which was more than that reported for printing and publishing, the sixth industry presented separately in the preceding table.

<sup>1</sup> The Journal of a Tour into the Territory Northwest of the Allegheny Mountains in the year 1803, by T. M. Harris, p. 146.

<sup>2</sup> Philip D. Armour, in One Hundred Years of American Commerce, vol. 2, p. 383.

The increase in value of products from 1904 to 1909 was \$12,212,000, or 38 per cent, and that from 1899 to 1904, \$7,065,000, or 28.2 per cent. In 1849 Ohio, with a total of \$2,765,232, which includes the value of the output for custom tailoring, dressmaking, and repairing establishments, was the fourth state in the Union in the manufacture of clothing, as measured by value of products. At the census of 1889, when the first attempt was made to segregate the statistics in order to show separately the establishments manufacturing clothing under the factory system, the output was valued at \$25,525,751, Ohio was the fifth state of the United States in the combined industries, but it advanced to fourth place in 1899 and has retained this position at each subsequent census. The value of men's clothing has represented more than half of the total value of all clothing manufactured at each census year, but since 1889 the proportion which was contributed by this branch has constantly decreased. The manufacture of women's clothing has rapidly increased; the total value was \$4,352,000 in 1889, \$7,773,000 in 1899, and \$19,493,000 in 1909.

*Printing and publishing.*—Under this head are included job-printing establishments, the printing and publishing of books, newspapers and periodicals, and of music, bookbinding and blank-book making, steel engraving, and lithographing. Of the 1,655 establishments reported in 1909, a larger number than was shown for any other single industry in the state (890) were engaged primarily in printing and publishing newspapers and periodicals and employed an average of 6,462 wage earners and reported products valued at \$21,453,000. These totals represent increases over the corresponding figures for 1904 of 4.3 per cent in wage earners and 30.7 per cent in the value of products. The industry as a whole shows an advance of 33 per cent in the value of products from 1904 to 1909, which was slightly more than the relative gain shown for the preceding five-year period. The absolute increase in the value of products from 1904 to 1909 was \$10,330,000, and from 1899 to 1904 was \$7,494,000.

*Automobiles, including bodies and parts.*—This classification includes, besides the articles mentioned in the industry designation, the manufacture of automobile accessories, but this latter branch of the industry covers a wide field and is to a considerable extent interwoven with other industries. A number of foundries and machine shops incidentally manufactured automobile accessories and parts, and a number of establishments classified under the head of "Rubber goods, not elsewhere specified," manufactured automobile tires. Furthermore, many electrical attachments and motors for automobiles were made in establishments engaged in the general manufacture of electrical machinery, apparatus, and supplies, and considerable quantities of brass fixtures used in connection with the manufacture of automobiles were produced in establishments

engaged primarily in the manufacture of brass and bronze products. The decided growth from 1904 to 1909 of each of these three industries was due in large measure to the remarkable development in the automobile industry. In 1899 there were only three establishments in the state engaged in the manufacture of automobiles, and the total value of their products for that year was only \$145,000. In 1904, 22 establishments, with products valued at \$6,358,000, were reported, while in 1909 there were 75 establishments the output of which was valued at \$38,839,000. Measured by value of products, Ohio was, in 1899, the sixth state in the Union in the manufacture of automobiles, but advanced to second place in 1904, a position which was retained in 1909. The proportion which Ohio contributed of the total value of products reported for the automobile industry in the United States was 3.1 per cent in 1899, 21.2 per cent in 1904, and 15.6 per cent in 1909.

*Liquors.*—The manufacture of distilled, malt, and vinous liquors forms a very important group of industries in Ohio. The combined output for 1909 was valued at \$38,647,000, and \$28,852,000 (including \$12,560,000 for internal-revenue tax) was added to the materials by the process of manufacture. These figures, however, represent decreases over the corresponding totals for 1904 of seven-tenths of 1 per cent and one-tenth of 1 per cent, respectively. Of the three industries comprising this group, the manufacture of malt liquors was by far the most important, the total output being valued at \$25,332,000 in 1909, an increase over 1904 of \$3,711,000, or 17.2 per cent. This gain was not large enough to overcome the losses of the other two industries in this group in respect to value of products. The value of distilled liquors was \$12,011,000 in 1909 and \$15,977,000 in 1904, showing a decrease of \$3,966,000, or 24.8 per cent, for the five-year period. The value of vinous liquors, the least important of the liquor group, was \$1,304,000 in 1909, showing a decrease compared with 1904 of \$31,000, or 2.3 per cent. In 1909 Ohio ranked sixth among the states of the Union in the manufacture of malt liquors, fifth in distilled liquors, and third in vinous liquors.

*Lumber and timber products.*—This industry includes the timber plants whose chief products are logs, as well as the sawmills, shingle mills, and planing mills which produce rough and dressed lumber, lath, shingles, cooperage stock, sash, doors, blinds, interior finishing, and other millwork, and also wooden packing-box factories. The industry as a whole has been practically at a standstill in Ohio during the last decade, 1899-1909, the total output for 1909 being valued at \$34,597,000, compared with \$32,926,000 for 1904, and \$32,812,000 for 1899. The timber and sawmill branch of the industry shows quite a decline for this 10-year period, which, however, was offset by the increased production of the planing mills and the packing-box factories. The 1,390 establishments reported in 1909 for the entire industry were distrib-

uted as follows: 411 independent planing mills, reporting 54.1 per cent of the value of products; 900 saw-mills and timber plants, reporting 37.2 per cent; and 79 packing-box factories, reporting 8.7 per cent. The corresponding percentages of the total value of products contributed by these three branches in 1899 were 33.7, 60.3, and 6, respectively.

*Boots and shoes, including cut stock and findings.*—Of the 72 establishments included in this classification in 1909, 63 were engaged primarily in the manufacture of boots and shoes, 5 in the production of boot and shoe findings, and 4 in the manufacture of boot and shoe cut stock. There is some overlapping between these three branches, which makes it desirable to combine them in presenting these statistics. In 1849 there were 805 establishments reported for this industry in Ohio, with an output valued at \$2,328,896, but it was not until recent years that the industry showed its most marked development. In 1899 the output of this class of establishments was valued at \$18,246,000, in 1904 it was \$25,735,000, and in 1909 it reached \$31,551,000, an increase for the decade of \$13,305,000, or 72.9 per cent, and for the more recent five-year period, 1904–1909, of \$5,816,000, or 22.6 per cent. Of the total value of products reported for the industry in the United States, these figures represented 6.3 per cent in 1899, 7.2 per cent in 1904, and 6.2 per cent in 1909, Ohio ranking fourth, third, and fifth, respectively, at the three censuses.

*Clay products.*—The total output of pottery, terra-cotta, and fire-clay products and brick and tile reported for 1909 was valued at \$30,531,000, an increase over 1904 of \$4,844,000, or 18.9 per cent, and over 1899 of \$14,050,000, or 85.2 per cent. The importance of Ohio in the manufacture of clay products is due very largely to the development of its extensive deposits of suitable clays. In 1909 Ohio ranked first among the states of the Union in this industry, contributing 18.1 per cent of the total value of products in the United States, the proportion for 1904 having been 19 per cent and for 1899, 17.3 per cent. The manufacture of pottery, terra-cotta, and fire-clay products, in which Ohio outranks all other states, is by far the most important branch of the clay manufactures in the state, the value of the output having been 69.3 per cent of the total for the combined industries in 1909, 72.2 per cent in 1904, and 71.9 per cent in 1899. There were 248 such establishments in the state in 1899, and the total output was valued at \$11,851,000, whereas in 1904 there were 205 with products valued at \$18,551,000, and in 1909, 186, with products valued at \$21,173,000. In the manufacture of brick and tile Ohio ranks second among the states, a position which it has held for a number of years.

*Tobacco manufactures.*—The statistics included in this industry include those for the establishments engaged in the manufacture of chewing and smoking

tobacco and snuff, as well as the cigar and cigarette factories. The industry in the state, if measured by number of plants, seems to be very largely confined to the latter class of establishments, for of the 1,146 reported for the entire industry in 1909, 1,124 were cigar and cigarette factories, but the value of their output represented only about half of the total. For the industry as a whole, the total value of the product in 1909 was \$28,907,000, an increase over 1904 of \$8,418,000, or 41.1 per cent, the absolute gain being more than double that for the preceding five-year period. Ohio ranked fifth in 1909, when measured by value of products, among the states of the Union in this class of manufacture.

*Cars and general shop construction and repairs by steam-railroad companies.*—The statistics for this industry represent the work done in car shops by steam-railroad companies, and exclude minor repairs in roundhouses. The operations consist almost exclusively of repairs to rolling stock and equipment. Although the number of establishments decreased from 91 in 1899 to 71 in 1909, chiefly through the elimination of a few roundhouses which were included in the prior census, the value of the work performed increased from \$12,975,000 to \$28,690,000 during that period. The growth of the industry, however, as measured by the value of products, during the five years 1904–1909, was slightly less than during the preceding five-year period. In 1909 employment was given to an average of 20,728 wage earners, this being the third largest number reported by any of the industries of the state specified in the table, and representing an increase over the number reported in 1899 of 9,194, or 79.7 per cent.

*Carriages and wagons and materials.*—This classification includes establishments which made five or more horse-drawn vehicles during the year, as well as those engaged in the manufacture of carriage or wagon bodies, tops, and other parts and accessories. In contrast to the great increase noted in the automobile industry from 1904 to 1909, there has been a decline in the manufacture of carriages and wagons during the same period. While the value of products of this industry increased from \$22,803,000 in 1899 to \$24,003,000 in 1904, it decreased to \$21,949,000 in 1909, a loss of 8.6 per cent in the last five years. As this decrease was general throughout the country, Ohio retained first place among the states of the Union in this class of manufactures.

In the table on pages 4 and 5 statistics are presented for five other industries which, though not among the leading ones of the state, are noteworthy in that Ohio ranks first among the states in each when measured by the value of products. These industries together with the percentage contributed by Ohio in 1909 of the total value for each in the United States, are: Stoves and furnaces, including gas and oil stoves, 19.5 per cent; safes and vaults, 64.6 per cent; flags,

banners, regalia, society badges, and emblems, 37.3 per cent; pumps, not including steam pumps, 49.2 per cent; and grindstones, 88.7 per cent. Ohio holds second place among the states in the manufacture of glass; sewing machines and attachments; mattresses and spring beds; coffins, burial cases, and undertakers' goods; bicycles, motorcycles, and parts; street-railroad cars; printing ink; lime; and machine screws.

The rank of the industries when measured by value added by manufacture differs considerably from the rank by value of products, which is the order in which they are shown in the table on pages 4 and 5. Of all the industries listed in the table, only five hold the same position when ranked according to the value added by manufacture. Noticeable changes in rank are found in the case of tin plate and terneplate, which drops from thirty-third place in gross value to seventy-first place in added value; in linseed oil, which falls from fifty-first to seventy-seventh place; in slaughtering and meat packing, which drops from fourth to twenty-fifth place; and in the manufacture of flour-mill and gristmill products, which falls from fifth to twenty-fourth place. On the other hand, the manufacture of patent medicines and compounds advances from forty-second to twenty-ninth place; the manufacture of cutlery and tools, from forty-fourth to thirty-first; liquor distilling, from twenty-seventh to sixteenth; and the manufacture of safes and vaults, from forty-third to thirty-second.

The table on pages 4 and 5 also shows the percentages of increase or decrease for each industry in respect to value of products and value added by manufacture in all cases where comparative figures are presented in Table I. Several of the industries show exceptionally large percentages of increase during both of the five-year periods, while others show marked decreases. From 1904 to 1909 the largest increases in both items are shown for street-railroad repair shops; for the manufacture of automobiles; millinery and lace goods; blacking and cleansing and polishing preparations; and pumps, not including steam pumps. From 1899 to 1904 the largest gains in both items are shown for the manufacture of automobiles, including bodies and parts, and show cases; pumps, not including steam pumps; street-railroad cars; musical instruments; and hosiery and knit goods.

The largest percentage of increase in value of products during the more recent five-year period was 883.1 in street-railroad repair shops, and for the preceding five-year period was 4,284.8 in the manufacture of automobiles, including bodies and parts. In value of products 15 of the 90 industries presented separately in the table show a decrease from 1904 to 1909, and 11 a decrease from 1899 to 1904, while in value added by manufacture decreases are shown for 17 industries from 1904 to 1909, and for 10 from 1899 to 1904. The largest relative decreases in value of products from 1904 to 1909 were in the manufacture of illumina-

nating and heating gas (36 per cent), and in the manufacture of distilled liquors (24.8 per cent).

**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.....	523,004	439,811	83,193
Proprietors and officials.....	31,213	30,341	872
Proprietors and firm members.....	14,719	14,141	578
Salaried officers of corporations.....	6,371	6,258	113
Superintendents and managers.....	10,123	9,942	181
Clerks.....	44,857	34,101	10,756
Wage earners (average number).....	446,934	375,369	71,565
16 years of age and over.....	441,690	372,694	68,996
Under 16 years of age.....	5,244	2,675	2,569

The average number of persons engaged in manufactures during 1909 was 523,004, of whom 446,934 were wage earners. Of the remainder, 31,213 were proprietors and officials and 44,857 were clerks. Corresponding figures for individual industries will be found in Table II, page 54.

The next 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 40 important industries individually.

Of the total number of persons engaged in all manufacturing industries, 6 per cent were proprietors and officials, 8.6 per cent clerks, and 85.5 per cent wage earners. The highest percentage of proprietors and officials shown for any industry, 51.9, was for establishments engaged in the manufacture of butter, cheese, and condensed milk. In this, as well as in the flour-mill and gristmill industry and in the manufacture of bread and other bakery products, 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 very much higher than for the other industries shown separately or for all industries combined. Somewhat analogous conditions prevail in the lumber industry and in printing and publishing, in which proprietors and officials formed 13.6 per cent and 12.1 per cent, respectively, of the total number of persons engaged in each industry.

Tin-plate and terneplate mills, steam railroad repair shops, glass factories, and steel works and rolling mills being conducted for the most part in large establishments, these industries show very small proportions of proprietors and officials.

INDUSTRY.	PERSONS ENGAGED IN MANUFACTURES.			
	Total number.	Per cent of total.		
		Proprietors and officials.	Clerks.	Wage earners (average number)
<b>All industries</b> .....	523,004	6.0	8.6	85.5
Agricultural implements.....	6,972	3.2	10.8	86.0
Automobiles, including bodies and parts.....	13,458	2.3	7.6	90.1
Boots and shoes, including cut stock and findings.....	17,607	2.5	6.5	91.0
Brass and bronze products.....	2,650	6.9	8.8	84.2
Bread and other bakery products.....	8,758	20.1	11.7	68.2
Brick and tile.....	8,575	10.9	2.1	87.1
Butter, cheese, and condensed milk.....	2,404	61.9	5.3	42.8
Carriages and wagons and materials.....	10,350	8.2	6.6	85.2
Cars and general shop construction and repairs by steam-railroad companies.....	22,102	1.5	4.7	93.8
Cars, steam-railroad, not including operations of railroad companies.....	2,477	3.4	4.5	92.1
Chemicals.....	1,340	5.7	10.2	84.1
Clothing, men's, including shirts.....	11,813	5.1	10.6	84.2
Clothing, women's.....	10,191	3.6	9.0	80.8
Coffee and spice, roasting and grinding.....	1,586	6.5	45.5	48.0
Confectionery.....	3,012	6.7	10.6	82.8
Copper, tin, and sheet-iron products.....	7,685	5.9	8.2	85.9
Electrical machinery, apparatus, and supplies.....	9,605	3.8	12.1	84.0
Flour-mill and gristmill products.....	4,104	28.0	9.9	62.1
Foundry and machine-shop products.....	74,887	4.5	8.9	86.6
Furniture and refrigerators.....	9,449	5.7	7.2	87.1
Glass.....	10,630	1.8	2.6	95.6
Hosiery and knit goods.....	3,412	3.4	4.3	92.3
Iron and steel, blast furnaces.....	8,278	2.5	9.4	88.1
Iron and steel, steel works and rolling mills.....	41,012	1.9	0.0	92.1
Leather, tanned, curried, and finished.....	2,028	4.3	2.8	92.0
Liquors, distilled.....	434	6.7	7.1	86.2
Liquors, malt.....	5,275	7.0	10.4	82.6
Lumber and timber products.....	16,445	13.6	4.6	81.8
Paint and varnish.....	2,587	9.8	30.9	59.3
Paper and wood pulp.....	4,972	2.6	3.4	94.0
Paper goods, not elsewhere specified.....	2,204	4.2	5.7	90.1
Petroleum, refining.....	2,639	2.1	16.6	81.4
Pottery, terra-cotta, and fire-clay products.....	17,751	3.0	3.9	93.1
Printing and publishing.....	22,754	12.1	18.6	69.2
Slaughtering and meat packing.....	3,864	8.1	12.1	79.0
Soap.....	2,280	4.9	17.3	77.8
Stoves and furnaces, including gas and oil stoves.....	8,352	3.6	0.4	87.1
Tin plate and terneplate.....	742	1.3	7.5	91.1
Tobacco manufactures.....	14,681	10.3	3.7	86.0
Woolen, worsted, and felt goods, and wool hats.....	2,711	2.4	3.0	94.7
All other industries.....	120,412	6.1	9.8	84.1

Among the industries shown separately in the table, the largest proportion of wage earners, 95.6 per cent, was reported for the glass factories, while the smallest, 42.8 per cent, was for the manufacture of butter, cheese, and condensed milk. Among the industries specified, the roasting and grinding of coffee and spice shows the largest proportion of clerks, 45.5 per cent.

The next 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.

For all industries combined, 83.4 per cent of the average number of wage earners were males 16 years of age and over, 15.4 per cent females 16 years of age and over, and 1.2 per cent children under the age of 16. The larger part of the total number of female wage earners 16 years of age and over was made up of those employed in the boot and shoe, clothing, hosiery and knit goods, and pottery industries, printing and publishing, and

tobacco manufactures. In the manufacture of hosiery and knit goods over three-fourths of the wage earners were women 16 years of age and over, and in the manufacture of men's clothing and women's clothing and in tobacco manufactures about two-thirds, in the boot and shoe industry over two-fifths, in printing and publishing nearly one-fourth, and in the pottery industry nearly one-fifth. In the manufacture of confectionery and in the woolen and worsted goods industry the proportion of female wage earners was also large, being 59.5 per cent and 59.3 per cent, respectively.

The boot and shoe, men's clothing, confectionery, glass, hosiery and knit goods, pottery, woolen and worsted goods industries, printing and publishing, and the manufacture of copper, tin, and sheet-iron products include the larger part of the total number of wage earners under 16 years of age. Of this class of employees the largest absolute number, 552, was in the boot and shoe industry, and the largest proportion, 10.1 per cent, in the manufacture of confectionery.

INDUSTRY.	WAGE EARNERS.			
	Average number. <sup>1</sup>	Per cent of total.		
		16 years of age and over.		Under 16 years of age.
Male.	Female.			
<b>All industries</b> .....	446,934	83.4	15.4	1.2
Agricultural implements.....	5,997	90.1	0.7	0.2
Automobiles, including bodies and parts.....	12,130	98.6	1.1	0.2
Boots and shoes, including cut stock and findings.....	10,026	55.5	41.0	3.4
Brass and bronze products.....	2,232	97.5	2.2	0.3
Bread and other bakery products.....	5,672	80.7	18.5	0.9
Brick and tile.....	7,460	99.3	( <sup>2</sup> )	0.7
Butter, cheese, and condensed milk.....	1,067	80.7	9.0	1.3
Carriages and wagons and materials.....	8,815	96.8	2.7	0.6
Cars and general shop construction and repairs by steam-railroad companies.....	20,728	99.8	0.2	( <sup>2</sup> )
Cars, steam-railroad, not including operations of railroad companies.....	2,282	99.6	0.4	.....
Chemicals.....	1,132	96.4	3.6	.....
Clothing, men's, including shirts.....	9,950	30.0	66.5	3.5
Clothing, women's.....	8,843	35.0	63.6	1.3
Coffee and spice, roasting and grinding.....	762	49.7	50.1	0.1
Confectionery.....	2,493	30.4	59.5	10.1
Copper, tin, and sheet-iron products.....	6,598	78.7	16.3	5.0
Electrical machinery, apparatus, and supplies.....	8,073	67.6	31.5	0.9
Flour-mill and gristmill products.....	2,555	96.0	4.0	.....
Foundry and machine-shop products.....	64,817	98.3	1.3	0.4
Furniture and refrigerators.....	8,232	90.7	2.4	0.9
Glass.....	10,159	87.0	8.2	4.3
Hosiery and knit goods.....	3,149	10.5	76.5	7.0
Iron and steel, blast furnaces.....	7,295	100.0	( <sup>2</sup> )	.....
Iron and steel, steel works and rolling mills.....	38,580	99.2	0.8	( <sup>2</sup> )
Leather, tanned, curried and finished.....	1,854	99.5	0.5	.....
Liquors, distilled.....	374	97.3	2.7	.....
Liquors, malt.....	4,350	99.8	0.2	( <sup>2</sup> )
Lumber and timber products.....	13,450	98.8	1.1	0.2
Paint and varnish.....	1,535	88.5	11.5	0.1
Paper and wood pulp.....	4,673	84.5	15.4	0.1
Paper goods, not elsewhere specified.....	2,040	47.8	51.5	0.7
Petroleum, refining.....	1,659	98.7	1.0	0.3
Pottery, terra-cotta, and fire-clay products.....	10,510	79.9	19.0	1.0
Printing and publishing.....	15,750	73.7	24.9	1.4
Slaughtering and meat packing.....	3,080	67.8	2.2	.....
Soap.....	1,774	74.0	24.2	1.8
Stoves and furnaces, including gas and oil stoves.....	7,274	99.5	0.3	0.2
Tin plate and terneplate.....	670	85.0	14.3	.....
Tobacco manufactures.....	12,631	32.3	66.8	0.9
Woolen, worsted, and felt goods, and wool hats.....	2,500	31.0	59.3	8.8
All other industries.....	101,280	80.2	18.3	1.5

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

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 classifica-

tion 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.....	523,004	100.0	417,946	100.0	25.1
Proprietors and firm members.....	14,719	2.8	13,657	3.3	7.8
Salaried employees.....	61,351	11.7	39,991	9.6	53.4
Wage earners (average number).....	446,934	85.5	364,298	87.2	22.7

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

The following table shows the average number of wage earners, 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.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	446,934	100.0	364,298	100.0	308,109	100.0
16 years of age and over.....	441,600	98.8	359,203	98.6	304,050	98.7
Male.....	372,694	83.4	303,828	83.4	258,778	84.0
Female.....	68,906	15.4	55,375	15.2	45,272	14.7
Under 16 years of age.....	5,244	1.2	5,095	1.4	4,059	1.3

This table indicates that for all industries combined there has been an increase during the 10 years in the number of children under 16 years of age employed, although in 1909 the proportion which such employees formed of all wage earners engaged in manufactures was less than in 1904. There has been little change during the decade in the proportion of male and female wage earners. In 1909 and 1904 males 16 years of age and over formed 83.4 per cent of all wage earners, as compared with 84 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; 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 54, is shown, for practically all of the important industries in 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.

There were no seasonal industries of importance which gave employment to large numbers of persons at certain seasons of the year only. Most of the industries showed comparatively little fluctuation throughout the year in the number of wage earners employed.

The greatest relative variation was in the foundry and machine-shop industry, in which the minimum number, 57,555, was employed in January, and the maximum number, 74,069, in December. The steel works and rolling mills had the next largest relative variation, with a minimum of 33,845 wage earners in February and 45,151 in December. For all industries combined, the smallest number, 414,278, was employed in the month of January. The number increased steadily month by month until July when a slight decrease occurred. Thereafter the number increased constantly until in December 480,405 wage earners were employed, the largest number reported for any month. The difference between the figures for the months of greatest and of least activity was thus 66,127, or 13.8 per cent of the maximum.

MONTH.	WAGE EARNERS.		MONTH.	WAGE EARNERS.	
	Number.	Per cent of maximum.		Number.	Per cent of maximum.
January.....	414,278	86.2	July.....	435,241	90.6
February.....	421,945	87.8	August.....	448,898	93.4
March.....	432,343	90.0	September.....	465,351	96.0
April.....	432,828	90.1	October.....	474,448	98.8
May.....	436,450	90.8	November.....	476,023	99.1
June.....	444,998	92.6	December.....	480,405	100.0

**Prevailing hours of labor.**—In the next 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.

It is evident from the figures that for the great majority of wage earners employed in the manufacturing industries of Ohio the prevailing hours of labor range from 54 to 60 a week, only 13.7 per cent of the total being employed in establishments where the prevailing hours were less than 54 a week, and only 7.6 per cent in establishments where they were more than 60 a week.

It will be noted that for the wage earners in 33 of the 89 industries shown separately in the table the most common period of employment was a week of between 54 and 60 hours, while in 32 industries the most common period was a week of 60 hours. The largest proportion of wage earners shown in the first of these groups was for the manufacture of flags and banners and in the second for liquor distilling, the proportions being 88.8 per cent and 90.1 per cent, respectively. The majority of wage earners engaged in the manufacture of cement, and illuminating and heating gas, and in blast furnaces were employed in establishments where the prevailing hours of labor were over 72 per week, while in the manufacture of malt liquors and in photo-engraving, the prevailing hours for the greater part of the wage earners were 48 or less per week.

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.
<b>All industries</b> .....	<b>440,034</b>	<b>31,077</b>	<b>29,296</b>	<b>88,915</b>	<b>130,852</b>	<b>131,863</b>	<b>14,484</b>	<b>8,714</b>	<b>10,843</b>
Agricultural implements.....	5,007	195	1,294	387	2,354	1,707	.....	.....	.....
Artificial stone.....	802	34	13	170	71	514	.....	.....	.....
Automobiles, including bodies and parts.....	12,130	2	64	4,469	0,055	1,051	.....	480	.....
Bags, paper.....	557	.....	.....	134	307	56	.....	.....	.....
Belting and hose, leather.....	107	.....	.....	1	54	52	.....	.....	.....
Bicycles, motorcycles, and parts.....	042	.....	.....	209	54	679	.....	.....	.....
Blacking and cleansing and polishing preparations.....	103	42	1	33	4	22	.....	1	.....
Boots and shoes, including cut stock and findings.....	16,026	100	305	2,608	0,106	3,817	.....	.....	.....
Boxes, cigar.....	531	89	84	07	139	122	.....	.....	.....
Boxes, fancy and paper.....	2,630	112	430	339	1,208	441	.....	.....	.....
Brass and bronze products.....	2,232	30	36	831	1,114	94	127	.....	.....
Bread and other bakery products.....	5,072	589	149	1,007	512	3,244	209	132	40
Brick and tile.....	7,466	355	65	852	529	5,576	22	.....	67
Butter, cheese, and condensed milk.....	1,067	64	9	27	58	401	470	11	27
Canning and preserving.....	2,009	208	18	70	140	1,555	.....	.....	.....
Carriages and wagons and materials.....	8,815	641	651	1,634	1,003	3,896	.....	.....	.....
Cars and general shop construction and repairs by steam-railroad companies.....	20,738	1,718	2,690	3,057	0,273	4,094	1,509	.....	1,417
Cars and general shop construction and repairs by street-railroad companies.....	1,818	2	.....	50	331	381	550	.....	4
Cars, steam-railroad, not including operations of railroad companies.....	2,282	.....	121	279	1,830	52	.....	.....	.....
Cars, street-railroad, not including operations of railroad companies.....	734	.....	.....	.....	488	246	.....	.....	.....
Cement.....	887	19	.....	.....	.....	122	.....	.....	746
Chemicals.....	1,132	2	.....	3	164	586	13	34	330
Clocks and watches, including cases and materials.....	1,456	.....	.....	25	173	1,258	.....	.....	.....
Clothing, men's, including shirts.....	9,050	1,300	2,023	5,428	1,090	109	.....	.....	.....
Clothing, women's.....	8,843	460	1,146	5,242	1,052	47	.....	.....	.....
Coffee and spice, roasting and grinding.....	762	46	87	133	252	244	.....	.....	.....
Coffins, burial cases, and undertakers' goods.....	1,245	.....	255	.....	040	124	.....	.....	.....
Coke.....	246	31	.....	.....	.....	3	212	.....	.....
Confectionery.....	2,493	322	342	280	280	1,266	.....	3	.....
Cooperage and wooden goods, not elsewhere specified.....	1,663	181	476	256	269	479	2	.....	.....
Copper, tin, and sheet-iron products.....	6,598	549	167	1,384	1,250	3,000	.....	.....	248
Cordage and twine and jute and linen goods.....	791	.....	.....	.....	637	154	.....	.....	.....
Cutlery and tools, not elsewhere specified.....	2,820	40	11	118	2,007	644	.....	.....	.....
Dairymen's, poultryers', and apiarists' supplies.....	479	.....	.....	20	111	129	210	.....	.....
Electrical machinery, apparatus, and supplies.....	8,073	20	1,086	2,430	3,071	1,452	.....	14	.....
Explosives.....	358	19	.....	106	.....	233	.....	.....	.....
Fertilizers.....	841	.....	.....	60	29	755	.....	.....	.....
Firearms and ammunition.....	813	.....	48	48	700	17	.....	.....	.....
Flags, banners, regalia, society badges and emblems.....	1,262	4	5	77	1,121	55	.....	.....	.....
Flour-mill and gristmill products.....	2,585	207	53	56	66	1,571	378	253	1
Foundry and machine-shop products.....	64,817	809	2,508	11,087	28,233	21,845	314	21	.....
Furniture and refrigerators.....	8,232	196	345	1,266	2,069	3,765	.....	.....	.....
Gas and electric fixtures and lamps and reflectors.....	1,437	39	201	452	402	136	147	.....	.....
Gas, illuminating and heating.....	666	128	2	.....	37	2	36	8	453
Glass.....	10,189	1,797	2,279	1,720	2,501	1,139	652	65	.....
Grindstones.....	1,277	.....	.....	71	94	1,112	.....	.....	.....
Hats and caps, other than felt, straw, and wool.....	406	3	112	268	2	21	.....	.....	.....
Hosiery and knit goods.....	3,149	10	45	921	1,019	1,154	.....	.....	.....
Ice, manufactured.....	892	8	.....	.....	47	109	140	152	436
Ink, printing.....	183	.....	121	25	.....	37	.....	.....	.....
Iron and steel, blast furnaces.....	7,295	.....	.....	.....	.....	.....	606	1	6,688
Iron and steel, steel works and rolling mills.....	38,586	1,483	44	5,442	7,200	13,352	6,296	4,700	.....
Jewelry.....	356	28	54	231	40	3	.....	.....	.....
Leather goods.....	1,800	24	24	465	861	515	.....	1	.....
Leather, tanned, curried, and finished.....	1,884	95	1	815	367	600	.....	.....	.....
Lime.....	1,273	1	10	115	27	865	48	20	181
Liquors, distilled.....	374	12	.....	25	337	.....	.....	.....	.....
Liquors, malt.....	4,356	2,309	1	1,479	89	471	7	.....	.....
Liquors, vinous.....	149	4	2	10	.....	133	.....	.....	.....
Lumber and timber products.....	13,450	704	358	2,802	2,238	7,348	2	4	.....
Marble and stone work.....	2,012	341	61	478	19	1,001	44	68	.....
Mattresses and spring beds.....	901	59	205	68	451	178	.....	.....	.....
Millinery and lace goods.....	1,367	432	469	346	102	8	.....	.....	.....
Models and patterns, not including paper patterns.....	441	1	151	106	152	31	.....	.....	.....
Musical instruments, pianos and organs and materials.....	1,841	.....	3	219	782	837	.....	.....	.....
Oil, linseed.....	213	.....	.....	.....	.....	.....	88	125	.....
Paint and varnish.....	1,535	53	267	198	520	497	.....	.....	.....
Paper and wood pulp.....	4,673	.....	.....	.....	468	1,498	1,233	1,456	18
Paper goods, not elsewhere specified.....	2,040	40	19	853	200	628	.....	.....	.....
Patent medicines and compounds and druggists' preparations.....	905	163	167	177	311	86	.....	1	.....
Petroleum, refining.....	1,059	.....	.....	480	30	1,122	19	8	.....
Photo-engraving.....	277	202	15	.....	.....	.....	.....	.....	.....
Pottery, terra-cotta, and fire-clay products.....	10,519	2,143	2,660	3,838	1,058	6,703	117	.....	.....
Printing and publishing.....	15,756	6,888	1,951	4,670	1,485	744	18	.....	.....
Pumps, not including steam pumps.....	897	3	70	39	725	60	.....	.....	.....
Safes and vaults.....	2,014	.....	89	217	1,617	91	.....	.....	.....
Salt.....	648	21	.....	57	110	127	03	240	.....
Screws, machine.....	324	.....	.....	45	33	246	.....	.....	.....
Sewing machines, cases, and attachments.....	3,831	.....	.....	623	1,657	1,551	268	.....	.....
Shoddy.....	438	.....	.....	.....	170	.....	.....	.....	.....
Show cases.....	340	.....	.....	42	111	191	5	.....	.....
Slaughtering and meat packing.....	3,086	26	6	484	90	2,333	67	80	.....
Soap.....	1,774	9	.....	80	1,209	525	.....	.....	.....
Stoves and furnaces, including gas and oil stoves.....	7,274	336	350	1,539	3,110	1,933	.....	.....	.....
Tin plate and terneplate.....	676	.....	.....	461	137	78	.....	.....	.....
Tobacco manufactures.....	12,631	4,327	2,431	938	2,806	2,113	10	3	3
Umbrellas and canes.....	287	.....	.....	37	193	9	.....	.....	.....
Wall plaster.....	259	.....	.....	5	17	224	.....	.....	.....
Woolen, worsted, and felt goods, and wool hats.....	2,566	2	6	.....	865	1,990	.....	.....	.....
All other industries.....	53,209	1,754	2,617	13,598	19,032	14,742	473	809	184

Location of establishments.—The following table shows the extent to which the manufactures of Ohio are centralized in cities of 10,000 population or over. (See Introduction.) Statistics for Lakewood, a city having

over 10,000 inhabitants in 1909, are not included in the city group, but are shown in those for districts outside of cities so as to avoid disclosing the operations of individual establishments.

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.	Percent of total.	Number or amount.	Percent of total.	Number or amount.	Percent of total.	Number or amount.	Percent of total.
Population.....	1910	4,767,121	2,130,013	44.7	345,803	7.3	393,371	8.3	1,390,839	29.2	2,637,108	55.3
	1900	4,157,645	1,512,007	36.4	305,089	7.3	241,866	5.8	965,052	23.2	2,645,538	63.6
Number of establishments.....	1909	15,133	8,765	57.9	1,366	9.0	1,208	8.0	6,191	40.9	6,373	42.1
	1899	13,898	6,990	50.4	1,299	9.4	1,034	7.5	4,657	33.6	6,378	49.6
Average number of wage earners.	1909	446,034	323,359	72.4	53,624	12.0	67,960	15.2	201,775	45.1	123,575	27.6
	1899	308,109	220,141	71.4	40,530	13.2	42,794	13.9	136,817	44.4	87,968	28.6
Value of products.....	1909	\$1,437,935,817	\$1,077,016,658	74.9	\$156,321,801	10.9	\$284,178,542	19.8	\$637,116,315	44.3	\$360,319,159	25.1
	1899	748,670,855	540,823,420	72.2	84,434,579	11.3	108,630,800	14.5	347,758,032	46.4	207,847,435	27.8
Value added by manufacture.....	1909	613,733,870	470,315,914	76.6	68,825,229	11.2	108,036,558	17.6	293,454,127	47.8	143,417,956	23.4
	1899	339,368,354	251,523,607	74.1	40,462,166	11.9	48,808,752	14.4	162,252,689	47.8	87,844,747	25.9

In 1909, 74.9 per cent of the total value of products for all manufacturing industries in the state were reported from cities having over 10,000 inhabitants, and 72.4 per cent of the average number of wage earners were employed in such cities. During the 10 years from 1899 to 1909 the industries located in cities have gained somewhat on those in the remainder of the state. It should be understood that the places which had less than 10,000 inhabitants each in 1900 but more than that number in 1910, namely, Norwood, Alliance, Elyria, Middletown, Lancaster, Bellaire, Cambridge, and Warren, are included in the 1899 statistics for the districts outside of cities. The total value of products reported for these eight cities in 1909 was \$64,845,752, or 4.5 per cent of the total value for the state. If, therefore, the statistics for these cities in 1909 were eliminated from the totals of the cities having a population of 10,000 or over and added to those having less than 10,000 inhabitants, the proportion of the aggregate value of products credited to the former group would be 70.4 per cent and that credited to the latter 29.6 per cent, which figures represent the relative proportions of the total value of manufactured products for the state contributed by the same areas that are compared in the total for the prior census.

The composition of each of the groups of cities having more than 10,000 inhabitants has been affected by changes in the population of the different cities during the decade. In 1900 Hamilton, Lima, Lorain, Newark, and Zanesville had less than 25,000 inhabitants, but during the following decade the population of each increased, so that all now belong to the group comprising cities having between 25,000 and 100,000 inhabitants. Dayton had less than 100,000 in 1900, but it so gained in population that in 1910 it was included with Cleveland, Cincinnati, Columbus, and Toledo in the group of cities having more than 100,000 inhabitants.

Although each of the three groups into which the cities having over 10,000 inhabitants are divided shows a substantial absolute increase during the 10-year period in average number of wage earners, value of products, and value added by manufacture, the group comprising the cities having between 10,000 and 25,000 inhabitants had for each of these items a smaller proportion of the total in 1909 than 1899; the group having 100,000 and over had a smaller proportion of the value of products but a larger proportion of the wage earners and value added by manufacture; while the group comprising cities having between 25,000 and 100,000 inhabitants had larger proportions in each item. These changes are, of course, due in the main to the shifting of the cities among the different groups. Of the total value of products shown in the state at the census of 1909, 10.9 per cent was reported from the 22 cities (Lakewood excluded) having between 10,000 and 25,000 inhabitants, and 19.8 per cent from the 9 cities having between 25,000 and 100,000, and 44.3 per cent from the 5 cities having more than 100,000 inhabitants.

The population in 1910 and 1900 of the 37 cities which had 10,000 or more inhabitants in 1910 is given in the following table:

CITY.	1910	1900	CITY.	1910	1900
Cleveland.....	560,663	381,768	Ashtabula.....	18,266	12,049
Cincinnati.....	393,591	325,902	Marion.....	18,232	11,862
Columbus.....	181,511	125,560	Norwood.....	10,185	0,480
Toledo.....	168,497	131,822	Lakewood.....	15,181	3,355
Dayton.....	116,577	85,393	Alliance.....	15,083	8,074
Youngstown.....	79,066	44,885	Findlay.....	14,858	17,013
Akron.....	69,067	42,723	Elyria.....	14,825	8,701
Canton.....	50,217	30,607	Chillicothe.....	14,508	12,076
Springfield.....	46,921	38,253	Massillon.....	13,879	11,044
Hamilton.....	35,279	23,914	Piqua.....	13,388	12,172
Lima.....	30,598	21,723	Middletown.....	13,152	9,215
Lorain.....	28,883	16,023	Ironton.....	13,147	11,803
Zanesville.....	28,026	23,538	Lancaster.....	13,003	8,091
Newark.....	25,404	18,157	Bellaire.....	12,946	9,012
Portsmouth.....	23,481	17,870	Marietta.....	12,923	13,348
Steubenville.....	22,391	14,349	Tiffin.....	11,894	10,069
Mansfield.....	20,768	17,640	Cambridge.....	11,327	8,241
East Liverpool.....	20,387	16,485	Warren.....	11,081	8,520
Sandusky.....	19,989	19,064			

The relative importance in the manufactures of each of the foregoing cities except Lakewood 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, as far as comparative figures are available:

CITY. <sup>1</sup>	AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.		
	1909	1904	1899	1909	1904	1899
Cleveland <sup>2</sup> .....	84,728	64,041	55,341	\$271,900,833	\$171,923,436	\$139,355,508
Cincinnati.....	60,192	58,584	54,942	194,515,092	169,059,050	141,677,997
Youngstown <sup>2</sup> .....	10,498	8,095	8,079	81,270,747	46,853,307	33,908,450
Akron <sup>2</sup> .....	15,831	9,620	8,269	73,153,200	33,559,243	22,016,643
Toledo <sup>2</sup> .....	18,878	15,697	12,747	61,220,542	44,501,292	31,976,094
Dayton.....	21,549	17,093	14,408	60,378,376	39,596,773	31,016,293
Columbus <sup>2</sup> .....	16,428	14,350	13,787	49,031,872	39,530,132	34,748,433
Lorain.....	6,697	3,102	2,233	38,980,906	14,491,091	9,481,388
Canton.....	9,064	5,938	5,149	28,582,811	10,591,143	9,575,473
Steubenville.....	4,267	4,154	1,773	21,187,127	12,309,077	4,547,049
Springfield <sup>2</sup> .....	7,405	6,258	6,209	19,240,141	13,381,707	12,115,941
Hamilton.....	6,895	6,107	5,147	18,183,093	13,510,901	10,655,480
Middletown.....	2,570	1,814	1,578	16,510,785	8,537,993	5,800,095
Bellaire.....	2,597	2,183	1,928	10,091,554	10,712,438	8,837,646
Norwood.....	3,007	( <sup>a</sup> )	( <sup>a</sup> )	9,084,332	( <sup>a</sup> )	( <sup>a</sup> )
Zanesville <sup>2</sup> .....	3,150	3,098	3,405	9,144,953	6,347,387	5,708,137
Mansfield.....	3,204	3,021	2,622	8,172,911	7,353,578	6,070,124
Elyria.....	2,673	1,144	638	8,064,914	2,933,450	1,221,250
Newark.....	3,913	3,027	2,075	7,851,118	5,612,587	2,879,368
Lima <sup>2</sup> .....	3,607	2,733	1,980	7,753,877	4,827,556	6,222,432
Portsmouth <sup>2</sup> .....	3,728	4,072	4,153	7,276,893	6,455,112	6,658,441
Ironton.....	1,920	1,800	1,577	7,118,259	4,755,304	5,410,528
Piqua.....	2,683	2,044	1,955	6,930,672	4,035,706	5,522,184
East Liverpool.....	4,873	5,228	4,171	6,620,076	6,437,000	4,749,165
Alliance <sup>2</sup> .....	2,524	1,442	1,486	6,135,420	3,540,080	3,202,730
Warren.....	1,798	1,505	1,832	5,988,174	4,414,379	4,584,003
Sandusky.....	2,118	2,323	1,453	5,946,853	4,878,503	2,833,506
Marion.....	2,619	1,721	1,171	5,006,976	3,227,712	2,425,853
Massillon.....	1,934	1,995	1,474	4,787,772	3,707,013	2,748,909
Chillicothe.....	1,674	1,553	1,112	4,345,224	3,140,890	1,615,959
Cambridge.....	1,230	814	708	4,200,500	2,440,917	2,201,573
Lancaster <sup>2</sup> .....	1,276	1,095	1,069	4,074,004	3,848,269	1,905,350
Findlay.....	1,376	1,343	1,107	3,486,793	2,925,309	1,685,418
Ashabula.....	1,471	846	373	3,468,612	1,895,454	884,413
Tiffin.....	1,632	1,045	1,238	3,264,328	2,434,602	1,901,902
Marietta.....	1,288	1,314	1,511	3,214,553	2,599,287	2,308,137

<sup>1</sup> Exclusive of Lakewood, to avoid disclosure of the operations of individual establishments.

<sup>2</sup> 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.

<sup>a</sup> Figures not available.

Every city for which comparative statistics are given, except Bellaire, shows an increase in the value of products from 1904 to 1909, and all but Lima, Portsmouth, Ironton, Piqua, and Warren an increase from 1899 to 1904. The percentages of increase, however, were generally greater from 1904 to 1909 than from 1899 to 1904. The greatest percentage of gain from 1904 to 1909, 174.9 per cent, was made by Elyria, due largely to gains in the chemical, foundry and machine-shop, and steel works and rolling-mill industries, and to the establishment of a new automobile body and part factory there since 1904. In Canton there was an increase of 169.9 per cent for the five-year period, due in part to the establishment of such new industries as steel works and rolling mills, the manufacture of tin plate and terneplate and stamped and enameled ware. Lorain showed the next largest increase, 169 per cent, mainly on account of the increased production of steel and pig iron. Akron is still another of the cities in which the value of products more than doubled during the five-year period, the gain, 118 per cent, being largely because of the increased output of rubber goods.

Cleveland, the largest and most important city in the state, with abundant facilities for commerce by

lake and land, shows an increase from 1904 to 1909 of \$100,037,197, or 58.2 per cent, in the value of manufactured products, and of 20,687, or 32.3 per cent, in the average number of wage earners. The growing importance of Cleveland as a manufacturing city is indicated by the fact that when ranked by value of products it was fifth among the cities of the United States in 1909, seventh in 1904, and eighth in 1899. Nineteen per cent of the wage earners and 18.9 per cent of the value of products shown for the state in 1909 were reported from Cleveland. The corresponding proportions for 1904 were 17.6 per cent and 17.9 per cent, respectively. As measured by value of products, the steel works and rolling mills, with products valued at \$38,463,000, were the most important industry of the city in 1909, while foundries and machine shops, with products valued at \$37,443,000, followed very closely. The value of products stated represents 19.4 per cent and 25.7 per cent of the respective totals for these industries in the state.

The third industry in the city was the manufacture of automobiles, including bodies and parts, the output of which was valued at \$21,404,000, which represents an increase over 1904 of over 360 per cent, and forms 55.1 per cent of the value reported for the state for this industry. The increase in the value of output for the three leading industries combined represents over one-third of the total increase for all manufacturing industries in the city. Other industries of importance for which statistics are shown separately for Cleveland in Table I, page 46, are slaughtering and meat packing, with products valued at \$17,192,000; the making of women's clothing, with \$12,789,000; printing and publishing, with \$9,635,000; the manufacture of paint and varnish, with \$6,138,000; that of men's clothing, with \$5,953,000; and that of malt liquors, with \$5,124,000. Of the remaining industries shown in that table, there are seven in which Cleveland contributed over one-third of the total value of products reported for the state in 1909, namely, the manufacture of blacking and cleansing and polishing preparations, brass and bronze products, confectionery, cutlery and tools, hosiery and knit goods, millinery and lace goods, and models and patterns.

In addition to the 48 industries presented separately for Cleveland in Table I, there are 105 others, which, for various reasons, are included in the group of "All other industries." Some of these were among the most important in the city; in fact, 17 reported products in 1909 exceeding \$1,000,000 in value, which were distributed as follows: Thirteen, with \$1,000,000 but less than \$5,000,000; 3, with \$5,000,000 but less than \$10,000,000; and 1, with \$10,000,000 and over.<sup>1</sup>

<sup>1</sup> These industries are:

- |                                                                                             |                                                 |
|---------------------------------------------------------------------------------------------|-------------------------------------------------|
| Bags, other than paper.                                                                     | Rubber goods, not elsewhere specified.          |
| Bicycles, motorcycles, and parts.                                                           | Sewing machines, cases, and attachments.        |
| Coffee and spice, roasting and grinding.                                                    | Shipbuilding, including boat building.          |
| Flour-mill and gristmill products.                                                          | Shoddy.                                         |
| Gas, illuminating and heating.                                                              | Tin plate and terneplate.                       |
| Iron and steel, blast furnaces.                                                             | Wire.                                           |
| Iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills. | Wirework, including wire rope and cable.        |
| Oil, linseed.                                                                               | Woolen, worsted, and felt goods, and wool hats. |
| Petroleum, refining.                                                                        |                                                 |

Cincinnati, the second city of the state in population, is the center of an important industrial district, which extends into Kentucky and Indiana. Its manufactures showed an increase from 1904 to 1909 of \$28,456,642, or 17.1 per cent, in value of products and of 1,608, or 2.7 per cent, in the average number of wage earners. Notwithstanding this gain in value of products, Cincinnati dropped from eighth place in 1904 to twelfth in 1909 among the manufacturing cities of the United States. In 1909 its leading industry was slaughtering and meat packing, with products valued at \$19,320,000, which constituted 9.9 per cent of the total for all industries in the city and 38 per cent of the total for this industry in the state. Foundries and machine shops were next in importance, with an output valued at \$18,380,000, followed by the manufacture of men's clothing, valued at \$16,975,000, representing 12.6 per cent and 68.3 per cent of the totals for the respective industries in the state. The output of boots and shoes in Cincinnati, valued at \$14,999,000, constituted nearly one-half of the total for the industry in the state; that of printing and publishing, \$11,519,000, over one-fourth; that of malt liquors, \$8,874,000, over one-third; and that of distilled liquors, \$8,745,000, nearly three-fourths. Carriages and wagons manufactured in this city, valued at \$6,825,000, represented nearly one-third of the total reported for such products in the state; bread and other bakery products, valued at \$5,103,000, nearly one-fourth; leather (tanned, curried, and finished), valued at \$5,059,000, about one-half; and lumber and timber products, valued at \$5,021,000, over one-seventh.

In addition to the 50 industries presented separately for Cincinnati in Table I, there are 104 others which, for various reasons, are included in the group of "All other industries." Some of these were among the most important in the city, 6 reporting products valued at more than \$1,000,000 but less than \$2,000,000 in 1909.<sup>1</sup>

Youngstown, the third manufacturing city of the state as measured by the value of products, showed an increase of \$34,417,440, or 73.5 per cent, from 1904 to 1909, due primarily to the increased production of steel, in the manufacture of which the city outranks all others in the state. The output of steel works and rolling mills located in Youngstown in 1909 was valued at \$50,175,000, an increase over 1904 of \$20,437,000, or 68.7 per cent, and represented 61.7 per cent of the total reported for all manufacturing industries of the city. Blast furnaces, foundries and machine shops, and the planing-mill branch of the lumber industry are also important industries in Youngstown. The value of the output of the blast furnaces far exceeds the value of the other two classes of establishments, but the statistics for such concerns can not be presented sep-

arately for Youngstown in Table I, page 52, without disclosing the operations of individual establishments. Youngstown ranked twenty-third in 1909 and thirty-second in 1904 among the manufacturing cities of the United States, as measured by value of products.

Akron was the fourth city of the state in 1909, reporting products valued at \$73,158,206, having advanced from seventh place in 1904, when \$33,559,243 was reported. It held seventh place also in 1899, when the output of its manufactures was valued at \$22,015,643. The manufacture of rubber goods is by far the leading industry, Akron being not only the most prominent center of that industry in the state but also in the United States. The manufacture of food preparations is next in importance, followed in order of value of products by printing and publishing, foundries and machine shops, flour-mill and gristmill products, automobiles, including bodies and parts, and pottery, terra-cotta, and fire-clay products. The statistics, however, for rubber goods, food preparations, flour-mill and gristmill products, and automobiles, including bodies and parts, can not be presented separately for Akron in Table I, page 43, without disclosing the operations of individual establishments.

Toledo, with products valued at \$61,229,542, was the fifth manufacturing city of the state in 1909, having dropped from fourth place in 1904, although the value of products increased from \$44,501,292, a gain of \$16,728,250, or 37.6 per cent, for the five-year period. The city owes its position in manufacturing to a comparatively wide range of industries, among which may be mentioned foundries and machine shops, with products valued at \$7,024,000; and flour-mill and gristmill products, with \$5,662,000. In 1909, 16.9 per cent of the wage earners reported for all manufacturing industries of the city were employed in foundries and machine shops. Other industries of importance in Toledo in 1909 were the roasting and grinding of coffee and spice, blast furnaces, automobiles, including bodies and parts, petroleum refining, the manufacture of women's clothing, tobacco products, linseed oil, and printing and publishing. The statistics for four of these industries—the first three named and linseed oil—could not be presented separately for Toledo in Table I, page 50, without disclosing the operations of individual establishments. Ten other industries in the city each reported products in 1909 valued at more than \$1,000,000 but less than \$2,000,000.

Dayton, the sixth city in the state when ranked by value of products, holds third place in respect to average number of wage earners employed. The total value of its products was \$60,378,376 in 1909 and \$39,596,773 in 1904, an increase for the five-year period of \$20,781,603, or 52.5 per cent. The leading industry in the city in 1909 was the manufacture of cash registers and calculating machines, in which Dayton outranks all other cities of the United States. Other industries, named in order of their importance in the value of products, were foundries and machine shops,

<sup>1</sup> These industries are:

Babbitt metal and solder.  
Coffins, burial cases, and undertakers' goods.  
House-furnishing goods, not elsewhere specified.  
Ink, printing.  
Oil, cottonseed, and cake.  
Waste.

steam-railroad car construction shops, the manufacture of automobiles, including bodies and parts, and slaughtering and meat packing. The aggregate output for 1909 for these five leading industries represented 52.9 per cent of the total for all manufacturing industries in the city. Of these five industries the statistics can not be presented separately for Dayton, since comparative data are not available for automobiles, including bodies and parts, as it is a new industry, and as separate statistics for cash registers and steam-railroad car-construction shops would disclose the operations of individual establishments. There are 10 other industries in the city each of which reported products in excess of \$1,000,000, the most important being the roasting and grinding of coffee and spice, the manufacture of sewing machines and attachments, and tobacco manufactures.

Columbus shows an increase in value of products from 1904 to 1909 of \$9,501,740, or 24 per cent, and from 1899 to 1904 of \$4,781,699, or 13.8 per cent. The leading industry in the city is foundry and machine-shop products, which were valued at \$7,744,000 in 1909 and represented 15.8 per cent of the total value of manufactures in the city. Other important industries were: Boots and shoes, with products valued at \$5,436,000; malt liquors, with \$2,728,000; printing and publishing, with \$2,660,000; and slaughtering and meat packing, with \$2,354,000.

Lorain, with products valued at \$38,986,996 in 1909, owes practically its entire industrial activity to the operation of two establishments—a steel works and rolling mill and a blast furnace. The value of the output of the blast furnace, however, was less than half that of the steel plant. All other industries except shipbuilding, for which one establishment was reported in 1909, are insignificant.

For Canton the most important industries were steel works and rolling mills, foundries and machine shops, and the manufacture of copper, tin, and sheet-iron products. An automobile body and part factory, an establishment engaged in the manufacture of safes and vaults, one tin-plate and terneplate mill, and two watch and watch-case factories located in Canton contributed considerably to its prominence in manufacture. Foundries and machine shops constitute the only one of these seven industries for which statistics can be presented separately for Canton in Table I, page 43, without disclosing the operations of individual establishments.

There are five cities in Ohio for which the products reported for 1909 were valued at more than \$10,000,000 but less than \$25,000,000, namely, Steubenville, Springfield, Hamilton, Middletown, and Bellaire. In both Steubenville and Bellaire the iron and steel industries (including tin plate and terneplate) contributed considerably more than half of the total value of products reported for the city, there being four establishments in the former city and two in the latter. In Bellaire the manufacture of stamped

and enameled ware and of glass are also important industries. The manufacture of agricultural implements is the largest industry in Springfield, the value of the products for this industry forming somewhat less than one-third of the total value shown for the city. Foundry and machine-shop products, printing and publishing, flour-mill and gristmill products, and pianos and organs and materials were also important. In Hamilton the leading industries were the manufacture of paper and wood pulp and of foundry and machine-shop products, their combined value of products being more than half of that reported for the city. The manufacture of safes and vaults and of copper, tin, and sheet-iron products are also important. Tobacco manufactures is by far the most important industry in Middletown, while the combined output of the five paper and wood pulp mills and of the steel works and rolling mill located in this city represented about one-fourth of the total for the city.

Of the remaining cities in Ohio for which statistics are shown separately in the preceding table, two had one industry each which contributed more than one-half of its total value of products for 1909, these cities being important centers of the respective industries in the state. In Portsmouth the value of boots and shoes was \$5,300,000, representing 72.8 per cent of the total reported for all manufactures in the city, while in East Liverpool pottery, terra-cotta, and fire-clay products were manufactured to the value of \$5,452,000, which amount represents 82.2 per cent of the total for that city.

The other cities of the state having products valued at more than \$5,000,000 but less than \$10,000,000, together with the two leading industries in each, were as follows: Norwood, printing and publishing and foundry and machine-shop products; Zanesville, iron and steel pipe, wrought, and steel works and rolling mills; Mansfield, agricultural implements and brass and bronze products; Elyria, chemicals and foundry and machine-shop products; Newark, glass and steam-railroad repair shops; Lima, tobacco manufactures and locomotives; Ironton, blast furnaces and wire; Piqua, hosiery and knit goods and stoves and furnaces; Alliance, foundry and machine-shop products and cash registers and calculating machines; Warren, foundry and machine-shop products and electrical machinery, apparatus, and supplies; Sandusky, vinous liquors and paper goods; and Marion, foundry and machine-shop products and agricultural implements.

The leading industry in each of the remaining cities of the state having over 10,000 inhabitants was as follows: Foundry and machine-shop products, in Massillon and in Tiffin; flour and grist mills, in Chillicothe; steel works and rolling mills, in Cambridge; boots and shoes, in Lancaster; refining petroleum, in Findlay and in Marietta; leather (tanned, curried, and finished), in Ashtabula; and electrical machinery and apparatus, in Lakewood.

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.
<b>ALL INDUSTRIES:</b>					<b>Butter, cheese, and condensed milk, 1909—Con.</b>				
1909.....	15,138	446,934	\$1,437,935,817	\$613,733,870	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	13,785	364,298	960,811,857	433,175,272	Individual.....	26.8	15.3	16.4	13.5
Individual:					Firm.....	16.3	8.3	11.8	7.4
1909.....	6,978	34,345	88,075,405	41,358,065	Corporation.....	22.2	65.7	60.6	70.5
1904.....	6,500	36,980	80,034,354	40,150,057	Other.....	34.8	10.7	11.1	8.6
Firm:					<b>Carriages and wagons and materials, 1909.....</b>				
1909.....	2,861	33,409	96,698,565	42,158,928	Individual.....	407	8,815	\$21,949,459	\$10,535,458
1904.....	3,002	38,519	101,947,038	47,273,310	Individual.....	183	1,250	2,345,765	1,348,440
Corporation:					Firm.....	97	1,104	2,888,841	1,312,007
1909.....	5,123	378,473	1,249,778,444	528,320,235	Corporation.....	127	6,305	10,744,853	7,875,015
1904.....	4,008	288,591	777,302,416	345,106,135	Per cent of total.....	100.0	100.0	100.0	100.0
Other:					Individual.....	45.0	14.2	10.7	12.8
1909.....	176	707	3,383,343	1,887,642	Firm.....	23.8	13.2	13.0	12.6
1904.....	185	208	1,438,649	645,770	Corporation.....	31.2	72.5	76.3	74.7
Per cent of total:					<b>Clothing, men's, including shirts, 1909.....</b>				
1909.....	100.0	100.0	100.0	100.0	Individual.....	342	9,950	\$24,860,437	\$11,049,357
1904.....	100.0	100.0	100.0	100.0	Individual.....	227	2,873	4,235,900	2,406,330
Individual:					Firm.....	70	4,254	13,387,350	6,201,928
1909.....	46.1	7.7	6.1	6.7	Corporation.....	45	2,823	7,240,115	3,221,009
1904.....	47.8	10.2	8.3	9.3	Per cent of total.....	100.0	100.0	100.0	100.0
Firm:					Individual.....	66.4	28.9	17.0	20.6
1909.....	18.9	7.5	6.7	6.9	Firm.....	20.5	42.8	53.8	52.4
1904.....	21.8	10.6	10.6	10.9	Corporation.....	13.2	28.4	29.1	27.0
Corporation:					<b>Clothing, women's, 1909.....</b>				
1909.....	33.8	84.7	86.9	86.1	Individual.....	153	8,843	\$10,493,060	\$9,202,477
1904.....	29.1	79.2	80.9	79.7	Individual.....	62	580	750,010	448,905
Other:					Firm.....	44	2,444	5,207,648	2,446,138
1909.....	1.2	0.2	0.2	0.3	Corporation.....	47	5,810	13,534,406	6,307,434
1904.....	1.3	0.1	0.1	0.1	Per cent of total.....	100.0	100.0	100.0	100.0
<b>Agricultural implements, 1909.....</b>					Individual.....	40.5	6.7	3.9	4.9
Individual.....	55	5,997	\$14,440,461	\$8,121,942	Firm.....	28.8	27.6	26.7	26.0
Individual.....	10	51	122,107	62,906	Corporation.....	30.7	65.7	69.4	68.5
Firm.....	4	148	525,896	207,703	<b>Coffee and spice, roasting and grinding, 1909.....</b>				
Corporation.....	41	5,798	13,792,458	7,791,273	Individual.....	39	762	\$11,224,437	\$2,947,098
Per cent of total.....	100.0	100.0	100.0	100.0	Individual.....	5	23	302,000	53,490
Individual.....	18.2	0.8	0.8	0.8	Firm.....	7	121	1,010,768	282,637
Individual.....	7.3	2.5	3.6	3.3	Corporation.....	27	618	9,911,609	2,610,965
Firm.....	74.5	96.7	95.5	95.0	Per cent of total.....	100.0	100.0	100.0	100.0
Corporation.....					Individual.....	12.8	3.0	2.7	1.8
<b>Automobiles, including bodies and parts, 1909.....</b>					Firm.....	17.0	15.9	9.0	9.6
Individual.....	75	12,130	\$38,838,754	\$20,316,756	Corporation.....	69.2	81.1	88.3	88.6
Individual.....	10	147	227,316	137,171	<b>Confectionery, 1909.....</b>				
Firm.....	13	228	1,608,806	788,593	Individual.....	114	2,493	\$7,306,574	\$3,217,656
Corporation.....	52	11,755	37,002,042	19,390,992	Individual.....	41	380	984,991	426,178
Per cent of total.....	100.0	100.0	100.0	100.0	Firm.....	26	387	917,511	422,453
Individual.....	13.3	1.2	0.6	0.7	Corporation.....	47	1,726	5,479,072	2,369,025
Individual.....	17.3	1.0	4.1	3.0	Per cent of total.....	100.0	100.0	100.0	100.0
Firm.....	60.3	96.0	95.3	95.4	Individual.....	36.0	15.2	12.5	13.2
Corporation.....					Firm.....	22.8	15.5	12.6	13.1
<b>Boots and shoes, including out stock and findings, 1909.....</b>					Corporation.....	41.2	69.2	75.0	73.6
Individual.....	72	16,026	\$31,650,957	\$12,678,950	<b>Flour-mill and gristmill products, 1909.....</b>				
Individual.....	8	307	514,020	218,034	Individual.....	673	2,585	\$48,093,353	\$6,740,749
Firm.....	13	1,852	3,300,551	1,512,723	Individual.....	230	604	8,472,566	1,467,028
Corporation.....	51	13,867	27,075,486	10,948,193	Firm.....	272	671	11,645,211	1,844,075
Per cent of total.....	100.0	100.0	100.0	100.0	Corporation.....	121	1,310	27,975,576	3,429,643
Individual.....	11.1	1.9	1.6	1.7	Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	18.1	11.6	10.7	11.9	Individual.....	40.4	23.4	17.6	21.8
Firm.....	70.8	86.5	87.7	86.3	Firm.....	41.6	26.0	24.2	27.4
Corporation.....					Corporation.....	18.0	50.7	58.2	50.9
<b>Bread and other bakery products, 1909.....</b>					<b>Foundry and machine-shop products, 1909.....</b>				
Individual.....	1,467	5,972	\$23,007,131	\$9,340,898	Individual.....	1,218	64,617	\$145,836,648	\$61,276,753
Individual.....	1,232	2,824	10,381,455	4,182,351	Individual.....	283	2,108	4,727,124	2,685,645
Firm.....	164	598	2,209,455	933,424	Firm.....	173	2,871	6,350,524	3,465,044
Corporation.....	71	2,550	10,326,221	4,225,123	Corporation.....	762	59,838	134,759,000	75,125,801
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.....	84.0	47.3	45.1	44.8	Individual.....	23.2	3.3	3.2	3.3
Individual.....	11.2	10.0	10.0	10.0	Firm.....	14.2	4.4	4.4	4.3
Firm.....	4.8	42.7	44.9	45.2	Corporation.....	62.6	92.3	92.4	92.4
Corporation.....					<b>Furniture and refrigerators, 1909.....</b>				
<b>Brick and tile, 1909.....</b>					Individual.....	228	8,232	\$16,258,757	\$9,016,312
Individual.....	517	7,466	\$9,357,730	\$7,153,387	Individual.....	66	895	1,695,026	912,404
Individual.....	211	694	1,200,580	934,044	Firm.....	40	537	1,070,674	633,800
Firm.....	153	1,095	1,407,180	1,096,681	Corporation.....	122	6,800	13,490,057	7,470,108
Corporation.....	153	5,377	6,749,970	5,122,662	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.....	28.9	10.9	10.4	10.1
Individual.....	40.8	13.3	12.8	13.1	Firm.....	17.5	6.5	6.6	7.0
Individual.....	29.6	14.7	15.0	15.3	Corporation.....	53.5	82.6	83.0	82.9
Firm.....	29.6	72.0	72.1	71.6	<b>Butter, cheese, and condensed milk, 1909.....</b>				
Corporation.....					Individual.....	325	1,067	\$9,689,670	\$2,004,234
<b>Butter, cheese, and condensed milk, 1909.....</b>					Individual.....	87	163	1,592,131	271,005
Individual.....	325	1,067	\$9,689,670	\$2,004,234	Firm.....	53	89	1,144,155	148,102
Individual.....	87	163	1,592,131	271,005	Corporation.....	72	701	5,874,514	1,413,468
Firm.....	53	89	1,144,155	148,102	Other.....	113	114	1,078,870	171,600
Corporation.....	72	701	5,874,514	1,413,468					
Other.....	113	114	1,078,870	171,600					

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

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.
<b>Liquors, malt, 1909</b> .....	<b>106</b>	<b>4,356</b>	<b>\$25,332,059</b>	<b>\$18,768,959</b>	<b>Printing and publishing, 1909—Continued.</b>				
Individual.....	12	141	644,346	488,829	Per cent of total.....	103.0	100.0	100.0	100.0
Firm.....	10	205	1,557,171	1,063,474	Individual.....	50.1	17.4	15.6	16.4
Corporation.....	83	4,010	23,130,542	17,216,656	Firm.....	17.1	16.2	7.8	7.8
					Corporation.....	20.2	68.7	71.2	70.2
Per cent of total.....	100.0	100.0	100.0	100.0	Other.....	3.6	3.0	5.4	5.6
Individual.....	11.4	3.2	2.5	2.6	<b>Slaughtering and meat packing, 1909</b>	<b>158</b>	<b>3,086</b>	<b>\$50,804,100</b>	<b>\$8,456,938</b>
Firm.....	9.5	4.7	6.1	5.7	Individual.....	83	463	7,600,049	938,940
Corporation.....	79.0	92.1	91.3	91.7	Firm.....	31	148	4,044,496	416,638
					Corporation.....	47	2,475	39,009,555	5,071,360
<b>Lumber and timber products, 1909</b> .....	<b>1,390</b>	<b>13,456</b>	<b>\$34,587,069</b>	<b>\$14,624,706</b>	Per cent of total.....	103.0	100.0	100.0	103.0
Individual.....	753	3,797	7,708,569	3,896,347	Individual.....	53.6	15.0	15.1	15.0
Firm.....	352	2,623	6,122,840	2,610,602	Firm.....	19.6	4.8	8.0	6.5
Corporation.....	285	7,036	20,765,500	8,117,667	Corporation.....	29.7	80.2	76.0	78.5
Per cent of total.....	100.0	100.0	100.0	100.0	<b>Tobacco manufactures, 1909</b>	<b>1,148</b>	<b>12,631</b>	<b>\$28,907,269</b>	<b>\$16,832,446</b>
Individual.....	51.2	28.2	22.3	26.6	Individual.....	963	3,259	5,121,142	3,172,670
Firm.....	25.3	19.5	17.7	17.9	Firm.....	137	2,751	3,715,795	2,378,108
Corporation.....	20.5	52.3	60.0	55.5	Corporation.....	46	6,621	20,070,332	11,181,668
					Per cent of total.....	100.0	100.0	100.0	100.0
<b>Printing and publishing, 1909</b> .....	<b>1,865</b>	<b>15,756</b>	<b>\$41,657,376</b>	<b>\$29,752,952</b>	Individual.....	84.0	25.8	17.7	19.4
Individual.....	829	2,745	6,510,373	4,801,752	Firm.....	12.0	21.8	12.9	14.1
Firm.....	283	1,615	3,232,528	2,306,498	Corporation.....	4.0	52.4	69.4	66.4
Corporation.....	483	10,832	29,673,914	20,877,439					
Other.....	60	504	2,240,491	1,077,263					

The most important distinction shown is that between corporate and all other forms of ownership. Of the total number of establishments in all industries combined, 33.8 per cent were under corporate ownership in 1909, as against 66.2 per cent under all other forms. The corresponding proportions for 1904 were 29.1 and 70.9 per cent, respectively. In respect to value of products, the diversity in the figures for the two classes was even more pronounced but in the opposite direction. In 1909 the establishments operated by corporations represented 86.9 per cent of the total value as against 13.1 per cent for establishments under all other forms of ownership, while in 1904 the corresponding figures were 80.9 per cent and 19.1 per cent, respectively. The establishments operated by firms decreased from 1904 to 1909 both in number and in the value of their products. They represented, in 1909, 18.9 per cent of the total number of establishments, as compared with 21.8 per cent in 1904, and contributed in 1909 only 6.7 per cent of the total value of products, as compared with 10.6 per cent in 1904.

Establishments under corporate ownership reported a larger proportion of the value of products (95.5 per cent), in the manufacture of agricultural implements than in any other industry shown separately in the table. The proportion of the total value of products reported for establishments under individual ownership was largest in the bakery industry (45.1 per cent), and that for establishments operated by firms greatest in the manufacture of men's clothing (53.8 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 table on the following page 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 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 certain important industries figures are given for 1909 only.

The table shows that in 1909, of the 15,138 establishments, only 245, or 1.6 per cent, had a value of products of \$1,000,000 and over. These establishments, however, employed an average of 142,832 wage earners, or 32 per cent of the total number in all establishments, and reported 46.3 per cent of the total value of products and 39.8 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 considerable proportion (33.7 per cent) of the total number of establishments, but the value of their products amounted to only eight-tenths of 1 per cent of the total. The great bulk of the manufacturing was carried on in 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 marked increase, as measured by average number of wage earners, value of products, and value added by manufacture, 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 \$69,700 to \$94,988, and the value added by manufacture from \$31,424 to \$40,543, 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 com-

modities. The average number of wage earners per establishment increased from 26 in 1904 to 30 in 1909.

This table shows further that among the industries given separately in the table the average value of products per establishment was high in the manufacture of automobiles, the boot and shoe industry, and in slaughtering and meat packing, while the average was low in the bakery, brick and tile, and lumber

industries. The average value of products in the automobile factories was \$517,850, and in the bakeries \$15,683. In the steel works and rolling mills, blast furnaces, tin-plate and terneplate factories, and petroleum refineries, the average value of products per establishment exceeded \$1,000,000, but the statistics as required in this table can not be presented separately for these industries without disclosing the operations of individual establishments.

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.
<b>ALL INDUSTRIES:</b>					<b>Bread and other bakery products, 1909</b>				
1909	15,138	446,934	\$1,437,935,817	\$613,733,870	Less than \$5,000	1,467	5,972	\$23,007,131	\$9,340,898
1904	13,785	364,298	960,811,857	433,176,272	\$5,000 and less than \$20,000	557	307	1,018,993	715,540
Less than \$5,000:					\$20,000 and less than \$100,000	726	1,854	6,687,277	2,756,564
1909	5,095	7,021	12,198,229	7,811,067	\$100,000 and less than \$1,000,000	151	1,458	5,521,220	2,058,782
1904	4,857	7,831	11,804,202	7,737,080	Average per establishment	33	2,263	9,179,641	3,810,092
\$5,000 and less than \$20,000:					Per cent of total	100.0	100.0	100.0	100.0
1909	4,474	23,571	46,028,999	26,309,094	Less than \$5,000	38.0	6.6	7.0	7.7
1904	4,147	24,003	42,532,939	24,242,565	\$5,000 and less than \$20,000	49.5	31.0	20.1	29.5
\$20,000 and less than \$100,000:					\$20,000 and less than \$100,000	10.3	21.4	24.0	22.0
1909	3,405	64,853	150,080,069	76,806,053	\$100,000 and less than \$1,000,000	2.2	37.9	30.0	40.8
1904	3,083	66,880	139,906,206	71,518,400	Average per establishment	4		\$15,683	\$6,367
\$100,000 and less than \$1,000,000:					<b>Brick and tile, 1909</b>				
1909	1,910	208,657	557,384,719	258,737,951	Less than \$5,000	517	7,466	\$9,357,730	\$7,153,387
1904	1,562	181,411	434,781,943	202,893,803	\$5,000 and less than \$20,000	246	646	670,208	531,882
\$1,000,000 and over:					\$20,000 and less than \$100,000	162	1,446	1,049,611	1,280,893
1909	245	142,832	666,243,771	244,068,505	\$100,000 and less than \$1,000,000	94	3,463	4,287,005	3,248,814
1904	130	84,173	331,726,477	126,782,819	Average per establishment	15	1,911	2,750,006	2,091,708
Per cent of total:					Per cent of total	100.0	100.0	100.0	100.0
1909	100.0	100.0	100.0	100.0	Less than \$5,000	47.6	8.7	7.2	7.4
1904	100.0	100.0	100.0	100.0	\$5,000 and less than \$20,000	31.3	19.4	17.0	17.0
Less than \$5,000:					\$20,000 and less than \$100,000	18.2	46.4	45.8	45.4
1909	33.7	1.6	0.8	1.3	\$100,000 and less than \$1,000,000	2.9	25.6	20.4	29.2
1904	35.2	2.1	1.2	1.8	Average per establishment	14		\$18,100	\$13,830
\$5,000 and less than \$20,000:					<b>Butter, cheese, and condensed milk, 1909</b>				
1909	29.6	5.3	3.2	4.3	Less than \$5,000	325	1,067	\$9,689,670	\$2,004,234
1904	30.1	6.6	4.4	5.6	\$5,000 and less than \$20,000	123	54	333,861	71,210
\$20,000 and less than \$100,000:					\$20,000 and less than \$100,000	104	112	1,059,718	195,725
1909	22.5	14.5	10.9	12.5	\$100,000 and less than \$1,000,000	77	282	2,800,024	512,051
1904	22.4	18.4	14.0	16.5	Average per establishment	21	619	5,406,067	1,224,348
\$100,000 and less than \$1,000,000:					Per cent of total	100.0	100.0	100.0	100.0
1909	12.7	46.7	38.8	42.2	Less than \$5,000	37.8	5.1	3.4	3.6
1904	11.3	49.8	45.3	40.8	\$5,000 and less than \$20,000	32.0	10.5	10.0	9.8
\$1,000,000 and over:					\$20,000 and less than \$100,000	23.7	26.4	29.8	25.6
1909	1.6	32.0	46.3	39.8	\$100,000 and less than \$1,000,000	6.5	58.0	55.8	61.1
1904	1.0	23.1	34.5	29.3	Average per establishment	3		\$20,814	\$6,167
Average per establishment:					<b>Carriages and wagons and materials, 1909</b>				
1909	30		\$94,988	\$40,543	Less than \$5,000	407	8,815	\$21,949,459	\$10,535,458
1904	26		69,700	31,424	\$5,000 and less than \$20,000	84	155	227,147	154,619
<b>Agricultural implements, 1909</b>					\$20,000 and less than \$100,000	172	1,073	1,788,714	1,118,304
Less than \$5,000	55	5,997	\$14,440,461	\$8,121,942	\$100,000 and less than \$1,000,000	80	1,968	4,250,008	2,002,509
\$5,000 and less than \$20,000	8	12	10,452	12,550	Average per establishment	62	5,619	15,683,590	7,170,026
\$20,000 and less than \$100,000	10	50	117,250	69,133	Per cent of total	100.0	100.0	100.0	100.0
\$100,000 and less than \$1,000,000	13	291	652,373	391,332	Less than \$5,000	20.6	1.8	1.0	1.5
\$1,000,000 and over	22	3,340	8,389,730	4,696,335	\$5,000 and less than \$20,000	42.3	12.2	8.1	10.6
Per cent of total	100.0	100.0	100.0	100.0	\$20,000 and less than \$100,000	21.9	22.3	10.4	19.0
Less than \$5,000	14.5	0.2	0.1	0.2	\$100,000 and less than \$1,000,000	15.2	63.7	71.5	63.1
\$5,000 and less than \$20,000	18.2	0.8	0.8	0.8	Average per establishment	22		\$53,930	\$25,886
\$20,000 and less than \$100,000	21.8	4.9	4.5	4.8	<b>Clothing, men's, including shirts, 1909</b>				
\$100,000 and less than \$1,000,000	40.0	55.7	58.1	57.8	Less than \$5,000	342	9,960	\$24,869,437	\$11,949,357
\$1,000,000 and over	5.5	38.4	36.4	36.4	\$5,000 and less than \$20,000	119	549	296,035	284,210
Average per establishment		100	\$262,554	\$147,672	\$20,000 and less than \$100,000	116	1,784	1,084,327	945,399
<b>Automobiles, including bodies and parts, 1909</b>					\$100,000 and less than \$1,000,000	53	1,537	2,701,557	1,302,380
Less than \$5,000	75	12,130	\$38,838,784	\$20,316,766	Average per establishment	54	6,080	20,786,948	9,417,359
\$5,000 and less than \$20,000	7	8	20,426	13,391	Per cent of total	100.0	100.0	100.0	100.0
\$20,000 and less than \$100,000	21	73	148,768	93,543	Less than \$5,000	34.8	5.5	1.2	2.4
\$100,000 and less than \$1,000,000	22	549	941,263	555,539	\$5,000 and less than \$20,000	33.9	17.9	4.4	7.9
\$1,000,000 and over	13	8,786	7,244,613	3,586,193	\$20,000 and less than \$100,000	15.5	15.4	10.9	10.0
Per cent of total	100.0	100.0	100.0	100.0	\$100,000 and less than \$1,000,000	15.8	61.1	83.6	78.8
Less than \$5,000	9.3	0.1	0.1	0.1	Average per establishment	29		\$72,718	\$34,910
\$5,000 and less than \$20,000	16.0	0.6	0.4	0.5	<b>Clothing, women's, 1909</b>				
\$20,000 and less than \$100,000	28.0	4.5	2.4	2.7	Less than \$5,000	153	8,843	\$19,493,060	\$9,202,477
\$100,000 and less than \$1,000,000	20.3	22.4	18.7	17.6	\$5,000 and less than \$20,000	42	154	103,484	88,862
\$1,000,000 and over	17.3	72.4	78.5	79.1	\$20,000 and less than \$100,000	27	316	286,892	209,521
Average per establishment		162	\$517,850	\$270,890	\$100,000 and less than \$1,000,000	42	1,234	2,162,544	969,594
<b>Boots and shoes, including cut stock and findings, 1909</b>					\$1,000,000 and over	39	5,005	11,562,057	5,277,791
Less than \$5,000	72	16,026	\$31,550,957	\$12,678,950	Average per establishment	3	2,044	5,378,173	2,656,709
\$5,000 and less than \$20,000	4	17	9,827	5,272	Per cent of total	100.0	100.0	100.0	100.0
\$20,000 and less than \$100,000	9	75	94,097	54,113	Less than \$5,000	27.4	1.7	0.5	1.0
\$100,000 and less than \$1,000,000	9	334	404,621	109,611	\$5,000 and less than \$20,000	17.6	3.6	1.5	2.3
\$1,000,000 and over	10	8,232	16,905,995	6,864,759	\$20,000 and less than \$100,000	27.4	14.0	11.1	10.5
Per cent of total	100.0	100.0	100.0	100.0	\$100,000 and less than \$1,000,000	25.5	57.6	59.3	67.3
Less than \$5,000	5.6	0.1	( <sup>1</sup> )	( <sup>1</sup> )	\$1,000,000 and over	2.0	23.1	27.0	28.9
\$5,000 and less than \$20,000	12.5	0.5	0.3	0.4	Average per establishment	58		\$127,406	\$60,157
\$20,000 and less than \$100,000	12.5	2.1	1.3	1.6	<b>Less than one-tenth of 1 per cent.</b>				
\$100,000 and less than \$1,000,000	55.6	46.0	44.8	43.8	<b>Includes the group "\$1,000,000 and over."</b>				
\$1,000,000 and over	13.9	51.4	53.6	54.2					
Average per establishment		223	\$438,208	\$176,097					

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.
<b>Coffee and spice, roasting and grinding, 1909</b>	<b>39</b>	<b>762</b>	<b>\$11,224,437</b>	<b>\$2,947,098</b>	<b>Liquors, malt, 1909</b>	<b>105</b>	<b>4,356</b>	<b>\$25,332,059</b>	<b>\$18,768,959</b>
Less than \$5,000	3	2	9,465	3,845	Less than \$5,000	4	5	8,855	5,915
\$5,000 and less than \$20,000	4	10	45,975	11,485	\$5,000 and less than \$20,000	7	30	75,770	46,192
\$20,000 and less than \$100,000	10	45	446,753	113,144	\$20,000 and less than \$100,000	36	467	2,126,651	1,485,808
\$100,000 and less than \$1,000,000	18	407	4,819,723	1,354,060	\$100,000 and less than \$1,000,000	52	2,370	13,794,286	10,318,480
\$1,000,000 and over	4	298	5,902,521	1,464,564	\$1,000,000 and over	6	1,484	9,326,488	6,912,465
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	7.7	0.3	0.1	0.1	Less than \$5,000	3.8	0.1	(?)	(?)
\$5,000 and less than \$20,000	10.3	1.3	0.4	0.4	\$5,000 and less than \$20,000	6.7	0.7	0.3	0.2
\$20,000 and less than \$100,000	25.6	5.9	4.0	3.8	\$20,000 and less than \$100,000	34.3	10.7	8.4	7.0
\$100,000 and less than \$1,000,000	46.2	53.4	42.9	45.9	\$100,000 and less than \$1,000,000	49.5	51.4	54.5	55.0
\$1,000,000 and over	10.3	39.1	52.6	49.7	\$1,000,000 and over	5.7	34.1	36.8	36.8
Average per establishment	20		\$287,806	\$75,567	Average per establishment	41		\$241,258	\$178,752
<b>Confectionery, 1909</b>	<b>114</b>	<b>2,493</b>	<b>\$7,306,574</b>	<b>\$3,217,656</b>	<b>Lumber and timber products, 1909</b>	<b>1,390</b>	<b>13,456</b>	<b>\$34,597,069</b>	<b>\$14,624,706</b>
Less than \$5,000	27	31	60,400	29,231	Less than \$5,000	574	1,121	1,370,723	868,599
\$5,000 and less than \$20,000	36	178	378,643	181,430	\$5,000 and less than \$20,000	453	2,561	4,565,738	2,501,581
\$20,000 and less than \$100,000	32	540	1,568,573	671,001	\$20,000 and less than \$100,000	284	4,901	12,020,125	5,425,620
\$100,000 and less than \$1,000,000	19	1,744	5,298,958	2,335,904	\$100,000 and less than \$1,000,000	70	4,873	15,740,483	5,825,906
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	23.7	1.2	0.8	0.9	Less than \$5,000	41.3	8.3	4.0	5.9
\$5,000 and less than \$20,000	31.6	7.1	5.2	5.6	\$5,000 and less than \$20,000	32.6	19.0	13.2	17.1
\$20,000 and less than \$100,000	28.1	21.7	21.5	20.9	\$20,000 and less than \$100,000	20.4	36.4	37.3	37.1
\$100,000 and less than \$1,000,000	16.7	70.0	72.5	72.6	\$100,000 and less than \$1,000,000	5.7	36.2	45.5	30.8
Average per establishment	22		\$64,693	\$28,235	Average per establishment	10		\$24,890	\$10,521
<b>Flour-mill and gristmill products, 1909</b>	<b>673</b>	<b>2,585</b>	<b>\$48,093,353</b>	<b>\$6,740,746</b>	<b>Printing and publishing, 1909</b>	<b>1,655</b>	<b>15,756</b>	<b>\$41,657,366</b>	<b>\$29,752,952</b>
Less than \$5,000	41	33	125,064	30,114	Less than \$5,000	795	1,095	1,939,089	1,490,403
\$5,000 and less than \$20,000	191	207	2,308,342	400,470	\$5,000 and less than \$20,000	524	2,823	5,208,241	4,044,786
\$20,000 and less than \$100,000	368	1,051	15,827,039	2,719,774	\$20,000 and less than \$100,000	260	4,713	10,754,812	7,065,373
\$100,000 and less than \$1,000,000	64	750	16,641,167	1,954,400	\$100,000 and less than \$1,000,000	72	5,624	18,731,793	13,187,171
\$1,000,000 and over	9	544	13,191,741	1,575,982	\$1,000,000 and over	4	1,501	5,023,371	3,259,219
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	6.1	1.3	0.3	0.4	Less than \$5,000	48.0	6.9	4.7	5.0
\$5,000 and less than \$20,000	28.4	8.0	4.8	6.8	\$5,000 and less than \$20,000	31.7	17.9	12.5	13.6
\$20,000 and less than \$100,000	54.7	40.7	32.9	40.4	\$20,000 and less than \$100,000	15.7	20.9	25.8	26.1
\$100,000 and less than \$1,000,000	9.5	29.0	34.6	29.0	\$100,000 and less than \$1,000,000	4.4	35.7	45.0	44.3
\$1,000,000 and over	1.3	21.0	27.4	23.4	\$1,000,000 and over	0.2	0.5	12.1	11.0
Average per establishment	4		\$71,461	\$10,016	Average per establishment	10		\$25,171	\$17,978
<b>Foundry and machine-shop products, 1909</b>	<b>1,218</b>	<b>64,817</b>	<b>\$145,836,648</b>	<b>\$81,276,763</b>	<b>Slaughtering and meat packing, 1909</b>	<b>158</b>	<b>3,086</b>	<b>\$50,804,156</b>	<b>\$5,456,938</b>
Less than \$5,000	198	280	481,119	317,218	Less than \$5,000	7	11	26,156	13,002
\$5,000 and less than \$20,000	303	1,830	3,347,103	2,172,448	\$5,000 and less than \$20,000	18	19	196,283	35,274
\$20,000 and less than \$100,000	401	9,752	19,627,491	11,223,823	\$20,000 and less than \$100,000	90	224	3,277,587	508,893
\$100,000 and less than \$1,000,000	293	38,563	86,934,104	47,427,402	\$100,000 and less than \$1,000,000	61	1,088	20,274,934	2,487,672
\$1,000,000 and over	23	14,302	35,446,831	20,135,802	\$1,000,000 and over	12	1,744	27,029,140	3,352,287
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	16.3	0.4	0.3	0.4	Less than \$5,000	4.4	0.4	0.1	0.2
\$5,000 and less than \$20,000	24.9	2.8	2.3	2.7	\$5,000 and less than \$20,000	11.4	0.6	0.4	0.5
\$20,000 and less than \$100,000	32.9	15.0	13.5	13.8	\$20,000 and less than \$100,000	38.0	7.3	6.5	8.8
\$100,000 and less than \$1,000,000	24.1	59.5	59.6	58.3	\$100,000 and less than \$1,000,000	38.6	35.3	39.9	38.5
\$1,000,000 and over	1.9	22.2	24.3	24.8	\$1,000,000 and over	7.6	56.5	53.2	51.9
Average per establishment	53		\$110,735	\$66,730	Average per establishment	20		\$321,545	\$40,897
<b>Furniture and refrigerators, 1909</b>	<b>228</b>	<b>8,232</b>	<b>\$16,258,757</b>	<b>\$9,016,312</b>	<b>Tobacco manufactures, 1909</b>	<b>1,146</b>	<b>12,631</b>	<b>\$28,907,269</b>	<b>\$18,832,446</b>
Less than \$5,000	35	43	91,023	62,003	Less than \$5,000	800	808	1,658,381	1,104,740
\$5,000 and less than \$20,000	54	357	599,079	399,462	\$5,000 and less than \$20,000	184	1,263	1,702,071	1,129,261
\$20,000 and less than \$100,000	101	3,089	5,341,808	2,861,220	\$20,000 and less than \$100,000	64	2,218	2,900,171	1,840,402
\$100,000 and less than \$1,000,000	38	4,740	10,226,247	5,733,637	\$100,000 and less than \$1,000,000	34	6,010	8,617,942	4,929,900
Per cent of total	100.0	100.0	100.0	100.0	\$1,000,000 and over	4	2,332	14,028,704	7,831,134
Less than \$5,000	15.4	0.5	0.6	0.7	Per cent of total	100.0	100.0	100.0	100.0
\$5,000 and less than \$20,000	23.7	4.3	3.7	4.1	Less than \$5,000	75.0	6.4	5.7	6.0
\$20,000 and less than \$100,000	44.3	37.5	32.9	31.0	\$5,000 and less than \$20,000	16.1	10.0	5.9	6.7
\$100,000 and less than \$1,000,000	10.7	57.7	62.9	63.6	\$20,000 and less than \$100,000	5.6	17.0	10.0	10.9
Average per establishment	36		\$71,310	\$39,545	\$100,000 and less than \$1,000,000	3.0	47.6	29.8	29.3
					\$1,000,000 and over	0.3	18.5	48.5	46.5
					Average per establishment	11		\$25,234	\$14,688

<sup>1</sup> Includes the group "\$1,000,000 and over."

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

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 table on the following page shows, for 1909, such a classification for all industries combined and for 40 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 15,138 establishments reported for all industries, 10 per cent employed no wage earners; 48.4 per cent from 1 to 5; 20.9 per cent from 6 to 20; and 9.4 per cent from 21 to 50. The most numerous single

group consists of the 7,320 establishments employing from 1 to 5 wage earners, and the next of the 3,163 establishments employing from 6 to 20 wage earners. There were 337 establishments that employed over 250 wage earners; 33 of these employed over 1,000, of which 8 were steel works and rolling mills and 4 automobile factories.

Of the total number of wage earners, 44 per cent were in establishments employing over 250 wage earners. The single group having the largest number of employees was the group comprising the establishments employing from 101 to 250 wage earners. This group employed 98,905 wage earners, or 22.1 per cent of the total. The average per establishment in this

group was 156. More than two-fifths of the total wage earners employed in the following industries were in this class of establishments: Hosiery and knit-goods mills; blast furnaces; distilleries; paint and varnish factories; pottery, terra-cotta, and fire-clay factories;

and tin-plate and terneplate mills. All of the individual industries listed in this table but not in the preceding one are those in which comparatively large establishments do most of the business, as appears from the classification according to the number of wage earners.

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.								
<b>All industries</b> .....	15,138	1,521	7,320	3,163	1,429	733	635	199	105	33
Agricultural implements.....	55	3	12	8	10	3	13	4	1	1
Automobiles, including bodies and parts.....	75	1	14	17	9	9	10	9	2	4
Boots and shoes, including cut stock and findings.....	72	1	4	11	5	10	23	9	7	2
Brass and bronze products.....	82	3	31	29	9	5	2	3		
Bread and other bakery products.....	1,407	220	1,055	151	22	13	6			
Brick and tile.....	517	4	276	141	59	27	10			
Butter, cheese, and condensed milk.....	325	27	266	24	3	4	1			
Carriages and wagons and materials.....	407	9	167	135	48	27	21			
Cars and general shop construction and repairs by steam-railroad companies.....	71		2	5	6	8	13	23	13	1
Cars, steam-railroad, not including operations of railroad companies.....	6				2	1	1	1		1
Chemicals.....	33	2	13	12	2	1	1	2		
Clothing, men's, including shirts.....	342	8	95	133	60	24	13	2	1	1
Clothing, women's.....	153	3	39	41	29	19	10	4	1	1
Coffee and spice, roasting and grinding.....	39	1	15	13	5	4	1			
Confectionery.....	114	12	42	30	14	9	7			
Copper, tin, and sheet-iron products.....	221	4	107	55	28	9	12	6		
Electrical machinery, apparatus, and supplies.....	115	1	35	29	15	12	15	6	1	1
Flour-mill and gristmill products.....	673	59	529	68	13	3	1			
Foundry and machine-shop products.....	1,218	47	355	316	211	124	111	35	10	3
Furniture and refrigerators.....	228	7	51	62	67	24	14	2	1	1
Glass.....	45		3	5	3	8	16	6	6	1
Hosiery and knit goods.....	39		10	2	7	9	9	2		
Iron and steel, blast furnaces.....	40		1		3	8	20	6	2	
Iron and steel, steel works and rolling mills.....	75			5	5	7	17	17	16	8
Leather, tanned, curried, and finished.....	36	1	11	5	12	3	3		1	
Liquors, distilled.....	17	3	5	5	2	1	3			
Liquors, malt.....	105	2	6	41	35	12	6	3		
Lumber and timber products.....	1,300	28	831	376	114	30	11			
Paint and varnish.....	87	3	49	22	7	6	6			
Paper and wood pulp.....	47			5	15	14	11	1	1	
Paper goods, not elsewhere specified.....	28		9		7	3	1	2	1	1
Petroleum, refining.....	10			2	3	1	2	1	1	
Pottery, terra-cotta, and fire-clay products.....	186	2	15	18	53	43	45	7	3	3
Printing and publishing.....	1,055	326	817	351	101	38	18	3	1	
Slaughtering and meat packing.....	158	12	80	36	14	13	1	1	1	1
Soap.....	44	6	16	11	5	3	1	1	1	
Stoves and furnaces, including gas and oil stoves.....	102	2	26	20	18	19	12	2	2	1
Tin plate and terneplate.....	4					1	3			
Tobacco manufactures.....	1,146	352	599	109	38	18	20	6	4	
Woolen, worsted, and felt goods, and wool hats.....	20		4	5	3	2	5			1
All other industries.....	3,691	372	1,733	855	367	164	136	35	22	7
AVERAGE NUMBER OF WAGE EARNERS.										
<b>All industries</b> .....	446,934		17,097	35,261	46,960	52,186	98,905	69,553	70,883	56,089
Agricultural implements.....	5,997		33	90	318	227	2,170	1,287	530	1,342
Automobiles, including bodies and parts.....	12,130		36	204	386	586	1,421	3,248	1,351	4,898
Boots and shoes, including cut stock and findings.....	16,025		10	118	162	739	3,885	3,303	4,908	2,901
Brass and bronze products.....	2,232		89	356	285	339	296	867		
Bread and other bakery products.....	5,972		2,119	1,389	723	920	821			
Brick and tile.....	7,466		752	1,621	1,929	1,788	1,470			
Butter, cheese, and condensed milk.....	1,067		320	240	82	289	118			
Carriages and wagons and materials.....	8,815		511	1,440	1,706	1,983	3,166			
Cars and general shop construction and repairs by steam-railroad companies.....	20,728		7	75	165	550	1,954	7,562	8,420	1,986
Cars, steam-railroad, not including operations of railroad companies.....	2,282				48	52	121	252		1,809
Chemicals.....	1,132		27	160	57	58	126	704		
Clothing, men's, including shirts.....	9,950		308	1,706	1,035	1,716	2,044	618	550	1,073
Clothing, women's.....	8,848		132	483	1,032	1,406	2,668	1,553	504	1,065
Coffee and spice, roasting and grinding.....	762		41	162	168	280	111			
Confectionery.....	2,493		110	305	455	646	977			
Copper, tin, and sheet-iron products.....	6,598		281	561	895	634	2,106	2,121		
Electrical machinery, apparatus, and supplies.....	8,073		70	337	448	834	2,446	1,944	899	1,170
Flour-mill and gristmill products.....	2,585		1,182	645	427	181	150			
Foundry and machine-shop products.....	64,817		1,013	3,836	7,214	9,185	17,141	11,922	10,576	3,930
Furniture and refrigerators.....	8,282		124	741	2,307	1,672	2,036	674	678	
Glass.....	10,159			54	164	544	2,659	2,200	3,440	1,038
Hosiery and knit goods.....	3,149		25	29	112	672	1,550	644		
Iron and steel, blast furnaces.....	7,295				220	672	1,550	2,108	1,190	
Iron and steel, steel works and rolling mills.....	38,586			90	157	534	2,867	6,780	12,149	16,033
Leather, tanned, curried, and finished.....	1,884		26	53	366	219	452		768	
Liquors, distilled.....	374		3	56	60	80	175			
Liquors, malt.....	4,350		14	495	1,127	832	915	973		
Lumber and timber products.....	13,450		2,018	4,058	3,569	2,108	1,703			
Paint and varnish.....	1,535		129	217	227		662			
Paper and wood pulp.....	4,073			88	496	955	1,695	439	1,000	
Paper goods, not elsewhere specified.....	2,040		23	82	170	222	144	652	747	
Petroleum, refining.....	1,059			27	99	97	248	480	708	
Pottery, terra-cotta, and fire-clay products.....	10,519		34	221	1,904	3,086	7,145	2,302	1,827	615
Printing and publishing.....	15,750		2,060	3,714	3,161	2,632	2,562	1,112	347	578
Slaughtering and meat packing.....	3,080		204	400	474	961	122	265	243	573
Soap.....	1,774		34	113	167	194	223	265	171	
Stoves and furnaces, including gas and oil stoves.....	7,274		69	200	580	1,354	1,854	771	1,151	1,235
Tin plate and terneplate.....	676				78	598	2,979	2,295	2,874	
Tobacco manufactures.....	12,631		1,137	1,154	1,266	1,226	2,979	2,295	2,874	
Woolen, worsted, and felt goods, and wool hats.....	2,566		8	54	76	168	861			1,399
All other industries.....	101,286		4,128	9,733	11,814	11,498	20,713	11,980	15,126	16,294

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.								
<b>All industries</b> .....	100.0	3.8	7.9	10.5	11.7	22.1	15.6	15.9	12.5	
Agricultural implements.....	101.0	0.6	1.5	5.3	3.8	36.2	21.5	8.8	22.4	
Automobiles, including bodies and parts.....	100.0	0.3	1.7	3.2	4.8	11.7	26.8	11.1	40.4	
Boots and shoes, including cut stock and findings.....	100.0	0.1	0.7	1.0	4.6	24.2	20.6	30.6	18.1	
Brass and bronze products.....	100.0	4.0	15.9	12.8	15.2	13.3	38.8			
Bread and other bakery products.....	100.0	35.5	23.3	12.1	15.4	13.7				
Brick and tile.....	100.0	10.1	20.4	25.8	23.9	10.8				
Butter, cheese, and condensed milk.....	100.0	30.8	23.3	7.7	27.1	11.1				
Carriages and wagons and materials.....	100.0	5.8	16.4	10.4	22.5	35.9				
Cars and general shop construction and repairs by steam-railroad companies.....	100.0	(1)	0.4	0.8	2.7	0.4	36.5	40.0	9.6	
Cars, steam-railroad, not including operations of railroad companies.....	100.0				2.3	5.3	11.0		79.3	
Chemicals.....	100.0	2.4	14.1	5.0	5.1	11.1	62.2			
Clothing, men's, including shirts.....	100.0	3.1	17.1	19.4	17.2	20.5	6.2	5.5	10.8	
Clothing, women's.....	100.0	1.5	5.5	11.7	15.9	30.2	17.6	5.7	12.0	
Coffee and spice, roasting and grinding.....	100.0	5.4	21.3	22.0	39.7	14.6				
Confectionery.....	100.0	4.4	12.2	18.3	25.9	39.2				
Copper, tin, and sheet-iron products.....	100.0	4.3	8.5	13.0	0.6	31.9	32.1			
Electrical machinery, apparatus, and supplies.....	100.0	1.0	4.2	5.5	10.3	30.3	24.1	10.0	14.6	
Flour-mill and gristmill products.....	100.0	45.7	25.0	16.5	7.0	5.8				
Foundry and machine-shop products.....	100.0	1.6	5.9	11.1	14.2	26.4	18.4	16.3	6.1	
Furniture and refrigerators.....	100.0	1.5	9.0	28.0	20.3	24.7	8.2			
Glass.....	100.0		0.5	1.6	5.4	26.2	22.2	33.9	10.2	
Hostery and knit goods.....	100.0	0.8	0.9	7.3	21.3	49.2	20.4			
Iron and steel, blast furnaces.....	100.0	(1)		1.5	8.7	43.2	30.1	16.4		
Iron and steel, steel works and rolling mills.....	100.0		0.2	0.4	1.4	7.4	17.6	31.5	41.6	
Leather, tanned, curried, and finished.....	100.0	1.4	2.8	19.4	11.6	24.0		40.8		
Liquors, distilled.....	100.0	0.8	15.0	10.0	21.4	46.8				
Liquors, malt.....	100.0	0.3	11.4	25.9	19.1	21.0	22.3			
Lumber and timber products.....	100.0	15.0	30.2	26.5	15.7	12.7				
Paint and varnish.....	100.0	8.4	14.1	14.8		62.7				
Paper and wood pulp.....	100.0		1.9		20.4	36.3	9.4	21.4		
Paper goods, not elsewhere specified.....	100.0	1.1	4.0	8.3	10.9	7.1	32.0	30.6		
Petroleum, refining.....	100.0		1.6	6.0	5.8	14.9	28.9	42.7		
Pottery, terra-cotta, and fire-clay products.....	100.0	0.2	1.3	11.5	18.7	43.3	13.9	11.1		
Printing and publishing.....	100.0	13.1	23.6	20.1	16.7	16.3	7.0	3.3		
Slaughtering and meat packing.....	100.0	6.6	13.0	15.4	31.1	4.0	11.2	18.7		
Soap.....	100.0	1.9	6.4	9.4	10.9	12.6	14.9	43.9		
Stoves and furnaces, including gas and oil stoves.....	100.0	0.9	3.6	8.0	18.6	25.5	10.6	15.8	17.0	
Tin plate and terneplate.....	100.0				11.5	33.5				
Tobacco manufactures.....	100.0	9.0	9.1	10.0	9.7	23.6	18.2	20.4		
Woolen, worsted, and felt goods, and wool hats.....	100.0	0.3	2.1	3.0	6.5	37.1			51.0	
All other industries.....	100.0	4.1	0.6	11.7	11.4	20.4	11.8	14.9	16.1	

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

**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 profit. Facts of interest can, however, be brought out concerning the relative importance of the different classes of expenses which make up the total.

The table in the next column 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 54.

The table shows that, for all industries combined, 64.2 per cent of the total expenses were incurred for materials, 24.7 per cent for services—that is, salaries and wages—and only 11 per cent for other purposes. As would be expected, these proportions vary greatly in the different industries. The large proportions shown for miscellaneous expenses for the manufacture of distilled and malt liquors and tobacco products are due to the inclusion of internal-revenue taxes. The highest percentage shown for materials, 92.7, is for flour mills and gristmills and the lowest percentage shown for salaries and wages, 2.8, is for distilleries, proportions which are due to the comparative simplicity of the manufacturing operations in each class of establishments. Other industries with a high percentage of expense for materials are: Tin plate and terneplate, slaughtering and meat packing, blast furnaces, and butter, cheese, and condensed milk.

INDUSTRY.	PER CENT OF TOTAL EXPENSES REPORTED.			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
<b>All industries</b> .....	5.6	19.1	64.2	11.0
Agricultural implements.....	0.3	25.6	51.2	13.0
Automobiles, including bodies and parts.....	4.4	24.1	57.5	14.0
Boots and shoes, including cut stock and findings.....	7.2	22.5	63.9	6.3
Brass and bronze products.....	7.2	23.7	61.1	8.0
Bread and other bakery products.....	5.5	17.0	68.8	8.7
Brick and tile.....	7.9	47.5	29.7	14.8
Butter, cheese, and condensed milk.....	1.9	0.2	86.0	5.9
Carriages and wagons and materials.....	6.6	24.1	59.1	10.2
Cars and general shop construction and repairs by steam-railroad companies.....	4.5	44.3	49.7	1.4
Cars, steam-railroad, not including operations of railroad companies.....	8.4	20.1	64.6	6.9
Chemicals.....	5.2	11.9	75.8	7.1
Clothing, men's, including shirts.....	7.5	18.1	57.6	16.8
Clothing, women's.....	9.2	23.7	57.1	10.0
Coffee and spice, roasting and grinding.....	7.8	3.4	79.9	8.9
Confectionery.....	7.3	13.8	67.1	11.8
Copper, tin, and sheet-iron products.....	5.6	18.5	68.1	7.7
Electrical machinery, apparatus, and supplies.....	9.9	24.8	49.6	18.7
Flour-mill and gristmill products.....	1.5	3.2	92.7	2.6
Foundry and machine-shop products.....	9.2	20.4	49.9	11.5
Furniture and refrigerators.....	7.4	29.0	50.7	13.0
Glass.....	5.6	46.9	36.8	10.8
Hostery and knit goods.....	0.8	18.0	69.8	7.8
Iron and steel, blast furnaces.....	1.8	6.6	88.5	3.1
Iron and steel, steel works and rolling mills.....	2.3	16.1	78.2	3.5
Leather, tanned, curried, and finished.....	2.1	11.5	82.1	4.2
Liquors, distilled.....	0.8	2.0	21.8	75.4
Liquors, malt.....	8.0	15.6	31.2	45.2
Lumber and timber products.....	4.8	22.1	65.8	7.3
Paint and varnish.....	11.0	7.2	68.7	13.1
Paper and wood pulp.....	3.8	15.6	70.2	10.3
Paper goods, not elsewhere specified.....	6.7	16.1	62.7	15.5
Petroleum, refining.....	4.1	10.2	81.1	4.6
Pottery, terra-cotta, and fire-clay products.....	7.7	45.8	34.3	12.2
Printing and publishing.....	15.8	27.1	34.4	22.7
Slaughtering and meat packing.....	1.4	3.9	92.1	2.7
Soap.....	4.1	5.9	83.0	7.0
Stoves and furnaces, including gas and oil stoves.....	3.8	30.9	46.2	14.0
Tin plate and terneplate.....	1.0	5.8	92.5	0.7
Tobacco manufactures.....	3.8	17.6	47.2	31.3
Woolen, worsted, and felt goods, and wool hats.....	3.0	13.7	68.2	15.1
All other industries.....	6.6	19.1	60.4	13.9

**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	1909	1904	1899	1909	1904	1899
<b>Primary power, total</b> .....	25,970	11,598	11,548	1,583,155	1,116,932	783,605	100.0	100.0	100.0
Owned.....	13,012	11,598	11,548	1,483,628	1,088,030	767,051	93.7	97.4	97.9
Steam.....	9,246	9,063	9,789	1,302,134	1,028,665	732,066	86.0	92.1	93.4
Gas.....	3,354	2,004	1,203	103,801	35,101	14,230	6.6	3.1	1.8
Water wheels.....	373	449	556	15,777	17,781	17,848	1.0	1.6	2.3
Water motors.....	30	82	( <sup>2</sup> )	330	308	( <sup>2</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	.....
Other.....				1,586	6,115	2,967	0.1	0.5	0.4
Rented.....	12,958	( <sup>2</sup> )	( <sup>2</sup> )	99,527	28,902	16,014	6.3	2.6	2.1
Electric.....	12,958	( <sup>2</sup> )	( <sup>2</sup> )	93,592	23,159	8,768	5.9	2.1	1.1
Other.....				5,935	5,743	7,846	0.4	0.5	1.0
<b>Electric motors</b> .....	34,237	8,608	1,721	417,844	144,467	42,157	100.0	100.0	100.0
Run by current generated by establishment.....	21,279	8,608	1,721	324,252	121,308	33,389	77.6	84.0	79.2
Run by rented power.....	12,958	( <sup>2</sup> )	( <sup>2</sup> )	93,592	23,159	8,768	22.4	16.0	20.8

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

The amount of primary power used in the manufacturing industries of Ohio increased 333,267 horsepower, or 42.5 per cent, from 1899 to 1904, and 466,223 horsepower, or 41.7 per cent, from 1904 to 1909. The greater part of the increase was in owned steam and rented electric power. In 1909, as in 1904 and 1899, steam power formed the major part of the total power reported, but notwithstanding increases during the two five-year periods of 296,659 horsepower and 333,469 horsepower, respectively, the proportion which this kind of power formed of the total primary power decreased from 93.4 per cent in 1899 to 92.1 per cent in 1904, and to 86 per cent in 1909.

The more general use of gas engines in recent years is shown, there being 3,354 of such engines with an indicated capacity of 103,801 horsepower reported in 1909, as against 2,004 engines with 35,101 horsepower in 1904, and 1,203 engines with 14,230 horsepower in 1899. The figures also show that the practice of renting electric power is increasing rapidly, 93,592 horsepower, or 5.9 per cent of the total power, being of this character in 1909, as compared with 23,159 horsepower, or 2.1 per cent, in 1904, and 8,768 horsepower,

or 1.1 per cent, in 1899. The use of electric motors for the purpose of applying the power generated in the establishments is rapidly becoming more common, the horsepower of such motors increasing from 33,389 in 1899 to 121,308 in 1904 and 324,252 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, by totals for all industries combined and for certain selected industries:

INDUSTRY.	An-thra-cite coal (tons).	Bitum-inous coal (tons).	Coke (tons).	Wood (cords).	Oil, including gaso-line (bar-rels).	Gas (1,000 feet).
<b>All Industries</b> .....	80,860	11,760,403	6,745,034	108,775	421,401	103,382,125
Agricultural implements.....		44,510	8,067	13	11,800	240,768
Automobiles, including bodies and parts.....	1,057	61,588	1,501	212	16,653	151,524
Boots and shoes, including cut stock and findings.....	844	31,722				31
Brass and bronze products.....		21,888	6,606	23	5,411	22,877
Bread and other bakery products.....	5,013	27,411	15,803	14,371	270	602,323
Brick and tile.....	2,957	953,209	1,557	43,685	1,068	1,780,136
Butter, cheese, and condensed milk.....	222	31,305	23	2,370	10	43,347
Carrriages and wagons and materials.....	204	81,415	5,986	101	4,833	63,700
Cars and general shop construction and repairs by steam-railroad companies.....	187	379,198	2,012	7,414	23,014	227,694
Cars, steam-railroad, not including operations of railroad companies.....	36	18,430	2,383		0,000	31,877
Chemicals.....		160,558	23,231	360	403	876,615
Clothing, men's, including shirts.....	35	5,470	88		808	71,453
Clothing, women's.....	889	1,083	11		28	44,105
Coffee and spice, roasting and grinding.....	1,111	6,801	876		1	22,232
Confectionery.....	12	10,315	408		32	45,150
Copper, tin, and sheet-iron products.....	1,731	70,844	2,895	9	1,104	318,942
Electrical machinery, apparatus, and supplies.....	1,063	65,015	2,443		6,452	615,288
Flour-mill and gristmill products.....	383	109,236		2,776	1,000	770,887
Foundry and machine-shop products.....	18,730	690,612	193,368	4,458	60,917	1,533,226
Furniture and refrigerators.....	41	68,481	480	700	103	33,434
Glass.....	89	210,815	1,307	5	4,498	12,728,017
Hosiery and knit goods.....	4	11,522				5,810
Iron and steel, blast furnaces.....		277,951	6,183,253	521	271	72
Iron and steel, steel works and rolling mills.....	105	3,460,695	136,904	10,030	73,275	64,620,688
Leather, tanned, curried, and finished.....		45,516	133		11	34
Liquors, distilled.....	18	53,837		130		744
Liquors, malt.....	1,070	320,569	1,202		310	693,380
Lumber and timber products.....	721	80,623	225	1,227	488	102,075
Paint and varnish.....	1	29,040	6,523	64	24	32,702
Paper and wood pulp.....		402,136				4,591,706
Paper goods, not elsewhere specified.....	5	15,427				6,886
Petroleum, refining.....		248,089			32,507	519,690
Pottery, terra-cotta, and fire-clay products.....	1,280	781,527		388	2,670	7,369,525
Printing and publishing.....	562	40,242	26	96	1,118	225,115
Slaughtering and meat packing.....		87,452	4	1,424	524	118,502
Soap.....	426	115,220	1,145			35,887
Stoves and furnaces, including gas and oil stoves.....	27	41,590	10,730	341	35	216,443
Tin plate and terneplate.....		14,035				99,862
Tobacco manufactures.....	47	12,152	136	40	5	37,152
Woolen, worsted, and felt goods, and wool hats.....		25,034	6,044			9,212
All other industries.....	41,079	2,495,690	123,296	18,011	165,442	4,324,578

NOTE.—In addition there were 2,081 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. Certain data of this character for 21 important industries in Ohio are here presented.

**Iron and steel.**—Under this heading are presented the statistics of blast furnaces and of steel works and rolling mills. Ohio owes its high position in this industry to its location midway between the largest iron-ore and coking-coal deposits in the country, to a plentiful supply of natural gas and oil, and to most excellent transportation facilities. The census of 1909 shows that it has maintained its position as the second state in the United States in the iron and steel industry, Pennsylvania alone having a greater production. The value of the products of the steel works and rolling mills was greater than the value of products of any other industry and represented 13.8 per cent of the total for the state. Blast furnaces ranked third in value of products, with 5.8 per cent of the total for the state.

**Steel works and rolling mills.**—The following statement shows for 1909, 1904, and 1899 the quantity and cost of the principal materials used by steel works and rolling mills, the quantity and value of the leading products, and the main features of the equipment.

MATERIAL, PRODUCT, OR EQUIPMENT.	1909	1904	1899
<b>Materials used, total cost.</b> .....	\$139,243,155	\$78,209,770	\$67,785,834
<b>Iron and steel:<sup>1</sup></b>			
<i>For furnaces and hot rolls—</i>			
Pig iron and ferroalloys—			
Tons.....	4,209,140	2,393,614	2,031,684
Cost.....	\$64,441,978	\$33,040,901	\$32,833,698
Pig iron—			
Tons.....	4,172,114	( <sup>2</sup> )	( <sup>2</sup> )
Cost.....	\$62,747,851	( <sup>2</sup> )	( <sup>2</sup> )
Ferroalloys—spiegeleisen, ferromanganese, etc.—			
Tons.....	37,035	( <sup>2</sup> )	( <sup>2</sup> )
Cost.....	\$1,694,127	( <sup>2</sup> )	( <sup>2</sup> )
Scrap, including old rails not intended for rerolling—			
Tons.....	530,408	635,967	463,335
Cost.....	\$8,093,044	\$8,067,895	\$8,635,371
Ingots, blooms, billets, slabs, muck and scrap bar, rerolling rails, and sheet and tin-plate bars—			
Tons.....	1,858,171	1,059,744	709,709
Cost.....	\$40,358,367	\$23,607,315	\$17,973,277
<i>Rolled forms for further manufacture—</i>			
Skelp—			
Tons.....	57,144	10,192	( <sup>2</sup> )
Cost.....	\$1,730,190	\$315,343	( <sup>2</sup> )
Wire rods—			
Tons.....	97,539	92,246	52,047
Cost.....	\$2,708,015	\$2,563,171	\$1,925,146
Iron ore:			
Tons.....	75,867	48,239	26,434
Cost.....	\$384,303	\$211,533	\$93,610
Fuel and rent of power.....	\$7,672,041	\$4,990,891	
All other materials.....	\$13,854,017	\$5,412,721	\$0,324,732
<b>Products, total value.</b> .....	\$197,780,043	\$111,996,673	\$98,568,619
<b>Rolled, forged, and other classified products, steel and iron:</b>			
Tons.....	5,898,690	3,533,426	2,737,497
Value.....	\$172,105,247	\$101,233,030	\$80,360,540
Bars and rods, not including wire rods, sheet and tin-plate bars, splice bars, and bars for reinforced concrete—			
Tons.....	704,168		
Value.....	\$21,168,583	274,191	472,159
Bars for reinforced concrete—			
Tons.....	70,978	\$8,672,928	\$17,787,412
Value.....	\$2,063,084		

MATERIAL, PRODUCT, OR EQUIPMENT.	1909	1904	1899
<b>Products—Continued.</b>			
Rolled, forged, and other classified products, steel and iron—Continued.			
Plates and sheets, not including black plates or sheets for tinning, nail and tack plates, tin-plates, fishplates, or armor plates—			
Tons.....	755,010		
Value.....	\$33,800,603	460,131	308,092
Black plates or sheets for tinning—		\$20,700,386	\$16,110,691
Tons.....	111,150		
Value.....	\$5,863,639		
Skelp:			
Tons.....	739,761	314,447	4128,188
Value.....	\$22,193,395	\$9,707,170	\$4,452,276
Blooms, billets, and slabs, produced for sale or for transfer to other works of the same company—			
Tons.....	1,975,730		
Value.....	\$42,301,868		
Sheet and tin-plate bars, produced for sale or for transfer to other works of the same company—		1,803,873	1,320,750
Tons.....	679,982	\$40,350,466	\$32,486,600
Value.....	\$15,611,744		
Muck and scrap bar, produced for sale or for transfer to other works of the same company—			
Tons.....	15,875	32,404	21,261
Value.....	\$415,051	\$1,008,781	\$594,268
Ingots for sale or for transfer to other works of the same company—			
Tons.....	32,223	2,601	
Value.....	\$613,540	\$64,836	
Direct castings—			
Tons.....	93,926	35,150	18,402
Value.....	\$6,343,186	\$2,308,178	\$1,428,738
All other rolled and forged steel and iron, not including remanufactures of rolling-mill products:			
Tons.....	719,881	610,503	468,045
Value.....	\$21,719,984	\$18,420,294	\$17,506,555
All other products, including value added to steel or iron rolling-mill product by further manufacture.....	\$25,674,796	\$10,763,634	\$8,202,070
<b>Steel production, tons.</b>			
Total.....	4,765,337	2,529,097	1,812,829
Bessemer.....	3,337,895	2,049,153	1,097,353
Open-hearth.....	1,366,672	480,844	114,926
Basic.....	1,306,694	425,007	62,394
Acid.....	59,978	55,837	52,532
Crucible.....	770		550
<b>Equipment:</b>			
<i>Steel plants: Daily capacity of steel furnaces and converters, tons of steel, double turn.....</i>	21,084	13,752	8,792
Open-hearth furnaces—			
Number.....	60	42	27
Daily capacity, tons of steel, double turn.....	6,329	2,922	1,218
Basic—			
Number.....	58	33	14
Daily capacity, tons of steel, double turn.....	5,945	2,384	740
Acid—			
Number.....	8	0	13
Daily capacity, tons of steel, double turn.....	384	538	478
Converters, Bessemer, or modified Bessemer—			
Number.....	17	12	12
Daily capacity, tons of steel, double turn.....	14,740	10,830	7,573
Crucible and miscellaneous steel furnaces—			
Number.....	12		6
Number of pots that can be used at a heat.....	96		12
Daily capacity, tons of steel, double turn.....	15		1
Metal mixers—			
Number.....	13	( <sup>4</sup> )	( <sup>6</sup> )
Capacity, tons.....	3,350	( <sup>4</sup> )	( <sup>6</sup> )
<i>Rolling mills: Daily capacity of rolled steel and iron, double turn, tons.....</i>	27,922	19,901	12,374

<sup>1</sup> Includes material purchased or transferred to the establishment reporting from other works of the same company.

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

<sup>3</sup> In addition, steel castings or rolled steel to the value of \$700,241 were produced by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

<sup>4</sup> Includes hoops, bands, and cotton ties.

<sup>5</sup> In addition, 8,632 tons of steel castings were produced by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

<sup>6</sup> Not reported.

Establishments which are classified as steel works and rolling mills make three classes of products:

(1) Those which must be subjected to further rolling before they can be regarded as finished rolling-mill products; (2) those which have passed through all the contemplated rolling processes and may be termed finished rolling-mill products; and (3) those which have been subjected to processes beyond the rolling-mill stage. In the preceding table products of the last class, namely, those which have been subjected to processes beyond the rolling-mill stage, are not shown separately, but those finished rolling-mill products that were made in the establishment and were there converted into these higher forms have been included with the other finished products of the industry, and the enhanced value which they have secured through their manufacture beyond the rolling-mill product stage has been reported under the head of "Value of all other products."

The existence of the other two classes of products in the industry, namely, the finished products and the unfinished products, results in a certain amount of duplication in the figures for cost of materials and value of products. When ore and other materials were worked up into ingots or other similar products in one rolling mill and were then used in a second, where they were made into finished rolling-mill products, they appear twice in the cost of materials and twice in the value of products. This duplication does not exist where an establishment makes the ingots or other similar products and then rolls them into finished rolling-mill products. In this connection it should be noted that two branches of the same company frequently constitute different establishments, according to the practice of the census, and hence duplication results when the products of one branch are used as the materials of the other.

In considering the comparative figures presented in the table it should be borne in mind that 1904 was a year of partial depression in the iron and steel industry and that neither the small increases shown in quantity and value for 1904 as compared with 1899 nor the large increases shown for 1909 as compared with 1904 are representative of the normal rate of growth for the industry.

The table is chiefly interesting as an indication of the enormous growth of the steel works and rolling mills during the 10-year period 1899-1909. The materials used increased in cost from a little less than \$68,000,000 to over \$139,000,000 and the value of products from a little over \$98,000,000 to almost \$198,000,000. The daily capacity of the steel furnaces and converters working on double turn increased from 8,792 tons to 21,084 tons, and the daily capacity of rolling mills working on double turn increased from 12,374 tons to 27,922 tons.

**Blast furnaces.**—The quantity and cost of materials used in blast furnaces, the production of pig iron according to grades and fuel used, and the equipment of the plants are shown in the following statement for

1909, 1904, and 1899. The year 1904, as stated above, was one of partial depression in the iron and steel industry, and hence comparisons between the censuses of 1899 and 1904 and between the censuses of 1904 and 1909 do not give a true idea of the development of the industry during these five-year periods.

MATERIAL, PRODUCT, OR EQUIPMENT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$68,424,722</b>	<b>\$32,476,727</b>	<b>\$23,543,473</b>
<b>Iron ore:</b>			
Tons.....	9,854,358	5,266,473	4,304,263
Cost.....	\$41,830,645	\$18,881,573	\$12,204,486
<b>Mill cinder, scrap, etc.:</b>			
Tons.....	368,931	328,841	192,203
Cost.....	\$1,041,384	\$604,526	\$463,347
<b>Fluxes:</b>			
Tons.....	2,693,423	1,464,057	1,252,632
Cost.....	\$2,897,107	\$1,348,409	\$1,003,919
<b>Coke:</b>			
Tons (2,000 pounds).....	6,050,491	3,432,065	2,917,388
Cost.....	\$20,433,686	\$10,548,220	\$6,869,025
<b>All other materials.....</b>	<b>\$2,521,900</b>	<b>\$1,093,009</b>	<b>\$3,001,706</b>
<b>Products, total value.....</b>	<b>\$83,699,238</b>	<b>\$40,862,451</b>	<b>\$40,366,637</b>
<b>Pig iron:</b>			
Tons.....	5,446,971	2,987,787	2,559,694
Value.....	\$82,048,712	\$40,705,777	\$40,308,758
<b>All other products.....</b>	<b>\$1,650,526</b>	<b>\$156,674</b>	<b>\$57,879</b>
<b>Pig iron, classified according to fuel used:</b>			
<b>Coke—</b>			
Tons.....	5,376,308	2,987,149	2,552,643
Value.....	\$80,813,570	\$40,689,717	\$40,155,408
<b>All other (raw coal and coke and charcoal)—</b>			
Tons.....	70,573	638	7,051
Value.....	\$1,235,142	\$16,680	\$153,350
<b>Pig iron classified according to disposition:</b>			
<b>Produced for consumption in works of company reporting—</b>			
Tons.....	3,564,358	1,751,739	( <sup>1</sup> )
Value.....	\$53,108,589	\$23,624,236	( <sup>1</sup> )
<b>Produced for sale—</b>			
Tons.....	1,882,613	1,236,057	( <sup>1</sup> )
Value.....	\$28,940,123	\$17,081,541	( <sup>1</sup> )
<b>Pig iron classified according to grades (tons):</b>			
Bessemer.....	2,456,131	2,120,643	1,862,136
Basic.....	798,173	203,458	93,700
Foundry.....	714,322	441,227	305,004
Forge or mill.....	60,805	66,720	246,467
Malleable Bessemer.....	364,037	127,330	( <sup>1</sup> )
White, mottled, miscellaneous, and direct castings.....	6,121	8,000	33,347
Ferrosilicon.....	47,352	16,494	19,020
<b>Pig iron classified according to method of delivery or castings (tons):</b>			
Delivered in molten condition.....	2,723,700	1,105,159	( <sup>1</sup> )
Sand cast.....	1,625,073	1,301,161	( <sup>1</sup> )
Machine cast.....	945,036	516,338	( <sup>1</sup> )
Chill cast and direct castings.....	153,162	5,129	( <sup>1</sup> )
<b>Equipment:</b>			
<b>Furnaces in active establishments:</b>			
Completed stacks at end of year—			
Number.....	67	53	51
Daily capacity, tons.....	21,017	15,887	10,468
Active during the year—			
Number.....	65	53	50
Daily capacity, tons.....	20,677	15,887	( <sup>2</sup> )
In course of construction at end of year—			
Number.....	1	1	4
Daily capacity, tons.....	325	75	2,200
<b>Pig casting machines, number.....</b>	<b>20</b>	<b>(<sup>1</sup>)</b>	<b>(<sup>1</sup>)</b>
<b>Granulated slag pits:</b>			
Number.....	25	14	( <sup>1</sup> )
Annual capacity, tons.....	1,149,000	( <sup>2</sup> )	( <sup>1</sup> )
<b>Gas engines operated with blast-furnace gas:</b>			
Number.....	10	( <sup>1</sup> )	( <sup>1</sup> )
Horsepower.....	20,140	( <sup>1</sup> )	( <sup>1</sup> )

<sup>1</sup> Not reported. <sup>2</sup> Includes 9,111 tons of low phosphorus. <sup>3</sup> Figures not available.

The total cost of materials increased from \$23,543,473 in 1899 to \$68,424,722 in 1909, a gain of 190.6 per cent. The quantity of ore, fluxes, and coke consumed in 1909 was more than double that used in 1899, and mill cinder, scrap, etc., gained 92 per cent, but none of these materials increased in quantity in as great a proportion as they increased in cost.

The total value of the products of blast furnaces was over \$83,000,000 in 1909, as compared with slightly over \$40,000,000 in 1899. The pig-iron product in

1909 consisted of 5,446,971 tons, valued at \$82,048,712, which figures represent an increase since 1899 of 112.8 per cent in quantity and of 103.6 per cent in value. Practically all the pig iron was made with coke, the mixed fuels and charcoal being used for an almost negligible quantity. Nearly two-thirds of the pig iron made in 1909 was for consumption in the works of the company reporting it, and 50 per cent of the entire product was delivered in a molten condition to the steel plants. Sixty-three and five-tenths per cent of the entire output for 1909 was Bessemer pig iron and 14.7 per cent basic, compared with 72.7 per cent Bessemer and 3.7 per cent basic in 1899.

The total number of furnaces in active establishments increased from 51 in 1899 to 67 in 1909, and their daily capacity from 10,468 to 21,017 tons. Pig casting machines were not reported until 1909, when there were 20. Internal combustion engines to the number of 10, with a total horsepower of 20,140, were first reported in 1909 and mark a great advance in industrial economy in the utilization of what was formerly waste blast furnace gas.

**Tin plate and terneplate.**—This industry is closely allied to iron and steel production, since the manufacture of the black plates used in it is a rolling-mill operation. The special statistics of the industry are given in the following table, which shows the kind, quantity, and cost of materials used, and the quantity and value of products for 1909. No comparative figures can be presented without disclosing individual operations.

MATERIAL OR PRODUCT.	1909
<b>Materials used, total cost.....</b>	<b>\$7,155,144</b>
Black plates or sheets:	
Pounds.....	213,704,015
Cost.....	\$5,143,570
Coating metals:	
Pounds.....	8,064,988
Cost.....	\$1,587,798
<i>In condition purchased:</i>	
Pig tin—	
Pounds.....	3,872,221
Cost.....	\$1,142,704
Pig lead—	
Pounds.....	240,000
Cost.....	\$10,012
Terne mixture—	
Pounds.....	3,043,767
Cost.....	\$434,482
All other materials.....	\$423,767
<b>Products, total value.....</b>	<b>\$7,889,367</b>
Tin plate and terneplate:	
Pounds.....	212,737,039
Value.....	\$7,609,423
All other products.....	\$219,944

In 1909 Ohio ranked third among the states of the United States in this industry, reporting 16.4 per cent of the total value of products for the country as a whole.

**Slaughtering and meat packing.**—The following tabular statement shows, for the slaughtering and meat-packing industry, the kind, quantity, and cost of the principal materials used and the quantity and value of the leading products with the exception of sausage, for which the value only is available.

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$44,347,162</b>	<b>\$25,310,709</b>	<b>\$18,007,351</b>
Beeves slaughtered:			
Number.....	265,101	180,613	98,636
Cost.....	\$11,613,314	\$9,490,507	\$3,029,833
Calves slaughtered:			
Number.....	150,223	86,006	31,971
Cost.....	\$1,590,585	\$665,385	\$247,280
Sheep slaughtered:			
Number.....	229,985	148,418	70,739
Cost.....	\$872,980	\$502,020	\$224,559
Hogs slaughtered:			
Number.....	1,725,285	1,447,778	1,283,507
Cost.....	\$24,547,070	\$14,954,587	\$11,189,787
Dressed meat, purchased.....	\$2,415,657	\$1,497,516	\$1,143,022
Fuel and rent of power.....	\$224,429	\$125,775	\$89,302
All other materials.....	\$3,073,218	\$1,074,910	\$1,483,508
<b>Products, total value.....</b>	<b>\$50,804,100</b>	<b>\$29,154,718</b>	<b>\$20,767,657</b>
Beef, fresh:			
Pounds.....	119,597,666	89,925,370	43,652,450
Value.....	\$10,047,217	\$5,907,126	\$3,116,193
Beef, salted or cured:			
Pounds.....	4,450,976	2,434,645	4,692,000
Value.....	\$328,334	\$175,972	\$240,740
Veal:			
Pounds.....	12,921,896	6,680,682	2,464,318
Value.....	\$1,408,687	\$610,853	\$234,817
Mutton:			
Pounds.....	7,738,777	5,406,034	2,277,155
Value.....	\$763,364	\$472,931	\$212,592
Pork, fresh:			
Pounds.....	60,320,250	49,033,932	46,226,099
Value.....	\$6,050,354	\$4,514,509	\$3,354,714
Pork, salted or cured:			
Pounds.....	121,988,353	116,433,401	114,350,050
Value.....	\$16,202,666	\$10,182,724	\$9,301,993
Sausage, fresh or cured.....	\$3,346,493	\$1,711,493	\$1,133,417
All other fresh meat:			
Pounds.....	6,728,033	4,155,474	242,080
Value.....	\$493,467	\$241,056	\$21,408
Lard:			
Pounds.....	58,518,712	49,180,068	32,398,820
Value.....	\$9,569,798	\$3,427,000	\$2,105,391
Tallow, oleo stock, and stearin:			
Pounds.....	11,088,893	(1)	(1)
Value.....	\$640,001	(1)	(1)
Fertilizers and fertilizer materials:			
Tons.....	9,103	7,517	4,006
Value.....	\$106,354	\$104,692	\$58,646
Hides:			
Number.....	410,573	254,672	130,595
Pounds.....	16,900,033	11,638,587	5,728,737
Value.....	\$1,970,009	\$1,037,295	\$514,750
Pelts:			
Number.....	232,775	148,118	(1)
Value.....	\$194,720	\$101,427	(1)
Amount received for custom or con-			
tract work.....	\$16,484	\$11,780	\$1,600
All other products.....	\$1,619,122	\$594,780	\$471,487

<sup>1</sup> Figures not available.

The total cost of the materials used in the slaughtering and meat-packing industry in 1909 was \$44,347,162, of which \$38,633,858 represented the cost of animals slaughtered, \$2,415,657 the cost of dressed meat purchased, \$224,429 the expenditures for fuel and rent of power, and \$3,073,218 the cost of all other materials. The cost of the dressed meat purchased may be to some extent a duplication, because the animals purchased by an establishment for slaughtering may be sold to a second establishment in the form of dressed meat for packing, and hence may enter twice into the cost of materials of the industry and twice into its value of products. If this element of duplication is ignored, it appears that the cost of animals slaughtered and dressed meat purchased formed 92.6 per cent of the total cost of materials.

Comparisons with the figures for earlier censuses show that for all classes of materials there was a substantial increase between 1899 and 1909. "All other materials" decreased in value between 1899 and 1904, but since the later year their cost has almost trebled.

The total value of products of the industry was \$50,804,100. Salted or cured pork was the principal

product, having a value of over \$16,000,000, as compared with about \$10,000,000 for fresh beef. Hides were the most important by-product, having a value of almost \$2,000,000.

All products except salted or cured beef, so far as figures are available, show a substantial gain between 1899 and 1909 in both quantity and value, and salted or cured beef shows a considerable increase in value although the quantity decreased.

A comparison of the figures for 1909 with those for 1904 shows increases for all commodities; in general, the values have increased more rapidly than the quantities, thus reflecting the increase in prices that has been taking place in recent years.

**Flour-mill and gristmill products.**—Ohio was fifth in 1909 among the states in the manufacture of flour-mill and gristmill products, reporting 5.4 per cent of the total value for the country. It also ranked fifth in the value of wheat flour produced and in the quantity of corn and buckwheat ground. Among the industries of the state itself the industry was sixth and contributed 3.4 per cent of the total value reported for all manufactured products. The tabular statement following gives the quantity and value of products for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$48,093,353</b>	<b>\$40,855,566</b>	<b>\$35,077,553</b>
Wheat flour:			
White—			
Barrels.....	5,713,058	5,600,458	
Value.....	\$30,459,760	\$27,704,108	7,113,343
Graham—			\$25,140,728
Barrels.....	10,478	21,721	
Value.....	\$48,340	\$92,495	
Corn meal and corn flour: *			
Barrels.....	805,250	1,000,703	1,201,970
Value.....	\$2,528,843	\$2,432,026	\$2,259,483
Rye flour:			
Barrels.....	33,215	43,091	39,133
Value.....	\$146,780	\$181,105	\$114,288
Buckwheat flour:			
Pounds.....	7,436,813	3,599,618	3,405,955
Value.....	\$180,207	\$93,967	\$81,575
Hominy and grits:			
Pounds.....	80,855,375	60,360,258	5,449,650
Value.....	\$1,247,605	\$699,171	\$54,513
Feed:			
Tons.....	209,532	203,278	306,943
Value.....	\$7,203,751	\$4,151,864	\$4,552,010
Offal:			
Tons.....	232,769	266,720	195,489
Value.....	\$5,142,619	\$4,821,108	\$2,383,732
All other products.....	\$1,075,373	\$619,722	\$491,218

White flour was the principal product reported, contributing 63.3 per cent of the total value of products in 1909, 68 per cent in 1904, and 71.7 per cent in 1899. The next in value was feed, with 15.1 per cent of the total in 1909, compared with 10.2 per cent in 1904 and 13 per cent in 1899. Hominy and grits contributed 2.6 per cent of the total in 1909, 1.7 per cent in 1904, and about two-tenths of 1 per cent in 1899. The decrease of 14.1 per cent from 1904 to 1909 in the quantity of corn products was counterbalanced by the greater production of feed, which was largely derived from corn. The value of all products in 1909 was higher per unit of quantity than in 1904 or 1899, except in the case of buckwheat flour, where the value per unit has remained practically the same. Less offal was

reported in 1909 than in 1904, but the total value was greater.

Of the 593 establishments grinding wheat in 1909, 10 reported over 100,000 barrels of wheat flour for the census year; 33 reported between 20,000 and 100,000 barrels; 188 from 5,000 to 20,000; 297 from 1,000 to 5,000; and 65 less than 1,000 barrels. The number of pairs of rolls reported was 5,643, and the number of runs of stone and steel burrs 453.

**Printing and publishing.**—Among the states Ohio ranked fifth in the value of the products of printing and publishing establishments. The industry ranked seventh among those in the state in 1909, and it showed an increase in value of products of 33 per cent over 1904 and of 31.4 per cent over 1899. The following statement gives the number and circulation of the principal kinds of newspapers and periodicals for the last three censuses:

PERIOD OF ISSUE.	NUMBER OF PUBLICATIONS.			AGGREGATE CIRCULATION PER ISSUE.		
	1909	1904	1899	1909	1904	1899
<b>Total</b> .....	<b>1,181</b>	<b>1,250</b>	<b>1,069</b>	<b>10,753,143</b>	<b>9,321,545</b>	<b>7,407,358</b>
Daily.....	184	190	170	1,542,855	1,357,135	1,234,715
Sunday.....	25	23	30	645,869	544,416	( <sup>1</sup> )
Semiweekly and tri-weekly.....	60	53	61	131,806	113,749	224,401
Weekly.....	609	781	692	2,913,730	2,747,511	2,411,173
Monthly.....	152	143	90	2,685,470	2,006,287	1,420,501
Quarterly.....	37	40	15	2,288,134	2,169,200	1,795,000
All other classes.....	24	20	11	545,279	383,247	390,900

<sup>1</sup>Included in circulation for dailies.

In the number of publications there was a net decrease of 69 from 1904 to 1909. The daily newspapers decreased by 6, the weekly newspapers and weekly periodicals by 82, and the quarterlies by 3, but there was an increase of 2 in the Sunday newspapers, of 7 in the semiweeklies and triweeklies, of 9 in the monthly publications, and of 4 in "All other classes." The reduction was wholly among publications in English, which decreased 90; the foreign and the foreign and English increased by 21.

In circulation of all publications the increase for the 10-year period 1899-1909 was 44 per cent, and for the 5-year period 1904-1909, 15.4 per cent. Of the different specified publications, the greatest percentage of gain both for the decade and for the 5-year period 1904-1909 was in the circulation of monthlies. These increased 89.1 per cent from 1899 to 1909 and 33.9 per cent from 1904 to 1909. Quarterlies increased their circulation 27.4 per cent during the decade and 5.5 per cent during the 5-year period 1904-1909. Daily newspapers increased their circulation 26 per cent in the decade and 13.7 per cent from 1904 to 1909.

The circulation of weekly newspapers decreased from 1904 to 1909, but the circulation of weekly periodicals materially increased. As these two are combined a net increase is shown of 20.8 per cent for the decade 1899-1909 and of 6 per cent for the five-year period 1904-1909.

The circulation of Sunday newspapers from 1904 to 1909 increased 18.6 per cent. The circulation of semiweeklies and triweeklies combined decreased 41.3 per cent during the 10 years, but increased 15.9 per cent during the later five-year period, 1904–1909.

The following statement gives the circulation for 1909 of the newspapers and periodicals published in English and of those published in foreign languages, including those published in both foreign languages and English:

PERIOD OF ISSUE.	TOTAL.		ENGLISH.		FOREIGN. <sup>1</sup>	
	Num-ber.	Aggregate circulation per issue.	Num-ber.	Aggregate circulation per issue.	Num-ber.	Aggregate circulation per issue.
Total.....	1,181	10,753,143	1,052	9,919,063	129	834,080
Daily.....	184	1,542,855	173	1,453,190	11	89,665
Sunday.....	25	645,869	18	588,729	7	57,140
Semiweekly and tri-weekly.....	60	131,806	52	111,438	8	20,368
Weekly.....	699	2,913,730	630	2,543,916	69	369,814
Monthly.....	152	2,685,470	133	2,550,482	19	134,988
Quarterly.....	37	2,288,134	20	2,151,180	8	136,954
All other classes.....	24	545,270	17	520,138	7	25,151

<sup>1</sup>Including foreign and English.

Of the aggregate circulation, 92.2 per cent was that of newspapers and periodicals published in English. This percentage is slightly smaller than that for 1904, when the circulation of publications in English formed 93.4 per cent of the total. The increase of publications in foreign languages, including those in "Foreign and English," was, however, slight. The circulation of German publications in 1909 constituted 67.5 per cent of the total circulation in foreign languages.

**Automobiles, including bodies and parts.**—Ohio ranked second among the states in the manufacture of automobiles, including bodies and parts, both in 1909 and 1904. The industry ranked eighth among the industries of the state, with a total value of products of \$38,838,754. This represents an increase of \$32,480,590, or 510.9 per cent, in value of products.

The number and value of the automobiles manufactured, classified by type and by power, are shown for 1904 and 1909 in the next table. No figures are available for 1899, for in that year the industry was included with that of carriages and wagons.

The total number of automobiles manufactured in Ohio in 1909 was 14,299, and they were valued at \$23,550,112. The number was 409.2 per cent greater than in 1904 and the value 353.1 per cent greater. In 1904 practically all machines reported were classed as passenger or pleasure vehicles, but in 1909 the commercial or business type of car was made in such numbers as to form 4.7 per cent of the total number, and ambulances, omnibuses, and similar cars formed 6.3 per cent.

In 1909 Ohio was first among the states in the number and value of electric machines, and in the number and value of steam machines, manufacturing 42.9 per cent and 72.1 per cent, respectively, of the

total number reported for the country. As all the steam cars were made by one establishment, they are included under "Electric and steam" to avoid the disclosure of the operations of an individual establishment. The item of "All other products," which includes the manufacture of additional parts, supplies, and other items not separately called for on the schedule, shows an enormous increase—from \$1,160,804 in 1904 to \$15,288,642 in 1909, or 1,217.1 per cent.

Of the total number of automobiles made in 1909, 76.6 per cent were to be operated with gasoline, and their value formed 76.4 per cent of the total value of all machines manufactured. The number of gasoline machines manufactured increased 504.5 per cent and their value 367.1 per cent over 1904. The increase in the electric and steam automobiles was 236.2 per cent in number and 313.1 per cent in value.

PRODUCT.	1909		1904	
	Num-ber.	Value.	Num-ber.	Value.
Total value.....		\$38,838,754		\$6,358,164
Automobiles, total.....	14,299	23,550,112	2,808	5,107,360
Gasoline.....	10,047	17,909,332	1,811	3,853,621
Electric and steam.....	3,352	5,550,780	997	1,343,739
Passenger vehicles.....	13,028	22,021,002	2,808	5,107,360
Buggies, runabouts, and touring cars.....	11,530	18,356,985	2,808	5,107,360
Limousines, cabs, etc.....	1,185	2,775,891		
All other (omnibuses, ambulances, etc.).....	604	1,788,180		
Business vehicles (merchandise).....	671	629,050		
Delivery wagons.....	460	242,105		
Trucks.....	202	386,945		
All other products, including repair work.....		15,288,642		1,160,804

<sup>1</sup> Includes "business vehicles" to avoid disclosure of individual operations.

A classification by horsepower rating shows that the greatest number of machines in 1909 were of 30 but less than 50 horsepower. Such machines numbered 4,742 and formed nearly one-third of the total. The next largest number, 3,825, consisted of machines rated at 20 but less than 30 horsepower. Those of from 10 to 19 horsepower, inclusive, numbered 3,716, and those of less than 10 horsepower, 1,542. The higher power machines were fewer in number, 461 being rated at 50 but less than 90 horsepower, and 13 at 90 horsepower or more. No rating by horsepower was secured in 1904, so that comparative data are not possible.

**Lumber and timber products.**—In the following tabular statement are shown the quantities of rough lumber, lath, and shingles produced in 1909 and 1899:

PRODUCT.	QUANTITY.	
	1909	1899
Rough lumber..... M feet b. m.	542,004	690,497
Lath..... thousands..	17,508	18,519
Shingles..... thousands..	3,227	13,005

The production of lumber in Ohio decreased 45.2 per cent during the decade 1899 to 1909, that of lath 5.5 per cent, and that of shingles 76.3 per cent. This

decline is due in the main to the decreasing supply of merchantable timber.

The state dropped in rank from fourteenth in 1899 to twenty-seventh in 1909 in the production of rough lumber from all species, and now ranks tenth in the total production of hardwood lumber in the United States. Oak formed 47.8 per cent of the total output of lumber in the state in 1909 and 62.3 per cent in 1899, only seven states exceeding Ohio in the output of oak lumber in the latter year. Ohio ranked first in 1909 in the cut of walnut lumber, contributing 18.6 per cent of the total production of this species in the United States. Other hardwoods cut in considerable quantities in the state were beech, maple, yellow poplar, elm, ash, and hickory, which ranked in production in the order named.

**Boots and shoes.**—The following table gives the number and kinds of boots, shoes, and slippers produced by the boot and shoe factories of Ohio in 1909, 1904, and 1899:

PRODUCT.	NUMBER OF PAIRS.		
	1909	1904	1899
<b>Total</b> .....	<b>18,008,915</b>	<b>18,263,416</b>	<b>13,849,679</b>
Boots and shoes.....	17,093,316	18,063,209	13,507,978
Men's.....	1,702,194	1,601,202	327,241
Boys' and youths'.....	1,372,330	1,590,568	974,257
Women's.....	11,154,083	9,797,093	8,204,972
Misses' and children's.....	3,464,709	5,014,430	3,801,608
Slippers.....	1,147,239	102,053	275,991
All other.....	68,360	8,064	65,710

The boot and shoe industry in Ohio did not show as large an increase from 1904 to 1909 in the total number of pairs produced as it did from 1899 to 1904, yet all kinds of shoes except boys' and youths' and misses' and children's were manufactured in larger quantities in 1909 than in 1904. More women's shoes were manufactured than any other kind and they formed 59 per cent of the total product. The number of pairs produced increased 1,356,990, or 13.9 per cent, between 1904 and 1909, which was the largest absolute increase reported for any class. The largest relative increase, however, was in the number of pairs of slippers, which increased 955,186, or 497.4 per cent.

In the quantity and value of boot and shoe products Cincinnati stood sixth in 1909 among the cities of the United States, with a production valued at nearly \$15,000,000. Portsmouth and Columbus have also become prominent in this industry, both reporting products valued at more than \$5,000,000 for that year.

The next table is a statement of the various kinds of footwear by method of manufacture, for 1909 only.

Of the total number of pairs of boots and shoes manufactured, 9,706,685, or 54.9 per cent, were made by the McKay method and 5,760,738, or 32.6 per cent, by the machine or hand-welt method. Men's shoes were made principally by the machine or hand-welt method, and misses' and children's by the McKay method.

PRODUCT.	NUMBER OF PAIRS, BY METHOD OF MANUFACTURE.			
	Total.	Machine or hand welt.	McKay.	All other methods. <sup>1</sup>
Boots and shoes.....	17,093,316	5,760,738	9,706,685	2,225,893
Men's.....	1,702,194	1,050,218	235,457	416,519
Boys' and youths'.....	1,372,330	420,086	570,888	380,456
Women's.....	11,154,083	4,038,641	6,073,809	1,041,633
Misses' and children's.....	3,464,709	250,893	2,826,531	387,285
Slippers and infants' shoes.....	1,215,599	67,376	580,125	568,098

<sup>1</sup> Includes "wire screw or metal-fastened," "turned," and "wooden-pegged."

**Carriages and wagons and materials.**—The following table shows the number and value of the various products of the carriage and wagon industry for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$21,949,459</b>	<b>\$24,002,500</b>	<b>\$22,803,197</b>
Carriages (family and pleasure):			
Number.....	135,877	199,428	213,692
Value.....	\$8,126,285	\$11,373,346	\$11,257,362
Wagons:			
Number.....	28,882	40,005	44,316
Value.....	\$2,733,606	\$2,703,506	\$2,550,063
Business—			
Number.....	12,187	7,088	.....
Value.....	\$1,507,161	.....	.....
Farm—			
Number.....	16,549	52,645	.....
Value.....	\$952,252	.....	.....
Government, municipal, etc.—			
Number.....	146	272	.....
Value.....	\$274,193	.....	.....
Public conveyances:			
Number.....	657	217	41
Value.....	\$206,458	\$107,141	\$16,000
Sleighs and sleds:			
Number.....	7,580	8,479	3,555
Value.....	\$78,542	\$52,166	\$25,701
All other products, including parts and repair work.....	\$10,804,568	\$9,706,281	\$8,948,011

Ohio still ranks first among the several states in the production of carriages and wagons, notwithstanding a decrease in the value of products from 1904 to 1909 of \$2,053,041. Inspection of the figures for the different classes shows that all the decrease in value results from the decreased production of family and pleasure carriages. In 1899, 213,692 carriages were produced, with a value of \$11,257,362, and they contributed 49.4 per cent of the total value of the products of the industry, but in 1909 only 135,877 carriages were produced, with a value of \$8,126,285, and they contributed only 37 per cent of the total value of products of the industry. This change is accounted for largely by the enormous development of the automobile industry, which has caused many carriage makers either to go out of business or to devote their attention to automobile manufacture. The decreased numbers of farm wagons manufactured and the great increase in the value of all other products, including parts and repair work, are other interesting features of the table.

**Pottery, terra-cotta, and fire-clay products.**—At each of the last three censuses Ohio was first among the states in the manufacture of pottery, terra-cotta, and fire-clay products. At the census of 1909 the value of these products comprised 27.8 per cent of the total for the industry in the United States. There was an increase of \$2,622,432, or 14.1 per cent, in 1909 over 1904, and of \$9,322,047, or 78.7 per cent, over

1899. The following table gives the products by kind and value for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$21,173,272</b>	<b>\$18,550,840</b>	<b>\$11,851,225</b>
<b>Pottery</b> .....	<b>13,416,356</b>	<b>11,004,210</b>	<b>6,904,805</b>
Red earthenware.....	145,137	181,736	164,708
Stoneware and yellow and Rockingham ware.....	1,806,708	1,146,718	741,685
White ware, including C. C. ware, white granite, semiporcelain ware, and semivitreous ware.....	8,884,189	8,446,868	5,033,874
Sanitary ware, including solid porcelain bath tubs, laundry tubs, etc.....	310,254	197,225	.....
Porcelain electrical supplies.....	1,146,694	584,243	100,314
Other pottery products.....	1,123,284	1,347,420	864,134
<b>Terra-cotta and fire-clay products</b> .....	<b>7,756,916</b>	<b>6,046,630</b>	<b>4,850,420</b>
Fire brick—			
Thousand.....	1,103,148	84,253	69,120
Value.....	\$1,730,401	\$1,240,826	\$976,693
Sewer pipe.....	3,000,798	2,039,772	1,680,724
Fireproofing.....	804,637	577,014	340,000
Tile, not drain.....	1,012,343	971,785	565,094
Stove lining.....	23,803	(9)	7,563
Other terra-cotta and fire-clay products <sup>3</sup> .....	122,010	884,872	1,207,451
<b>All other products</b> .....	<b>153,924</b>	<b>32,361</b>	<b>12,805</b>

<sup>1</sup> Includes refractory block or tile, boiler and locomotive tile and tank blocks, and other refractory products (9-inch equivalent).

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

<sup>3</sup> Includes common, fancy or ornamental, vitrified, and paving brick or block and draintile to the value of \$322,228 in 1904 and \$448,089 in 1899.

The manufacture of pottery products is the more important branch of the industry, and in 1909 it furnished 63.4 per cent of the total value of the products. This represents a very slight decrease in the relative importance of the pottery products since 1904, in which year their value formed 64.2 per cent of the total, but it represents a considerable increase since 1899, when the proportion was 59 per cent. The value of the pottery products has increased materially since 1899, being \$21,173,272 in 1909 as contrasted with \$11,851,225 in 1899.

White ware, including C. C. (cream colored) ware, white granite, semiporcelain, and semivitreous ware, was the leading pottery product in Ohio. In 1909 the value of such ware reported for the state was \$8,884,189, which is 64.7 per cent of the total reported for the United States. The increase in the value of this product was small between 1904 and 1909, but between 1899 and 1904 it was \$3,412,994, or 67.8 per cent.

Red earthenware and those pottery products included in "Other pottery products" showed a decrease between 1904 and 1909 in the value of products, but the other classes showed increases as follows: Stoneware and yellow and Rockingham ware, 57.6 per cent; sanitary ware, 57.3 per cent; and porcelain electrical supplies, 96.3 per cent. Of the total value of the stoneware and yellow and Rockingham ware made in the United States, Ohio reported 45.2 per cent, and of the porcelain electrical supplies, 37.6 per cent.

Sewer pipe was the leading terra-cotta and fire-clay product, the value of that produced in Ohio forming about one-third of the total for the country as a whole. Its production, however, did not increase materially between 1904 and 1909, the percentage of increase being only 2.4. The proportion which the value of

sewer pipe formed of the total value of the products of this branch of the industry fell, moreover, from 44.2 per cent in 1904 to 38.8 per cent in 1909. All the other products reported separately showed considerable increase. The value of tile, not drain, increased 96.8 per cent between 1904 and 1909 and 238.4 per cent between 1899 and 1909. The value of fireproofing increased 39.4 per cent between 1904 and 1909 and 132.5 per cent between 1899 and 1909. Fire brick, the only item for which quantities are given, shows a gain of 18,895 thousand in number and \$489,575 in value from 1904 to 1909 and of 15,124 thousand in number and \$264,133 in value for the prior census period. The value of fire brick in 1909 formed 22.3 per cent of the value of terra-cotta and fire-clay products.

**Brick and tile.**—The value of the brick and tile produced in 1909 was \$2,221,700, or 31.1 per cent, greater than in 1904, and \$4,728,143, or 102.1 per cent, greater than in 1899. The following table gives the products classified by kind, quantity, and value for the last three censuses:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$9,357,730</b>	<b>\$7,136,030</b>	<b>\$4,629,587</b>
<b>Brick</b> .....	<b>\$6,061,161</b>	<b>\$5,355,808</b>	<b>\$3,743,365</b>
Common—			
Thousand.....	420,009	1,450,443	1,450,047
Value.....	\$2,420,870	\$2,675,314	\$2,341,063
Vitrified, paving, etc.—			
Thousand.....	324,530	167,888	118,804
Value.....	\$3,113,128	\$1,714,293	\$924,585
Front, including fancy-colored—			
Thousand.....	130,684	82,552	45,515
Value.....	\$1,303,787	\$856,431	\$436,830
Fancy or ornamental.....	\$24,367	\$109,770	\$40,837
<b>Draintile</b> .....	<b>\$2,032,528</b>	<b>\$1,111,138</b>	<b>\$836,631</b>
<b>All other products</b> .....	<b>\$304,041</b>	<b>\$669,084</b>	<b>\$49,591</b>

<sup>1</sup> Includes enameled brick, \$3,000; sand-lime brick, \$8,750; and fire brick, \$48,046.

Vitrified paving brick or block contributed 33.3 per cent of the total value of the products of the entire industry in 1909, and showed an increase in value of \$1,398,835, or 81.6 per cent, between 1904 and 1909. The figures for the three censuses for common building brick, including common brick used for paving and hollow building brick, are not strictly comparable, because hollow building brick was not included under this item previous to the census of 1909. Had this class of brick been omitted from the item "Common brick" in 1909, the decrease would be still greater. Front brick showed an increase in value of 62.7 per cent between 1904 and 1909, and for the more recent year contributed 14.9 per cent of the total value of products for this industry as compared with 12 per cent in 1904.

The value of fancy or ornamental brick decreased 77.8 per cent between 1904 and 1909. The value of draintile, which represented 15.6 per cent of the total value of brick and tile products in 1904, showed an increase of \$921,390, or 82.9 per cent, between 1904 and 1909, and in 1909 formed 21.7 per cent of the total for the industry.

**Soap.**—The following table gives for this industry the kind, quantity, and value of the principal varieties of soap, as shown at the censuses of 1909 and 1904. In 1899 this industry was classified with candles under "Soap and candles;" therefore no figures are included for that census.

PRODUCT.	1909	1904
Total value.....	\$17,077,308	\$11,791,223
Hard soap:		
Pounds.....	255,943,442	268,786,287
Value.....	\$14,589,331	\$10,245,313
Soft soap:		
Pounds.....	1,268,533	1,123,100
Value.....	\$36,449	\$39,634
Glycerin:		
Pounds.....	11,174,661	8,843,638
Value.....	\$1,751,070	\$995,009
All other products, including special soap articles....	\$700,458	\$511,207

Ohio, with a gain of \$5,286,085, or 44.8 per cent, from 1904 to 1909, in the value of soap products, remained the third state of the Union in the industry. The quantity of hard soaps produced decreased slightly, but their value increased considerably. Statistics for the different kinds of soap can not be shown separately, as to do so might reveal the operations of an establishment which reported by far the greater part of the production of a number of the varieties. It can be said, however, that Ohio led the country in 1909 in olein soap and was second in tallow soap. Soft soap was shown to have increased in quantity but to have decreased in value. The value of all other products, including special soap articles, increased.

**Paper and wood pulp.**—In the value of paper and wood pulp produced, Ohio ranked sixth among the states in 1909. The industry stood twenty-second among those of the state in value of products, and in that respect shows an increase of \$6,003,733, or 54.8 per cent. The next tabular statement shows the materials and products, by kind, quantity, and value, for the last three censuses.

Of the 47 establishments reporting in 1909 only four made both paper and pulp. Only one mill made pulp for sale and, of the four mills making and consuming pulp, no more than two used the same processes, hence figures for wood pulp sold and for the various classes of wood pulp produced can not be presented without disclosing individual operations. It may be said, however, that a little pulp was manufactured by the grinding process but that most of it was made by chemical processes, principally the sulphite. The principal kinds of wood used were spruce and hemlock.

The cost of the wood pulp purchased slightly more than doubled from 1904 to 1909, and the quantity of wood pulp made by establishments consuming it decreased. Of the specified kinds of paper produced, book paper showed the greatest percentage of increase from 1904 to 1909 both in output and value, fine paper, which includes writing paper, ranking second. Heavy wrapping paper decreased both in quantity and value, and straw wrapping in quantity only. There was an increase in value of strawboard during the 10-year

period, with a decreased output. For the period 1904-1909, however, there was a decrease in value, accompanied with an increase of output. News paper is not shown separately in the statement, as it was the product of but two mills.

The yearly capacity of the paper machines reported increased from 212,639 tons in 1899 to 281,075 in 1904 and 414,650 in 1909.

MATERIAL, PRODUCT, OR MACHINE.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$10,898,285</b>	<b>\$6,153,761</b>	<b>\$3,768,572</b>
Pulp wood.....	\$443,296	\$189,724	\$104,500
Wood pulp purchased:			
Tons.....	80,201	40,040	26,691
Cost.....	\$3,743,972	\$1,585,559	\$867,637
Ground—			
Tons.....	4,778	2,782	5,186
Cost.....	\$110,372	\$57,820	\$96,899
Sulphite fiber—			
Tons.....	47,167	27,344	12,647
Cost.....	\$2,292,178	\$1,109,884	\$410,693
Other chemical fiber—			
Tons.....	28,256	9,014	8,858
Cost.....	\$1,341,422	\$417,846	\$160,045
Rags, including cotton and flax waste and sweepings:			
Tons.....	33,744	22,877	19,416
Cost.....	\$893,509	\$556,545	\$374,643
Old and waste paper:			
Tons.....	93,239	55,475	26,087
Cost.....	\$1,286,182	\$806,328	\$309,884
Manila stock, including jute bagging, rope, waste, threads, etc.:			
Tons.....	25,940	12,208	14,994
Cost.....	\$850,420	\$354,112	\$395,370
Straw:			
Tons.....	70,322	71,930	93,127
Cost.....	\$335,951	\$327,375	\$274,447
Fuel and rent of power.....	\$1,049,097	\$709,028	\$485,295
All other materials.....	\$2,280,858	\$1,825,110	\$956,796
<b>Products, total value.....</b>	<b>\$16,965,260</b>	<b>\$10,961,527</b>	<b>\$3,543,513</b>
Book, cover, plate, and coated paper:			
Tons.....	75,607	45,604	16,582
Value.....	\$6,752,103	\$4,019,447	\$1,146,015
Writing and other fine paper:			
Tons.....	19,579	8,722	4,695
Value.....	\$2,306,016	\$1,057,920	\$578,172
Wrapping paper:			
Tons.....	42,548	44,037	49,854
Value.....	\$2,389,232	\$1,786,172	\$2,303,109
Manila (rope, jute, tag, etc.)—			
Tons.....	12,363	10,050	18,579
Value.....	\$1,264,635	\$777,055	\$1,368,700
Heavy (mill wrappers, etc.)—			
Tons.....	5,725	6,314	5,646
Value.....	\$147,869	\$104,873	\$175,473
Straw—			
Tons.....	8,682	9,078	10,610
Value.....	\$217,050	\$207,610	\$211,234
All other—			
Tons.....	15,748	18,589	15,010
Value.....	\$759,678	\$636,634	\$547,792
Boards:			
Tons.....	106,016	60,269	53,886
Value.....	\$3,159,290	\$1,716,740	\$1,167,360
Strawboard—			
Tons.....	37,710	33,953	40,531
Value.....	\$853,100	\$806,879	\$800,038
All other boards—			
Tons.....	68,306	26,316	13,355
Value.....	\$2,306,190	\$840,861	\$367,322
Building, roofing, and sheathing paper:			
Tons.....	18,974	15,400	7,275
Value.....	\$598,680	\$409,692	\$213,663
All other products.....	\$1,759,930	\$1,881,556	\$1,135,164
Wood pulp produced (including that used in mills where manufactured), tons.....	25,935	29,274	13,805
<b>Equipment:</b>			
Paper machines:			
Total number.....	118	96	81
Capacity, yearly, tons.....	414,650	281,075	212,639
Fourdriner—			
Number.....	63	37	33
Capacity per 24 hours, tons.....	575	299	( <sup>1</sup> )
Cylinder—			
Number.....	55	59	48
Capacity per 24 hours, tons.....	717	554	( <sup>1</sup> )
Pulp equipment:			
Grinders, number.....	5	5	7
Digesters, total number.....	11	8	13
Sulphite fiber, number.....	8	8	( <sup>2</sup> )
Soda fiber, number.....	3	( <sup>2</sup> )	( <sup>2</sup> )
Capacity, yearly, tons of pulp.....	54,400	34,150	29,436
Ground, tons.....	7,800	5,321	( <sup>2</sup> )
Sulphite, tons.....	43,600	28,829	( <sup>2</sup> )
Soda, tons.....	3,000	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> Not reported.<sup>2</sup> Not reported separately.

**Agricultural implements.**—For the last two census periods Ohio has been third among the states in the value of its production of agricultural implements, and the industry is of sufficient importance to rank twenty-fifth among those of the state. The value of products in 1909 represents an increase of 12 per cent over 1904 and of 3.3 per cent over 1899. The next table gives for 1909 and 1904 the value of the products manufactured, distributed according to the classes of implements made, but for 1899 only the combined total value of these products is given. Under the heading "All other products" are included miscellaneous agricultural implements and parts which can not be placed in any of the four groups distinguished in the table and also a large number of products not distinctively agricultural, although made by manufacturers of agricultural implements, such as windmills, carriages and wagons, engines, presses, lawn swings, etc. The value of these products classified as "All other products" represents more than a third of the total value for the industry in the state.

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$14,440,461</b>	<b>\$12,891,197</b>	<b>\$13,975,268</b>
Implements of cultivation.....	3,082,194	3,031,384	13,053,868
Seeders and planters.....	2,245,512	2,016,919	
Harvesting implements.....	2,075,727	3,193,853	
Seed separators.....	858,106	501,482	
All other products.....	5,201,338	3,624,137	
Amount received for repair work.....	307,584	523,422	921,400

**Glass.**—In the industry as a whole, Ohio ranked third in 1904 and second in 1909, and in the manufacture of globes and electrical goods, and beer, soda, and mineral-water bottles the state ranked first.

The next tabular statement shows for 1909, 1904, and 1899, (1) the kind, quantity, and value of the principal varieties of building glass, (2) the total value of the pressed and blown glass and of the bottles, jars, etc., produced, and (3) the quantity of the different kinds of pressed and blown glass and bottles and jars produced.

Pressed and blown glass was the most important product of the glass industry in Ohio in 1909, furnishing 42.9 per cent of the total value of products. Bottles and jars were second, with 32.9 per cent, and building glass third, with 19.1 per cent. Pressed and blown glass also showed the greatest absolute increase in value between 1904 and 1909, but the greatest percentage of increase (68.9) was in building glass. All kinds of pressed and blown ware increased in quantity between 1904 and 1909 except chimneys and lantern globes. The most conspicuous increase was in the number of dozens of electric globes and other goods, from 1,732,800 in 1904 to 4,750,785 in 1909, or 174.2 per cent. The per cent of increase for gas shades, globes, and other goods was somewhat larger (293.9 per cent), but the absolute increase was only 478,950 dozens. All classes of bottles and jars showed increases except "Liquor and flasks" and "Patent and proprietary." Noteworthy increases occurred in the numbers of

"Beers, sodas, and minerals," "Milk jars," and "Packers and preservers." All classes of building glass increased materially.

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$14,358,274</b>	<b>\$9,026,208</b>	<b>\$4,547,083</b>
Building glass.....	\$2,744,513	\$1,025,126	\$671,422
Window glass.....	829,872	380,771	200,854
50-foot boxes.....	\$1,533,460	\$941,244	\$519,187
Value.....	\$1,211,053	\$983,882	\$152,235
All other.....	\$6,160,707	\$3,954,060	\$2,738,289
Pressed and blown glass.....	\$4,717,058	\$2,961,727	\$1,058,055
Bottles and jars.....			
All other products.....	\$735,396	\$484,605	\$78,417
<i>Kind and quantity of pressed and blown glass and bottles and jars.</i>			
Pressed and blown glass:			
Tableware—100 pieces.....	248,815	161,000	150,992
Jellies, tumblers, and goblets, dozens.....	4,133,100	2,088,925	1,681,584
Lamps, dozens.....	50,147	25,744	191,084
Chimneys, dozens.....	1,215,815	1,609,314	1,568,114
Lantern globes, dozens.....	213,586	255,805	142,800
Globes and other electrical goods, dozens.....	4,750,785	1,732,800	1,397,824
Shades, globes, and other gas goods, dozens.....	641,896	162,946	( <sup>1</sup> )
Blown tumblers, stem ware, and bar goods, dozens.....	2,255,805	1,835,350	214,072
Opal ware, dozens.....	318,350	200,000	96,597
Cut ware, dozens.....	0,000	5,850	2,900
Bottles and jars:			
Prescriptions, vials, and druggists' ware, gross.....	148,071	79,342	70,409
Beer, soda, and mineral, gross.....	585,024	433,546	219,422
Liquors and flasks, gross.....	222,764	268,782	16,400
Milk jars, gross.....	107,644	2,387	6,000
Fruit jars, gross.....	21,626	( <sup>2</sup> )	2,000
Patent and proprietary, gross.....	21,933	47,933	20,000
Packers and preservers, gross.....	138,269	10,155	25,000

<sup>1</sup> Included in "Globes and other electrical goods."

<sup>2</sup> Not reported.

The number of furnaces, including both active and idle, was 138 in 1909, as compared with 93 in 1904 and 60 in 1899. Sixty-eight of the total number in 1909 were pot furnaces, and they had 736 pots. The corresponding figures for 1904 were 43 pot furnaces with 620 pots, and for 1899, 42 pot furnaces with 539 pots. Fifty-seven tank furnaces with 532 rings were reported in 1909; 36 in 1904 with 303 rings; and 12 in 1899 with 95 rings. Thirteen intermittent or dry-tank furnaces were reported in 1909 with a capacity of 30 tons. The corresponding figures were, for 1904, 14 with a capacity of 42 tons, and for 1899, 6 with a capacity of 25 tons.

The fuel used in the largest number of furnaces in 1909 was producer and natural gas.

**Paint and varnish.**—The increase in the total value of paint and varnish was very much larger during the period 1904–1909 than during the preceding five years. The next table shows the kind, quantity, and value of the output for the last three censuses.

Paints in oil already mixed for use are the principal products of the paint and varnish industry of Ohio. In 1909 the value of this product was \$5,334,914, which was 39.2 per cent of the total for the industry. The increase in the manufacture of these ready-mixed paints was marked during the five years 1904–1909, the quantity produced more than doubling and the value almost doubling. Oleoresinous varnishes ranked second in 1909 among the products, with a value of \$2,413,323, or 17.7 per cent of the total. These varnishes almost trebled in quantity and considerably

more than doubled in value. Spirit varnishes and damar and similar turpentine and benzine varnishes decreased in both quantity and value. Paste fillers, dry fillers, and putty also decreased in both quantity and value, due mostly to a great reduction in the output of two large establishments.

PRODUCT.	1909	1904	1899
Total value.....	\$13,617,189	\$5,530,142	\$6,703,624
Pigments.....	\$949,613	\$781,117	\$579,377
Paints.....	\$7,674,867	\$4,389,085	.....
White lead in oil—			
Pounds.....	24,057,520	19,003,727	( <sup>1</sup> )
Value.....	\$1,532,797	\$957,134	( <sup>1</sup> )
Paints in oil, in paste—			
Pounds.....	12,237,952	10,027,720	30,595,967
Value.....	\$807,156	\$701,088	\$1,752,553
Paints in oil, already mixed for use—			
Gallons.....	6,769,267	3,081,836	2,578,218
Value.....	\$5,334,914	\$2,731,763	\$2,365,938
Varnishes and japans.....	\$3,721,889	\$2,424,730	\$1,965,016
Oleoresinous varnishes—			
Gallons.....	3,790,073	1,736,439	
Value.....	\$2,419,323	\$1,181,203	
Damar and similar turpentine and benzine varnishes—			
Gallons.....	309,080	624,295	
Value.....	\$259,204	\$582,284	
Spirit varnishes, not turpentine—			
Gallons.....	77,786	80,675	43,304
Value.....	\$106,848	\$107,147	\$50,107
Drying and baking japans and lacquers—			
Gallons.....	1,715,173	( <sup>2</sup> )	( <sup>3</sup> )
Value.....	\$672,443	\$470,771	\$512,299
All other.....	\$270,071	\$83,325	\$225,213
Fillers and putty:			
Liquid fillers—			
Gallons.....	292,867	146,460	( <sup>2</sup> )
Value.....	\$155,869	\$89,213	( <sup>1</sup> )
Paste fillers, dry fillers, and putty—			
Pounds.....	4,623,364	8,779,800	( <sup>2</sup> )
Value.....	\$159,570	\$246,412	( <sup>2</sup> )
All other products.....	\$955,381	\$503,685	\$40,740

<sup>1</sup> Included with "Pigments."

<sup>2</sup> Not reported.

**Petroleum refining.**—Ohio was fifth among the states in the production of crude petroleum in 1909, and seventh in the value of its refinery output. The next tabular statement gives the quantity and cost of materials used in the refineries of the state, the quantity and value of the principal products, and details as to the main equipment reported for 1909, 1904, and 1899.

The quantity of illuminating oil and greases produced decreased between 1904 and 1909, but the quantity of fuel oils nearly doubled, and that of lubricating oils and of naphtha and gasoline increased 61.7 per cent and 15.4 per cent, respectively. Of the total quantity of refined oils, which include illuminating, fuel, and lubricating, the fuel oils formed 41.9 per cent in 1909, as contrasted with 28 per cent in 1904 and 26.3 per cent in 1899.

Of the total crude oil used in Ohio refineries in 1909 about one-half was from the Lima (Ohio) and Indiana fields. The remainder, excepting 5.3 per cent returned as "Pennsylvania, including Kentucky," was from the Illinois field.

The development of the industry in the state is also reflected in the equipment, such as stills, storage tanks, and agitators. The number of stills was 198 in 1909, as compared with 217 in 1904 and 222 in 1899. The combined capacity of the stills reported for 1909 was

105,881 barrels of 42 gallons; for the other years this detail was not given. There were 675 tanks in 1909, of which 61 were for crude oils and 614 for refined; in 1904 there were 519, of which 20 were for crude oil and 499 for refined; and in 1899, 296, of which 21 were for crude and 275 for refined. At the earliest of the three censuses no statement of storage capacity was requested. In 1909 the refineries could store 21,520,952 gallons of crude and 78,612,190 gallons of refined petroleum, compared with 8,964,030 gallons of crude and 84,888,935 gallons of refined in 1904. The agitators numbered 44 in 1909, 52 in 1904, and 53 in 1899.

MATERIAL, PRODUCT, OR EQUIPMENT.	1909	1904	1899
Materials used, total cost.....	\$8,144,583	\$7,602,397	\$6,177,048
Crude petroleum:			
Barrels (42 gallons).....	4,833,075	4,105,871	4,001,554
Cost.....	\$4,987,558	\$5,143,137	\$4,495,890
Containers.....	\$952,487	\$936,659	\$540,081
All other materials.....	\$2,504,538	\$1,582,601	\$1,132,077
Products, total value.....	\$10,753,738	\$10,948,864	\$8,396,977
Oils:			
Illuminating—			
Barrels (50 gallons).....	1,204,186		1,987,150
Value.....	\$2,618,762		\$3,440,427
Fuel (including gas oils)—			
Barrels.....	1,257,950	1,961,105	614,631
Value.....	\$1,302,720	\$5,188,803	\$629,548
Lubricating—			
Barrels.....	543,526	330,110	331,863
Value.....	\$2,002,387	\$1,540,896	\$701,635
Naphtha and gasoline (including gas naphtha)—			
Barrels.....	539,828	467,594	598,858
Value.....	\$2,224,283	\$1,676,520	\$1,750,541
Greases (lubricating, etc.):			
Barrels.....	18,070	19,059	161,294
Value.....	\$207,225	\$158,885	\$723,308
Paraffin wax:			
Barrels.....	54,536	47,533	66,455
Value.....	\$470,760	\$549,515	\$801,223
Residuum or tar:			
Barrels.....	101,105	111,339	140,628
Value.....	\$108,403	\$210,911	\$224,819
Coke and black naphtha.....	\$33,829	\$30,448	\$12,594
All other products.....	\$1,640,369	\$1,592,872	\$103,882
Equipment:			
Stills, number.....	199	217	222
Heated by steam—			
Number.....	30	32	32
Capacity (barrels, 42 gallons)...	22,589	( <sup>1</sup> )	( <sup>1</sup> )
Heated by superheated steam—			
Number.....	8	1	1
Capacity (barrels, 42 gallons)...	4,000	( <sup>1</sup> )	( <sup>1</sup> )
Heated by fire—			
Number.....	160	184	189
Capacity (barrels, 42 gallons)...	79,292	( <sup>1</sup> )	( <sup>1</sup> )
Agitators, number.....	44	52	53
Chilling houses for paraffin, number.....	9	8	8
Hydraulic or other presses, number.....	17	41	54
Storage tanks:			
For crude petroleum—			
Number.....	61	20	21
Capacity, gallons.....	21,520,952	8,964,030	( <sup>1</sup> )
For refined petroleum—			
Number.....	614	499	275
Capacity, gallons.....	78,612,190	84,888,935	( <sup>1</sup> )
Cooper shops, number.....	4	7	5
Tin shops, number.....	1	1	1

<sup>1</sup> Not reported.

**Leather, tanned, curried, and finished.**—Ohio has held the tenth position among the states in the manufacture of leather since 1899. The value of the leather product increased from \$5,182,065 in 1899 to \$6,512,754 in 1904 and to \$10,127,836 in 1909, or a gain of 55.5 per cent between 1904 and 1909 and of 95.4 per cent between 1899 and 1909. The next table gives the products, by kind, quantity, and value, for 1909, 1904, and 1899.

Carriage, automobile, and furniture leather was the leading product, with a value of \$3,734,827. Large

amounts of sundry kinds of leather are included with "All other leather," to avoid disclosing operations of individual establishments.

Of the total value of leather made in the state in 1909 the city of Cincinnati reported one-half, a slight decrease since 1904, when the city reported 52.3 per cent of the total production.

The number of cattle hides used in the manufacture of leather in Ohio in 1909 was 514,226, and they cost \$5,179,537, an increase of 110,571, or 27.4 per cent, in number and of \$2,335,867, or 82.1 per cent, in cost over 1904. The skins reported in 1909 numbered 607,624, and they cost \$1,157,205, an increase of 31,677, or 5.5 per cent, in number and of \$476,744, or 70.1 per cent, in cost.

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$10,127,836</b>	<b>\$6,512,764</b>	<b>\$5,182,065</b>
Upper leather, other than calf or kip skins (grain, satin, pebble, etc.):			
Sides.....	22,668	2,500	1,100
Value.....	\$76,277	\$0,700	\$2,875
Harness leather:			
Sides.....	363,081	306,434	336,015
Value.....	\$2,540,892	\$1,800,772	\$1,831,651
Carrriage, automobile, and furniture leather:			
Hides.....	261,050	205,517	109,071
Value.....	\$3,734,827	\$1,798,850	\$955,973
All other leather.....	\$3,600,863	\$1,777,099	\$2,291,744
All other products.....	\$205,277	\$1,065,397	\$99,702
Work on materials for others.....	\$700	\$36	\$3,000

**Butter, cheese, and condensed milk.**—The manufacture of butter, cheese, and condensed milk, although not one of the leading industries of the state, is of such importance that Ohio ranks ninth among the states in the industry. In the manufacture of cheese alone, and of condensed milk alone, it ranks fourth. The following statement gives the principal products, by kind, quantity, and value, for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$9,689,670</b>	<b>\$4,593,222</b>	<b>\$3,808,990</b>
<b>Butter:</b>			
Packed solid—			
Pounds.....	11,265,341	7,233,289	6,802,419
Value.....	\$3,162,518	\$1,527,514	\$1,335,512
Prints or rolls—			
Pounds.....	6,225,910	4,358,692	1,285,212
Value.....	\$1,822,755	\$1,007,067	\$304,039
<b>Cream sold:</b>			
Pounds.....	4,735,900	1,843,868	6,298,648
Value.....	\$500,528	\$110,253	\$396,743
<b>Cheese:</b>			
Full cream—			
Pounds.....	9,768,970	13,219,415	14,570,890
Value.....	\$1,305,461	\$1,231,779	\$1,304,705
Part cream—			
Pounds.....	1,550,560	.....	.....
Value.....	\$197,656	.....	.....
Other kinds—			
Pounds.....	541,071	4,132,358	3,585,061
Value.....	\$30,400	\$424,184	\$350,928
<b>Condensed milk:</b>			
Sweetened—			
Pounds.....	4,232,160	266,250	100,000
Value.....	\$250,529	\$15,975	\$6,500
Unsweetened—			
Pounds.....	33,423,187	1,680,968	.....
Value.....	\$2,153,430	\$123,088	.....
All other products <sup>1</sup> .....	\$280,393	\$147,362	\$110,470

<sup>1</sup> Includes skimmed milk sold and casein, whey, and skimmed cheese.

The total value of the products increased \$5,880,674, or 154.4 per cent, during the 10 years 1899-1909.

The increase from 1899 to 1904 was 20.6 per cent, and from 1904 to 1909, 111 per cent.

From 1904 to 1909 the quantity of butter manufactured increased 50.9 per cent and the value 96.7 per cent. The increase for the 10-year period from 1899 to 1909 was 116.3 per cent in quantity and 204 per cent in value. The average value per pound as reported for all kinds in 1909 was 28.5 cents, as against 21.9 cents in 1904.

The total amount of cheese produced decreased from over 18,000,000 pounds in 1899 to about 17,000,000 in 1904 and about 12,000,000 in 1909, a decrease for the decade of 34.7 per cent. The value decreased from \$1,655,723 in 1899 to \$1,533,517 in 1909. The value in 1904 was practically the same as the value in 1899.

Attention should be called to the fact that part-cream cheese was not differentiated from full-cream cheese prior to 1909. The full-cream cheese reported for the earlier censuses included a certain amount of part-cream cheese. In 1909, 1,550,566 pounds of part-cream cheese, valued at \$197,656, were reported.

The output of condensed milk in the state increased from 100,000 pounds in 1899 to 37,655,347 pounds in 1909, and its value increased from \$6,500 to \$2,409,959. This most remarkable increase from 1899 to 1909 was due to the establishment during the 10 years of a number of large factories for making unsweetened condensed milk. The growth of this branch of the industry has probably resulted in a diversion of considerable quantities of milk formerly sent to the cheese factories and may account in a measure for the decline in the production of cheese.

The butter, cheese, and condensed-milk industry in 1909 was represented by 119 butter, 197 cheese, and 9 condensed-milk factories. Two of the butter factories also made condensed milk, and one butter factory made cheese. Twenty of the cheese factories and one condensed-milk factory made butter also.

Twenty-eight of the butter and 85 of the cheese factories were operated by cooperative associations. These associations operated 34.8 per cent of all the establishments in the combined industry, but employed only 10.7 per cent of the wage earners, and produced only 11.1 per cent of the value of products. Eight of the nine condensed-milk factories were operated by corporations; the other was conducted by a firm.

**Chemicals.**—The next statement shows the kind, quantity, and value of certain of the products reported for the chemical industry at the last three censuses. The quantity and value of many of the chemicals can not be shown separately, as they are the product of fewer than three establishments and the publication of statistics regarding them would disclose the operations of individual establishments.

The chemical industry in Ohio advanced rapidly in the 10 years from 1899 to 1909. The value of its products was \$3,576,260 at the census of 1899, as con-

trasted with \$7,742,045 in 1909, an increase of \$4,165,785, or 116.5 per cent. Sodas, which were of comparatively little importance in 1899, were the most important products of the industry in value in 1909, contributing 29.5 per cent of the total. In 1899 their value was less than \$125,000, but by 1909 it had increased to almost \$2,300,000. The chemicals included under the head of "Other chemicals," which ranked second, increased from a little over \$125,000 in value in 1899 to over \$1,000,000 in 1909, and glycerin, which ranked third among the products, increased 64.9 per cent. Fine chemicals also show a marked increase in value, from \$1,650 in 1899 to \$292,626 in 1909.

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	\$7,742,045	\$4,580,749	\$3,576,260
<b>Acids:</b>			
Oleic—		( <sup>2</sup> )	( <sup>2</sup> )
Pounds.....	8,337,761	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$422,220	( <sup>2</sup> )	( <sup>2</sup> )
Stearic—		( <sup>2</sup> )	( <sup>2</sup> )
Pounds.....	4,029,390	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$310,252	( <sup>2</sup> )	( <sup>2</sup> )
Other.....	\$448,715	\$582,708	\$871,408
<b>Sodas:</b>			
Tons.....	120,520	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$2,285,759	\$1,502,452	\$122,820
<b>Potashes:</b>			
Pounds.....	91,117	.....	852,200
Value.....	\$5,700	.....	\$34,233
Coal-tar distillery products.....	\$607,514	\$417,100	\$243,000
Compressed or liquefied gases:			
Carbon dioxide—		( <sup>2</sup> )	.....
Pounds.....	2,588,738	( <sup>2</sup> )	.....
Value.....	\$158,888	\$39,358	.....
All other.....	\$80,653	\$89,932	\$52,005
Fine chemicals.....	\$292,626	\$40,220	\$1,650
<b>Glycerin:</b>			
Pounds.....	6,976,859	7,725,350	5,607,874
Value.....	\$1,140,030	\$802,322	\$991,536
Tin and zinc salts.....	\$412,582	.....	.....
Other chemicals.....	\$1,159,538	\$819,058	\$125,027
All other products.....	\$374,899	\$536,443	\$1,933,621

<sup>1</sup> Including sulphuric, nitric, and mixed acids and wood distillation products to the value of \$1,018,857 (sulphuric acid, \$527,944; nitric acid, \$72,245; mixed acids, \$414,665; and wood alcohol, \$4,000).

<sup>2</sup> Figures not available.

**Textiles.**—Under the heading "Textiles" for Ohio are included woolen, worsted, and felt goods and wool hats; hosiery and knit goods; cordage and twine and jute and linen goods; cotton goods, including cotton small wares; shoddy; fur-felt hats; carpets and rugs; and silk goods. No detailed statistics regarding materials or products can be given for any of these classes except the first two named, because to give them would disclose individual operations.

**Woolen, worsted, and felt goods, and wool hats.**—Twenty establishments are engaged in the manufacture of woolen, worsted, and felt goods, and wool hats. The quantity and cost of the principal materials used, and the quantity and value of the principal classes of products reported for this industry at the censuses of 1909, 1904, and 1899, are given in the next table.

The total cost of materials of the industry was \$4,616,029 in 1909, as contrasted with \$1,681,166 in 1899, an increase of 174.6 per cent. The principal gain was in wool. In 1899, 3,262,140 pounds of wool were used, costing \$763,966, and its cost formed 45.4 per cent of the total for all materials, but in 1909, 11,844,168 pounds were used, costing \$3,696,495, and its cost formed 80.1 per cent of the total for all mate-

rials. The percentages of increase for the decade were 263.1 in quantity and 383.9 in value. The quantity of raw cotton and cotton yarn used was smaller in 1909 than in 1904 or in 1899, while the cost in 1909 was smaller than in 1904 but considerably larger than in 1899. Shoddy, rags, and wool waste and noils showed an increase in value at each census, yet the quantities increased between 1899 and 1904 but decreased slightly between 1904 and 1909. Chemicals and dyestuffs decreased from 1904 to 1909 but fuel and rent of power shows substantial increases at each census.

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost</b> .....	\$4,616,029	\$2,137,265	\$1,681,166
Wool, in condition purchased:			
Pounds.....	11,844,168	4,624,300	3,262,140
Cost.....	\$3,696,495	\$1,307,270	\$763,966
Equivalent of above in scoured condition, pounds.....	8,892,410	2,782,632	2,008,188
Raw cotton and cotton yarn, purchased:			
Pounds.....	524,430	751,594	647,347
Cost.....	\$110,353	\$158,270	\$84,079
Shoddy, rags, and wool waste and noils:			
Pounds.....	1,849,452	1,897,315	1,372,028
Cost.....	\$260,771	\$230,243	\$178,492
Chemicals and dyestuffs.....	\$222,866	\$41,230	\$65,616
Fuel and rent of power.....	\$61,360	\$48,438	\$29,799
All other materials.....	\$264,184	\$351,790	\$562,243
<b>Products, total value</b> .....	\$7,690,149	\$3,586,528	\$2,826,321
All-wool woven goods:			
Square yards.....	8,620,943	4,647,096	3,555,045
Value.....	\$5,599,871	\$2,461,050	\$1,517,238
Cotton-mixed and cotton-warp goods:			
Square yards.....	1,399,475	918,409	1,588,329
Value.....	\$301,202	\$417,070	\$737,898
All other products.....	\$1,390,016	\$708,393	\$571,185

The total value of products increased from \$2,826,321 in 1899 to \$3,586,528 in 1904 and to \$7,690,149 in 1909, a gain of 26.9 per cent for the earlier five-year period and of 114.4 per cent for the later. The important increase was in all-wool woven goods, which increased in value from about one and one-half million dollars in 1899 to about five and one-half million in 1909. Cotton-mixed and cotton-warp goods, although of smaller value in 1909 than in 1899, show a considerable increase since 1904.

The quantity of the principal materials used at each of the censuses are shown in the following statement, in which the wool is divided into foreign and domestic:

MATERIAL.	QUANTITY CONSUMED (POUNDS).		
	1909	1904	1899
Wool, in condition purchased.....	11,844,168	4,624,300	3,262,140
Foreign.....	8,740,503	1,458,394	24,825
Domestic.....	3,103,665	3,165,912	3,237,315
Raw cotton and cotton yarn, purchased.....	524,430	751,594	647,347
Shoddy purchased and made in mill.....	1,051,734	1,301,793	1,115,327

The most noticeable feature of this table is the increase in the amount of foreign wool purchased, from 24,825 pounds in 1899 to 1,458,394 pounds in 1904 and to 8,740,503 pounds in 1909. The quantity of foreign wool used in 1909 is thus over three hundred and fifty times greater than the quantity used at the beginning of the decade. All other items showed decreases from 1904 to 1909, and all, excepting domestic wool, increases for the previous five years.

The following table shows the number of spindles, looms, sets of woolen cards, and combing machines reported for this industry at the censuses of 1909, 1904, and 1899:

MACHINE.	1909	1904	1899
Spindles <sup>1</sup> .....	69,509	34,733	30,400
Looms.....	1,434	756	674
Woolen cards (sets).....	54	69	78
Wool-combing machines.....	27	11	5

<sup>1</sup> Includes producing and doubling and twisting spindles.

**Hosiery and knit goods.**—The following statement compares the quantity and cost of the different kinds of materials used in the hosiery and knit-goods industry and the quantity and value of the various products for 1909, 1904, and 1899:

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$3,851,419</b>	<b>\$2,177,368</b>	<b>\$810,401</b>
Yarns, purchased:			
Cotton—			
Pounds.....	4,207,238	1,640,479	432,372
Cost.....	\$1,238,527	\$444,930	\$98,817
Worsted—			
Pounds.....	1,005,829	784,770	455,599
Cost.....	\$1,003,980	\$760,490	\$412,277
Woolen—			
Pounds.....	773,371	327,684	64,823
Cost.....	\$439,977	\$215,232	\$38,346
Merino—			
Pounds.....	843,181	564,372	202,934
Cost.....	\$308,934	\$105,266	\$54,774
All other—			
Pounds.....	60,081	14,262	7,633
Cost.....	\$177,528	\$32,941	\$26,350
Chemicals.....	\$22,501	\$21,730	\$10,688
Fuel and rent of power.....	\$37,503	\$25,461	\$10,323
All other materials.....	\$532,319	\$481,318	\$158,826
<b>Products, total value.....</b>	<b>\$6,433,431</b>	<b>\$3,997,047</b>	<b>\$1,584,754</b>
Hose and half hose:			
Merino or mixed—			
Dozen pairs.....	323,948	239,162	105,000
Value.....	\$304,930	\$321,864	\$128,000
Cotton—			
Dozen pairs.....	72,602	74,840	39,609
Value.....	\$150,464	\$131,142	\$48,079
All other—			
Dozen pairs.....	3,725	97,815	80,107
Value.....	\$8,725	\$150,802	\$130,322
Shirts and drawers:			
Cotton—			
Dozens.....	87,151	82,264	16,806
Value.....	\$106,667	\$228,170	\$45,058
All other—			
Dozens.....	39,154	37,100	22,750
Value.....	\$234,037	\$247,771	\$140,779
Combination suits:			
Cotton—			
Dozens.....	131,180	55,823	11,517
Value.....	\$1,047,775	\$305,058	\$73,052
Merino—			
Dozens.....	58,063	15,643	5,135
Value.....	\$961,771	\$212,879	\$1,088
All other—			
Dozens.....	2,683	4,623	1,515
Value.....	\$66,938	\$111,326	\$2,770
Gloves and mittens:			
Dozen pairs.....	319,522	231,000	273,040
Value.....	\$289,848	\$360,111	\$333,258
Hoods, scarfs, nubias, etc.:			
Dozens.....	272,478	206,024	122,102
Value.....	\$1,004,900	\$482,070	\$304,440
Cardigan jackets, sweaters, fancy jackets, etc.:			
Dozens.....	115,457	( <sup>2</sup> )	.....
Value.....	\$1,355,728	( <sup>2</sup> )	.....
All other products.....	\$581,570	\$1,340,794	\$275,200

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

<sup>2</sup> Included in "All other products."

It is to be noted that in materials used the item of greatest importance for 1909 was cotton yarns purchased, which contributed nearly one-third of the total value of all materials used. Worsted yarns was the most important item of cost in 1904 and in 1899.

The increase in value of products for the 10-year

period was 306 per cent, the greater part of this occurring during the earlier five-year period, although the statistics for two establishments making hand-knit goods were omitted for 1904.

Conspicuous increases occurred between 1904 and 1909 in the manufacture of combination suits. Cotton combination suits increased 135 per cent in number and 165.2 per cent in value, while merino combination suits increased 271.2 per cent in number and 351.8 per cent in value. All other combination suits, however, decreased 42 per cent in number and 39.9 per cent in value. Hoods, scarfs, nubias, etc., increased 32.3 per cent in number and 120.9 per cent in value.

The manufacture of hose and half hose increased markedly between 1899 and 1904, but between 1904 and 1909 comparatively little change took place in the totals. A considerable change occurred, however, in the relative importance of the different classes of hosiery. The value of merino or mixed hose formed 76 per cent of the total value of the hosiery produced in 1909, as contrasted with 52.8 per cent in 1904. The corresponding percentages for cotton hose were 22.7 in 1909 and 21.5 in 1904. The proportion formed by the value of all other hose decreased from 25.7 per cent in 1904 to 1.3 in 1909. A striking increase occurred between 1904 and 1909 in the number of pairs of merino or mixed hose and half hose produced, but this was more than offset by the decrease in the number of pairs of cotton hose and in the number of pairs of all other kinds.

Gloves and mittens increased considerably in quantity, but there was a decrease in the value reported in 1909 from that given for 1904. This was due principally to the decrease in value of output reported by one establishment.

Eleven establishments made cardigan jackets, sweaters, fancy jackets, etc., in 1909, but as these items were included under "All other products" at prior censuses, no comparative figures can be given. The value of the output in 1909 was so large as to form 21.1 per cent of the total value of products.

The great decrease in "All other products" between 1904 and 1909 was due in great part to the decrease in the output of shawls and fancy knit goods.

The following is a table showing the machinery of the hosiery and knitting mills for 1909, 1904, and 1899:

MACHINE.	1909	1904	1899
Spindles.....	4,670	5,484	3,920
Cards (sets).....	13	11	10
Sewing machines.....	1,380	643	170
Knitting machines.....	2,008	2,308	1,147

The number of knitting machines decreased owing to the elimination of a large number of hand machines, the loss not being counterbalanced by the increase in machines operated by power.

**Laundries.**—Statistics for steam laundries are not included in the general tables or in the totals for manufacturing industries. In 1909 there were 253 such establishments in the state of Ohio, 22 of which

were in Cleveland, 19 in Toledo, 18 in Cincinnati, 11 in Columbus, 7 in Akron, 6 in Dayton, and 5 in Hamilton. No other city had as many as 5 laundries.

The following statement summarizes the statistics:

Number of establishments.....	253
Persons engaged in the industry.....	6,773
Proprietors and firm members.....	277
Salaried employees.....	603
Wage earners (average number).....	5,893
Primary horsepower.....	7,431
Capital.....	\$3,802,957
Expenses.....	4,425,294
Services.....	2,772,137
Materials.....	871,722
Miscellaneous.....	781,435
Amount received for work done.....	5,388,954

The most common form of ownership was the individual, with 125 establishments. The firm and corporate forms of ownership were represented by 69 and 59 establishments, respectively. Seventy-two establishments had receipts for the year's business of less than \$5,000; 110, receipts of \$5,000 but less than \$20,000; 58, receipts of \$20,000 but less than \$100,000; and 13, receipts of \$100,000 but less than \$1,000,000.

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.....	5,641	92.9	July.....	6,054	99.8
February.....	5,626	92.7	August.....	5,976	98.5
March.....	5,794	95.5	September.....	6,069	100.0
April.....	5,800	95.6	October.....	5,958	98.2
May.....	5,897	97.2	November.....	5,912	97.4
June.....	6,043	99.6	December.....	5,946	98.0

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

KIND.	Number of engines or motors.	Horsepower.
<b>Primary power, total.....</b>		<b>7,431</b>
Owned:		
Steam.....	198	6,235
Gas.....	45	737
Water wheels.....	1	35
Water motors.....	1	15
Rented:		
Electric.....	82	401
Other.....		8

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

KIND.	Unit.	Quantity.
Anthracite coal.....	Tons.....	398
Bituminous coal.....	Tons.....	59,799
Coke.....	Tons.....	77
Wood.....	Cords.....	26
Oil.....	Barrels.....	73
Gas.....	1,000 feet.....	649,446

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.....	202	152
Persons engaged in industry.....	732	301
Proprietors and firm members.....	340	199
Salaried employees.....	1	7
Wage earners (average number).....	391	95
Primary horsepower.....	5,398	5,125
Capital.....	\$336,846	\$503,988
Expenses.....	138,402	1,034,430
Services.....	107,999	32,860
Materials.....	3,080	1,981,496
Miscellaneous.....	26,423	20,134
Value of products.....	286,189	1,189,853

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

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).							
<b>STATE—All industries</b> .....	1909	15,138	523,004	14,719	61,351	446,934	1,583,155	\$1,300,733	\$72,147	\$245,450	\$824,202	\$1,437,936	\$813,734
	1904	13,785	417,946	13,657	30,991	364,298	1,116,932	856,989	43,435	182,429	527,637	960,812	433,175
	1899	13,868	.....	.....	28,109	308,109	783,065	570,909	28,151	136,428	409,303	748,671	339,368
Agricultural implements.....	1909	55	6,972	23	952	5,997	9,867	25,037	1,148	3,155	6,319	14,440	8,121
	1904	71	6,616	30	918	5,659	8,354	24,302	1,002	2,910	5,692	12,801	7,109
	1899	78	8,498	58	1,588	6,852	7,830	23,628	1,309	3,271	6,060	13,975	7,915
Artificial stone.....	1909	200	1,315	391	122	802	1,325	1,274	74	404	499	1,378	879
	1904	67	416	62	44	280	347	437	26	135	167	446	279
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Automobiles, including bodies and parts.....	1909	75	13,458	42	1,286	12,130	14,433	30,892	1,430	7,740	18,522	38,839	20,317
	1904	22	2,930	8	269	2,722	1,877	4,220	254	1,617	2,553	6,358	3,805
	1899	3	.....	.....	7	86	.....	68	5	52	60	145	85
Bags, paper.....	1909	8	632	.....	75	557	508	1,447	104	240	1,638	2,393	755
	1904	9	609	3	124	482	1,389	1,300	90	177	955	1,513	558
	1899	10	278	4	50	218	.....	300	41	68	511	719	208
Belting and hose, leather.....	1909	8	164	4	53	107	405	657	65	80	795	1,080	285
	1904	6	124	1	43	80	307	482	59	48	550	753	203
	1899	5	137	3	42	92	.....	486	45	48	638	836	198
Bicycles, motorcycles, and parts.....	1909	6	1,037	2	93	942	1,895	2,245	65	686	1,000	2,308	1,242
	1904	3	567	.....	61	446	547	1,132	62	293	457	1,041	584
	1899	34	2,609	20	200	2,380	2,705	4,075	107	1,017	2,251	4,100	1,840
Blacking and cleansing and polishing preparations.....	1909	49	238	53	82	103	207	381	68	50	207	672	375
	1904	21	83	25	20	38	60	78	18	14	62	152	90
	1899	15	70	15	13	42	.....	58	18	12	67	157	90
Boots and shoes, including cut stock and findings.....	1909	72	17,607	40	1,541	16,026	8,925	16,755	2,125	6,646	18,872	31,551	12,679
	1904	73	15,091	55	1,004	14,032	6,113	10,434	1,010	5,275	14,089	25,735	10,746
	1899	92	13,758	97	895	12,700	.....	7,654	900	4,010	11,310	18,240	6,936
Boxes, cigar.....	1909	31	600	38	31	531	1,029	464	31	167	360	711	351
	1904	30	544	36	28	480	506	309	21	136	374	689	295
	1899	32	680	40	29	517	.....	354	18	151	340	645	305
Boxes, fancy and paper.....	1909	46	2,777	32	215	2,530	1,825	2,841	258	830	1,931	3,635	1,704
	1904	42	1,942	41	158	1,743	827	1,597	156	475	1,072	2,133	1,001
	1899	35	1,597	38	85	1,474	.....	784	98	382	620	1,408	788
Brass and bronze products.....	1909	82	2,650	72	346	2,232	4,214	6,472	418	1,372	3,533	6,572	3,039
	1904	70	1,719	84	150	1,485	1,800	3,282	181	808	1,545	3,347	1,802
	1899	40	1,407	53	99	1,315	.....	1,730	111	580	1,039	2,293	1,254
Bread and other bakery products.....	1909	1,467	8,758	1,000	1,180	5,972	5,398	11,781	1,099	3,371	13,666	23,007	9,341
	1904	1,138	7,097	1,247	555	5,295	3,875	8,320	411	2,520	9,059	15,641	6,582
	1899	950	5,115	1,029	567	3,519	.....	5,057	358	1,629	5,427	9,857	4,430
Brick and tile.....	1909	517	8,575	569	540	7,466	37,742	17,315	590	3,527	2,204	9,358	7,154
	1904	590	7,839	704	416	6,719	33,291	12,049	390	2,942	1,633	7,136	5,503
	1899	686	6,414	853	208	5,363	22,715	7,344	180	1,967	982	4,030	3,648
Butter, cheese, and condensed milk.....	1909	325	2,494	1,210	211	1,067	3,386	2,739	173	557	7,685	9,690	2,005
	1904	431	807	318	61	488	3,402	1,428	19	262	3,729	4,593	804
	1899	479	869	391	89	389	2,560	1,041	19	190	3,055	3,809	754
Butter, reworking.....	1909	5	73	.....	26	47	423	571	20	31	1,228	1,356	128
	1904	8	104	6	12	86	451	208	12	59	863	1,054	191
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canning and preserving.....	1909	107	2,379	94	276	2,009	4,244	3,494	252	532	3,102	4,660	1,558
	1904	107	2,484	121	219	2,144	3,580	2,507	192	577	2,701	4,491	1,790
	1899	207	2,223	113	148	1,902	.....	1,430	120	438	1,931	3,247	1,316
Carriages and wagons and materials.....	1909	407	10,350	414	1,121	8,815	14,771	20,398	1,282	4,647	11,414	21,949	10,535
	1904	450	12,555	495	1,033	11,027	16,936	19,205	1,009	5,269	12,856	24,003	11,147
	1899	558	.....	.....	954	11,058	.....	17,235	842	5,020	12,181	22,803	10,623
Cars and general shop construction and repairs by steam-railroad companies.....	1909	71	22,102	.....	1,374	20,728	19,422	10,654	1,299	12,726	14,266	28,690	14,424
	1904	74	18,195	.....	1,169	17,026	13,954	7,503	999	9,890	10,225	21,428	11,293
	1899	91	12,110	.....	870	11,534	9,767	5,701	457	6,087	5,964	12,975	7,011
Cars and general shop construction and repairs by street-railroad companies.....	1909	49	1,392	.....	74	1,318	3,635	2,054	65	722	801	1,691	890
	1904	5	169	.....	19	150	20	128	17	94	55	172	117
	1899	4	236	.....	7	229	.....	123	5	137	94	240	155
Cars, steam-railroad, not including operations of railroad companies.....	1909	6	2,477	.....	195	2,282	4,410	11,037	545	1,304	4,195	6,451	2,256
	1904	5	2,148	.....	83	2,065	1,725	3,208	135	1,198	3,358	5,530	2,181
	1899	5	1,869	.....	61	1,805	1,065	2,582	76	862	2,792	3,942	1,150
Cars, street-railroad, not including operations of railroad companies.....	1909	4	823	.....	89	734	2,875	2,842	124	471	1,094	1,055	861
	1904	4	835	.....	70	765	1,850	1,748	93	475	1,069	1,828	750
	1899	3	290	2	13	275	.....	253	12	153	231	538	307
Cement.....	1909	9	978	.....	61	887	12,685	4,732	140	544	638	1,465	827
	1904	12	831	3	85	743	9,579	3,595	125	452	534	1,508	974
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chemicals.....	1909	33	1,346	17	197	1,132	11,715	8,994	324	749	4,748	7,742	2,994
	1904	18	1,304	10	269	1,025	6,169	3,655	400	652	3,003	4,590	1,587
	1899	35	794	21	164	609	1,280	3,670	199	340	2,084	3,576	1,492

<sup>1</sup> Not reported separately.  
<sup>2</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.  
<sup>3</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.

## MANUFACTURES—OHIO.

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.													
<b>STATE—Continued.</b>													
Clocks and watches, including cases and materials.	1909 1904 1899	0 6 5	1,534 1,803 .....	2 ..... .....	76 91 47	1,456 1,712 1,271	877 640 .....	\$4,232 2,650 743	\$81 104 50	\$784 851 589	\$526 714 475	\$1,081 1,860 1,467	\$1,455 1,155 002
Clothing, men's, including shirts.....	1909 1904 1899	342 357 563	11,813 8,600 .....	405 464 .....	1,458 941 865	9,050 7,185 7,129	1,794 1,315 .....	14,432 12,263 11,008	1,601 1,022 842	4,050 2,749 2,284	12,020 9,637 9,470	24,860 10,340 17,312	11,040 9,400 7,842
Clothing, women's.....	1909 1904 1899	153 143 126	10,191 7,191 6,324	174 179 159	1,174 633 348	8,843 6,379 4,817	1,505 1,363 613	8,151 4,700 2,866	1,053 657 384	4,272 2,724 1,518	10,201 6,760 4,440	19,403 12,804 7,773	9,202 6,035 3,324
Coffee and spice, roasting and grinding..	1909 1904 1899	39 28 26	1,586 1,139 969	25 15 18	799 532 273	762 592 678	2,186 1,080 .....	5,400 6,932 2,376	812 485 208	352 221 230	8,277 7,626 4,709	11,224 9,658 8,850	2,047 2,332 1,141
Coffins, burial cases, and undertakers' goods.	1909 1904 1899	24 10 14	1,475 1,309 1,112	11 17 11	219 128 117	1,245 1,164 984	2,289 1,454 .....	3,724 2,645 2,073	266 107 138	525 537 410	1,324 1,176 872	3,061 2,524 1,801	1,737 1,848 629
Coke.....	1909 1904 1899	4 4 5	259 126 85	..... 1 .....	13 12 14	246 113 71	1,250 350 55	1,238 584 85	18 13 19	120 54 33	640 170 138	851 259 255	211 89 117
Confectionery.....	1909 1904 1899	114 70 55	3,012 2,054 .....	103 81 .....	416 223 235	2,493 1,750 1,357	2,005 891 .....	3,416 1,704 1,456	443 195 178	840 526 396	4,089 2,272 2,004	7,307 4,712 3,825	3,218 2,440 1,821
Cooperage and wooden goods, not elsewhere specified.	1909 1904 1899	113 120 141	1,911 1,968 .....	118 120 .....	130 125 80	1,663 1,723 1,800	3,453 3,096 .....	2,911 2,350 1,752	161 149 84	803 823 725	2,216 1,068 1,354	3,516 3,559 2,612	1,300 1,591 1,258
Copper, tin, and sheet-iron products....	1909 1904 1899	221 180 147	7,685 4,620 .....	105 106 .....	892 490 212	6,598 3,970 2,674	6,352 3,770 .....	21,685 11,223 3,086	961 530 205	3,163 1,746 1,025	11,622 5,341 3,206	19,080 9,414 5,377	7,464 4,073 2,171
Cordage and twine and jute and linen goods.	1909 1904 1899	8 8 9	848 1,140 1,101	3 ..... 2	54 70 47	701 1,070 1,052	3,225 3,285 .....	2,743 2,806 2,148	81 104 54	313 361 318	1,084 2,518 2,326	2,728 3,732 2,958	744 732 632
Cutlery and tools, not elsewhere specified.	1909 1904 1899	70 68 59	3,335 2,763 .....	49 44 .....	406 252 184	2,820 2,467 1,537	6,567 4,836 .....	7,768 4,897 2,501	521 258 180	1,518 1,116 767	1,650 1,256 870	5,036 3,567 2,441	3,386 2,311 1,571
Dairymen's, poulterers', and apiarists' supplies.	1909 1904	18 15	589 444	19 15	91 68	479 301	916 662	1,041 583	72 48	262 167	527 419	1,149 852	622 433
Electrical machinery, apparatus, and supplies.	1909 1904 1899	115 92 64	9,005 6,187 4,190	49 50 29	1,483 1,023 394	8,073 5,114 3,773	11,959 7,133 5,123	23,706 10,408 7,036	1,529 1,079 399	3,847 2,268 1,502	7,226 4,699 3,330	18,777 11,019 6,505	11,551 6,320 3,166
Explosives.....	1909 1904 1899	11 16 9	424 513 411	..... 2 3	66 83 56	358 428 352	2,692 4,075 2,738	2,248 2,868 1,972	102 126 93	204 236 170	1,104 1,275 773	1,719 1,843 1,330	615 568 557
Fertilizers.....	1909 1904 1899	27 17 27	1,064 604 506	13 8 26	210 106 80	841 490 400	3,059 2,030 2,168	4,950 3,551 1,888	237 136 104	368 235 174	2,535 1,386 1,017	4,435 2,280 1,657	1,900 903 640
Firearms and ammunition.....	1909 1904 1899	5 4 3	910 786 405	..... ..... 2	97 45 32	813 741 371	1,129 1,003 .....	2,225 1,658 670	104 73 405	318 275 111	1,201 1,220 565	2,215 1,020 832	924 700 267
Flags, banners, regalia, society badges and emblems.	1909 1904 1899	13 16 14	1,572 1,343 1,150	4 14 15	306 209 161	1,262 1,120 974	568 421 .....	2,352 1,660 1,027	343 243 132	523 420 235	1,509 1,023 1,012	3,026 2,257 1,700	1,517 1,234 784
Flour-mill and gristmill products.....	1909 1904 1899	673 694 676	4,164 4,141 .....	911 1,003 .....	668 438 339	2,585 2,700 2,334	52,250 53,880 .....	19,963 14,931 10,773	682 422 302	1,415 1,340 1,170	41,353 35,626 29,984	48,093 40,856 35,078	6,740 5,230 5,094
Foundry and machine-shop products...	1909 1904 1899	1,218 1,093 1,007	74,887 59,791 .....	683 755 .....	9,387 6,050 4,362	64,817 52,986 50,109	112,538 78,859 .....	177,745 117,449 80,890	11,908 7,170 4,616	38,015 28,207 24,246	64,560 44,546 39,052	145,837 103,713 88,410	81,277 59,167 49,358
Furniture and refrigerators.....	1909 1904 1899	228 212 165	9,449 9,677 7,577	170 170 183	1,047 835 671	8,232 8,672 6,723	15,951 14,490 .....	16,251 13,281 9,586	1,055 837 577	4,142 3,910 2,622	7,242 5,544 4,042	16,250 13,827 9,515	9,017 8,233 5,473
Gas and electric fixtures and lamps and reflectors.	1909 1904 1899	56 22 24	1,788 801 823	40 19 19	311 120 89	1,437 662 715	2,356 714 .....	2,577 923 748	302 145 68	748 288 241	1,777 484 410	3,563 1,284 1,046	1,786 800 627
Gas, illuminating and heating.....	1909 1904 1899	38 58 73	862 2,666 1,672	2 ..... .....	194 427 283	666 2,239 1,389	2,165 2,052 1,387	11,969 25,081 25,017	181 366 277	431 1,083 602	827 1,347 885	3,080 4,812 3,031	2,253 3,465 3,046
Glass.....	1909 1904 1899	45 37 28	10,630 8,163 4,754	8 10 9	463 309 199	10,159 7,844 4,546	16,193 11,256 3,721	16,201 9,254 5,452	716 444 240	5,977 4,512 2,067	4,688 2,837 1,253	14,358 9,026 4,547	9,670 6,189 3,294

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

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

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).							
STATE—Continued.													
Grindstones.....	1909	9	1,355	3	75	1,277	5,228	\$4,070	\$147	\$597	\$385	\$1,498	\$1,113
	1904	18	638	4	40	594	2,277	1,582	72	222	143	517	374
	1899	20	1,082	4	50	1,028	.....	674	51	356	207	906	609
Hats and caps, other than felt, straw, and wool.....	1909	25	511	38	67	406	83	384	74	174	422	804	382
	1904	21	410	31	30	340	67	207	35	272	370	642	370
	1899	26	734	39	39	656	.....	337	31	224	573	1,004	431
Hosiery and knit goods.....	1909	30	3,412	31	232	3,140	1,613	4,408	301	1,072	3,851	6,433	2,582
	1904	28	2,049	25	134	2,490	1,321	2,330	146	714	2,177	3,967	1,820
	1899	28	1,504	28	56	1,420	.....	1,072	55	356	810	1,585	775
Ice, manufactured.....	1909	67	1,176	43	241	892	19,058	8,381	220	559	564	2,270	1,708
	1904	69	892	31	141	520	11,882	4,495	111	296	292	1,217	925
	1899	42	395	17	79	299	6,150	1,777	53	155	138	583	445
Ink, printing.....	1909	8	277	.....	94	183	1,437	1,550	191	131	809	1,907	1,098
	1904	6	185	.....	50	135	732	1,468	97	99	407	1,319	912
	1899	5	132	.....	30	102	.....	686	65	63	375	707	332
Iron and steel, blast furnaces.....	1909	40	8,278	7	076	7,295	215,730	94,533	1,366	5,090	68,425	83,699	15,274
	1904	33	5,820	.....	305	5,434	167,740	43,196	568	3,471	32,477	40,862	8,385
	1899	43	6,342	17	286	6,039	95,040	22,347	342	3,287	23,543	40,367	16,824
Iron and steel, steel works and rolling mills.....	1909	75	41,612	3	3,323	38,586	515,813	163,384	4,061	28,614	130,243	197,780	58,537
	1904	57	29,500	.....	1,744	27,756	304,162	87,406	1,931	18,658	78,210	111,907	33,787
	1899	64	28,583	.....	945	27,638	211,621	63,181	1,250	16,444	67,786	98,569	30,783
Jewelry.....	1909	35	481	43	82	356	116	1,191	84	252	619	1,255	636
	1904	16	326	21	43	262	94	472	43	162	220	653	424
	1899	21	.....	.....	35	224	.....	647	25	123	515	864	349
Leather goods.....	1909	86	2,309	90	329	1,890	1,390	4,070	302	879	2,859	4,039	2,080
	1904	94	2,785	99	274	2,412	1,813	4,229	203	1,063	2,931	5,444	2,513
	1899	96	.....	.....	269	2,345	.....	2,809	217	871	2,769	4,559	1,700
Leather, tanned, curried, and finished..	1909	36	2,028	24	120	1,884	4,244	13,759	197	1,083	7,720	10,128	2,408
	1904	40	1,738	34	94	1,610	2,770	6,015	142	839	4,462	6,513	2,051
	1899	58	1,534	70	74	1,384	2,322	5,823	81	617	3,774	5,182	1,408
Lime.....	1909	30	1,403	34	96	1,273	3,872	2,635	120	553	598	1,620	1,022
	1904	41	1,012	32	81	890	3,318	1,075	65	381	532	1,334	802
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liquors, distilled.....	1909	17	434	12	48	374	2,422	4,732	88	230	2,514	12,011	9,467
	1904	23	845	21	107	627	3,517	3,851	100	317	3,410	15,977	12,567
	1899	26	428	29	64	335	2,683	3,000	80	179	1,430	12,447	11,008
Liquors, malt.....	1909	105	5,275	35	884	4,356	31,690	57,748	1,083	3,267	6,563	25,332	18,769
	1904	114	4,540	52	717	3,771	25,288	34,970	1,293	2,802	5,956	21,621	15,665
	1899	111	.....	.....	540	3,301	.....	25,305	871	2,243	4,201	18,168	13,907
Liquors, vinous.....	1909	29	254	22	83	149	406	1,980	95	79	718	1,304	586
	1904	47	283	43	70	170	677	2,180	77	88	691	1,335	644
	1899	52	286	49	58	179	459	1,622	49	68	420	802	373
Lumber and timber products.....	1909	1,300	16,445	1,560	1,429	13,456	69,255	28,500	1,467	6,701	10,972	34,597	14,625
	1904	1,312	16,380	1,644	1,106	13,570	68,536	24,631	1,087	6,594	17,733	32,926	15,193
	1899	1,656	.....	.....	864	16,562	.....	19,136	715	6,548	17,116	32,812	15,606
Marble and stone work.....	1909	198	2,520	229	279	2,012	7,070	3,505	206	1,161	1,450	3,847	2,397
	1904	123	3,436	139	292	3,035	9,998	6,725	320	1,626	1,732	4,863	3,131
	1899	184	.....	.....	184	2,097	.....	2,366	148	1,038	1,131	3,058	1,927
Mattresses and spring beds.....	1909	38	1,145	34	150	961	2,069	2,935	183	435	1,682	3,897	1,625
	1904	35	793	42	88	663	1,798	1,682	117	275	1,392	2,290	904
	1899	31	.....	.....	49	441	.....	323	36	156	579	975	396
Millinery and lace goods.....	1909	31	1,605	30	218	1,357	603	1,334	223	478	1,459	2,744	1,285
	1904	17	519	21	42	456	132	236	28	141	288	596	308
	1899	20	441	30	19	392	.....	221	12	96	324	543	224
Models and patterns, not including paper patterns.....	1909	74	504	65	28	441	673	316	27	294	159	670	511
	1904	61	379	77	19	283	631	271	10	174	58	386	328
	1899	65	411	80	11	320	.....	234	10	170	76	407	331
Musical instruments, pianos and organs and materials.....	1909	30	1,987	16	130	1,841	2,254	3,593	172	1,092	1,922	3,626	2,004
	1904	26	2,336	10	116	2,210	2,153	3,357	150	1,205	1,625	3,084	2,059
	1899	18	844	20	53	771	1,008	1,349	61	358	710	1,451	741
Oil, linseed.....	1909	4	258	.....	45	213	1,347	2,552	56	83	3,081	3,027	546
	1904	4	90	2	17	71	950	990	27	56	2,135	2,400	265
	1899	7	172	.....	25	147	.....	1,987	49	76	2,689	3,115	226
Paint and varnish.....	1909	87	2,587	39	1,013	1,535	5,572	11,757	1,377	904	8,570	13,617	5,047
	1904	75	1,635	40	484	1,111	4,275	7,906	600	581	5,855	8,530	2,675
	1899	65	1,419	62	515	842	2,445	5,592	636	414	4,115	6,704	2,589
Paper and wood pulp.....	1909	47	4,072	3	296	4,673	51,402	20,970	596	2,419	10,898	16,905	6,067
	1904	53	4,108	3	222	3,883	36,288	14,433	827	1,683	6,154	10,962	4,808
	1899	51	3,399	19	196	3,184	28,517	7,873	278	1,118	3,769	6,544	2,775

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

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

<sup>3</sup> Not reported separately.

## MANUFACTURES—OHIO.

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.													
<b>STATE—Continued.</b>													
Paper goods, not elsewhere specified.....	1909	28	2,264	19	205	2,040	1,900	\$5,605	\$312	\$882	\$3,434	\$6,307	\$2,873
	1904	23	2,403	10	344	2,049	2,020	4,877	288	653	1,836	3,973	2,137
	1899	14	804	11	40	744	.....	1,066	76	244	1,383	2,691	1,303
Patent medicines and compounds and druggists' preparations.....	1909	261	2,068	236	927	905	1,568	4,072	800	385	1,888	5,850	3,971
	1904	196	1,803	196	561	1,046	1,255	3,832	574	380	2,118	7,371	5,253
	1899	159	1,469	188	412	869	.....	2,078	428	287	1,445	4,842	3,397
Petroleum, refining.....	1909	10	2,039	.....	380	1,650	4,324	11,152	412	1,028	8,145	10,754	2,600
	1904	12	2,116	.....	216	1,930	4,386	10,385	206	1,054	7,032	10,040	3,267
	1899	9	1,227	2	217	1,008	2,401	10,913	234	552	6,177	8,307	2,220
Photo-engraving.....	1909	20	370	12	81	277	215	266	85	242	100	576	467
	1904	11	240	9	51	180	159	137	37	148	35	321	285
	1899	18	250	14	36	200	.....	117	26	97	47	232	185
Pottery, terra-cotta, and fire-clay products.....	1909	186	17,751	69	1,163	16,510	26,778	32,167	1,443	8,628	6,461	21,173	14,713
	1904	205	17,072	106	1,047	15,019	24,754	26,300	1,177	7,677	4,823	18,551	13,728
	1899	243	12,913	225	818	11,870	20,051	15,564	766	5,001	3,229	11,851	8,022
Printing and publishing.....	1909	1,655	22,754	1,480	5,518	15,756	18,417	38,053	5,458	9,355	11,904	41,657	29,753
	1904	1,542	19,288	1,513	3,910	13,859	12,272	26,724	3,585	7,573	8,979	31,327	22,618
	1899	1,340	16,949	1,412	2,329	13,208	.....	20,958	2,105	6,351	6,970	23,833	16,533
Pumps, not including steam pumps.....	1909	20	1,093	28	158	897	1,322	2,273	144	517	1,271	2,747	1,470
	1904	19	444	21	54	369	633	650	55	192	215	672	454
	1899	30	131	35	13	83	.....	116	12	36	90	193	103
Safes and vaults.....	1909	10	2,437	1	422	2,014	3,177	5,075	749	1,321	2,162	5,488	3,329
	1904	11	2,342	1	138	2,153	2,316	4,549	454	1,395	2,047	4,805	2,848
	1899	10	1,453	2	124	1,327	.....	3,561	141	679	1,123	2,408	1,285
Salt.....	1909	8	722	.....	74	648	4,034	1,981	77	361	1,090	1,807	717
	1904	8	592	1	52	539	1,705	1,242	53	236	663	1,108	505
	1899	10	729	3	48	678	1,277	797	42	243	424	818	394
Screws, machine.....	1909	6	363	.....	39	324	915	666	41	204	178	598	430
	1904	4	501	.....	63	438	1,160	1,376	83	226	301	703	492
Sewing machines, cases, and attachments.....	1909	4	4,050	1	218	3,831	2,973	4,973	276	2,105	2,518	5,972	3,454
	1904	13	2,007	.....	101	1,936	1,547	4,052	140	1,057	1,803	3,882	2,679
	1899	15	1,463	.....	157	1,306	.....	3,404	208	740	1,446	2,923	1,477
Shoddy.....	1909	4	469	1	30	438	1,100	1,096	62	200	742	1,257	515
	1904	5	450	3	21	426	1,100	922	37	158	648	1,239	291
	1899	6	509	.....	35	474	1,035	1,368	55	165	1,078	1,479	491
Show cases.....	1909	14	402	6	47	349	569	535	52	173	307	608	361
	1904	14	518	7	73	438	742	380	71	228	314	749	435
	1899	9	125	13	12	100	.....	80	9	51	81	189	108
Slaughtering and meat packing.....	1909	158	3,864	154	624	3,086	9,873	12,309	687	1,857	44,347	50,804	6,457
	1904	105	2,190	119	316	2,315	4,434	6,465	294	1,355	25,311	29,155	3,844
	1899	77	1,753	96	313	1,784	.....	5,306	266	823	18,007	29,708	2,761
Soap.....	1909	44	2,280	25	481	1,774	3,579	12,732	573	827	11,661	17,077	5,416
	1904	43	2,323	21	528	1,774	3,166	17,085	743	681	8,395	11,791	3,396
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stoves and furnaces, including gas and oil stoves.....	1909	102	8,352	38	1,040	7,274	9,478	15,625	1,201	4,217	6,300	15,358	9,058
	1904	102	7,144	70	565	6,509	6,859	11,251	651	3,634	4,065	10,191	6,184
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tin plate and terneplate.....	1909	4	742	.....	66	676	1,849	1,063	76	449	7,155	7,889	734
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	12	736	1	38	697	580	1,153	33	395	5,012	6,023	1,011
Tobacco manufactures.....	1909	1,146	14,681	1,269	781	12,631	1,401	11,070	980	4,505	12,075	28,907	16,832
	1904	1,329	13,280	1,483	622	11,175	1,011	15,647	533	3,912	7,500	20,489	12,983
	1899	1,148	11,958	1,291	534	10,133	1,127	6,661	606	3,406	5,035	16,993	11,358
Umbrellas and canes.....	1909	15	371	15	69	287	82	505	69	105	607	1,065	398
	1904	12	369	9	80	280	111	502	76	88	488	833	345
	1899	14	.....	.....	40	288	.....	296	32	88	296	499	209
Wall plaster.....	1909	23	340	10	71	259	1,823	679	76	166	434	935	561
	1904	27	548	10	72	466	1,730	1,124	62	225	382	1,037	653
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Woolen, worsted, and felt goods, and wool hats.....	1909	20	2,711	23	122	2,566	6,504	7,159	207	925	4,616	7,690	3,074
	1904	27	1,880	38	75	1,773	3,178	3,585	92	563	2,137	3,587	1,459
	1899	38	.....	.....	84	1,234	.....	2,710	95	334	1,081	2,826	1,145
All other industries.....	1909	1,586	62,913	1,350	8,401	53,162	119,187	150,018	9,194	27,364	103,264	185,872	82,668
	1904	1,333	45,919	1,218	4,690	40,011	75,058	93,881	5,053	18,444	61,156	105,787	44,631
	1899	1,528	.....	.....	3,502	34,189	.....	66,609	3,541	14,168	48,000	85,884	37,824

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

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

<sup>3</sup> Figures can not be shown without disclosing individual operations.

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.													
<b>AKRON—All industries.....</b>	1909	248	19,023	159	3,033	15,831	36,263	\$58,216	\$3,004	\$8,936	\$43,071	\$73,158	\$30,087
	1904	186	10,706	128	952	9,628		28,638	1,115	4,893	20,410	33,559	13,149
	1899	178			1,063	8,259		23,725	692	3,615	12,720	22,016	9,296
Artificial stone.....	1909	10	51	16	5	30	16	31	3	15	15	41	26
	1904	3	31	7	2	22		17	2	11	8	36	28
	1899												
Bread and other bakery products.....	1909	25	145	23	32	90	105	161	23	58	255	417	162
	1904	12	42	12		30		33		18	47	70	29
	1899	10	61	18	9	34		27	4	10	52	95	43
Brick and tile.....	1909	3	96	3	8	85	345	116	7	43	40	141	101
	1904	4	73	3	7	63		142	4	32	35	100	65
	1899	3	82	6	4	72		85	3	20	18	76	58
Carriages and wagons and materials.....	1909	7	137	8	14	115	357	442	15	68	78	230	158
	1904	10	182	12	11	159		407	15	88	142	293	151
	1899	7			17	156		205	17	73	91	223	132
Foundry and machine-shop products.....	1909	26	1,061	12	80	969	2,015	3,008	106	650	1,062	2,248	1,186
	1904	20	900	14	54	832		2,024	62	488	1,360	2,368	1,008
	1899	19	1,391	13	207	1,171		3,540	155	600	746	2,095	1,349
Liquors, malt.....	1909	3	110		20	81	1,522	914	86	57	170	645	475
	1904	3	77		14	63		404	28	46	113	405	292
	1899												
Lumber and timber products.....	1909	10	378	8	51	310	980	663	57	191	437	702	355
	1904	8	192	9	24	159		417	22	99	396	602	296
	1899	6	130	10	11	109		210	11	53	82	193	111
Patent medicines and compounds and druggists' preparations.....	1909	8	18	9	3	6		19	2	2	9	29	20
	1904	6	10	7		3		16		2	5	28	23
	1899	6	13	5	3	6		48	3	1	13	36	23
Pottery, terra-cotta, and fire-clay products.....	1909	15	1,162	5	70	1,087	2,567	1,089	87	557	403	1,350	947
	1904	18	1,377	5	73	1,299		2,520	85	644	406	1,718	1,312
	1899	18	953	8	45	900		1,455	42	412	215	867	652
Printing and publishing.....	1909	27	900	16	240	734	934	3,587	167	452	597	2,353	1,750
	1904	20	1,052	12	70	970		2,480	120	523	655	2,835	2,180
	1899	18	1,108	11	148	949		2,412	143	406	562	2,049	1,487
Stoves and furnaces, including gas and oil stoves.....	1909	5	390		62	334	610	804	77	228	245	754	509
	1904	3	332	2	28	302		473	34	199	165	468	303
	1899												
Tobacco manufactures.....	1909	7	17	7		10		5		4	6	18	12
	1904	10	20	11		15		7		6	6	22	16
	1899	7	16	7		9		5		4	9	22	13
All other industries.....	1909	100	14,462	52	2,430	11,071	26,813	46,477	2,374	6,611	30,754	64,134	24,380
	1904	70	6,412	34	660	5,709		18,699	743	2,737	17,072	24,608	7,536
	1899	75			649	4,854		15,738	614	1,952	10,932	16,366	5,428
<b>CANTON—All industries.....</b>	1909	204	11,313	129	1,220	9,964	27,016	\$25,342	\$1,347	\$5,719	\$14,644	\$28,583	\$13,939
	1904	158	6,666	131	597	5,938		12,850	636	2,964	4,564	10,591	5,897
	1899	164			504	5,149		9,656	497	2,345	4,349	9,575	5,226
Agricultural implements.....	1909	5	351		68	283	442	1,047	99	127	401	819	418
	1904	5	593	1	67	525		2,421	76	239	533	1,154	621
	1899	6	689	1	102	586		2,474	100	268	539	1,185	646
Brass and bronze products.....	1909	5	35	7	6	22	38	47	2	16	27	55	28
	1904	3	8	5	1	2		13	( <sup>e</sup> )	1	4	15	11
Bread and other bakery products.....	1909	19	97	23	15	59	38	90	12	34	147	253	100
	1904	7	54	12		42		40		21	49	90	41
	1899	11	63	15	1	47		35	1	21	59	120	61
Confectionery.....	1909	7	44	7	7	30	18	50	2	10	42	69	27
	1904	3	20	3		17		11		5	11	19	8
	1899												
Cutlery and tools, not elsewhere specified.....	1909	5	170		41	138	230	308	40	74	93	258	165
	1904	3	156	3	33	120		165	17	56	90	207	117
	1899	3				61		42		25	15	67	52
Foundry and machine-shop products.....	1909	32	2,044	13	283	1,748	3,400	4,578	353	1,005	2,267	4,891	2,624
	1904	25	1,400	10	159	1,225		2,691	199	620	1,298	2,704	1,406
	1899	24			105	877		1,343	87	394	655	1,519	864
Furniture and refrigerators.....	1909	5	208	2	27	179	354	530	32	90	83	296	213
	1904	5	224	1	20	203		386	21	111	105	340	235
	1899	5	204	1	27	236		382	34	111	87	352	265
Leather goods.....	1909	3	305	2	36	267	131	468	34	116	339	549	210
	1904	3	69	3	10	56		89	11	27	54	117	63
	1899	3			12	201		161	11	59	212	322	110

<sup>1</sup> 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.  
<sup>2</sup> Not reported separately.  
<sup>3</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.  
<sup>4</sup> Figures can not be shown without disclosing individual operations.  
<sup>5</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>6</sup> Less than \$500.

MANUFACTURES—OHIO.

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.	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.													
<b>CANTON—Continued.</b>													
Lumber and timber products.....	1909	3	52	1	5	46	180	\$107	\$0	\$20	\$95	\$135	\$40
	1904	10	95	11	4	80	.....	127	3	44	100	202	102
	1899	3	.....	.....	2	36	.....	97	1	15	51	83	32
Printing and publishing.....	1909	17	219	17	41	101	185	326	37	88	78	293	215
	1904	13	160	13	10	131	.....	184	20	74	52	218	160
	1899	11	123	8	12	103	.....	116	12	46	38	144	106
Tobacco manufactures.....	1909	10	93	23	.....	70	.....	33	.....	27	42	106	64
	1904	16	85	17	1	67	.....	21	1	33	22	79	57
	1899	15	61	15	3	43	.....	13	1	14	16	54	38
All other industries.....	1909	84	7,086	34	691	6,961	21,991	17,758	724	4,094	11,030	20,859	9,829
	1904	65	3,802	46	286	3,470	.....	6,702	288	1,733	2,276	5,446	3,170
	1899	83	.....	.....	240	2,969	.....	4,392	250	1,392	2,677	5,729	3,052
<b>CINCINNATI—All industries ..</b>													
	1899	2,184	72,488	2,015	10,281	60,192	88,597	\$150,254	\$12,759	\$31,101	\$101,932	\$194,516	\$92,584
	1904	2,171	68,954	2,180	8,190	58,584	.....	130,272	9,077	27,390	83,258	166,059	82,801
	1899	2,454	.....	.....	6,164	54,942	.....	103,464	6,437	23,104	71,391	141,078	70,287
Bags, paper.....	1909	5	358	.....	59	290	320	673	72	120	730	1,088	353
	1904	5	291	3	51	197	.....	358	47	68	401	581	180
	1899	7	105	4	35	126	.....	180	26	38	324	403	130
Blacking and cleansing and polishing preparations.....	1909	14	92	21	33	38	34	90	24	14	112	255	143
	1904	8	34	10	7	17	.....	32	6	5	35	77	42
	1899	4	20	2	5	13	.....	20	12	3	19	56	37
Boots and shoes, including cut stock and findings.....	1909	32	8,702	21	692	7,989	4,631	7,656	1,016	3,518	8,584	14,900	6,415
	1904	35	7,178	32	502	6,644	.....	4,661	535	2,563	6,294	11,152	4,858
	1899	46	.....	.....	385	6,747	.....	3,671	489	2,132	5,180	8,620	3,446
Boxes, cigar.....	1909	8	248	10	16	222	406	213	17	82	177	347	170
	1904	6	210	8	13	189	.....	193	11	57	238	371	133
	1899	8	264	11	13	240	.....	188	9	70	216	354	138
Boxes, fancy and paper.....	1909	15	738	9	60	669	218	442	70	185	292	679	387
	1904	14	692	14	39	639	.....	374	35	153	234	509	275
	1899	12	581	14	24	543	.....	202	32	134	153	420	273
Brass and bronze products.....	1909	14	635	12	60	563	424	1,304	80	329	385	996	611
	1904	17	668	25	56	587	.....	1,038	60	300	465	1,108	643
	1899	14	593	20	27	516	.....	468	23	206	312	680	368
Bread and other bakery products.....	1909	187	1,768	186	242	1,340	909	2,653	237	723	3,034	5,163	2,669
	1904	199	1,628	198	116	1,314	.....	2,012	88	502	2,311	3,892	1,581
	1899	258	1,548	275	172	1,101	.....	1,505	113	461	1,671	3,048	1,377
Brick and tile.....	1909	7	114	7	8	99	280	100	7	41	13	94	81
	1904	11	95	14	1	80	.....	94	1	38	13	80	67
	1899	12	73	19	.....	54	.....	26	.....	31	12	66	54
Canning and preserving.....	1909	9	315	5	93	217	420	646	105	77	483	825	342
	1904	7	495	5	73	417	.....	456	87	129	765	1,262	497
	1899	8	305	8	33	264	.....	348	53	107	600	1,077	477
Carriages and wagons and materials.....	1909	74	2,677	64	363	2,250	2,523	4,477	381	1,295	3,702	6,825	3,123
	1904	78	3,146	72	369	2,705	.....	4,026	328	1,380	4,676	7,670	3,604
	1899	73	.....	.....	313	2,771	.....	4,278	293	1,419	4,264	7,220	2,650
Cars and general shop construction and repairs by steam-railroad companies.....	1909	3	327	.....	13	314	590	398	14	203	111	328	217
	1904	3	474	.....	25	449	.....	211	22	282	199	510	311
	1899	4	478	.....	18	460	.....	156	16	263	148	454	306
Chemicals.....	1909	11	162	4	36	122	508	713	63	76	474	890	425
	1904	9	140	4	37	99	.....	774	51	59	651	958	367
	1899	8	118	4	20	94	.....	534	32	52	602	957	265
Clothing, men's, including shirts.....	1909	183	6,956	237	1,001	5,718	559	10,212	1,212	2,512	8,680	16,975	8,205
	1904	217	5,380	286	774	4,320	.....	9,903	839	1,702	7,750	14,761	7,085
	1899	361	.....	.....	635	4,168	.....	8,462	641	1,419	6,886	12,452	5,566
Clothing, women's.....	1909	26	1,541	41	175	1,325	176	1,280	217	619	1,514	2,913	1,399
	1904	29	1,366	40	155	1,171	.....	1,269	153	457	1,497	2,712	1,215
	1899	38	1,522	53	106	1,363	.....	850	108	399	1,173	2,075	902
Coffee and spice, roasting and grinding..	1909	8	356	7	128	221	691	1,083	131	91	1,595	2,110	515
	1904	10	281	9	102	170	.....	624	96	62	1,432	1,835	403
	1899	10	187	10	68	109	.....	474	71	42	1,160	1,416	256
Confectionery.....	1909	22	922	21	130	771	573	970	139	279	1,222	2,029	807
	1904	15	739	17	69	653	.....	725	65	225	977	1,568	691
	1899	14	.....	.....	83	437	.....	691	73	148	894	1,310	416
Cooperage and wooden goods, not elsewhere specified.	1909	20	697	17	48	632	1,269	1,446	75	292	766	1,232	466
	1904	23	718	25	52	641	.....	1,084	71	318	727	1,350	623
	1899	18	.....	.....	23	662	.....	786	42	258	579	1,021	442
Copper, tin, and sheet-iron products....	1909	37	1,019	30	156	833	1,154	2,019	147	413	1,633	2,775	1,142
	1904	35	1,083	34	131	918	.....	1,516	141	432	1,199	2,348	1,149
	1899	36	.....	.....	70	680	.....	789	59	285	883	1,483	650

<sup>1</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.  
<sup>2</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.

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.	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.													
<b>CINCINNATI—Continued.</b>													
Cutlery and tools, not elsewhere specified.	1909	9	80	14	11	55	166	\$101	\$13	\$35	\$51	\$136	\$85
	1904	11	116	10	21	85	.....	135	21	45	48	175	127
	1899	10	79	11	11	57	.....	67	11	31	55	135	80
Electrical machinery, apparatus, and supplies.	1909	13	303	9	71	313	397	529	95	209	333	830	593
	1904	13	310	13	54	243	.....	347	60	136	283	621	338
	1899	9	292	8	51	233	.....	321	48	99	530	813	283
Flags, banners, regalia, society badges and emblems.	1909	8	408	3	92	403	317	608	88	162	503	888	385
	1904	9	399	8	64	327	.....	344	77	114	331	609	308
	1899	7	414	8	64	342	.....	259	46	88	284	620	336
Flour-mill and gristmill products.....	1909	6	84	3	29	52	685	400	33	38	957	1,083	126
	1904	7	122	6	23	93	.....	377	29	40	810	973	163
	1899	6	.....	.....	16	61	.....	272	21	30	671	781	110
Foundry and machine-shop products...	1909	200	10,110	120	1,459	8,534	12,590	21,400	1,876	4,985	7,044	18,380	11,336
	1904	186	9,437	126	1,131	8,180	.....	17,240	1,208	4,254	6,309	15,958	9,649
	1899	194	.....	.....	864	8,106	.....	12,430	840	3,895	6,431	14,557	8,126
Furniture and refrigerators.....	1909	60	2,306	67	213	2,020	3,499	3,024	263	1,071	1,727	4,092	2,355
	1904	62	3,068	70	202	2,700	.....	4,312	283	1,327	1,962	4,821	2,859
	1899	54	2,667	72	240	2,355	.....	3,817	216	969	1,564	3,594	2,030
Hats and caps, other than felt, straw, and wool.	1909	12	323	20	43	260	33	264	45	112	284	532	248
	1904	11	288	17	20	251	.....	125	28	87	181	424	243
	1899	12	326	20	21	285	.....	130	17	86	241	447	206
Hosiery and knit goods.....	1909	6	231	5	6	220	192	420	16	84	257	442	185
	1904	5	290	8	11	271	.....	372	18	77	233	471	238
	1899	9	248	10	1	247	.....	413	4	69	127	275	148
Ice, manufactured.....	1909	8	168	1	38	120	3,229	1,861	51	81	124	385	261
	1904	10	133	1	23	109	.....	1,140	27	68	100	332	232
	1899	5	46	1	8	37	.....	148	8	19	20	81	55
Jewelry.....	1909	15	284	25	49	210	88	1,002	52	156	518	936	418
	1904	11	271	17	39	215	.....	452	40	132	180	548	359
	1899	13	.....	34	177	.....	.....	616	25	99	480	790	304
Leather goods.....	1909	16	659	20	106	533	230	1,475	101	277	790	1,499	709
	1904	16	625	24	87	514	.....	874	85	271	725	1,407	682
	1899	19	.....	113	622	.....	.....	999	99	270	844	1,435	591
Leather, tanned, curried, and finished..	1909	13	1,043	10	36	907	2,269	6,593	71	570	3,677	5,959	1,382
	1904	10	1,021	11	34	976	.....	4,640	63	610	2,285	3,405	1,120
	1899	15	980	18	25	943	.....	4,865	37	412	2,490	3,447	957
Liquors, distilled.....	1909	4	400	.....	29	271	1,750	2,834	63	178	1,824	8,745	6,921
	1904	4	399	2	46	411	.....	1,658	68	206	2,266	9,010	7,344
	1899	3	199	2	34	103	.....	1,523	55	98	1,034	9,420	8,386
Liquors, malt.....	1909	22	1,858	.....	280	1,578	11,410	15,464	614	1,168	2,173	8,874	6,701
	1904	21	1,520	1	232	1,287	.....	14,357	462	938	1,884	7,708	5,819
	1899	21	1,481	6	163	1,282	.....	11,371	351	911	1,403	6,387	4,984
Liquors, vinous.....	1909	5	10	7	1	8	0	57	1	5	19	40	21
	1904	5	15	7	.....	8	.....	63	.....	4	19	41	22
	1899	5	17	6	3	8	.....	26	3	4	15	34	19
Lumber and timber products.....	1909	45	1,866	30	215	1,621	6,808	6,560	291	863	2,887	5,021	2,134
	1904	43	1,736	48	185	1,563	.....	5,562	210	792	2,027	5,043	2,416
	1899	31	1,430	41	80	1,303	.....	2,393	94	682	1,575	3,408	1,833
Marble and stone work.....	1909	25	340	30	41	269	854	582	50	181	252	632	380
	1904	21	487	30	40	417	.....	517	42	207	373	1,001	628
	1899	22	.....	20	326	.....	.....	416	18	163	236	524	288
Mattresses and spring beds.....	1909	9	203	10	28	165	227	311	22	74	223	394	171
	1904	8	85	8	5	72	.....	89	4	31	138	212	74
	1899	7	.....	12	110	.....	.....	103	0	38	139	230	97
Millinery and lace goods.....	1909	11	494	16	56	428	59	136	49	120	294	547	253
	1904	9	293	10	19	264	.....	134	11	85	158	324	166
	1899	11	263	12	8	243	.....	121	4	66	111	229	118
Models and patterns, not including paper patterns.	1904	9	104	11	4	89	65	70	6	63	54	151	97
	1904	15	96	22	3	71	.....	29	2	43	13	88	76
	1899	20	136	25	3	108	.....	71	3	65	27	140	122
Musical instruments, pianos and organs and materials.	1909	7	760	5	43	712	835	1,185	62	371	1,080	1,753	673
	1904	4	711	.....	32	679	.....	861	51	342	882	1,488	606
	1899	4	538	2	23	513	.....	791	31	226	489	931	442
Paint and varnish.....	1909	24	636	19	209	498	1,356	4,026	282	215	2,486	3,880	1,394
	1904	23	393	18	108	270	.....	3,108	149	148	2,000	2,628	928
	1899	21	400	24	109	267	.....	2,325	130	144	1,522	2,255	733
Paper goods, not elsewhere specified....	1909	6	144	7	24	113	252	319	29	42	205	346	141
	1904	4	49	4	6	39	.....	57	6	12	56	106	50
	1899	4	59	4	9	46	.....	83	6	10	102	176	74
Patent medicines and compounds and druggists' preparations.	1909	50	448	40	209	292	404	953	108	90	497	1,230	733
	1904	37	579	37	168	305	.....	1,207	255	122	439	1,412	973
	1899	50	565	52	160	353	.....	939	186	99	433	1,467	1,034

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

MANUFACTURES—OHIO.

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.	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.													
<b>CINCINNATI—Continued.</b>													
Pottery, terra-cotta, and fire-clay products.	1900	7	276	3	36	237	370	\$727	\$44	\$118	\$52	\$370	\$318
	1904	8	212	8	35	169		360	33	81	41	278	231
	1899	7	321	7	27	287		413	23	124	62	291	229
Printing and publishing.....	1909	280	5,391	246	1,279	3,866	4,671	8,451	1,379	2,480	3,349	11,519	8,170
	1904	264	5,394	228	1,169	3,977		8,430	1,170	2,317	3,218	10,321	7,163
	1899	233	4,828	237	728	3,863		7,212	728	2,125	2,388	8,193	5,805
Safes and vaults.....	1909	5	703	1	123	579	970	1,156	257	359	630	1,401	771
	1904	4	626	1	68	557		532	110	313	490	1,151	661
	1899	5	490	2	60	428		615	61	206	340	773	433
Show cases.....	1909	3	74		11	63	118	58	12	43	50	116	66
	1904	3	94	1	12	81		78	10	47	74	164	90
	1899												
Slaughtering and meat packing.....	1909	55	1,368	69	183	1,116	3,710	4,654	205	669	16,974	19,320	2,346
	1904	48	1,044	63	103	878		2,857	113	522	11,762	13,510	1,748
	1899	227	990	36	98	850		2,893	104	415	8,807	10,370	1,563
Soap.....	1909	16	603	8	164	491	699	1,621	205	193	1,359	2,352	993
	1904	14	805	8	132	645		2,192	238	223	1,519	2,690	1,171
	1899												
Stoves and furnaces, including gas and oil stoves.	1909	15	1,092	3	217	872	1,086	2,150	269	485	1,013	2,325	1,312
	1904	11	698	6	78	614		873	76	329	365	1,003	638
	1899												
Tobacco manufactures.....	1909	208	2,920	228	175	2,526	247	2,364	189	988	1,640	4,153	2,513
	1904	253	3,017	281	202	3,434		3,188	182	1,267	2,245	5,748	3,563
	1899	306	4,247	147	205	3,895		2,067	213	1,380	2,265	6,768	4,603
All other industries.....	1909	337	9,017	299	1,494	7,224	13,315	19,608	1,881	3,747	15,099	26,637	11,538
	1904	300	9,049	230	1,116	7,643		24,406	1,220	3,376	9,461	18,900	9,499
	1899	393			908	7,088		21,613	972	2,918	11,578	10,938	8,430
<b>CLEVELAND—All industries.</b>													
	1909	2,148	98,686	1,718	12,240	84,728	199,898	\$227,397	\$15,506	\$48,053	\$154,015	\$271,961	\$118,160
	1904	1,615	72,362	1,445	6,876	64,041		156,321	8,299	33,460	97,578	171,924	74,346
	1899	1,350			5,064	55,341		101,243	5,453	26,518	76,466	139,356	62,891
Artificial stone.....	1909	18	158	10	18	121	158	165	16	76	92	233	141
	1904	5	52	7	7	38		84	6	22	22	60	38
Automobiles, including bodies and parts	1909	32	7,115	20	687	6,408	9,135	16,600	875	4,023	10,417	21,404	10,987
	1904	10	1,949	3	146	1,800		3,055	304	1,027	2,030	4,621	2,594
	1899												
Blackening and cleansing and polishing preparations.	1909	19	100	16	33	51	55	231	36	20	159	355	196
	1904	7	29	8	9	12		26	7	6	17	44	27
	1899	3	8	4	1	3		2	( <sup>1</sup> )	2	4	13	9
Boots and shoes, including cut stock and findings.	1909	6	631	8	66	557	304	467	84	225	510	951	441
	1904	4	578	10	27	541		327	23	195	398	780	388
	1899	8			28	472		319	23	126	402	705	273
Boxes, cigar.....	1909	5	78	5	4	69	27	57	6	19	43	97	54
	1904	4	63	6	3	54		55	2	16	33	66	33
	1899	4	52	6	4	42		30	2	11	25	48	24
Boxes, fancy and paper.....	1909	6	790		51	739	947	824	68	266	627	1,141	514
	1904	6	359	4	34	321		404	27	112	199	421	222
	1899	5	329	4	11	314		128	12	88	90	270	171
Brass and bronze products.....	1909	28	931	23	107	801	872	2,737	121	518	1,362	2,568	1,206
	1904	19	636	21	54	561		1,576	70	310	745	1,480	735
	1899	12	453	16	38	429		596	47	235	362	931	569
Bread and other bakery products.....	1909	198	1,696	201	296	1,229	14	2,601	312	804	2,722	4,731	2,009
	1904	138	1,451	130	91	1,230		1,881	81	611	1,719	2,982	1,263
	1899	104	773	103	118	552		724	85	285	892	1,525	633
Brick and tile.....	1909	13	563	9	28	546	1,965	961	43	286	213	769	556
	1904	8	268	11	5	252		303	9	141	84	346	262
	1899	9			3	196		276	2	112	59	263	204
Carrriages and wagons and materials.....	1909	33	330	38	25	267	175	429	25	182	142	402	320
	1904	23	409	41	25	343		374	28	203	180	549	360
	1899	36			25	375		410	18	200	215	574	359
Cars and general shop construction and repairs by steam-railroad companies.	1909	6	1,473		101	1,372	1,640	1,075	99	843	1,077	2,056	970
	1904	6	1,498		95	1,313		490	76	757	823	1,681	858
	1899	7	1,229		74	1,155		564	55	609	514	1,210	696
Chemicals.....	1909	5	557		88	469	1,840	1,572	141	307	978	1,566	888
	1904	5	708	3	199	506		809	301	308	671	1,373	792
	1899	6	471	1	114	356		2,156	139	204	910	1,723	810
Clothing, men's, including shirts.....	1909	93	3,166	110	311	2,745	346	3,319	374	1,096	3,293	5,053	2,750
	1904	70	1,659	93	84	1,482		1,595	122	642	1,396	2,979	1,613
	1899	118	1,734	166	111	1,467		1,815	110	481	1,871	3,410	1,539

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

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

<sup>3</sup> Not reported separately.

<sup>4</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.

<sup>5</sup> 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.

<sup>6</sup> Less than \$500.

MANUFACTURES—OHIO.

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.	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.													
<b>CLEVELAND—Continued.</b>													
Clothing, women's.....	1909	96	6,226	100	708	5,418	771	\$4,041	\$1,126	\$2,003	\$6,496	\$12,780	\$6,293
	1904	78	3,864	102	368	3,394	.....	2,583	390	1,682	3,796	7,428	3,632
	1899	77	2,671	91	218	2,362	.....	1,598	221	842	2,445	4,213	1,768
Confectionery.....	1909	16	908	10	95	803	679	1,294	150	253	1,553	2,852	1,200
	1904	8	499	11	26	412	.....	511	44	106	558	1,715	1,157
	1899	10	.....	36	437	.....	.....	349	33	108	550	1,490	949
Cooperage and wooden goods, not elsewhere specified.	1909	10	289	9	19	261	533	500	36	136	471	708	237
	1904	9	187	10	10	167	.....	209	23	80	234	392	158
	1899	5	.....	8	178	.....	.....	249	17	73	102	224	122
Copper, tin, and sheet-iron products....	1909	37	1,531	32	135	1,304	1,231	4,782	153	640	1,028	2,066	1,338
	1904	19	477	19	53	405	.....	699	62	213	293	724	431
	1899	17	.....	27	503	.....	.....	660	29	214	344	705	361
Cutlery and tools, not elsewhere specified.	1909	15	1,603	11	207	1,444	3,216	4,097	228	750	665	2,395	1,730
	1904	18	871	7	57	807	.....	1,887	81	359	452	1,224	772
	1899	18	634	7	59	598	.....	984	50	200	265	890	625
Electrical machinery, apparatus, and supplies.	1909	40	1,800	20	301	1,578	1,080	3,368	346	700	1,780	4,036	2,256
	1904	30	1,463	18	210	1,235	.....	1,863	218	548	1,060	2,653	1,554
	1899	25	.....	151	1,467	.....	.....	2,220	144	602	1,278	2,552	1,274
Foundry and machine-shop products...	1909	231	20,348	121	2,312	17,015	24,204	41,610	3,134	10,485	15,324	37,443	22,110
	1904	164	14,464	98	1,348	13,018	.....	26,163	1,803	7,101	10,017	24,033	14,016
	1899	150	11,939	121	864	10,954	.....	13,657	906	5,516	7,847	18,424	10,577
Furniture and refrigerators.....	1909	25	557	19	71	467	578	660	73	288	401	1,069	578
	1904	26	614	18	53	543	.....	606	64	345	340	901	615
	1899	18	499	20	59	420	.....	960	64	213	511	1,030	510
Gas and electric fixtures and lamps and reflectors.	1909	17	409	16	67	326	199	313	96	103	220	654	425
	1904	17	346	6	51	289	.....	391	66	112	192	560	377
	1899	15	242	3	37	202	.....	162	28	70	101	252	151
Hats and caps, other than felt, straw, and wool.	1909	9	132	15	20	97	11	100	26	43	102	199	97
	1904	5	77	9	9	59	.....	71	7	34	56	151	95
	1899	8	352	13	12	327	.....	186	9	123	299	500	201
Hosiery and knit goods.....	1909	13	1,305	12	119	1,234	407	1,804	185	485	1,813	2,057	1,144
	1904	10	1,074	9	40	1,025	.....	925	49	348	1,061	1,957	896
	1899	5	556	7	7	541	.....	239	11	131	387	748	361
Ice, manufactured.....	1909	5	131	1	19	111	3,206	2,149	25	85	103	368	265
	1904	4	52	1	8	43	.....	667	10	33	45	195	150
	1899	4	39	1	12	26	.....	194	11	19	31	95	64
Iron and steel, steel works and rolling mills.	1909	14	8,278	2	738	7,538	10,575	25,087	849	5,150	28,039	38,493	10,424
	1904	9	9,110	.....	533	8,577	.....	23,921	574	4,956	22,772	32,279	9,597
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jewelry.....	1909	15	124	12	10	102	34	115	12	66	62	208	146
	1904	5	55	4	4	47	.....	20	3	30	40	105	65
	1899	5	.....	.....	31	.....	.....	21	.....	15	13	42	29
Leather goods.....	1909	14	153	10	18	125	84	154	17	68	133	271	138
	1904	12	142	7	16	120	.....	98	12	60	89	230	141
	1899	20	.....	15	100	.....	.....	161	10	68	110	242	132
Leather, tanned, curried, and finished.	1909	4	124	1	15	108	422	386	18	69	468	636	168
	1904	4	104	2	12	90	.....	315	13	50	209	302	93
	1899	3	59	5	10	44	.....	171	9	18	165	151	46
Liquors, distilled.....	1909	4	6	5	1	1	14	4	.....	( <sup>1</sup> )	6	14	8
	1904	4	7	4	.....	3	.....	17	.....	.....	3	13	10
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liquors, malt.....	1909	11	904	5	155	744	3,305	9,888	358	504	1,484	5,124	3,640
	1904	9	718	5	112	601	.....	5,049	217	503	1,108	3,986	2,878
	1899	10	582	10	95	477	.....	3,788	174	382	840	4,034	3,194
Liquors, vinous.....	1909	4	54	3	23	28	23	194	18	17	136	206	70
	1904	3	9	2	1	6	.....	87	1	4	14	31	17
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lumber and timber products.....	1909	51	1,310	22	150	1,147	5,203	2,380	172	699	2,732	4,021	1,289
	1904	37	1,216	30	102	1,084	.....	1,877	129	622	2,516	3,820	1,304
	1899	35	1,169	34	82	1,053	.....	1,258	85	466	1,083	2,055	972
Marble and stone work.....	1909	18	367	10	33	315	789	409	34	192	197	468	271
	1904	7	199	8	13	178	.....	296	17	116	106	297	191
	1899	10	.....	12	210	.....	.....	231	14	145	146	375	229
Mattresses and spring beds.....	1909	6	173	4	19	150	178	209	18	71	208	305	157
	1904	3	127	.....	15	112	.....	95	10	47	140	239	90
	1899	4	156	2	17	137	.....	71	15	55	165	286	121
Millinery and lace goods.....	1909	6	536	4	60	472	143	459	83	190	726	1,206	480
	1904	5	83	6	8	69	.....	75	10	20	58	117	59
	1899	8	174	16	11	147	.....	88	8	30	209	299	99

<sup>1</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>2</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.  
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MANUFACTURES—OHIO.

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.	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.													
<b>CLEVELAND—Continued.</b>													
Models and patterns, not including paper patterns.	1909 1904 1899	21 15 13	229 124 135	23 18 14	16 5 4	190 101 117	213	\$95 87 75	\$18 10 6	\$123 70 55	\$51 20 22	\$251 143 123	\$200 123 101
Musical instruments, pianos and organs and materials.	1909 1904 1899	3 3 3	52 81	..... .....	10 9	42 72	75	120 118	13 12	32 44	20 39	93 134	64 95
Paint and varnish	1909 1904 1899	24 20 16	1,258 797 691	5 7 12	493 215 288	760 575 391	2,024	5,393 3,161 1,805	704 245 304	468 304 182	3,880 2,025 1,737	6,138 3,700 2,902	2,249 1,075 1,165
Patent medicines and compounds and druggists' preparations.	1909 1904 1899	50 30 10	322 149 70	56 31 8	141 66 20	125 52 42	66	420 274 147	124 66 31	62 21 10	316 132 84	1,010 426 214	694 294 130
Photo-engraving	1909 1904 1899	3 4 3	84 87 45	1 2 2	25 19 8	58 66 35	23	48 48 16	29 14 6	50 53 17	36 10 5	144 125 44	108 115 30
Printing and publishing	1909 1904 1899	245 184 127	4,671 3,291 2,530	171 164 119	1,306 836 450	3,104 2,291 1,067	3,328	6,944 3,947 3,227	1,505 884 473	2,009 1,400 1,120	2,780 1,086 1,325	9,635 6,146 4,340	6,855 4,454 3,024
Slaughtering and meat packing	1909 1904 1899	35 19 10	1,336 1,128 757	28 15 7	232 135 173	1,076 978 577	2,570	3,555 2,276 1,827	200 121 136	509 566 235	15,390 0,338 6,759	17,192 10,616 7,514	1,793 1,278 755
Soap	1909 1904 1899	6 6 6	57 75	2 1	14 25	41 49	143	108 111	16 21	26 26	148 108	214 205	66 97
Stoves and furnaces, including gas and oil stoves.	1909 1904 1899	20 17	2,097 1,077	7 11	247 139	1,843 1,527	1,899	4,093 3,900	281 160	1,155 857	2,286 1,535	4,977 3,005	2,691 1,470
Tobacco manufactures	1909 1904 1899	254 257 117	2,234 1,732 1,124	277 270 130	91 73 51	1,806 1,389 943	29	926 1,116 455	135 69 53	734 581 348	1,047 646 410	2,769 1,916 1,201	1,722 1,270 851
Umbrellas and canes	1909 1904 1899	5 4	68 70	5 5	24 20	69 54	12	114 103	27 17	25 16	143 136	253 240	110 113
Wall plaster	1909 1904 1899	3 3 3	64 49	..... .....	8 4	50 45	270	112 115	12 6	32 25	123 66	205 145	82 70
All other industries	1909 1904 1899	356 277 320	21,081 17,816	241 208	2,464 1,593 1,802	18,376 16,105 25,664	63,443	69,483 60,930 50,166	2,995 1,910 1,972	9,918 7,719 12,890	42,277 27,737 43,858	67,070 44,308 73,595	25,913 16,571 29,737
<b>COLUMBUS—All Industries</b>													
Artificial stone	1909 1904 1899	5 3	36 27	4 2	7 4	25 21	38	38 29	5 2	17 10	23 14	57 33	34 19
Boots and shoes, including cut stock and findings.	1909 1904 1899	8 8 8	2,791 2,457 2,032	4 1 1	308 150 161	2,470 2,300 1,890	845	3,181 2,245 1,695	387 191 201	1,076 926 683	3,224 3,055 2,142	5,430 5,425 3,505	2,212 2,370 1,363
Brass and bronze products	1909 1904 1899	5 4 3	53 16 40	5 5 2	4 1 8	44 10 36	55	76 6 35	7 (9) 4	28 5 16	65 16 26	124 28 55	59 12 29
Bread and other bakery products	1909 1904 1899	53 20 30	642 392 394	53 24 30	154 69 78	435 299 286	75	1,008 624 457	145 64 57	222 143 113	1,092 618 461	1,765 997 811	673 379 359
Brick and tile	1909 1904 1899	3 4 3	37 117	4 5	1 8	32 104 35	130	28 163 16	1 6 1	14 31 17	5 18 5	35 92 28	30 74 23
Carriages and wagons and materials	1909 1904 1899	14 20 23	483 1,285	17 26	59 111 115	407 1,151 1,187	477	714 1,998 1,656	80 121 93	217 557 478	605 1,270 1,216	1,078 2,558 2,439	473 1,288 1,223
Coffee and spice, roasting and grinding	1909 1904 1899	3 3 3	264 205 99	..... 2 2	219 159 70	45 44 27	65	198 226 69	142 122 35	10 22 12	329 395 188	694 695 276	275 300 88
Copper, tin, and sheet-iron products	1909 1904 1899	6 4 6	173 49	4 4	29 7	140 38 69	93	251 63 120	33 8 8	71 19 22	472 80 48	700 126 115	228 46 67
Flour-mill and gristmill products	1909 1904 1899	4 4 3	32 40 41	6 5 1	6 10 11	20 25 29	815	239 148 160	8 10 13	15 14 16	297 598 481	384 596 532	87 88 51

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

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6 Less than \$500.

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.	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.													
<b>COLUMBUS—Continued.</b>													
Foundry and machine-shop products...	1909	58	3,745	46	687	3,012	4,148	\$0,656	\$735	\$1,841	\$3,465	\$7,744	\$4,270
	1904	40	3,200	43	388	2,808	.....	6,344	404	1,550	3,393	7,008	3,615
	1899	43	.....	.....	.....	222	2,071	.....	4,277	283	1,433	2,398	5,070
Furniture and refrigerators .....	1909	8	422	4	44	374	553	487	61	189	405	747	342
	1904	14	232	2	26	204	.....	320	29	91	230	405	175
	1899	4	250	4	33	213	.....	265	24	67	205	428	223
Gas and electric fixtures and lamps and reflectors.	1909	0	373	4	35	334	263	573	38	141	371	770	399
	1904	13	40	4	4	32	.....	74	4	16	28	62	34
	1899	3	.....	.....	3	64	.....	85	4	30	34	103	69
Ice, manufactured.....	1909	5	183	.....	25	158	1,784	676	21	91	68	253	185
	1904	4	111	.....	18	93	.....	658	10	42	84	128	94
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leather goods.....	1909	11	200	13	59	128	127	584	43	74	353	560	207
	1904	11	175	14	37	124	.....	300	26	74	223	433	210
	1899	12	.....	.....	50	160	.....	246	38	50	202	395	193
Liquors, malt.....	1909	4	561	.....	88	473	3,045	10,634	146	371	610	2,728	2,109
	1904	5	520	5	66	455	.....	3,721	93	369	816	2,134	1,318
	1899	4	502	5	50	447	.....	1,047	74	251	407	2,024	1,527
Lumber and timber products.....	1909	27	530	20	76	434	1,808	630	65	264	758	1,240	482
	1904	20	355	15	35	305	.....	486	31	220	451	799	348
	1899	17	247	16	13	218	.....	213	11	106	172	374	202
Marble and stone work.....	1909	6	90	5	15	70	445	236	12	47	75	169	94
	1904	4	128	2	15	111	.....	131	39	71	78	188	110
	1899	8	88	8	9	71	.....	63	5	40	33	114	81
Models and patterns, not including paper patterns.	1909	8	40	10	5	34	58	48	3	23	11	70	59
	1904	5	19	6	1	12	.....	12	1	7	2	19	17
Paint and varnish.....	1909	5	110	1	63	55	141	413	68	28	346	662	256
	1904	13	65	.....	27	38	.....	172	39	19	155	282	127
	1899	13	70	.....	23	47	.....	165	30	18	115	205	90
Patent medicines and compounds and druggists' preparations.	1909	13	281	11	130	140	285	730	95	61	230	946	707
	1904	9	242	9	70	163	.....	869	50	55	681	3,214	2,333
	1899	10	.....	.....	35	193	.....	713	32	66	491	1,611	1,120
Printing and publishing.....	1909	91	1,433	71	461	901	870	1,823	417	592	689	2,660	1,971
	1904	70	1,346	78	421	847	.....	1,352	294	516	475	1,916	1,441
	1899	52	.....	.....	181	771	.....	975	137	442	378	1,333	955
Slaughtering and meat packing.....	1909	6	166	5	31	130	365	636	29	101	1,064	2,354	390
	1904	4	79	5	5	69	.....	116	5	49	737	852	115
	1899	5	88	11	4	73	.....	152	2	34	630	714	84
Stoves and furnaces, including gas and oil stoves.	1909	10	360	4	62	294	377	707	65	173	310	722	412
	1904	10	300	9	36	255	.....	425	46	132	100	497	307
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tobacco manufactures.....	1909	35	278	37	18	223	.....	150	21	81	155	436	281
	1904	47	287	55	12	220	.....	85	11	70	107	349	242
	1899	31	537	32	22	483	.....	332	20	113	104	452	348
All other industries.....	1909	184	7,222	107	1,074	6,041	18,909	14,125	1,134	3,136	9,264	16,848	7,584
	1904	135	5,332	101	675	4,556	.....	8,042	671	2,279	5,470	10,694	5,224
	1899	137	.....	.....	483	4,518	.....	10,128	443	2,012	8,426	14,164	5,738
<b>DAYTON—All industries.....</b>													
Boxes, cigar.....	1909	3	97	4	7	86	358	75	5	23	47	85	38
	1904	3	115	3	7	105	.....	77	5	27	45	106	61
	1899	3	122	3	9	110	.....	59	0	36	37	100	63
Boxes, fancy and paper.....	1909	5	594	.....	54	540	378	881	65	106	486	932	446
	1904	5	437	.....	51	386	.....	531	66	114	379	743	364
	1899	3	389	.....	39	350	.....	342	48	101	261	491	230
Brass and bronze products.....	1909	7	246	7	29	210	340	494	47	145	213	481	268
	1904	14	213	5	19	189	.....	436	34	109	111	337	226
	1899	3	282	3	19	260	.....	518	32	89	163	375	212
Bread and other bakery products.....	1909	65	519	74	95	350	401	719	86	187	940	1,531	582
	1904	47	365	53	50	262	.....	481	39	112	538	861	323
	1899	53	278	61	31	186	.....	444	21	88	332	629	297
Brick and tile.....	1909	4	31	5	1	25	165	27	1	11	4	26	22
	1904	3	38	4	2	32	.....	35	2	15	6	33	27
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carriages and wagons and materials.....	1909	17	425	18	33	374	697	677	52	293	347	802	455
	1904	18	431	21	27	383	.....	651	40	167	254	566	312
	1899	13	.....	.....	28	477	.....	652	42	206	330	738	408

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

## MANUFACTURES—OHIO.

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.	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 employees.	Wage earners (average number).							
Expressed in thousands.													
<b>DAYTON—Continued.</b>													
Clothing, men's, including shirts.....	1909	4	237	4	37	196	125	\$211	\$26	\$71	\$209	\$354	\$145
	1904	4	228	4	20	204	-----	186	17	60	167	315	148
	1899	1 4	312	5	23	284	-----	250	26	70	174	328	154
Coffee and spice, roasting and grinding..	1909	5	271	3	132	136	304	1,165	143	73	1,007	2,245	638
	1904	4	158	1	59	98	-----	500	68	40	1,200	1,571	311
	1899	3	64	4	18	42	-----	188	15	17	386	507	121
Confectionery.....	1909	11	176	12	22	142	50	104	11	51	106	330	143
	1904	8	134	10	17	107	-----	61	11	33	90	189	89
	1899	4	-----	-----	15	62	-----	23	5	17	80	126	46
Copper, tin, and sheet-iron products....	1909	11	98	14	21	63	50	77	5	44	88	178	90
	1904	1 6	86	10	5	71	-----	189	5	44	65	153	88
	1899	8	-----	-----	2	74	-----	109	2	34	99	165	60
Cutlery and tools, not elsewhere specified.	1909	4	50	2	8	40	50	51	7	21	7	62	55
	1904	1 3	23	4	-----	19	-----	12	-----	10	3	18	15
	1899	1 3	9	2	-----	7	-----	7	-----	7	3	10	13
Electrical machinery, apparatus, and supplies.	1909	7	134	3	27	104	334	232	29	49	90	235	145
	1904	5	151	1	28	122	-----	277	30	66	111	325	214
	1899	5	142	4	13	125	-----	217	12	58	74	197	123
Flour-mill and gristmill products.....	1909	6	65	8	16	41	383	206	25	28	548	600	121
	1904	4	58	4	9	45	-----	154	19	29	570	644	74
	1899	4	-----	-----	8	46	-----	211	15	30	525	624	99
Foundry and machine-shop products...	1909	69	4,136	34	517	3,585	5,576	9,530	583	2,033	2,800	6,778	3,078
	1904	50	3,637	59	355	3,223	-----	6,318	404	1,714	2,268	5,530	3,271
	1899	1 40	3,109	38	173	2,898	-----	4,647	210	1,526	2,509	5,010	2,510
Furniture and refrigerators.....	1909	10	491	5	63	423	705	1,087	62	200	287	744	457
	1904	6	477	2	48	427	-----	966	43	193	250	738	482
	1899	6	438	1	34	403	-----	806	31	131	285	528	243
Liquors, malt.....	1909	3	275	-----	54	221	2,305	5,750	88	148	261	1,218	957
	1904	8	235	-----	37	198	-----	1,287	56	147	257	1,087	830
	1899	9	186	5	29	152	-----	1,727	43	97	183	704	611
Lumber and timber products.....	1909	11	580	9	59	512	1,650	1,108	69	325	878	1,417	539
	1904	1 11	517	9	50	458	-----	649	56	273	720	1,241	521
	1899	8	-----	-----	25	453	-----	345	25	228	484	882	398
Marble and stone work.....	1909	6	52	9	2	41	80	59	3	33	39	95	56
	1904	3	34	4	3	27	-----	31	3	23	22	65	43
	1899	10	-----	-----	12	80	-----	55	8	55	66	171	105
Mattresses and spring beds.....	1909	3	14	4	-----	10	100	19	-----	8	24	41	17
	1904	3	28	5	-----	23	-----	25	-----	10	27	49	23
	1899	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Models and patterns, not including paper patterns.	1909	5	38	7	-----	31	44	10	-----	20	5	35	30
	1904	5	27	7	2	18	-----	24	1	7	5	22	17
	1899	7	23	7	1	15	-----	5	(*)	9	3	20	17
Patent medicines and compounds and druggists' preparations.....	1909	11	86	7	36	43	35	101	47	10	51	183	132
	1904	1 11	69	15	15	39	-----	60	9	12	51	129	78
	1899	1 6	73	8	24	41	-----	430	34	11	54	216	163
Printing and publishing.....	1909	45	937	39	208	630	1,078	1,198	255	380	440	1,552	1,112
	1904	1 40	746	26	106	521	-----	1,417	169	261	310	1,019	709
	1899	1 30	596	21	113	462	-----	807	91	224	320	918	598
Slaughtering and meat packing.....	1909	10	299	8	46	245	484	1,048	52	145	2,636	3,171	535
	1904	7	141	7	24	110	-----	345	17	55	1,144	1,310	163
	1899	1 8	-----	-----	9	87	-----	147	7	46	517	611	94
Soap.....	1909	6	228	3	86	139	232	1,077	101	51	771	1,306	535
	1904	5	136	2	39	95	-----	375	54	40	371	795	424
	1899	4	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Tobacco manufactures.....	1909	56	1,544	56	60	1,428	52	700	73	487	831	1,893	1,062
	1904	1 60	1,422	62	73	1,287	-----	1,012	55	425	576	1,455	879
	1899	1 70	1,212	78	36	1,098	-----	577	51	436	420	1,285	805
All other industries.....	1909	129	13,117	81	1,102	11,934	15,368	34,650	1,737	7,503	13,714	34,066	20,262
	1904	108	9,930	85	1,201	8,644	-----	16,802	1,444	4,701	8,899	20,287	11,388
	1899	125	-----	-----	717	6,696	-----	13,717	790	3,384	7,025	16,275	9,250
<b>TOLEDO—All industries.....</b>													
	1909	760	22,900	665	3,367	18,878	43,946	\$58,319	\$3,632	\$9,911	\$34,084	\$61,230	\$27,146
	1904	597	18,504	521	2,286	15,697	-----	38,445	2,285	8,099	25,466	44,501	19,035
	1899	445	-----	-----	1,162	12,747	-----	23,788	1,143	5,576	19,397	31,976	12,879
Boxes, fancy and paper.....	1909	5	111	2	12	97	78	86	12	26	58	103	45
	1904	4	73	2	12	59	-----	70	8	14	43	70	33
	1899	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Brass and bronze products.....	1909	6	35	10	3	22	68	43	2	13	28	52	24
	1904	1 3	26	4	3	19	-----	12	2	11	20	42	13
	1899	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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

2 Figures can not be shown without disclosing individual operations.

3 Less than \$500.

4 Not reported separately.

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.

MANUFACTURES—OHIO.

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

CITIES OF 50,000 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.	Salaried employes.	Wage earners (average number).							
Expressed in thousands.													
<b>TOLEDO—Continued.</b>													
Bread and other bakery products.....	1909	88	633	96	69	468	314	\$663	\$64	\$260	\$959	\$1,508	\$639
	1904	64	595	64	88	443	.....	673	51	205	724	1,208	544
	1899	46	350	48	30	278	.....	435	22	133	475	808	333
Brick and tile.....	1909	8	191	2	17	172	675	233	14	80	35	177	142
	1904	10	248	7	20	221	.....	370	17	117	48	259	211
	1899	11	312	16	8	288	.....	303	7	136	53	274	226
Carriages and wagons and materials.....	1909	16	602	11	77	514	1,283	2,370	105	257	609	1,317	708
	1904	21	924	20	79	825	.....	2,450	89	309	932	1,756	824
	1899	16	879	13	65	801	.....	2,288	70	281	817	1,379	562
Cars and general shop construction and repairs by steam-railroad companies.	1909	4	1,330	.....	132	1,198	935	534	115	634	674	1,427	753
	1904	5	941	.....	73	868	.....	281	62	465	832	1,367	535
	1899	8	646	.....	40	606	.....	333	31	343	479	866	387
Clothing, women's.....	1909	13	1,282	16	116	1,150	155	788	176	492	1,375	2,323	948
	1904	11	726	19	60	638	.....	323	77	251	804	1,448	644
	1899	4	645	8	14	623	.....	204	25	171	483	942	460
Confectionery.....	1909	12	197	14	37	146	165	119	32	51	235	411	176
	1904	10	185	11	33	141	.....	64	18	34	135	262	127
	1899	4	.....	.....	24	47	.....	48	11	13	110	186	76
Cooperage and wooden goods, not elsewhere specified.	1909	10	134	10	8	116	145	133	6	52	100	195	89
	1904	10	43	11	2	30	.....	23	2	15	53	83	30
	1899	10	.....	.....	.....	21	.....	10	.....	12	20	50	24
Copper, tin, and sheet-iron products...	1909	37	675	37	61	547	265	3,557	85	282	649	1,303	654
	1904	20	249	27	42	180	.....	331	30	94	198	484	286
	1899	18	.....	.....	38	578	.....	570	42	201	871	1,291	420
Electrical machinery, apparatus, and supplies.	1909	7	483	1	66	416	248	722	55	168	289	922	643
	1904	4	112	1	13	98	.....	75	13	35	45	130	85
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Flour-mill and gristmill products.....	1909	7	257	3	50	204	3,510	2,485	84	140	4,931	5,662	731
	1904	8	238	3	40	195	.....	1,488	54	115	3,237	3,676	439
	1899	10	263	10	20	233	.....	1,208	40	123	4,034	4,450	425
Foundry and machine-shop products...	1909	75	3,708	50	527	3,191	6,931	8,050	621	1,905	3,161	7,024	3,863
	1904	50	3,253	35	323	2,895	.....	4,045	328	1,566	2,491	5,190	2,690
	1899	27	2,152	22	139	1,901	.....	1,945	118	970	1,130	2,716	1,586
Furniture and refrigerators.....	1909	23	674	18	76	580	884	1,069	86	303	545	1,128	583
	1904	12	485	14	38	433	.....	399	37	220	338	660	322
	1899	8	414	11	61	342	.....	360	37	148	120	418	289
Leather goods.....	1909	4	104	3	13	88	36	79	11	35	78	139	61
	1904	3	101	4	9	88	.....	105	10	38	113	209	96
	1899	4	.....	.....	13	88	.....	73	11	33	80	152	72
Liquors, malt.....	1909	4	305	.....	53	312	1,631	7,108	92	250	452	1,887	1,435
	1904	6	312	.....	50	262	.....	2,427	110	222	499	1,610	1,111
	1899	6	300	.....	47	253	.....	2,180	76	151	330	1,450	1,120
Lumber and timber products.....	1909	28	689	21	83	585	2,480	1,433	96	280	1,111	1,793	682
	1904	23	578	19	57	502	.....	911	64	260	1,260	1,784	524
	1899	18	.....	.....	48	514	.....	1,081	43	212	1,257	1,730	473
Marble and stone work.....	1909	6	89	5	22	69	142	188	22	43	108	217	109
	1904	7	99	9	13	77	.....	172	11	60	134	263	129
	1899	8	.....	.....	7	60	.....	103	6	45	50	135	85
Models and patterns, not including paper patterns.	1909	7	26	10	.....	16	20	15	.....	9	5	24	19
	1904	4	16	4	1	11	.....	10	1	6	5	17	12
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paint and varnish.....	1909	5	61	4	23	34	150	271	22	20	158	252	94
	1904	5	65	3	30	32	.....	174	24	18	139	225	86
	1899	4	52	3	21	28	.....	216	18	13	120	196	76
Patent medicines and compounds and druggists' preparations.	1909	51	169	50	43	76	154	312	43	36	149	540	391
	1904	20	107	24	30	44	.....	175	21	15	74	343	269
	1899	17	61	6	13	42	.....	167	10	13	85	436	351
Petroleum, refining.....	1909	3	331	.....	61	270	540	2,036	103	157	1,845	2,431	580
	1904	3	199	.....	41	158	.....	1,317	63	104	1,556	2,006	450
	1899	3	123	.....	27	90	.....	887	33	55	1,048	1,393	345
Printing and publishing.....	1909	72	1,219	60	396	763	866	1,551	353	480	523	2,004	1,481
	1904	56	1,026	48	341	637	.....	916	292	360	414	1,451	1,037
	1899	42	711	39	112	560	.....	727	84	300	288	982	694
Slaughtering and meat packing.....	1909	11	40	10	3	27	60	68	2	19	294	376	82
	1904	3	45	4	3	38	.....	63	2	24	215	269	54
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

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

MANUFACTURES—OHIO.

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

CITIES OF 50,000 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 employees.	Wage earners (average number).							
Expressed in thousands.													
<b>TOLEDO—Continued.</b>													
Tobacco manufactures.....	1909	48	593	51	56	486	395	\$541	\$60	\$146	\$795	\$2,129	\$1,334
	1904	<sup>1</sup> 67	189	75	1	113		97	1	58	86	217	161
	1899	<sup>2</sup> 50	184	52	5	127		76	3	58	74	211	137
Wall plaster.....	1909	6	66		21	45	380	114	18	25	130	221	91
	1904	5	47	1	14	32		83	13	20	81	140	59
	<sup>3</sup> 1889												
All other industries.....	1909	204	8,776	181	1,302	7,293	21,487	22,245	1,353	3,742	14,782	25,565	10,783
	1904	157	7,622	112	852	6,658		20,401	895	3,373	10,081	19,236	8,255
	1899	141			430	5,165		10,400	456	2,159	7,458	11,888	4,490
<b>YOUNGSTOWN—All industries.</b>													
	1909	115	11,851	94	1,259	10,498	140,907	\$87,160	\$1,593	\$7,835	\$62,292	\$81,271	\$18,979
	1904	113	8,903	86	722	8,095		40,956	870	5,460	35,183	46,853	11,670
	1899	103			414	8,679		22,064	478	4,730	23,133	33,908	10,775
Bread and other bakery products.....	1909	22	100	27	8	65	23	90	3	38	133	249	116
	1904	11	64	15	1	48		137	( <sup>5</sup> )	30	86	153	67
	1899	10	48	12		36		51		17	39	82	43
Carriages and wagons and materials.....	1909	3	74	2	8	64	88	113	13	40	66	140	80
	1904	4	89	4	5	80		122	10	34	71	160	89
	1899	5			13	82		163	15	38	83	201	118
Foundry and machine-shop products.....	1909	15	1,453	4	296	1,153	2,674	5,822	338	800	2,702	4,865	2,163
	1904	<sup>1</sup> 13	1,041	4	128	909		3,006	176	566	1,020	2,079	1,059
	1899	<sup>2</sup> 12	858	4	65	789		1,400	74	431	860	1,800	934
Iron and steel, steel works and rolling mills.	1909	7	7,128		478	6,650	75,530	50,516	670	5,204	30,069	50,175	10,266
	1904	7	4,980		350	4,630		23,571	429	3,350	23,000	29,738	6,738
	<sup>3</sup> 1899												
Lumber and timber products.....	1909	8	232	7	26	199	615	731	32	135	654	953	299
	1904	10	239	11	20	208		576	25	137	431	763	332
	1899	7	202	10	17	175		304	15	85	338	515	177
Printing and publishing.....	1909	13	251	9	78	164	188	402	62	109	128	454	326
	1904	10	178	4	22	152		269	23	121	69	284	215
	1899	<sup>4</sup> 8	128	5	17	106		178	17	67	49	193	144
Tobacco manufactures.....	1909	6	30	7	2	30		18	1	12	10	35	28
	1904	11	42	13		29		12		12	19	51	32
	1899	9	35	11		24		15		13	12	30	27
All other industries.....	1909	41	2,574	38	303	2,173	61,789	29,468	454	1,497	18,630	24,891	5,761
	1904	47	2,270	35	196	2,039		13,263	297	1,210	10,487	13,625	3,138
	1899	52			302	7,467		19,893	357	4,079	21,746	31,078	9,332

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

Alliance.....	1909	44	3,020	35	467	2,524	3,453	\$7,212	\$447	\$1,462	\$2,853	\$6,135	\$3,282
	1904	40	1,725	40	243	1,442		5,682	177	837	1,901	3,547	1,646
	1899	39			134	1,486		5,678	110	667	1,648	3,203	1,555
Ashtabula.....	1909	44	1,601	31	99	1,471	2,379	2,076	198	814	2,084	3,450	1,375
	1904	36	934	32	56	846		1,286	57	450	990	1,895	899
	1899	29			46	373		707	84	165	527	884	357
Bellaire.....	1909	30	2,846	44	205	2,597	17,790	6,427	225	1,412	7,159	10,092	2,033
	1904	37	2,340	22	135	2,183		6,018	148	1,193	7,316	10,712	3,396
	1899	30			69	1,928		3,517	108	827	5,087	8,838	2,851
Cambridge.....	1909	32	1,406	30	146	1,230	5,055	2,379	105	910	2,885	4,291	1,406
	1904	34	909	34	61	814		1,147	50	497	1,520	2,441	921
	1899	28			48	768		1,059	51	457	1,317	2,202	885
Chillicothe.....	1909	57	1,872	59	139	1,674	3,558	2,364	135	707	3,038	4,345	1,397
	1904	64	1,751	65	133	1,553		1,694	114	570	1,928	3,147	1,219
	1899	46			73	1,112		1,054	44	423	878	1,610	738
East Liverpool.....	1909	82	5,254	49	332	4,873	5,528	7,988	448	2,764	2,521	6,629	4,168
	1904	81	5,550	56	302	5,228		6,672	303	2,703	2,107	6,437	4,339
	1899	75			283	4,171		4,900	288	1,070	1,463	4,749	3,289
Elyria.....	1909	58	3,117	30	414	2,673	9,058	7,324	464	1,573	4,495	8,065	3,570
	1904	50	1,430	37	249	1,144		3,071	231	567	1,595	2,933	1,338
	1899	32			62	638		1,117	54	299	740	1,221	481
Findlay.....	1909	74	1,623	67	180	1,376	2,574	2,955	180	574	2,004	3,487	1,393
	1904	71	1,522	78	101	1,343		2,659	105	625	1,576	2,925	1,359
	1899	80			104	1,107		1,693	85	453	751	1,685	634

<sup>1</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.  
<sup>2</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>3</sup> Not reported separately.  
<sup>4</sup> 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.  
<sup>5</sup> Less than \$500.

MANUFACTURES—OHIO.

TABLE I.—COMPARATIVE SUMMARY FOR 1909, 1904, AND 1899—Continued.  
CITIES OF 10,000 TO 50,000 INHABITANTS—ALL INDUSTRIES COMBINED—Continued.

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).							
Expressed in thousands.													
Hamilton.....	1909	125	7,770	81	794	6,895	22,563	\$24,620	\$1,318	\$3,798	\$9,640	\$18,184	\$8,544
	1904	113	6,679	97	475	6,107	.....	18,874	774	3,321	6,384	13,811	7,427
	1899	97	.....	.....	273	5,147	.....	10,243	360	2,316	5,003	10,655	5,652
Ironton.....	1909	63	2,119	51	148	1,920	15,548	4,993	198	888	4,994	7,118	2,124
	1904	57	1,971	46	125	1,800	.....	3,356	144	324	3,423	4,755	1,332
	1899	53	.....	.....	93	1,577	.....	3,212	106	609	3,145	5,411	2,266
Lancaster.....	1909	42	1,657	48	77	1,532	2,453	1,469	75	677	3,051	4,074	1,023
	1904	42	1,853	41	117	1,695	.....	1,065	96	750	2,501	3,848	1,347
	1899	36	.....	.....	64	1,039	.....	1,365	57	544	1,059	1,905	846
Lima.....	1909	85	3,899	79	213	3,607	3,264	5,488	363	2,024	3,869	7,754	3,885
	1904	77	3,065	73	190	2,733	.....	3,894	106	1,322	2,255	4,828	2,573
	1899	70	.....	.....	183	1,980	.....	5,361	158	942	3,936	6,222	2,286
Lorain.....	1909	57	7,347	36	614	6,007	208,992	34,387	702	4,788	24,222	38,987	14,765
	1904	43	3,416	26	288	3,102	.....	10,599	255	2,832	9,708	14,491	4,783
	1899	26	.....	.....	134	2,233	.....	12,684	137	1,102	6,485	9,481	2,996
Mansfield.....	1909	121	3,901	120	577	3,204	5,077	8,539	585	1,472	4,356	8,173	3,817
	1904	109	3,599	112	469	3,021	.....	8,295	466	1,309	3,523	7,354	3,831
	1899	95	.....	.....	316	2,622	.....	5,467	296	973	2,705	6,076	3,371
Marletta.....	1909	66	1,549	59	202	1,288	2,742	3,275	100	594	1,787	3,215	1,428
	1904	73	1,515	56	145	1,314	.....	2,557	139	610	1,366	2,599	1,233
	1899	77	.....	.....	125	1,511	.....	1,935	112	590	1,160	2,398	1,248
Marion.....	1909	55	3,028	40	369	2,619	3,680	7,864	416	1,405	2,577	5,667	3,090
	1904	47	1,965	32	212	1,721	.....	3,395	230	865	1,362	3,228	1,876
	1899	34	.....	.....	121	1,721	.....	2,917	114	556	966	2,426	1,460
Massillon.....	1909	56	2,193	37	222	1,934	4,730	7,788	282	1,127	2,290	4,788	2,498
	1904	52	2,177	40	130	1,995	.....	5,745	178	1,158	1,582	3,707	2,125
	1899	40	.....	.....	87	1,474	.....	3,075	81	745	1,263	2,749	1,486
Middletown.....	1909	41	2,992	22	394	2,570	9,304	10,564	473	1,389	7,950	10,517	8,567
	1904	47	2,044	44	180	1,814	.....	10,418	198	801	3,692	8,538	4,846
	1899	41	.....	.....	255	1,578	.....	3,867	309	621	2,473	5,800	3,327
Newark.....	1909	72	4,282	63	306	3,913	8,630	9,036	315	1,958	3,982	7,851	3,869
	1904	78	3,936	83	226	3,627	.....	3,834	216	2,130	2,433	5,613	3,180
	1899	69	.....	.....	147	2,075	.....	1,081	122	810	1,180	2,879	1,699
Norwood.....	1909	40	4,445	31	507	3,907	6,381	13,368	632	2,081	4,021	9,684	5,063
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plqua.....	1909	82	3,073	74	310	2,683	5,062	5,444	402	1,292	3,852	6,931	3,079
	1904	76	2,282	62	176	2,044	.....	3,196	210	947	1,998	4,030	2,128
	1899	68	.....	.....	193	1,955	.....	3,616	201	614	3,610	5,552	1,942
Portsmouth.....	1909	75	4,310	54	537	3,728	4,028	6,385	680	1,459	3,894	7,277	3,383
	1904	81	4,500	68	360	4,072	.....	4,070	318	1,470	3,520	6,645	3,125
	1899	100	.....	.....	365	4,153	.....	3,820	302	1,341	3,404	6,658	3,254
Sandusky.....	1909	91	2,518	59	341	2,118	4,850	6,495	353	1,006	2,835	5,047	3,112
	1904	93	2,096	78	265	2,323	.....	6,727	258	1,028	2,136	4,879	2,743
	1899	81	.....	.....	142	1,453	.....	4,453	135	571	1,207	2,834	1,627
Springfield.....	1909	195	8,634	161	1,068	7,405	10,179	22,485	1,292	3,985	8,910	19,246	10,327
	1904	137	7,215	103	854	6,258	.....	19,739	937	3,253	5,762	13,382	7,620
	1899	104	.....	.....	1,282	6,299	.....	13,844	1,102	3,615	5,289	12,116	6,827
Steubenville.....	1909	55	4,638	55	316	4,267	37,748	18,424	403	3,203	14,443	21,187	6,744
	1904	72	4,517	78	255	4,184	.....	12,627	321	2,328	8,243	12,370	4,127
	1899	54	.....	.....	88	1,773	.....	2,303	74	734	2,406	4,647	2,141
Tiffin.....	1909	75	1,970	78	290	1,632	3,257	3,727	224	828	1,252	3,254	2,002
	1904	87	1,874	94	135	1,645	.....	2,714	125	664	1,060	2,435	1,435
	1899	75	.....	.....	100	1,238	.....	2,252	75	624	808	1,902	1,094
Warren.....	1909	68	2,174	41	335	1,798	5,530	4,511	421	911	3,064	5,988	2,024
	1904	53	1,793	44	214	1,505	.....	2,730	240	738	2,043	4,414	2,366
	1899	44	.....	.....	120	1,832	.....	2,882	157	775	2,643	4,585	2,042
Zanesville.....	1909	109	3,586	95	341	3,150	8,783	6,025	351	1,793	5,504	9,145	3,641
	1904	99	3,498	91	279	3,098	.....	4,905	298	1,590	3,291	6,347	3,056
	1899	115	.....	.....	323	3,405	.....	4,120	240	1,255	3,086	5,708	2,622

<sup>1</sup> 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.  
<sup>2</sup> Figures not comparable.

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, 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 All industries.....	15,138	523,004	14,719	16,494	34,101	10,766	446,934	De 480,405	Ja 414,278	(1)	(1)	(1)	(1)	(1)	1,583,155		
2 Agricultural implements.....	55	6,072	23	200	630	122	5,997	Ap 6,721	Jy 5,547	6,231	6,178	43	9	1	9,867		
3 Artificial flowers and feathers and plumes.....	3	21	3	.....	.....	1	.....	Je 19	.....	18	3	15	.....	.....	.....		
4 Artificial stone.....	299	1,315	391	66	39	17	802	Au 1,041	Ja 375	956	956	.....	.....	.....	1,325		
5 Automobiles, including bodies and parts.....	75	13,458	42	267	802	217	12,130	De 15,700	Ja 10,034	16,214	15,993	180	37	4	14,433		
6 Babbitt metal and solder.....	6	74	5	7	10	5	47	Se 52	Fe 41	46	46	.....	.....	.....	251		
7 Bags, paper.....	8	632	.....	25	37	13	557	De 579	Je 527	580	282	280	1	17	508		
8 Baking powders and yeast.....	10	70	11	4	14	5	42	Mh 47	Jy 37	40	17	27	.....	.....	61		
9 Baskets, and rattan and willow ware.....	30	350	30	10	3	4	297	Je 361	De 238	359	280	72	4	3	794		
10 Belting and hose, leather.....	8	164	4	18	25	10	107	No 120	My 98	120	120	.....	.....	.....	305		
11 Belting and hose, woven and rubber.....	5	808	3	25	77	20	683	No 845	Jy 540	835	781	45	0	.....	1,523		
12 Bicycles, motorcycles, and parts.....	6	1,037	2	12	53	23	942	De 1,089	Jy 711	1,181	1,181	.....	.....	.....	1,885		
13 Blacking and cleansing and polishing preparations.....	49	238	53	26	34	22	103	My 1,260	Oc 94	119	82	37	.....	.....	267		
14 Boots and shoes, including cut stock and findings.....	72	17,607	40	393	751	307	16,026	De 17,033	Ap 13,880	17,122	9,510	7,023	254	335	8,925		
15 Boxes, cigar.....	31	600	38	16	10	5	531	No 565	Ap 491	574	220	323	11	20	1,022		
16 Boxes, fancy and paper.....	46	2,777	32	94	77	44	2,530	Oc 2,637	Ja 2,419	2,602	950	1,518	4	100	1,823		
17 Brass and bronze products.....	82	2,650	72	112	152	82	2,232	Oc 2,302	Je 2,055	2,612	2,548	56	8	.....	4,214		
18 Bread and other bakery products.....	1,467	8,758	1,600	162	644	380	5,972	De 6,144	Fe 5,809	6,220	6,025	1,149	32	23	5,398		
19 Brick and tile.....	617	8,575	569	363	132	45	7,466	Je 9,401	Ja 4,873	9,093	9,029	2	62	.....	37,742		
20 Brooms.....	32	536	95	18	22	8	393	De 418	Au 357	428	368	56	4	.....	328		
21 Brushes.....	22	540	17	27	53	27	425	My 481	Au 305	527	322	168	15	22	675		
22 Butter, cheese, and condensed milk.....	325	2,494	1,216	78	61	42	1,067	Au 1,232	Fe 876	1,144	1,026	102	8	8	3,356		
23 Butter, reworking.....	5	73	.....	8	9	5	47	Oc 50	Je 42	47	44	3	.....	.....	425		
24 Buttons.....	5	164	4	2	4	3	151	My 186	Au 127	162	118	14	6	14	73		
25 Canning and preserving.....	107	2,379	94	116	129	31	2,009	Se 5,868	Ap 581	6,292	2,869	3,321	50	40	4,264		
26 Carpets, rag.....	29	208	20	10	1	7	104	Jy 184	Fe 124	163	96	65	.....	.....	447		
27 Carriages and wagons and materials.....	407	10,350	414	437	447	237	8,815	My 9,596	Au 7,944	9,031	8,757	241	52	1	14,751		
28 Cars and general shop construction, and repairs by steam-railroad companies, and general shop construction, and repairs by street-railroad companies.....	71	22,102	.....	332	1,025	17	20,728	No 22,043	Ap 19,666	21,848	21,797	47	4	.....	19,422		
29 Cars, steam-railroad, not including operations of railroad companies.....	49	1,392	.....	47	23	4	1,318	Au 1,354	Fe 1,268	1,347	1,326	20	1	.....	3,635		
30 Cars, street-railroad, not including operations of railroad companies.....	6	2,477	.....	83	98	14	2,282	Fe 3,171	Ap 1,571	2,650	2,640	10	.....	.....	4,419		
31 Cars, street-railroad, not including operations of railroad companies.....	4	823	.....	33	45	11	734	De 1,131	Jy 575	1,131	1,129	2	.....	.....	2,875		
32 Cement.....	9	978	.....	23	56	12	837	Ap 1,119	Ja 600	1,001	999	2	.....	.....	12,685		
33 Chemicals.....	33	1,346	17	60	107	30	1,132	No 1,242	Je 1,051	1,282	1,241	41	.....	.....	11,515		
34 Clocks and watches, including cases and materials.....	9	1,634	2	21	37	18	1,456	Fe 1,581	Jy 791	1,477	1,018	411	17	31	807		
35 Cloth, sponging and refinishing.....	6	62	10	1	1	2	48	Je 52	Se 44	50	50	.....	.....	.....	24		
36 Clothing, men's, including shirts.....	342	11,813	405	200	1,009	249	9,950	De 10,421	Ja 9,167	10,708	3,234	7,160	33	341	1,754		
37 Clothing, women's.....	153	10,191	174	197	699	287	8,843	Oc 9,857	My 7,883	9,746	3,414	6,201	13	118	1,504		
38 Coffee and spice, roasting and grinding.....	39	1,586	25	78	614	107	702	No 795	Au 725	784	300	393	1	.....	2,146		
39 Coffins, burial cases, and undertakers' goods.....	24	1,475	11	51	138	30	1,245	No 1,279	Jy 1,175	1,259	1,044	207	8	.....	2,269		
40 Coke.....	4	259	.....	7	4	2	249	Ap 300	Au 219	240	240	.....	.....	.....	1,259		
41 Confectionery.....	114	3,012	103	98	220	98	2,493	No 3,213	Jy 2,030	2,870	873	1,708	80	200	2,306		
42 Cooperage and wooden goods, not elsewhere specified.....	113	1,911	118	76	32	22	1,663	De 1,801	Au 1,568	1,735	1,710	11	14	.....	3,609		
43 Copper, tin, and sheet-iron products.....	221	7,685	195	258	441	193	6,598	Se 7,189	Ja 5,762	7,179	5,647	1,172	109	161	6,302		
44 Cordage and twine and jute and linen goods.....	8	843	3	17	25	12	791	Ap 932	Au 498	912	678	227	5	2	3,225		
45 Corsets.....	4	47	3	3	1	2	38	Mh 52	Au 24	41	1	40	.....	.....	12		
46 Cotton goods, including cotton small wares.....	4	195	1	10	4	3	177	Oc 183	Se 172	181	42	135	.....	.....	266		
47 Cutlery and tools, not elsewhere specified.....	70	3,835	49	117	251	98	2,820	De 3,173	Ja 2,548	3,173	2,872	201	7	3	6,567		
48 Dairymen's, poulterers', and apiarists' supplies.....	18	589	19	25	32	34	479	De 520	Oc 433	520	468	47	10	5	516		
49 Electrical machinery, apparatus, and supplies.....	115	9,695	49	317	745	421	8,073	Do 9,456	Ja 9,907	9,471	6,406	2,983	4	78	11,649		
50 Electroplating.....	29	254	30	12	2	5	205	No 218	Ja 101	222	218	3	1	.....	624		
51 Enameling and japanning.....	5	163	3	5	6	4	145	Mh 157	Ja 127	154	95	18	17	24	624		
52 Explosives.....	11	424	.....	24	34	8	358	Au 385	Ap 323	378	355	23	.....	.....	2,002		
53 Fancy articles, not elsewhere specified.....	15	251	15	15	31	5	185	Oc 226	Ja 125	211	137	65	3	6	300		
54 Fertilizers.....	27	1,064	13	51	188	21	841	Se 1,522	Fe 670	739	738	1	.....	.....	3,009		
55 Files.....	7	154	6	1	3	5	139	Oc 147	Ja 117	157	154	3	.....	.....	259		
56 Firearms and ammunition.....	5	910	.....	15	70	12	813	Au 848	De 750	762	497	265	.....	.....	3,729		
57 Flags, banners, regalia, society badges and emblems.....	13	1,572	4	44	186	76	1,262	Je 1,445	Au 1,162	1,197	393	777	8	10	3,016		

1 No figures given for reasons explained in the Introduction, page 2. See also discussion of wage earners on page 12.

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 \$1,300,732,732	\$1,282,845,511	\$33,765,010	\$38,392,489	\$245,449,904	\$50,117,773	\$774,084,174	\$4,913,712	\$24,499,586	\$6,717,474	\$104,916,389	\$1,437,935,817	\$613,733,870
2 25,637,082	12,330,545	472,305	675,635	3,155,115	161,928	6,156,501	4,445	108,334	8,521	1,500,671	14,440,461	8,121,942
3 9,205	12,968	.....	312	6,659	150	3,314	1,320	92	.....	1,131	17,730	14,266
4 1,274,108	1,075,090	53,830	20,167	403,850	13,337	485,228	11,410	6,871	12,372	68,013	1,377,700	870,225
5 30,891,660	32,192,594	634,600	795,222	7,746,477	248,709	18,273,289	38,778	145,625	220,907	4,088,937	38,838,754	20,310,756
6 463,130	1,000,104	22,048	14,172	25,620	4,161	896,857	1,637	5,713	.....	28,997	1,026,917	125,909
7 1,440,847	2,176,662	69,550	34,498	239,763	13,831	1,624,666	15,981	7,740	3,431	167,202	2,303,385	754,888
8 115,998	251,531	8,280	15,020	15,440	1,885	159,514	4,076	864	.....	46,452	272,672	111,273
9 177,847	230,007	9,579	2,602	107,784	3,079	80,040	2,567	1,329	515	16,432	271,126	182,607
10 650,921	1,035,378	40,500	45,843	70,080	5,247	789,826	6,794	4,852	.....	53,936	1,079,943	284,870
11 3,230,090	2,963,710	56,686	60,361	361,862	37,707	2,077,972	2,078	7,973	.....	318,413	3,443,460	1,327,721
12 2,245,317	2,075,493	40,700	53,528	685,355	35,007	1,031,170	1,000	13,410	.....	214,323	2,308,316	1,242,139
13 381,021	523,986	34,111	34,318	50,064	4,129	202,516	10,261	1,443	.....	97,144	672,117	376,472
14 10,755,293	29,516,430	746,715	1,377,843	6,645,790	126,056	18,745,051	162,529	93,830	128	1,617,579	31,550,957	12,678,950
15 463,577	595,131	21,989	9,514	166,952	8,011	352,130	9,217	3,793	42	23,477	711,370	351,223
16 2,840,735	3,345,190	174,239	83,465	830,401	33,880	1,897,521	49,459	14,054	.....	261,280	3,635,100	1,793,789
17 6,471,775	5,786,809	234,007	183,728	1,372,150	92,505	3,440,870	27,995	32,937	11,906	390,705	6,572,022	3,038,641
18 11,780,708	19,856,771	366,828	732,504	3,370,889	403,802	13,262,431	304,213	94,005	80	1,321,290	23,007,131	9,340,898
19 17,314,892	7,418,610	463,138	136,235	3,527,475	1,797,155	407,188	7,648	78,589	93,030	918,152	9,357,730	7,153,387
20 425,275	944,801	16,783	15,736	172,019	5,343	687,136	3,913	2,458	3,347	39,066	1,079,382	380,903
21 706,332	1,064,209	58,750	62,073	158,076	7,958	617,003	6,975	22,253	73,400	57,031	1,219,461	594,500
22 2,738,717	8,938,606	94,008	78,647	556,764	90,537	7,594,899	12,860	18,851	5,434	480,006	9,089,670	2,004,234
23 571,051	1,330,874	13,700	6,608	30,692	8,421	1,210,201	6,880	13,934	.....	31,348	1,356,245	128,623
24 121,056	96,217	1,780	4,434	54,984	959	28,979	2,840	126	.....	2,115	113,615	83,977
25 3,493,904	4,226,322	124,787	127,240	532,219	30,086	3,063,093	18,012	18,354	10,065	291,936	4,659,674	1,557,495
26 95,823	111,268	11,310	2,980	50,777	2,755	24,242	3,384	1,183	25	38,612	153,671	126,674
27 20,397,675	19,320,042	726,241	555,688	4,647,200	211,381	11,202,620	125,421	110,657	22,129	1,709,705	21,049,459	10,535,458
28 10,653,932	28,703,331	404,428	894,547	12,720,032	473,810	13,791,741	.....	78,108	6,385	328,274	28,090,287	14,424,738
29 2,054,130	1,691,963	47,275	17,880	722,389	23,276	777,775	.....	18,285	2,200	82,823	1,690,903	889,852
30 11,030,610	6,492,724	410,325	134,937	1,303,953	53,281	4,141,234	2,443	37,917	20,272	388,362	6,451,155	2,256,640
31 2,842,157	1,849,075	74,777	49,593	470,572	27,540	1,066,679	1,200	11,430	.....	147,284	1,955,118	860,890
32 4,732,463	1,573,257	69,854	70,313	543,596	325,614	312,864	.....	22,981	14,162	213,873	1,465,413	826,935
33 8,993,780	6,298,370	194,180	129,748	748,913	509,999	4,181,297	11,687	43,324	.....	362,222	7,742,045	2,993,749
34 4,231,593	1,677,188	51,804	38,723	784,220	17,188	508,430	7,325	5,351	154,021	110,126	1,980,957	1,455,339
35 23,082	44,722	2,000	1,240	28,727	2,517	580	4,873	45	80	4,660	68,214	63,117
36 14,432,475	2,432,475	455,256	1,235,969	4,049,227	90,984	12,820,996	321,750	42,823	1,898,437	1,508,751	24,869,437	11,949,357
37 8,150,889	18,014,201	675,276	1,077,461	4,271,984	76,793	10,213,790	107,540	25,117	279,452	1,296,788	19,493,060	9,202,477
38 5,400,252	10,363,145	175,243	636,810	351,630	40,707	8,236,632	40,739	28,658	3,348	849,072	11,224,437	2,947,098
39 3,724,239	2,589,691	165,042	161,039	525,229	32,550	1,291,909	7,265	27,926	.....	438,731	3,061,150	1,736,691
40 1,238,106	808,352	13,840	4,788	110,852	610,101	23,569	450	.....	.....	2,327	850,615	211,005
41 3,416,317	6,092,637	170,745	272,702	839,703	50,028	4,038,939	95,888	18,018	15,853	590,810	7,306,574	3,217,656
42 2,010,894	3,368,074	118,122	42,635	802,658	22,424	2,193,802	18,147	19,181	480	160,625	3,515,516	1,299,290
43 21,685,043	17,059,530	505,958	455,026	3,163,188	225,815	11,396,152	64,151	61,455	24,460	1,163,325	10,086,462	7,404,495
44 2,743,489	2,561,362	48,265	32,725	312,704	26,774	1,957,255	2,100	18,499	.....	163,040	2,727,854	743,825
45 47,164	50,117	2,432	2,484	10,438	520	28,156	1,604	.....	71	.....	67,226	38,541
46 300,858	337,519	10,850	4,256	52,411	4,621	229,011	4,662	3,137	.....	19,571	395,175	161,543
47 7,768,232	4,385,900	220,578	299,991	1,518,312	99,840	1,550,399	11,475	37,388	5,040	642,880	5,035,889	3,385,653
48 1,041,471	982,045	32,599	39,719	261,558	9,433	517,827	3,062	5,371	.....	112,566	1,148,746	621,486
49 23,706,297	15,497,820	602,674	866,697	3,846,900	317,650	6,908,228	73,975	153,008	18,892	2,649,880	18,776,769	11,550,891
50 128,121	215,249	11,170	3,740	127,305	10,532	43,061	10,088	911	.....	8,436	259,374	205,781
51 132,069	181,014	7,160	5,624	62,608	11,802	89,698	1,560	988	2,322	5,852	216,478	115,578
52 2,247,776	1,585,825	66,068	35,580	203,782	40,997	1,062,874	460	14,799	.....	160,659	1,718,871	615,000
53 752,780	337,650	19,160	32,036	83,353	2,670	115,551	8,977	1,019	1,239	73,645	412,944	294,723
54 4,950,438	3,583,213	99,069	137,822	367,948	66,782	2,408,003	2,264	22,741	1,229	416,755	4,434,541	1,899,750
55 112,061	141,289	1,200	5,621	75,300	6,794	43,685	3,300	400	.....	5,089	151,522	101,043
56 2,225,245	2,013,684	57,010	100,690	318,116	24,403	1,266,507	1,000	7,477	.....	232,591	2,214,998	924,088
57 2,351,946	2,721,088	106,863	236,169	522,850	10,409	1,498,079	13,103	16,064	1,100	315,851	3,026,875	1,516,787

\* Same number reported for one or more other months.

MANUFACTURES—OHIO.

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 Flour-mill and gristmill products.....	673	4,164	911	257	287	124	2,585	Oc	2,783	Je	2,425	72,773	2,061	112	.....	.....	52,250	
2 Foundry and machine-shop products.....	1,218	74,887	683	2,720	5,331	1,336	94,817	De	74,009	Ja	57,555	5,123	73,839	950	304	30	112,638	
3 Fur goods.....	18	200	17	8	2	5	107	No	229	Ap	105	221	56	104	1	.....	12	
4 Furnishing goods, men's.....	63	2,934	59	86	146	75	2,558	De	2,852	Ja	2,317	2,881	364	2,372	2	143	917	
5 Furniture and refrigerators.....	228	9,440	170	366	523	158	8,232	De	8,856	Jy	7,557	8,925	8,630	210	68	27	15,951	
6 Gas and electric fixtures and lamps and reflectors.....	50	1,788	40	72	195	44	1,437	No	1,699	Ja	1,198	1,042	1,084	527	24	7	2,350	
7 Gas, illuminating and heating.....	38	862	2	62	99	33	606	Mh	806	Jy	483	1,858	858	.....	.....	.....	2,105	
8 Glass.....	45	10,630	8	184	178	101	10,169	De	11,814	Jy	5,888	12,540	10,983	1,023	483	51	16,198	
9 Gloves and mittens, leather.....	6	109	6	4	.....	2	94	De	97	Fe	90	96	24	72	.....	.....	37	
10 Grindstones.....	9	1,355	3	31	37	7	1,277	Jy	1,499	Ja	731	1,246	1,246	.....	.....	.....	5,223	
11 Hand stamps and stencils and brands.....	31	177	34	8	10	10	115	Je	118	Ja	109	117	107	6	4	.....	105	
12 Hats and caps, other than felt, straw, and wool.....	25	511	38	17	34	16	406	Fe	416	Se	396	420	183	218	1	18	83	
13 Hats, fur-felt.....	3	10	1	.....	.....	.....	9	Je	10	Ja	7	10	7	3	.....	.....	9	
14 Hosiery and knit goods.....	39	3,412	31	84	100	48	3,149	Au	3,427	Ja	2,682	3,371	557	2,578	32	204	1,613	
15 Ice, manufactured.....	97	1,176	43	139	69	33	892	Jy	1,308	Ja	525	810	802	8	.....	.....	19,058	
16 Ink, printing.....	8	277	.....	19	65	10	183	No	190	Fe	178	190	188	.....	2	.....	1,437	
17 Iron and steel, blast furnaces.....	40	8,278	7	202	717	57	7,295	De	9,108	Fe	6,214	9,187	9,184	3	.....	.....	215,739	
18 Iron and steel, steel works and rolling mills.....	75	41,912	3	792	2,255	276	38,586	De	45,151	Fe	33,845	45,151	44,708	360	3	.....	515,813	
19 Jewelry.....	35	481	43	22	34	20	350	De	384	Jy	339	383	329	43	11	.....	116	
20 Kaolin and ground earths.....	20	75	.....	8	1	2	64	No	68	Jy	57	70	70	.....	.....	.....	1,340	
21 Leather goods.....	86	2,309	90	107	162	60	1,890	De	1,940	Se	1,822	1,997	1,570	407	15	5	1,309	
22 Leather, tanned, curried, and finished.....	36	2,028	24	63	42	15	1,884	De	2,175	Je	1,739	2,196	2,185	11	.....	5	4,244	
23 Lime.....	39	1,403	34	44	32	20	1,273	Se	1,522	Fe	903	1,345	1,343	.....	2	.....	3,872	
24 Liquors, distilled.....	17	434	12	17	27	4	374	Oc	399	Je	341	432	420	12	.....	.....	2,422	
25 Liquors, malt.....	165	5,275	35	333	521	30	4,356	Jy	4,782	Fe	4,061	4,259	4,250	7	.....	.....	31,690	
26 Liquors, vinous.....	20	254	22	28	46	9	149	Oc	187	Au	135	160	145	14	1	.....	496	
27 Lumber and timber products.....	1,390	16,445	1,560	679	527	223	13,456	Oc	14,199	Ja	12,183	15,644	15,452	165	27	.....	69,255	
28 Marble and stone work.....	198	2,520	229	109	138	32	2,012	No	2,211	Fe	1,524	2,240	2,223	2	15	.....	7,070	
29 Mattresses and spring beds.....	31	1,145	34	30	81	30	901	No	998	Jy	928	985	971	303	8	3	2,069	
30 Millinery and lace goods.....	38	1,605	30	47	111	60	1,357	Fe	1,745	Je	866	1,858	306	1,009	12	31	603	
31 Mirrors.....	8	114	10	8	1	1	94	Oc	107	Je	86	108	107	1	.....	.....	198	
32 Models and patterns, not including paper patterns.....	74	504	65	16	3	9	441	No	470	Ja	410	477	457	4	10	.....	673	
33 Musical instruments and materials, not specified.....	8	63	8	1	3	4	47	My	50	Ja	44	46	46	.....	.....	.....	49	
34 Musical instruments, pianos and organs and materials.....	30	1,987	16	55	53	22	1,841	Oc	1,953	Jy	1,716	1,920	1,846	81	2	.....	2,254	
35 Oil, linseed.....	4	255	.....	11	29	5	213	Mh	308	Se	157	188	185	3	.....	.....	1,347	
36 Optical goods.....	17	124	7	14	22	14	97	Se	74	Ap	62	74	64	10	.....	.....	43	
37 Paint and varnish.....	87	2,587	39	214	616	183	1,535	My	1,662	De	1,431	1,517	1,342	174	1	.....	5,572	
38 Paper and wood pulp.....	47	4,972	3	126	108	62	4,673	De	4,811	My	4,528	4,796	4,055	737	3	1	51,492	
39 Paper goods, not elsewhere specified.....	28	2,204	19	75	84	46	2,040	Ap	2,145	Se	1,956	2,082	995	1,072	5	10	1,909	
40 Patent medicines and compounds and druggists' preparations.....	261	2,005	236	159	527	241	905	Mh	962	Au	850	941	507	425	6	3	1,568	
41 Pens, fountain, stylographic, and gold.....	9	190	5	13	31	41	100	No	113	Ja	83	107	88	17	2	.....	50	
42 Petroleum, refining.....	10	2,089	.....	42	293	45	1,659	No	1,943	My	1,500	1,890	1,866	18	6	.....	4,324	
43 Photographic apparatus and materials.....	3	42	.....	12	5	2	22	Fe	24	Ja	22	23	20	3	.....	.....	29	
44 Photo-engraving.....	20	370	12	34	27	20	277	Oc	284	Je	272	281	271	8	2	.....	215	
45 Pottery, terra-cotta, and fire-clay products.....	186	17,751	60	409	498	196	16,519	Oc	17,044	Ja	15,197	17,323	13,847	3,296	110	70	26,778	
46 Printing and publishing.....	1,655	22,754	1,480	1,276	2,884	1,858	15,756	De	16,428	Jy	15,219	16,555	12,203	4,115	200	37	18,417	
47 Pumps, not including steam pumps.....	20	1,083	28	24	120	14	807	De	947	Se	832	900	900	.....	.....	.....	1,322	
48 Rubber goods, not elsewhere specified.....	37	12,540	15	199	1,530	420	10,382	De	11,119	Ja	9,292	11,610	9,845	1,062	30	64	25,885	
49 Safes and vaults.....	10	2,437	1	55	288	79	2,014	De	2,145	Fe	1,943	2,145	2,124	.....	.....	.....	3,177	
50 Salt.....	8	722	.....	23	36	15	648	Ja	675	Au	609	677	596	80	1	.....	4,034	
51 Saws.....	7	184	5	12	16	5	146	Mh	161	Jy	132	148	148	.....	.....	.....	443	
52 Screws, machine.....	6	363	.....	15	16	8	324	De	409	Ja	265	409	402	7	.....	.....	915	
53 Sewing machines, cases, and attachments.....	4	4,050	1	25	154	39	3,831	De	4,099	Jy	3,939	4,105	3,996	54	55	.....	2,973	
54 Shipbuilding, including boat building.....	39	3,408	43	51	92	22	3,200	Mh	4,231	Se	1,945	3,485	3,485	.....	.....	.....	8,125	
55 Shoddy.....	4	499	1	12	16	2	438	Mh	442	Au	432	441	302	139	.....	.....	1,100	
56 Show cases.....	14	402	6	25	14	8	349	De	385	Fe	318	385	366	12	4	.....	560	
57 Signs and advertising novelties.....	28	1,290	13	57	47	77	1,096	Se	1,143	Ja	1,006	1,090	622	404	2	2	1,125	
58 Slaughtering and meat packing.....	168	3,864	154	168	404	62	3,086	De	3,219	Ap	2,993	3,203	3,133	70	.....	.....	9,873	
59 Smelting and refining, not from the ore.....	6	73	6	5	2	3	57	Ja	73	Au	46	66	66	.....	.....	.....	280	
60 Soap.....	44	2,280	25	87	323	71	1,774	De	1,953	My	1,628	1,962	1,451	476	16	19	3,579	
61 Steam packing.....	4	40	1	3	.....	4	32	De	38	My	25	42	42	.....	.....	.....	132	
62 Stereotyping and electrotyping.....	14	255	9	12	16	11	207	Oc	225	Ja	190	223	219	1	3	.....	323	
63 Stoves and furnaces, including gas and oil stoves.....	102	8,352	38	259	591	190	7,274	Oc	7,822	Ja	6,621	7,086	7,648	23	15	.....	9,478	
64 Sulphuric, nitric, and mixed acids.....	4	148	.....	8	10	1	129	Se	162	Ja	101	121	121	.....	.....	.....	213	
65 Surgical appliances and artificial limbs.....	23	186	23	7	32	12	112	De	117	Mh	110	117	71	39	2	5	68	
66 Tin plate and terneplate.....	4	742	.....	10	48	8	676	Je	899	Au	438	899	707	129	.....	.....	1,849	

1 Same number reported for one or more other months.

MANUFACTURES—OHIO.

STATE, BY INDUSTRIES: 1909—Continued.

	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	\$19,962,573	\$44,017,047	\$377,050	\$305,101	\$1,415,155	\$361,954	\$40,980,653	\$23,042	\$133,220	\$10,652	\$1,000,211	\$48,093,353	\$6,740,746	
2	177,744,821	129,424,717	5,973,713	5,934,233	38,014,707	2,630,816	61,923,079	454,690	989,472	718,395	12,779,600	145,836,648	81,276,753	
3	277,682	327,230	11,618	3,010	74,478	1,305	204,959	20,210	1,007	.....	9,746	410,681	204,417	
4	2,308,137	4,204,045	115,666	173,577	667,993	20,820	3,029,751	24,300	6,997	20,520	234,361	4,622,950	1,572,388	
5	16,250,911	14,204,222	585,971	468,828	4,141,784	163,222	7,070,223	113,757	101,453	29,400	1,610,524	10,258,757	9,016,312	
6	2,576,959	3,264,904	137,113	164,767	747,943	35,062	1,740,843	27,186	9,964	60,287	341,100	3,563,230	1,780,704	
7	11,009,337	2,182,051	96,435	84,123	431,305	741,035	84,809	363,695	175,832	10,862	193,055	3,070,670	2,252,926	
8	16,201,190	12,753,518	456,835	250,528	5,976,980	1,091,415	3,599,571	31,979	68,177	19,321	1,252,703	14,358,274	9,670,288	
9	67,620	134,052	6,900	760	31,594	704	88,459	3,328	350	.....	2,021	138,656	49,496	
10	4,078,818	1,315,811	81,872	64,773	597,217	55,580	329,279	.....	19,209	3,132	164,740	1,498,256	1,113,397	
11	161,327	148,031	8,775	9,618	59,163	2,653	47,955	11,800	730	55	7,750	104,898	144,260	
12	384,362	711,787	20,622	43,948	174,355	4,528	417,730	18,948	728	266	21,632	804,229	381,971	
13	4,245	10,450	.....	.....	4,716	383	3,457	1,440	42	.....	421	14,683	10,843	
14	4,407,562	5,760,021	220,642	160,050	1,071,780	37,503	3,812,850	44,033	14,319	32,156	356,622	6,433,431	2,582,012	
15	8,380,852	1,736,257	163,192	56,535	558,758	414,763	149,621	15,409	50,052	458	318,370	2,270,112	1,705,728	
16	1,559,069	1,591,527	84,362	106,344	131,103	13,876	795,375	1,135	12,374	.....	440,058	1,907,369	1,098,118	
17	94,532,845	77,273,870	665,058	800,777	5,080,960	21,227,252	47,197,500	38,520	430,265	26,360	1,898,250	83,690,238	15,274,516	
18	103,383,821	178,093,126	1,792,510	2,268,379	28,614,117	7,072,641	131,870,614	3,050	735,414	58,786	5,377,715	107,780,043	58,536,888	
19	1,191,041	1,037,930	33,402	50,313	251,920	5,560	613,528	24,947	4,003	.....	54,264	1,255,110	636,026	
20	352,564	294,762	11,217	2,200	33,770	22,393	200,276	.....	2,455	.....	22,451	330,501	107,832	
21	4,069,792	4,433,205	151,580	150,752	879,013	27,012	2,831,668	49,218	26,155	.....	317,801	4,630,002	2,080,412	
22	13,758,911	9,398,390	141,655	55,565	1,083,121	80,209	7,030,335	7,000	43,512	855	347,049	10,127,836	2,408,232	
23	2,634,728	1,424,852	84,831	44,463	553,371	254,658	843,070	1,450	13,107	.....	350	1,620,060	1,022,332	
24	4,731,718	11,529,484	52,970	34,555	230,086	77,402	2,430,914	15,000	8,428,661	1,000	252,546	12,011,115	9,406,799	
25	57,748,188	21,008,272	998,973	684,513	3,267,244	731,019	6,832,081	11,824	4,524,313	66,300	4,582,005	25,392,059	18,768,959	
26	1,979,718	1,007,261	60,640	48,042	79,439	10,728	707,459	3,622	66,289	.....	125,642	1,303,007	585,510	
27	28,500,012	30,347,035	935,657	531,712	6,700,919	219,372	10,752,991	144,685	185,684	252,266	1,623,749	34,597,009	14,624,706	
28	3,505,269	3,263,445	149,228	140,564	1,161,397	80,231	1,361,926	22,473	19,337	27,296	256,803	3,847,308	2,397,051	
29	2,034,991	2,093,906	73,269	109,054	435,498	24,839	1,656,869	10,899	15,532	0,016	355,265	3,300,839	1,625,087	
30	1,333,962	2,368,872	98,361	125,067	478,313	13,780	1,444,869	34,203	5,372	.....	168,907	2,744,492	1,285,843	
31	166,006	262,373	9,248	1,150	55,722	2,620	179,555	3,040	915	800	8,723	201,187	109,012	
32	315,980	516,425	21,520	0,149	293,545	8,067	150,724	16,235	1,530	300	18,855	669,855	511,064	
33	74,145	59,008	1,125	4,329	32,004	1,023	7,071	1,054	305	1,559	10,448	80,884	72,790	
34	3,593,177	3,540,176	111,593	60,562	1,092,113	30,944	1,891,439	53,806	10,209	1,085	287,525	3,025,757	2,003,374	
35	2,552,688	3,387,051	33,059	22,184	83,232	20,778	3,054,269	360	7,405	.....	158,864	3,627,492	540,445	
36	159,808	233,230	20,725	19,658	41,621	2,138	107,006	16,819	1,008	.....	24,135	274,050	164,846	
37	11,757,377	12,482,218	508,965	778,140	904,378	96,353	8,473,693	42,917	72,040	600	1,515,120	13,617,189	5,047,143	
38	20,969,094	15,515,130	404,240	102,088	2,410,215	1,049,097	9,840,188	4,800	59,867	10,708	1,498,867	16,965,266	6,066,975	
39	5,004,576	5,478,505	195,343	116,409	881,779	48,407	3,355,189	24,498	282,825	3	543,067	6,300,606	2,872,920	
40	4,071,940	4,908,370	287,650	512,500	385,003	31,100	1,856,866	50,293	31,865	5,380	1,741,533	5,550,489	3,971,593	
41	3,055,989	410,002	27,203	53,386	49,852	1,090	221,023	6,732	975	2,040	47,095	469,869	247,750	
42	11,152,443	10,042,159	156,675	255,175	1,028,304	522,565	7,021,988	9,430	100,092	4,025	343,869	10,753,738	2,609,155	
43	67,357	101,455	22,046	7,724	10,166	322	42,040	1,660	748	.....	16,138	105,028	62,000	
44	266,262	499,709	53,580	31,813	241,786	7,360	101,984	12,575	910	4,624	45,168	575,810	406,475	
45	32,166,630	18,838,269	801,609	641,338	8,627,779	2,025,175	4,436,365	15,859	151,374	68,159	2,040,771	21,173,272	14,711,792	
46	38,053,259	34,504,572	2,304,086	3,063,222	9,354,848	396,263	11,508,091	640,970	211,913	1,391,211	5,594,068	41,057,366	29,752,952	
47	2,272,910	2,280,327	35,020	108,800	517,369	21,166	1,249,532	3,598	12,554	.....	332,360	2,747,109	1,470,411	
48	37,545,665	45,575,644	637,645	1,390,141	5,059,522	360,166	32,082,249	5,810	151,455	1,177	5,287,579	53,910,531	21,468,116	
49	5,074,718	4,903,112	207,567	541,330	1,321,055	47,024	2,114,961	12,945	27,593	6,335	624,342	5,488,341	3,320,356	
50	1,980,873	1,640,212	45,650	32,144	306,534	250,292	840,063	.....	8,791	.....	102,738	1,807,347	716,992	
51	339,335	276,201	13,848	11,781	95,449	5,547	101,992	4,110	3,405	.....	40,069	297,667	190,128	
52	605,589	459,669	28,400	13,281	203,797	14,460	163,530	3,120	5,689	.....	27,392	597,960	419,976	
53	4,973,085	5,091,231	96,080	179,914	2,104,703	42,875	2,475,451	.....	40,686	.....	751,522	5,972,228	3,453,002	
54	13,625,199	4,799,707	153,380	105,776	1,704,530	98,317	2,363,525	8,092	40,821	800	315,466	5,070,416	3,214,574	
55	1,095,562	1,137,725	32,700	29,679	199,770	20,710	714,934	.....	10,761	.....	123,171	1,257,173	615,529	
56	534,654	693,635	37,818	14,221	172,556	7,574	299,049	9,494	3,207	4,000	45,316	667,866	360,943	
57	2,030,182	2,247,537	99,043	63,479	505,118	19,216	922,146	17,148	14,556	2,200	604,631	2,598,093	1,656,731	
58	12,398,691	48,174,845	279,618	407,343	1,856,502	224,429	44,123,733	21,769	74,172	7,750	1,180,020	50,804,100	6,456,938	
59	270,562	247,297	18,360	3,720	15,360	30,617	143,993	630	550	.....	8,728	379,205	205,595	
60	12,731,016	14,050,747	186,625	386,553	826,561	222,934	11,438,999	17,270	57,390	843	914,466	17,077,308	5,416,278	
61	63,532	35,654	6,200	1,320	14,365	1,436	8,101	.....	442	.....	3,920	38,158	28,621	
62	239,453	402,982	20,781	18,102	142,532	12,493	158,901	11,922	684	.....	37,567	475,215	303,821	
63	15,624,866	13,627,363	519,138	681,673	4,217,193	174,710	6,125,783	40,158	86,343	94,334	1,682,031	15,357,500	9,057,007	
64	574,391	394,571	17,367	12,268	82,350	20,238	228,339	.....	3,276	.....	30,733	417,702	169,125	
65	253,873	225,983	10,050	43,175	50,110	1,150	80,999	5,758	1,678	2,865	29,598	283,043	201,794	
66	1,063,491	7,733,073	18,473	57,983	449,242	29,835	7,125,309	.....	7,036	.....	40,695	7,880,367		

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, superintendents, and managers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.			Under 16.	
					Male.	Female.		Number.			Male.	Female.		Male.	Female.
								Maximum month.	Minimum month.						
1 Tobacco manufactures	1,146	14,681	1,269	237	455	89	12,631	De 13,194	Fe 12,256	13,384	4,327	8,038	110	9	1,401
2 Type founding and printing materials	5	87	5	3	5	1	73	Ap <sup>1</sup> 75	My 70	74	71	2	1	.....	55
3 Typewriters and supplies	4	20	2	2	2	3	11	Ap <sup>1</sup> 12	Ja <sup>1</sup> 9	11	9	2	.....	17	
4 Umbrellas and canes	15	371	15	13	42	14	287	De 314	Ja 252	314	87	208	6	13	82
5 Wall plaster	23	340	10	35	25	11	250	Au <sup>1</sup> 291	Ja 215	243	243	.....	.....	.....	1,823
6 Whips	4	205	.....	8	43	6	148	Mh 162	Se 137	142	91	50	.....	1	210
7 Woolen, worsted, and felt goods, and wool hats	20	2,711	23	41	65	16	2,566	Au 2,724	Ja 2,358	2,688	857	1,504	42	105	6,504
8 All other industries <sup>2</sup>	979	36,524	813	1,328	2,435	883	31,065	.....	.....	.....	.....	.....	.....	.....	73,492

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

<sup>2</sup> All other industries embrace—

Artists' materials	1	Emery and other abrasive wheels	3	Horseshoes, not made in steel works or in rolling mills	1
Awings, tents, and sails	30	Engraving and diesinking	8	House-furnishing goods, not elsewhere specified	23
Axle grease	5	Engraving, wood	4	Ink, writing	1
Bags, other than paper	6	Fire extinguishers, chemical	2	Instruments, professional and scientific	17
Beet sugar	1	Fireworks	3	Iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills	17
Billiard tables and materials	4	Flavoring extracts	37	Iron and steel, doors and shutters	3
Bluing	3	Food preparations	61	Iron and steel forgings	30
Bone, carbon, and lamp black	1	Foundry supplies	10	Iron and steel, nails and spikes cut and wrought, including wire nails, not made in steel works or rolling mills	4
Carpets and rugs, other than rag	2	Furs, dressed	1	Iron and steel pipe, wrought	5
Carriages and sleds, children's	9	Galvanizing	5	Jewelry and instrument cases	2
Cash registers and calculating machines	8	Glass, cutting, staining, and ornamenting	34	Labels and tags	4
Charcoal	8	Glucose and starch	2	Lasts	2
Clothing, horse	1	Glue	3	Lead, bar, pipe, and sheet	2
Clothing, men's, buttonholes	8	Gold and silver, reducing and refining, not from the ore	2	Locomotives, not made by railroad companies	1
Cordials and sirups	7	Grease and tallow	23		
Dentists' materials	5	Hair work	7		
Drug grinding	1	Hats, straw	1		
Dyeing and finishing textiles	6				

STATE, BY INDUSTRIES: 1909—Continued.

	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	\$11,070,490	\$25,573,191	\$490,777	\$489,449	\$4,504,787	\$66,380	\$12,008,443	\$184,249	\$4,758,332	\$22,702	\$3,048,072	\$28,007,269	\$16,832,446
2	367,693	159,174	7,360	5,428	58,046	2,724	69,018	6,320	674		9,604	192,220	120,478
3	25,693	47,797	2,600	4,546	6,224	243	25,944	1,908	27		6,305	54,102	27,915
4	564,884	885,072	25,214	43,766	104,642	2,502	604,851	12,389	3,295	500	87,913	1,005,130	397,777
5	679,065	712,459	49,346	26,638	105,550	38,704	395,577	36,195	6,343	4,615	49,485	935,165	500,884
6	302,852	314,633	13,210	50,925	55,452	3,786	137,863		1,910		51,493	349,077	207,434
7	7,158,812	6,767,443	115,080	91,688	924,844	61,360	4,554,669	2,785	32,612	479,818	504,587	7,690,149	3,074,120
8	83,524,536	94,176,549	2,728,243	2,731,218	16,480,005	1,397,744	55,560,415	302,006	528,617	308,265	14,121,436	105,098,862	48,131,703

<sup>a</sup> All other industries embrace—Continued.

Looking-glass and picture frames.....	15	Pulp goods.....	2	Vault lights and ventilators.....	1
Malt.....	8	Roofing materials.....	11	Vinegar and cider.....	19
Matches.....	4	Rules, ivory and wood.....	1	Wall paper.....	2
Mineral and soda waters.....	174	Scales and balances.....	6	Washing machines and clothes wringers.....	18
Mucilage and paste.....	18	Screws, wood.....	1	Waste.....	1
Needles, pins, and hooks and eyes.....	1	Silk and silk goods, including throwsters.....	1	Wheelbarrows.....	3
Oil, cottonseed, and cake.....	1	Silverware and plated ware.....	5	Windmills.....	3
Oil, not elsewhere specified.....	21	Soda-water apparatus.....	1	Window shades and fixtures.....	7
Oilcloth and linoleum.....	3	Sporting and athletic goods.....	12	Wire.....	6
Oleomargarine.....	2	Springs, steel, car and carriage.....	5	Wirework, including wire rope and cable.....	60
Paper patterns.....	2	Stationery goods, not elsewhere specified.....	14	Wood, turned and carved.....	83
Paving materials.....	5	Statuary and art goods.....	8	Wool pulling.....	1
Peanuts, grading, roasting, cleaning, and shelling..	2	Toys and games.....	19		
Pipes, tobacco.....	1	Upholstering materials.....	9		

## MANUFACTURES : OKLAHOMA

## 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 Oklahoma 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 Oklahoma, 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 Oklahoma City. 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 in to (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 week. The inquiry called merely for the prevailing practice used 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.**—The territory of Oklahoma and Indian Territory were admitted to the Union as one state under the name of Oklahoma, November 16, 1907. For the census years preceding the consolidation of the two territories their statistics have, therefore, been combined in this bulletin for purposes of comparison.

The state has an area of 70,057 square miles, of which 643 represent water surface. It ranks seventeenth in size among the 49 states and territories of continental United States. Its population in 1910 was 1,657,155, as compared with 790,391 in 1900 and 258,657 in 1890. In 1910 the density of population for the entire state was 23.9 per square mile, the corresponding figure for 1900 being 11.4. It ranked twenty-third among the states and territories as regards population in 1910 and thirtieth in 1900. The percentage of increase in population during the decade 1900–1910 was greater than for any other state except Washington. The population is mostly rural; only 19.3 per cent of the entire population of the state in 1910 resided in incorporated places having a population of 2,500 or over.

There are eight cities in the state which in 1910 had a population of over 10,000—Oklahoma City, Muskogee, Tulsa, Enid, McAlester, Shawnee, Guthrie, and Chickasha. These eight cities contained 10.2 per cent of the total population of the state, and in 1909 were credited with 37.3 per cent of the total value of its manufactures.

The Arkansas and Red Rivers are navigable for boats of light draft for some distance, thus giving water connections with the lower Mississippi. The facilities for railway transportation have been greatly developed during the past few years, and the principal manufacturing centers have good railroad connection with other parts of the country.

**Importance and growth of manufactures.**—The manufactures of Oklahoma have increased rapidly in their importance, although many of the industries are as yet in their infancy. In 1909, as in 1904 and 1899, the leading industries were those directly dependent on the products of agriculture, but in 1909 these industries, although large, did not report such a large proportion of the total value of products for all industries combined as in the previous years. A marked

increase in the independent industrial activities of the state commenced with the development of the oil fields in 1907 and the discovery of natural gas. This cheap fuel has attracted manufacturers, who have established a number of new enterprises. An abundance of coal and lumber and the location in the state of such minerals as gypsum, cement rock, asphalt, granite, limestone, lead, and zinc have further stimulated manufacturing. In 1899 the total value of manufactured products amounted to only \$8,133,000, as compared with \$24,459,000 in 1904 and \$53,682,000 in 1909. Of the total increase of \$29,223,000 from 1904 to 1909, nearly one-fourth represents the value of the output of about 30 new industries. From 1899 to 1909 the gross value of products per capita of the total population of the state increased from \$10 to \$32. The proportion which the manufactures of the state represent of the total value of the products of manufacturing industries in the United States increased from seven-hundredths of 1 per cent in 1899 to seventeen-hundredths of 1 per cent in 1904 and twenty-six-hundredths of 1 per cent in 1909.

The next table gives the more important figures relative to all classes of manufactures combined for the state at the censuses of 1909, 1904, and 1899, with the percentages of increase from census to census.

In 1909 the state of Oklahoma had 2,310 manufacturing establishments, which gave employment to an average of 18,034 persons during the year and paid out \$9,285,000 in salaries and wages. Of the persons employed, 13,143 were wage earners. These establishments turned out products to the value of \$53,682,000, to produce which materials costing \$34,153,000 were used. The value added by manufacture was thus \$19,529,000, which figure best represents the net wealth created by manufacturing operations during the year.

In general, this table brings out the fact that there has been a rapid growth of the manufacturing interests of the state. During the five-year period 1904–1909 every item more than doubled, the number of establishments increasing 105.7 per cent and the average number of wage earners 140.9 per cent, while the value of products increased 119.5 per cent and the value added by manufacture 142.1 per cent. As pointed out in the Introduction, however, it would be improper to infer that manufactures increased in

## MANUFACTURES—OKLAHOMA.

volume to the full extent indicated by the figures representing values, since the increases shown are 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 .....	2,310	1,123	495	105.7	126.9
Persons engaged in manufactures .....	18,034	7,456	( <sup>1</sup> )	141.9	( <sup>1</sup> )
Proprietors and firm members .....	2,698	1,187	( <sup>1</sup> )	127.3	( <sup>1</sup> )
Salaried employees .....	2,193	813	269	169.7	202.2
Wage earners (average number) .....	13,143	5,456	2,381	140.9	129.1
Primary horsepower .....	71,139	29,608	11,572	140.3	155.9
Capital .....	\$38,873,000	\$16,124,000	\$4,054,000	141.1	297.7
Expenses .....	47,216,000	21,383,000	6,800,000	120.8	214.5
Services .....	9,285,000	3,517,000	1,113,000	164.0	216.0
Salaries .....	2,045,000	718,000	219,000	184.8	227.9
Wages .....	7,240,000	2,799,000	894,000	158.7	213.1
Materials .....	34,153,000	16,394,000	5,430,000	108.3	201.9
Miscellaneous .....	3,778,000	1,472,000	257,000	156.7	472.8
Value of products .....	53,682,000	24,459,000	8,134,000	119.5	200.7
Value added by manufacture (value of products less cost of materials) .....	19,529,000	8,065,000	2,704,000	142.1	198.3

<sup>1</sup> Figures not available.

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

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. <sup>1</sup>			
		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
<b>All industries .....</b>	<b>2,310</b>	<b>13,143</b>	<b>100.0</b>	<b>\$53,682,000</b>	<b>100.0</b>	<b>\$19,529,000</b>	<b>100.0</b>	<b>119.5</b>	<b>200.7</b>	<b>142.1</b>	<b>198.3</b>
Flour-mill and gristmill products .....	295	842	6.4	19,144,000	35.7	2,651,000	13.6	50.3	155.0	44.7	121.3
Oil, cottonseed, and cake .....	39	581	4.4	5,187,000	9.7	942,000	4.8	66.8	255.7	24.6	181.0
Lumber and timber products .....	342	3,175	24.2	4,439,000	8.3	2,052,000	15.1				
Printing and publishing .....	598	1,698	12.9	3,980,000	7.4	2,085,000	15.3	80.9	210.9	83.4	216.1
Bread and other bakery products .....	252	418	3.2	1,794,000	3.3	825,000	4.2	159.2	620.8	192.6	442.3
Foundry and machine-shop products .....	64	457	3.5	1,371,000	2.6	784,000	4.0	488.4	294.9	399.4	469.7
Ice, manufactured .....	77	449	3.4	1,273,000	2.4	960,000	4.9	141.1	371.4	137.3	402.5
Butter, cheese, and condensed milk .....	19	62	0.5	1,150,000	2.1	222,000	1.1				
Brick and tile .....	38	730	5.6	1,029,000	1.9	803,000	4.1	101.8	175.7	110.2	148.1
Slaughtering and meat packing .....	7	63	0.5	889,000	1.7	140,000	0.7	202.4		154.5	
Copper, tin, and sheet-iron products .....	62	233	1.8	799,000	1.5	388,000	2.0	271.6		259.3	
Artificial stone .....	129	236	1.8	539,000	1.0	306,000	1.6	582.3		551.0	
Marble and stone work .....	41	147	1.1	418,000	0.8	231,000	1.2	294.3		220.8	
Leather goods .....	15	66	0.5	375,000	0.7	149,000	0.8	33.9	78.3	17.3	104.8
Brooms .....	23	76	0.6	248,000	0.5	103,000	0.5	244.4	620.0	151.2	583.3
Carriages and wagons and materials .....	19	123	0.9	233,000	0.4	152,000	0.8				
All other industries .....	290	3,787	28.8	10,805,000	20.1	4,920,000	25.2				

<sup>1</sup> Per cent of increase is based on figures in Table I. Where the percentages are omitted, the figures are not comparable.

The smelting and refining of zinc, the refining of petroleum, and the steam-railroad repair shops, which are among the most important industries in the state when measured by value of products, are included under the head of "All other industries" in the above table. The first two of these industries were started after 1904, and for this reason no comparative figures are available, while for the third industry comparative figures can not be given without disclosing the operations of individual establishments. The 1909 statistics for each of these industries, however, are given in Table II, page 16. In 1909 three establishments were engaged in the smelting and refining of zinc, the average number of wage earners employed being 566. Measured by value of products, this industry, with

\$3,002,000 in 1909, held fifth place among the manufacturing industries of the state. The nine establishments engaged in refining petroleum gave employment to an average of 75 employees and reported products valued at \$1,055,000. In 1909 the eight steam-railroad car repair shops gave employment to an average of 1,412 wage earners and reported products valued at \$1,702,000.

Although a few industries predominate in importance, it will be seen from Table II, page 16, 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.

*Flour-mill and gristmill products.*—This industry, which was the first in importance among the manufacturing industries of the state, gave employment in 1909 to 842 wage earners and reported products valued at \$19,144,000, or 35.7 per cent of the total value of manufactured products for the state. During the decade 1899–1909 the value of flour-mill and gristmill products increased over 300 per cent.

*Oil, cottonseed, and cake.*—The statistics presented include those for all establishments engaged primarily in extracting oil from the seed and in refining oil for sale. The industry shows a decided increase during the decade in the average number of wage earners, the value of products, and the value added by manufacture.

*Lumber and timber products.*—This industry embraces establishments engaged in logging and also sawmills, planing mills, and wooden packing-box factories. Its growth was most rapid during the latter half of the decade, and in 1909 more wage earners were employed in this industry than in any other in the state.

*Printing and publishing.*—This classification includes establishments which publish newspapers, books, and periodicals, job-printing offices, and those engaged in bookbinding and blank-book making. This industry reported more establishments, and, with the exception of the lumber industry, gave employment to more wage earners than any other in the state.

The rank of the industries according to value added by manufacture differs considerably from the rank in value of products. Because of the extent to which the processes of manufacture are carried on by machinery in the flour mills and gristmills and in the cottonseed-oil mills the value added by manufacture in these industries is not commensurate with the gross value of products. As a result, the flour mills and gristmills would become third in order according to value added by manufacture, and the cottonseed-oil mills would be fifth. Printing and publishing and lumber advance to first and second places, respectively, and the manufacture of ice, which was seventh in value of products, goes to fourth place.

This table also shows the percentages of increase for these leading industries in respect to value of products and value added by manufacture where these statistics are comparable. The butter, cheese, and condensed-milk industry shows a greater rate of increase from 1904 to 1909 both in value of products and in value added by manufacture than any of the other industries shown separately in the table. The bakeries and broom factories show by far the greatest percentages of increase in value of products from 1899 to 1904, and the broom factories show also the greatest rate of increase in value added by manufacture for the same period. Remarkable rates of increase are shown, however, for nearly all of the industries for which a separate presentation is made, and generally for both periods of the decade.

In addition to the 16 industries shown separately in the table and the 3 mentioned in the preceding paragraph, there are 14 other industries which had a value of products in 1909 in excess of \$100,000. 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 represent the true condition of the industry, for the reason that it is more or less interwoven with one or more other industries; and in others, because comparable statistics for the different census years are not available, or on account of changes in classification. These industries are as follows: Boxes, fancy and paper; cement; clothing, men's; coffee and spice, roasting and grinding; confectionery; cordage and twine and jute and linen goods; explosives; food preparations; furniture and refrigerators; gas, illuminating and heating; mattresses and spring beds; mineral and soda waters; wall plaster; and wood preserving. Statistics for 1909 for men's clothing, confectionery, furniture, gas, mattresses and spring beds, and wall plaster are presented in Table II, page 16.

**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.
<b>All classes</b> .....	<b>18,034</b>	<b>17,071</b>	<b>963</b>
Proprietors and officials.....	3,630	3,547	83
Proprietors and firm members.....	2,698	2,628	70
Salaried officers of corporations.....	284	278	6
Superintendents and managers.....	648	641	7
Clerks.....	1,261	1,059	202
Wage earners (average number).....	13,143	12,465	678
16 years of age and over.....	13,020	12,345	675
Under 16 years of age.....	123	120	3

The average number of persons engaged in manufactures during 1909 was 18,034, of whom 13,143 were wage earners. Of the remainder, 3,630 were proprietors and officials and 1,261 were clerks. Corresponding figures for individual industries will be found in Table II, page 16.

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 nine important industries individually.

Of the total number of persons engaged in all manufacturing industries, 20.1 per cent were proprietors and officials, 7 per cent clerks, and 72.9 per cent wage

earnings. In most of the industries the majority of the establishments are small and in many of them the work is to a large extent done by the proprietors or their representatives, so that the proportion of persons falling in the class of proprietors and officials is much higher than in states where the industries are more highly developed and the establishments larger.

INDUSTRY.	PERSONS ENGAGED IN MANUFACTURES.			
	Total number.	Per cent of total.		
		Proprietors and officials.	Clerks.	Wage earners (average number).
All industries.....	18,034	20.1	7.0	72.9
Bread and other bakery products.....	766	40.3	5.1	54.6
Brick and tile.....	823	8.6	2.7	88.7
Butter, cheese, and condensed milk.....	101	26.7	11.9	61.4
Flour-mill and gristmill products.....	1,479	39.2	10.6	50.1
Foundry and machine-shop products.....	587	17.0	5.1	77.9
Ice, manufactured.....	614	18.1	8.8	73.1
Lumber and timber products.....	3,809	14.2	2.5	83.4
Oil, cottonseed, and cake.....	770	14.2	10.4	75.5
Printing and publishing.....	2,045	27.0	14.5	57.7
All other industries.....	5,040	14.9	5.5	79.0

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 in all industries is also given in each case.

INDUSTRY.	WAGE EARNERS.			
	Average number. <sup>1</sup>	Per cent of total.		
		16 years of age and over.		Under 16 years of age.
Male.		Female.		
All industries.....	13,143	93.9	5.1	0.9
Bread and other bakery products.....	418	90.4	8.1	1.4
Brick and tile.....	780	99.7	.....	0.3
Butter, cheese, and condensed milk.....	62	80.6	17.7	1.6
Flour-mill and gristmill products.....	842	99.8	.....	0.2
Foundry and machine-shop products.....	457	100.0	.....	.....
Ice, manufactured.....	449	98.9	.....	1.1
Lumber and timber products.....	3,175	99.7	( <sup>2</sup> )	0.2
Oil, cottonseed, and cake.....	581	100.0	.....	.....
Printing and publishing.....	1,698	79.9	17.4	2.8
All other industries.....	4,731	91.8	7.1	1.1

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

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

For all industries combined, 93.9 per cent of the average number of wage earners were males 16 years of age and over; 5.1 per cent females 16 years of age and over; and nine-tenths of 1 per cent children under the age of 16. The larger part of the total number of female wage earners and of the wage earners under 16 years of age is made up of those employed in bakeries, creameries, and printing and publishing establishments.

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.....	18,034	100.0	7,456	100.0	141.9
Proprietors and firm members.....	2,608	15.0	1,187	15.9	127.3
Salaried employees.....	2,193	12.2	813	10.9	169.7
Wage earners (average number)....	13,143	72.9	5,456	73.2	140.9

Comparable figures are not obtainable for 1899. Salaried employees show a greater percentage of increase than either of the other two classes, as well as the only increase in the proportion of the total.

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.....	13,143	100.0	5,456	100.0	2,381	100.0
16 years of age and over..	13,020	99.1	5,346	98.0	2,331	97.9
Male.....	12,345	93.9	5,019	92.0	2,254	94.7
Female.....	675	5.1	327	6.0	77	3.2
Under 16 years of age....	123	0.9	110	2.0	50	2.1

This table indicates that for all industries combined the proportion of females was greater in 1909 than in 1899, while that of males 16 years of age and over and children under 16 years of age was less. In 1909 males 16 years of age and over formed 93.9 per cent of all wage earners, as compared with 92 per cent in 1904 and 94.7 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 cottonseed-oil 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 16, 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.	NUMBER OF WAGE EARNERS.					
	All industries.		Oil, cottonseed, and cake.		All other industries.	
	Number.	Percent of maximum.	Number.	Percent of maximum.	Number.	Percent of maximum.
January.....	11,826	80.7	1,000	79.0	10,826	79.9
February.....	11,782	80.4	641	50.6	11,141	82.2
March.....	12,237	83.5	507	40.0	11,730	86.6
April.....	12,285	83.8	267	21.1	12,018	88.7
May.....	12,518	85.4	162	12.8	12,356	91.2
June.....	12,905	88.0	126	10.0	12,779	94.3
July.....	13,153	89.7	115	9.1	13,038	96.2
August.....	13,465	91.9	132	10.4	13,333	98.4
September.....	13,826	94.3	408	32.2	13,418	99.0
October.....	14,659	100.0	1,112	87.8	13,547	100.0
November.....	14,551	99.3	1,266	100.0	13,285	98.1
December.....	14,505	98.9	1,232	97.3	13,273	98.0

For all industries combined the greatest number of wage earners, 14,659, is shown for October, and the smallest number, 11,782, for February, the minimum number representing 80.4 per cent of the maximum number. The most important seasonal industry in Oklahoma is the manufacture of cottonseed oil. The smallest number employed in this industry was 115, in

July, and the greatest number, 1,266, in November. The relative variation in the number of wage earners employed for the several months in the more important industries, except in the manufacture of brick and tile, where the number employed in January was only 39.6 per cent of the number employed in July, was not much greater than that which is shown for all industries of the state combined. The minimum number employed in flour mills and gristmills, as shown in Table II, was 80.4 per cent of the maximum number; in the lumber industry the minimum number was 83.4 per cent of the maximum; and in printing and publishing the minimum was 88.8 per cent of the maximum.

**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.
<b>All industries.....</b>	<b>13,143</b>	<b>2,965</b>	<b>308</b>	<b>1,940</b>	<b>526</b>	<b>4,711</b>	<b>1,463</b>	<b>858</b>	<b>368</b>
Artificial stone.....	236	86	5	54	2	89	.....	.....	.....
Bread and other bakery products.....	418	58	4	52	14	236	15	34	5
Brick and tile.....	730	15	.....	46	.....	669	.....	.....	.....
Brooms.....	76	10	10	1	37	9	.....	.....	.....
Butter, cheese, and condensed milk.....	62	1	.....	1	20	19	9	3	.....
Carriages and wagons and materials.....	123	4	.....	43	.....	76	.....	.....	.....
Copper, tin, and sheet-iron products.....	233	187	4	18	.....	24	.....	.....	.....
Flour-mill and gristmill products.....	842	98	10	11	4	280	168	271	.....
Foundry and machine-shop products.....	457	18	1	90	1	343	4	.....	.....
Ice, manufactured.....	449	5	.....	.....	9	40	124	24	247
Lumber and timber products.....	3,175	800	180	155	156	1,631	253	.....	.....
Marble and stone work.....	147	69	.....	45	5	28	.....	.....	.....
Oil, cottonseed, and cake.....	581	.....	.....	.....	.....	15	14	488	64
Printing and publishing.....	1,698	1,122	58	323	32	163	.....	.....	.....
Slaughtering and meat packing.....	63	.....	.....	.....	.....	54	7	2	.....
All other industries.....	3,853	492	22	1,110	237	1,035	809	30	52

It is evident from these figures that for the majority of wage earners employed in the manufacturing industries of Oklahoma in 1909 the prevailing hours of labor were 60 or more a week, 56.3 per cent being employed in establishments where these hours prevailed, and 43.7 per cent in establishments where less than 60 hours a week prevailed. Of the total number of wage earners, 35.8 per cent were employed in plants in which 60 hours constituted a week's work.

In the cottonseed-oil mills most of the wage earners were employed in mills where the prevailing number of hours of labor was 72 or more per week; in the flour mills and gristmills the prevailing hours for the greater part of the wage earners were from 60 to 72 per week; in the lumber industry about three-fifths of the wage earners worked 60 hours or more per week, though slightly more than one-fourth of the total number worked 48 hours or less; and in printing and publish-

ing almost two-thirds of the wage earners were employed for 48 hours or less per week.

**Location of establishments.**—The next table shows the extent to which the manufactures of Oklahoma are carried on in cities of 10,000 population or over. (See Introduction.) The statistics in 1904 are omitted from this table, because there was no Federal census of population for that year, from which to determine the cities that came within the group having over 10,000 inhabitants.

In 1909, 37.3 per cent of the total value of products was reported from cities having over 10,000 inhabitants, and 33.4 per cent of the average number of wage earners were employed in such cities. In the relative importance of their manufacturing industries, this class of cities made a decided gain during the period from 1899 to 1909. There were only two of these cities, however, since Muskogee, Tulsa, Enid, McAlester,

Shawnee, and Chickasha, each had less than 10,000 inhabitants in 1900, and so were included in the districts outside in 1899. The extent of this change will be appreciated when it is considered that in 1909 the manufacturing establishments in these six cities gave employment to an average of 2,704 wage earners and turned out products valued at \$10,694,651, which represented 20.6 per cent and 19.9 per cent of the respective totals for the state.

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	1,657,155	168,866	1,488,289	10.2	89.8
	1900	790,391	20,043	770,348	2.5	97.5
Number of establishments.	1909	2,310	486	1,824	21.0	79.0
	1899	495	69	426	13.9	86.1
Average number of wage earners.	1909	13,143	4,884	8,759	33.4	66.6
	1899	2,381	401	1,920	19.4	80.6
Value of products....	1909	\$53,682,405	\$20,005,330	\$33,677,075	37.3	62.7
	1899	8,133,936	1,493,098	6,639,938	18.4	81.6
Value added by manufacture.	1909	19,520,511	7,110,080	12,410,431	36.4	63.6
	1899	2,703,489	639,860	2,063,629	23.7	76.3

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

CITY.	1910	1900	CITY.	1910	1900
Oklahoma City.....	64,205	10,037	McAlester.....	12,954	4,125
Muskogee.....	26,278	4,254	Shawnee.....	12,474	3,462
Tulsa.....	18,182	1,390	Guthrie.....	11,654	10,006
Enid.....	13,799	3,444	Chickasha.....	10,320	3,209

The relative importance in manufactures of the eight cities having a population of 10,000 or over 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
Oklahoma City.....	1,398	720	458	\$7,807,884	\$3,670,730	\$1,241,987
Enid.....	303	(1)	(1)	2,453,188	(1)	(1)
Muskogee.....	381	(1)	(1)	2,279,151	(1)	(1)
Shawnee.....	1,014	(1)	(1)	2,081,477	(1)	(1)
Chickasha.....	364	(1)	(1)	1,866,959	(1)	(1)
Tulsa.....	462	(1)	(1)	1,562,642	(1)	(1)
Guthrie.....	282	333	241	1,442,795	1,200,662	648,933
McAlester.....	180	(1)	(1)	451,234	(1)	(1)

<sup>1</sup> Figures not available.

Oklahoma City and Guthrie, the only cities for which comparative figures are given, show increases in value of products at each census. Oklahoma City, however, showed by far the greater growth in manufactures, as it did in population. The value of its

manufactured products increased 195.6 per cent from 1899 to 1904 and 114.3 per cent from 1904 to 1909, and the average number of wage earners employed increased 57.2 per cent and 94.2 per cent, respectively, during the same periods. In Guthrie the value of products increased 85 per cent from 1899 to 1904 and 20.2 per cent from 1904 to 1909, while the average number of wage earners increased 38.2 per cent between 1899 and 1904 and decreased 15.3 per cent between 1904 and 1909. In four of the cities shown separately for 1909—Oklahoma City, Enid, Muskogee, and Guthrie—the flour-mill and gristmill products and the printing and publishing industries were predominant.

The leading industries or products in the remaining cities shown in the table are as follows: In Chickasha, flour mills and gristmills, cottonseed-oil mills, and steam-railroad repair shops; in McAlester, manufactured ice and printing and publishing; in Shawnee, steam-railroad repair shops, cottonseed-oil mills, and flour-mill and gristmill products; and in Tulsa, foundries and machine shops, flour-mill and gristmill products, and the lumber industry.

**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.

The most important distinction shown is that between corporate and all other forms of ownership. For all industries combined, 21.7 per cent of the total number of establishments were, in 1909, under corporate ownership, as against 78.3 per cent under all other forms. The corresponding figures for 1904 were 21.5 per cent and 78.4 per cent, respectively. For all industries combined, as measured by value of products and value added by manufacture, corporate ownership gained ground during the period covered by the table, establishments operated by corporations reporting 73.4 per cent of the total value of products and 65 per cent of the total value added by manufacture in 1909, as against 71.1 per cent and 61.2 per cent, respectively, in 1904. This class of establishments reported one-half or more of the total value of products for each of the industries shown separately, with the exception of the bakeries, in which individually owned establishments reported the greater value of products. Among the establishments engaged in the important industries not shown in the preceding table, all of the zinc smelters and refineries, all but two of the cottonseed-oil mills, and all but one of the petroleum refineries were under corporate ownership.

INDUSTRY AND CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
<b>ALL INDUSTRIES:</b>				
1909.....	2,310	13,143	\$53,682,405	\$19,529,511
1904.....	1,123	6,456	24,469,107	8,065,155
<b>Individual:</b>				
1909.....	1,257	3,113	7,099,080	4,101,449
1904.....	635	1,389	4,173,454	1,987,004
<b>Firm:</b>				
1909.....	541	1,787	6,412,806	2,705,968
1904.....	242	696	2,879,369	1,139,309
<b>Corporation:</b>				
1909.....	501	8,225	39,390,330	12,687,947
1904.....	242	3,366	17,401,144	4,934,424
<b>Other:</b>				
1909.....	11	18	180,180	34,147
1904.....	4	5	5,140	4,208
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	100.0	100.0	100.0	100.0
<b>Individual:</b>				
1909.....	54.4	23.7	14.3	21.0
1904.....	56.5	25.5	17.1	24.6
<b>Firm:</b>				
1909.....	23.4	13.0	11.9	13.0
1904.....	21.5	12.8	11.8	14.1
<b>Corporation:</b>				
1909.....	21.7	62.6	73.4	65.0
1904.....	21.5	61.7	71.1	61.2
<b>Other:</b>				
1909.....	0.5	0.1	0.3	0.2
1904.....	0.4	0.1	(1)	0.1
<b>Bread and other bakery products, 1909.</b>	252	418	\$1,794,113	\$825,098
<b>Individual:</b>	205	330	1,387,606	633,542
<b>Firm:</b>	47	88	425,061	191,556
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	81.3	78.9	76.3	78.8
<b>Firm:</b>	18.6	21.1	23.7	23.2
<b>Flour-mill and gristmill products, 1909.</b>	295	842	\$10,144,475	\$2,651,580
<b>Individual:</b>	106	105	1,387,606	236,456
<b>Firm:</b>	91	141	2,460,548	387,211
<b>Corporation:</b>	98	596	15,296,261	2,027,913
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	35.0	12.5	7.2	8.9
<b>Firm:</b>	30.8	16.7	12.9	14.6
<b>Corporation:</b>	33.2	70.8	70.9	76.5
<b>Foundry and machine-shop products, 1909.</b>	64	457	\$1,371,463	\$784,784
<b>Individual:</b>	25	125	318,170	198,535
<b>Firm:</b>	17	92	366,405	226,551
<b>Corporation:</b>	22	240	686,828	359,698
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	39.1	27.4	23.2	25.3
<b>Firm:</b>	26.0	20.1	20.7	28.9
<b>Corporation:</b>	34.4	52.5	50.1	45.8
<b>Lumber and timber products, 1909.</b>	342	3,175	\$4,438,563	\$2,951,317
<b>Individual:</b>	198	1,004	1,170,314	611,246
<b>Firm:</b>	103	710	981,409	657,487
<b>Corporation:</b>	41	1,371	2,336,840	1,382,384
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	57.0	34.5	26.4	30.9
<b>Firm:</b>	30.1	22.4	21.0	22.3
<b>Corporation:</b>	12.0	43.2	52.6	46.8
<b>Printing and publishing, 1909.</b>	598	1,698	\$3,988,542	\$2,984,419
<b>Individual:</b>	397	647	1,233,929	980,002
<b>Firm:</b>	109	205	551,112	420,306
<b>Corporation:</b>	87	780	2,197,781	1,561,926
<b>Other:</b>	5	6	5,720	4,125
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	66.4	38.1	30.9	33.1
<b>Firm:</b>	18.2	15.0	13.8	14.4
<b>Corporation:</b>	14.5	45.9	55.1	52.3
<b>Other:</b>	0.8	0.4	0.1	0.1

1 Less than one-tenth of 1 per cent.  
 2 Includes the group "Corporation," to avoid disclosure of individual operations.  
 3 Includes the group "Other," to avoid disclosure of individual operations.

**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 establishments for all industries combined and for important industries separately as measured by the

number of wage earners, value of products, and value added by manufacture.

INDUSTRY AND VALUE OF PRODUCTS.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
<b>ALL INDUSTRIES:</b>				
1909.....	2,310	13,143	\$53,682,405	\$19,529,511
1904.....	1,123	6,456	24,469,107	8,065,155
<b>Less than \$5,000:</b>				
1909.....	1,182	1,068	2,075,597	1,792,500
1904.....	612	700	1,430,330	999,858
<b>\$5,000 and less than \$20,000:</b>				
1909.....	727	2,863	7,194,008	4,142,194
1904.....	323	1,382	3,124,083	1,847,403
<b>\$20,000 and less than \$100,000:</b>				
1909.....	295	3,908	13,057,308	5,877,865
1904.....	125	1,460	5,720,060	2,188,556
<b>\$100,000 and less than \$1,000,000:</b>				
1909.....	102	4,400	25,870,502	7,001,117
1904.....	60	1,854	14,184,034	3,020,278
<b>\$1,000,000 and over:</b>				
1909.....	4	298	4,884,270	715,775
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	100.0	100.0	100.0	100.0
<b>Less than \$5,000:</b>				
1909.....	51.2	12.7	5.0	9.2
1904.....	54.5	13.9	5.8	12.4
<b>\$5,000 and less than \$20,000:</b>				
1909.....	31.5	21.8	13.4	21.2
1904.....	28.0	25.3	12.8	22.9
<b>\$20,000 and less than \$100,000:</b>				
1909.....	12.8	29.7	24.3	30.1
1904.....	11.1	20.8	23.4	27.1
<b>\$100,000 and less than \$1,000,000:</b>				
1909.....	4.4	33.5	48.2	35.8
1904.....	5.3	34.0	58.0	37.6
<b>\$1,000,000 and over:</b>				
1909.....	0.2	2.3	9.1	3.7
<b>Average per establishment:</b>				
1909.....		6	\$23,239	\$8,454
1904.....		5	21,780	7,182
<b>Bread and other bakery products, 1909.</b>	252	418	\$1,794,113	\$825,098
<b>Less than \$5,000:</b>	135	77	323,997	154,495
<b>\$5,000 and less than \$20,000:</b>	101	210	895,674	420,209
<b>\$20,000 and less than \$100,000:</b>	16	131	574,442	250,394
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	53.0	18.4	18.1	18.7
<b>\$5,000 and less than \$20,000:</b>	40.1	50.2	49.9	50.9
<b>\$20,000 and less than \$100,000:</b>	6.3	31.3	32.0	30.3
<b>Average per establishment:</b>			\$7,119	\$3,274
<b>Flour-mill and gristmill products, 1909.</b>	295	842	\$10,144,475	\$2,651,580
<b>Less than \$5,000:</b>	82	55	240,320	52,050
<b>\$5,000 and less than \$20,000:</b>	108	121	1,147,394	231,504
<b>\$20,000 and less than \$100,000:</b>	63	169	3,000,735	491,723
<b>\$100,000 and less than \$1,000,000:</b>	39	394	11,042,152	1,403,929
<b>\$1,000,000 and over:</b>	3	103	3,713,874	472,068
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	27.8	6.5	1.3	2.0
<b>\$5,000 and less than \$20,000:</b>	36.6	14.4	6.0	8.7
<b>\$20,000 and less than \$100,000:</b>	21.4	20.1	15.7	18.5
<b>\$100,000 and less than \$1,000,000:</b>	13.2	46.8	57.7	52.9
<b>\$1,000,000 and over:</b>	1.0	12.2	19.4	17.8
<b>Average per establishment:</b>			\$64,897	\$8,988
<b>Foundry and machine-shop products, 1909.</b>	64	457	\$1,371,463	\$784,784
<b>Less than \$5,000:</b>	21	33	58,638	38,401
<b>\$5,000 and less than \$20,000:</b>	27	121	318,347	211,194
<b>\$20,000 and less than \$100,000:</b>	13	139	513,010	317,771
<b>\$100,000 and less than \$1,000,000:</b>	3	164	480,408	217,418
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	32.8	7.2	4.3	4.9
<b>\$5,000 and less than \$20,000:</b>	42.2	26.5	23.3	26.9
<b>\$20,000 and less than \$100,000:</b>	20.3	30.4	37.4	40.5
<b>\$100,000 and less than \$1,000,000:</b>	4.7	35.9	35.0	27.7
<b>Average per establishment:</b>			\$21,429	\$12,202
<b>Lumber and timber products, 1909.</b>	342	3,175	\$4,438,563	\$2,951,317
<b>Less than \$5,000:</b>	200	664	448,807	372,510
<b>\$5,000 and less than \$20,000:</b>	92	744	894,724	476,469
<b>\$20,000 and less than \$100,000:</b>	42	905	1,662,859	1,104,358
<b>\$100,000 and less than \$1,000,000:</b>	8	772	1,432,173	797,974
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	58.5	20.9	10.1	12.6
<b>\$5,000 and less than \$20,000:</b>	26.0	23.4	20.2	22.9
<b>\$20,000 and less than \$100,000:</b>	12.3	31.3	37.5	37.4
<b>\$100,000 and less than \$1,000,000:</b>	2.3	24.3	32.3	27.0
<b>Average per establishment:</b>			\$12,978	\$8,630
<b>Printing and publishing, 1909.</b>	598	1,698	\$3,988,542	\$2,984,419
<b>Less than \$5,000:</b>	436	507	966,088	784,130
<b>\$5,000 and less than \$20,000:</b>	133	595	1,198,006	943,119
<b>\$20,000 and less than \$100,000:</b>	26	444	1,094,833	828,820
<b>\$100,000 and less than \$1,000,000:</b>	8	152	729,615	428,360
<b>Per cent of total:</b>				
1909.....	100.0	100.0	100.0	100.0
1904.....	72.9	29.9	24.2	28.3
<b>\$5,000 and less than \$20,000:</b>	22.2	35.0	30.0	31.6
<b>\$20,000 and less than \$100,000:</b>	4.3	26.1	27.4	27.8
<b>\$100,000 and less than \$1,000,000:</b>	0.5	9.0	18.3	14.4
<b>Average per establishment:</b>			\$6,670	\$4,991

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 2,310 manufacturing establishments in the state only 4, or two-tenths of 1 per cent, had a value of products exceeding \$1,000,000, while 102 other establishments, or 4.4 per cent, had a value of products exceeding \$100,000. These 106 establishments, however, had an average of 4,704 wage earners, or 35.8 per cent of the total number in all establishments, and reported 57.3 per cent of the total value of products and 39.5 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 51.2 per cent of the total number of establishments, but the value of their products amounted to only 5 per cent of the total.

The fact that the average value of products per

establishment increased from \$21,780 in 1904 to \$23,239 in 1909, and the average value added by manufacture from \$7,182 to \$8,454, 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 5 in 1904 to 6 in 1909.

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 nine important industries individually, 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.
NUMBER OF ESTABLISHMENTS.									
<b>All industries.....</b>	2,310	262	1,597	352	68	20	9	1	1
Bread and other bakery products.....	252	58	181	13	9	4			
Brick and tile.....	38	11	14	1					
Butter, cheese, and condensed milk.....	19	1	15	2	1				
Flour-mill and gristmill products.....	295	44	216	31	3	1			
Foundry and machine-shop products.....	64	2	40	19	1	2			
Ice, manufactured.....	77		53	23					
Lumber and timber products.....	342	3	212	103	14	8	1	1	
Oil, cottonseed, and cake.....	39		4	27	8				
Printing and publishing.....	508	100	442	45	9	2			
All other industries.....	586	54	423	75	22	3	8		1
AVERAGE NUMBER OF WAGE EARNERS.									
<b>All industries.....</b>	13,143		3,315	3,724	2,136	1,326	1,635	253	754
Bread and other bakery products.....	418		296	122					
Brick and tile.....	730		37	153	288	252			
Butter, cheese, and condensed milk.....	62		26	14	22				
Flour-mill and gristmill products.....	842		376	331	83	52			
Foundry and machine-shop products.....	457		99	194	43	121			
Ice, manufactured.....	449		173	250	26				
Lumber and timber products.....	3,175		589	1,100	441	542	250	253	
Oil, cottonseed, and cake.....	581		16	363	202				
Printing and publishing.....	1,698		863	432	281	122			
All other industries.....	4,731		840	705	750	237	1,385		754
PER CENT OF AVERAGE NUMBER OF WAGE EARNERS.									
<b>All industries.....</b>	100.0		25.2	28.3	16.3	10.1	12.4	1.9	5.7
Bread and other bakery products.....	100.0		70.8	29.2					
Brick and tile.....	100.0		5.1	21.0	39.5	34.5			
Butter, cheese, and condensed milk.....	100.0		41.9	22.6	35.5				
Flour-mill and gristmill products.....	100.0		44.7	39.3	9.9	6.2			
Foundry and machine-shop products.....	100.0		21.7	42.4	9.4	26.5			
Ice, manufactured.....	100.0		38.5	55.7	5.8				
Lumber and timber products.....	100.0		18.6	34.6	13.9	17.1	7.9	8.0	
Oil, cottonseed, and cake.....	100.0		2.8	62.5	34.8				
Printing and publishing.....	100.0		50.8	25.4	16.5	7.2			
All other industries.....	100.0		17.8	16.2	15.9	5.0	29.3		15.9

Of the 2,310 establishments reported for all industries, 11.3 per cent employed no wage earners; 69.2 per cent, from 1 to 5; 15.2 per cent, from 6 to 20; 2.9 per cent, from 21 to 50; and 1.3 per cent, 51 or over. The most numerous single group consists of the 1,598 establishments employing from 1 to 5 wage earners, and the next of the 352 establishments employing from 6 to 20 wage earners. One establishment employed over 250 wage earners, and one employed over 500.

Of the total number of wage earners, almost seven-tenths were in establishments employing under 51 wage earners. The single group employing the largest number of wage earners was the group comprising establishments employing from 6 to 20, which gave employment to 3,724 wage earners, or 28.3 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 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 16.

INDUSTRY.	PER CENT OF TOTAL EXPENSES REPORTED.			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
All industries.....	4.3	15.3	72.3	8.0
Bread and other bakery products.....	2.1	18.4	70.7	8.8
Brick and tile.....	8.0	50.1	29.9	12.0
Butter, cheese, and condensed milk.....	1.7	3.4	86.6	8.3
Flour-mill and gristmill products.....	1.8	2.6	91.8	3.7
Foundry and machine-shop products.....	0.8	30.2	55.4	7.6
Ice, manufactured.....	11.2	29.9	34.0	24.8
Lumber and timber products.....	5.4	30.1	42.3	16.3
Oil, cottonseed, and cake.....	4.1	4.7	55.2	6.1
Printing and publishing.....	15.1	33.7	32.4	18.8
All other industries.....	4.7	23.7	63.3	8.4

This table shows that, for all industries combined, 72.3 per cent of the total expenses was incurred for materials, 19.6 per cent for services—that is, salaries and wages—and but 8 per cent for other purposes. As would be expected, these proportions vary greatly in the different industries.

**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 table indicates that there was an increase from 1904 to 1909 in all forms of power except that generated by water motors and the forms of owned and rented power included under the head of "Other." Of the total increase of 41,531 horsepower from 1904 to 1909, 28,946 horsepower, or 69.7 per cent, was in power generated by steam engines. Notwithstanding this large actual increase, the proportion of power shown for steam engines decreased from 96.4 per cent in 1899 to 79.6 per cent in 1909. The more general use of gas engines is shown by the increase in the number of such engines from 48 in 1899 to 539 in 1909, and the increase in their indicated capacity from 200 horsepower in 1899 to 8,676 horsepower in 1909. The figures also show that the practice of rent-

ing electric power is on the increase, 5,281 horsepower, or 7.4 per cent of the total primary power, being rented electric power in 1909, as against 597 horsepower, or 2 per cent, in 1904, while none was reported in 1899.

The use of electric motors for the purpose of applying the power generated within the establishments is also shown to be rapidly increasing, the horsepower of such motors increasing from 12 in 1899 to 2,606 in 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899 <sup>1</sup>	1909	1904	1899 <sup>1</sup>	1909	1904	1899
<b>Primary power, total.....</b>	<b>2,265</b>	<b>590</b>	<b>267</b>	<b>71,139</b>	<b>29,608</b>	<b>11,572</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Owned.....	1,407	590	267	65,701	28,881	11,507	92.5	97.4	99.4
Steam.....	862	371	212	56,643	27,697	11,151	79.6	93.5	96.4
Gas.....	539	214	48	8,676	989	200	12.2	3.3	1.7
Water wheels.....	5	3	7	470	105	150	0.7	0.4	1.3
Water motors.....	1	2	( <sup>2</sup> )	2	4	( <sup>2</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>2</sup> )
Other.....					50				0.2
Rented.....	858	( <sup>2</sup> )	( <sup>2</sup> )	5,348	757	65	7.5	2.6	0.6
Electric.....	858	( <sup>2</sup> )	( <sup>2</sup> )	5,281	597	( <sup>2</sup> )	7.4	2.0	.....
Other.....				7	160	65	0.1	0.5	0.6
<b>Electric motors.....</b>	<b>985</b>	<b>43</b>	<b>3</b>	<b>7,887</b>	<b>810</b>	<b>12</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Run by current generated by establishment.....	127	43	3	2,606	313	12	33.0	34.4	100.0
Run by rented power.....	858	( <sup>2</sup> )	( <sup>2</sup> )	5,281	597	( <sup>2</sup> )	67.0	65.6	.....

<sup>1</sup> Includes the neighborhood industries and hand trades, omitted in 1904 and 1909.  
<sup>2</sup> Not reported.  
<sup>3</sup> 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.	All-thrifle coal (tons).	Bituminous coal (tons).	Coke (tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
All industries <sup>1</sup> .....	9,972	296,826	4,270	13,268	165,016	9,866,461
Bread and other bakery products.....	11	704	125	4,733	38	55,849
Brick and tile.....		29,115		3,198	6	1,732,665
Butter, cheese, and condensed milk.....		3,882				1,040
Cars and general shop construction and repairs by steam-railroad companies.....	610	23,879	392	300	1,510	.....
Flour-mill and gristmill products.....	406	47,077		1,220	16,054	138,737
Foundry and machine-shop products.....	27	914	2,359	5	908	51,609
Ice, manufactured.....		53,808		100	9,687	1,052,781
Lumber and timber products.....		7,616		101	151	10,589
Oil, cottonseed, and cake.....		29,516		1,564	25,708	203,066
Petroleum, refining.....					44,515	216,753
Printing and publishing.....	35	872	14	244	834	38,112
Smelting and refining, zinc.....	8,823	36,867	1,230			4,617,865
All other industries.....	54	68,486	159	1,797	65,605	1,747,395

<sup>1</sup> In addition there were 49 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. Certain data of this character for four important industries in Oklahoma are here presented.

**Flour-mill and gristmill products.**—This industry, which is dependent upon the cereal crop of the state for its raw materials, has shown a substantial growth. The statistics include only those mills which are engaged mainly in merchant milling, excluding custom mills, generally small, which grind exclusively for local consumption and for toll. The figures for these custom mills are shown separately on page 13.

The following tabular statement gives the quantity and value of the different products for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	\$19,144,475	\$12,018,923	\$4,712,953
<b>Wheat flour:</b>			
White—			
Barrels.....	2,194,165	1,959,847	1,185,977
Value.....	\$10,918,747	\$8,875,240	\$3,508,493
Graham—			
Barrels.....	10,874	2,470	( <sup>1</sup> )
Value.....	\$40,620	\$11,393	( <sup>1</sup> )
<b>Corn meal and corn flour:</b>			
Barrels.....	382,721	200,223	259,689
Value.....	\$1,124,244	\$407,903	\$369,168
<b>Rye flour:</b>			
Barrels.....	149	458	950
Value.....	\$698	\$2,152	\$2,527
<b>Feed:</b>			
Tons.....	204,481	70,559	36,884
Value.....	\$5,062,822	\$1,398,421	\$450,766
<b>Offal:</b>			
Tons.....	81,524	78,472	32,659
Value.....	\$1,698,008	\$1,232,632	\$369,378
<b>All other products</b> .....	\$299,341	\$1,182	\$12,622

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

From 1899 to 1909 there was an increase of \$14,431,522, or over 300 per cent, in the total value of products reported for this industry. The greater part of this increase was in the value of white flour, which shows a gain of \$7,410,250, or over 200 per cent, and in the value of feed, which shows a gain of \$4,612,057, or a value over ten times that reported in 1899. In 1909 the value of white flour represented 57 per cent of the total value of all flour-mill and gristmill products, while the value of offal, which consists chiefly of the by-products of flour mills, represented 8.9 per cent of the total. Feed which is usually ground from corn, oats, etc., shows marked increases both in quantity and in value. The quantity of corn meal and corn flour increased 85.6 per cent during the five-year period, 1904 to 1909, and its value 125.8 per cent. Rye flour, an unimportant product, was the only product showing a decrease in quantity and value.

**Oil, cottonseed, and cake.**—Measured by value of products, this industry was second in the state in 1909. In this year the state ranked eighth among the cotton-growing states as regards its crop of cotton and in the value of its crude cottonseed products. The following table gives the quantity of seed crushed and the quantities of the resultant crude products for the census years 1909, 1904, and 1899:

MATERIAL OR PRODUCT.	QUANTITY.		
	1909	1904	1899
Cotton seed crushed..... tons..	186,352	168,454	52,840
Crude products manufactured:			
Oil..... gallons..	6,817,974	6,384,973	1,868,906
Meal and cake..... tons..	78,690	67,417	18,656
Hulls..... tons..	62,230	62,264	25,498
Linters..... pounds..	9,584,227	7,169,960	1,199,528

The statistics in this table include the products of all establishments which crushed cotton seed during the year. While the quantity of seed crushed increased 218.8 per cent from 1899 to 1904, it increased only 10.6 per cent from 1904 to 1909. The average amount crushed per mill increased from 4,403 tons in 1899 to 7,019 tons in 1904, but decreased to 4,778 tons in 1909. Of the 39 mills reported in 1909 as crushing seed, there was only 1 which crushed less than 1,000 tons of seed during the census year; 6 crushed 1,000 but less than 2,000 tons; 18 crushed 2,000 but less than 5,000 tons; 10 crushed 5,000 but less than 10,000 tons; and 4 crushed 10,000 but less than 20,000 tons.

The quantities of the various products obtained in 1909 per ton of seed as received at the mill were as follows: Crude oil, 36.6 gallons; meal and cake, 844.5 pounds; hulls, 668.5 pounds; and linters, 51.4 pounds. The proportions which the weight of the several products represented of the total weight of the seed when received at the mill were as follows: Crude oil, 13.7 per cent; meal and cake, 42.2 per cent; hulls, 33.4 per cent; and linters, 2.6 per cent. The weight of hulls per ton of seed crushed decreased from 965.1 pounds in 1899 to 739.2 pounds in 1904 and 668.5 pounds in 1909, while there was an increase in the weight of meal and cake and linters and a small net increase in that of oil for the period as a whole. The amount of oil secured for each ton of seed crushed was 35.4 gallons in 1899, 37.9 gallons in 1904, and 36.6 gallons in 1909.

**Lumber and timber products.**—Oklahoma showed from 1899 to 1909 a greater relative increase in the quantity of lumber cut than any other state in the Union, the output in 1909 being more than ten times that of 1899. The table following shows the quantity of rough lumber, lath, and shingles produced in the sawmill branch of the industry for 1909 and 1899.

Of the total cut of rough lumber in 1909, amounting to 225,730 M feet board measure, 141,677 M feet was softwood, principally yellow pine, and 84,053 M feet was hardwood, of which 60,964 M feet, or 72.5 per cent, was oak.

PRODUCT.	M feet b. m. thousands.	QUANTITY.	
		1909	1899
Rough lumber.....	225,730	22,104	
Lath.....	1,233	75	
Shingles.....	4,635	103	

**Printing and publishing.**—This industry as a whole shows considerable growth during the last 10 years as measured by the financial statistics. The statistics for newspapers and other publications summarized in the following statement also show a large increase in number and circulation during this period.

PERIOD OF ISSUE.	NUMBER OF PUBLICATIONS.			AGGREGATE CIRCULATION PER ISSUE.		
	1909	1904	1899	1909	1904	1899
Total.....	593	453	187	857,950	533,063	170,218
Daily.....	67	44	15	185,479	74,451	18,024
Sunday.....	11	8	13	77,326	43,802	(1)
Semiweekly.....	1	2	1	1,750	8,000	800
Weekly.....	490	387	152	512,229	352,013	145,841
Monthly.....	12	10	5	39,225	29,797	5,050
All other classes.....	3	2	1	41,050	25,000	500

<sup>1</sup> Included in circulation for daily.

The number of publications in 1909 was more than three times that in 1899, and the aggregate circulation per issue was more than five times as great. The weekly publications are by far the most important class in the state, measured either by number or by aggregate circulation per issue. In both respects they show a substantial increase for each of the five-year periods. In 1909 they formed 84.1 per cent of all publications and reported 59.7 per cent of the aggregate circulation per issue. All of the other classes of publications, with the exception of the semiweeklies, show large gains in their aggregate circulation from 1904 to 1909. All of the publications were in English except five weeklies, one of which was published in Bohemian and four in German.

**Laundries.**—Statistics for steam laundries are not included in the general tables or in the totals for manufacturing industries. There were 93 such establishments in the state, 9 of which were in Oklahoma City, 6 in Muskogee, 5 in Tulsa, 3 in Enid, and 2 each in Chickasha, Guthrie, McAlester, and Shawnee.

The most common form of ownership was the individual, with 47 establishments. The firm and corporate forms of ownership were represented by 27 and 19 establishments, respectively. Eighteen establishments had receipts for the year's business of less than \$5,000; 58, \$5,000 but less than \$20,000; and 17, \$20,000 but less than \$100,000.

The following statement summarizes the statistics:

Number of establishments.....	93
Persons engaged in the industry.....	1,301
Proprietors and firm members.....	105
Salaried employes.....	95
Wage earners (average number).....	1,101
Primary horsepower.....	1,484
Capital.....	\$781,531
Expenses.....	928,217
Services.....	563,685
Materials.....	200,679
Miscellaneous.....	163,853
Amount received for work done.....	1,197,978

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.....	993	84.2	July.....	1,160	98.4
February.....	995	84.4	August.....	1,167	99.0
March.....	1,022	86.7	September.....	1,179	100.0
April.....	1,040	88.2	October.....	1,171	99.3
May.....	1,064	90.2	November.....	1,151	97.6
June.....	1,099	93.2	December.....	1,167	99.0

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

KIND.	Number of engines or motors.	Horse power.
<b>Primary power, total.....</b>		<b>1,484</b>
Owued:		
Steam.....	176	1,195
Gas.....	8	53
Rented:		
Electric.....	66	231
Other.....		5

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

KIND.	Unit.	Quantity.
Anthracite coal.....	Tons.....	696
Bituminous coal.....	Tons.....	9,377
Wood.....	Cords.....	393
Oil.....	Barrels.....	1,346
Gas.....	1,000 feet.....	224,175

**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.....	4	147
Persons engaged in the industry.....	12	323
Proprietors and firm members.....	5	182
Salaried employes.....		4
Wage earners (average number).....	7	137
Primary horsepower.....	118	4,123
Capital.....	\$5,325	\$180,518
Expenses.....	2,321	389,037
Services.....	1,908	12,906
Materials.....	65	1,369,149
Miscellaneous.....	348	6,982
Value of products.....	4,725	1,465,348

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

## MANUFACTURES—OKLAHOMA.

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 employees.	Wage earners (average number).							
STATE—All industries.....	1909 1904 1899	2,310 1,123 495	13,034 7,456	2,698 1,187	2,193 813 209	13,143 5,459 2,381	71,139 29,098 11,572	\$38,873 16,124 4,054	\$2,045 718 219	\$7,240 2,799 894	\$34,153 16,394 5,430	\$53,682 24,459 8,134	\$19,529 8,085 2,704
Artificial stone.....	1909 1904 1899	129 14 1	426 40	168 11	22 5	236 33	166 13	304 44	14 4	120 18	233 32	539 79	306 47
Bread and other bakery products.....	1909 1904 1899	252 121 18	766 305 52	298 144 20	50 4	418 157 32	223 27 3	574 225 44	20 1	252 88 12	969 410 44	1,794 692 96	825 282 52
Brick and tile.....	1909 1904 1899	38 50 49	823 482 288	32 47 64	61 34	730 401 218	3,733 3,029 378	1,303 733 136	61 34	378 186 81	226 128 31	1,029 510 185	803 382 154
Brooms.....	1909 1904 1899	23 12 7	109 57 14	27 15 6	6	76 42 8	51 20	122 28 14	6	43 10 2	145 31 4	248 72 10	103 41 6
Butter, cheese, and condensed milk.....	1909 1904 1899	19 3 5	101 16 8	17 4 5	22 1	62 11 3	427 91 32	197 16 13	19 ( <sup>2</sup> )	36 6 2	928 66 14	1,150 89 19	222 23 5
Carriages and wagons and materials.....	1909 1904 1899	19 8 7	158 52	22 8	13 1	123 43 27	319 15	172 54 25	12 1	72 23 9	81 26 11	233 67 37	152 41 26
Copper, tin, and sheet-iron products.....	1909 1904 1899	62 18	344 95	79 23	32 3	233 69	46	305 90	30 2	184 52	411 107	799 215	388 108
Flour-mill and gristmill products.....	1909 1904 1899	205 108 66	1,479 911	533 101	304 193 105	842 9,013 346	16,400 4,764	7,691 4,131 1,448	323 186 82	473 331 165	16,493 10,187 3,885	10,144 12,019 4,713	2,651 1,832 828
Foundry and machine-shop products.....	1909 1904 1899	64 26 6	587 158 34	65 33 10	65 4 1	457 121 23	1,113 332 51	1,437 268 39	71 3	320 77 ( <sup>3</sup> )	587 76 31	1,371 233 50	784 157 28
Ice, manufactured.....	1909 1904 1899	77 44 9	614 285 81	30 23 7	135 65 10	449 197 55	10,359 5,348 790	2,719 1,341 227	101 48 13	270 107 29	307 121 31	1,273 528 112	960 407 81
Leather goods.....	1909 1904 1899	15 14 8	88 85	15 12	7 8	66 65 41	20	140 179 53	7 11 5	62 45 23	226 153 95	375 280 157	149 127 62
Lumber and timber products.....	1909 1904 1899	342 60 73	3,809 567	429 78	205 31 24	3,175 468 539	12,397 2,361	3,603 512 405	189 31	1,209 245 159	1,487 437 315	4,439 1,017 684	2,952 580 369
Marble and stone work.....	1909 1904 1899	41 11	220 82	50 17	23 2	147 63	257 95	227 60	20 2	111 34	187 34	418 106	231 72
Oil, cottonseed, and cake.....	1909 1904 1899	39 24 12	770 606 263	3 1	186 109 41	581 496 222	10,720 6,005 2,286	5,071 2,590 719	202 110 43	235 182 70	4,245 2,353 605	5,187 3,100 874	942 756 269
Printing and publishing.....	1909 1904 1899	598 423 100	2,945 1,799 757	661 486 189	586 174 46	1,698 1,139 522	1,604 652 141	3,734 1,700 510	467 135 32	1,044 574 189	1,004 473 148	3,089 2,101 663	2,085 1,628 515
Slaughtering and meat packing.....	1909 1904 1899	7 4	86 46	7 6	16 1	63 39	236 52	200 125	18 4	43 22	749 239	889 204	140 55
All other industries.....	1909 1904 1899	290 183 75	4,500 1,861	262 178	460 178 22	3,787 1,505 345	13,002 2,555	10,984 4,028 421	476 146 20	2,328 790 142	5,875 1,521 216	10,805 3,048 525	4,930 1,527 309

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

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

<sup>3</sup> Less than \$500.

<sup>4</sup> Figures can not be shown without disclosing individual operations.

<sup>5</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.

MANUFACTURES—OKLAHOMA.

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

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

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 employees.	Wage earners (average number).	Expressed in thousands.														
<b>OKLAHOMA CITY—All industries.</b>	1909	171	2,087	148	541	1,398	4,132	\$4,482	\$483	\$973	\$5,146	\$7,868	\$2,722								
	1904	89	936	71	145	720		3,022	142	422	2,362	3,871	1,309								
	1899	36			33	220		473	24	101	517	845	328								
Artificial stone.....	1909	15	61	19	8	34	48	81	6	20	37	97	60								
	1904																				
	1899																				
Bread and other bakery products.....	1909	17	130	17	28	85	30	96	15	59	214	365	151								
	1904	9	38	9		29		32		19	49	88	30								
	1899	3				5		18		4	16	38	22								
Copper, tin, and sheet-iron products.....	1909	5	63	5	10	48	23	87	10	37	130	212	82								
	1904	6	37	6	3	3		26	2	22	35	76	41								
	1899																				
Flour-mill and gristmill products.....	1909	7	116	2	39	75	1,187	738	46	50	1,830	2,087	248								
	1904	3	65		18	47		410	18	28	1,049	1,227	178								
	1899	4			14	27		216	9	12	383	508	125								
Foundry and machine-shop products.....	1909	7	111	6	18	87	185	286	18	63	97	222	125								
	1904	6	62	7		55		140		35	37	96	59								
	1899	4			1	14		26	(3)	6	11	21	10								
Ice, manufactured.....	1909	5	57		17	40	909	201	13	26	36	133	97								
	1904																				
	1899																				
Lumber and timber products.....	1909	8	182	7	25	150	277	338	31	106	193	388	195								
	1904	4	87	3	13	71		100	17	34	142	232	90								
	1899																				
Marble and stone work.....	1909	5	53	8	6	39	19	61	6	33	78	140	62								
	1904																				
	1899																				
Patent medicines and compounds and druggists' preparations.	1909	8	24	8	5	11	8	31	3	6	9	35	26								
	1904	3	14	2	4	8		20	4	3	6	24	18								
	1899																				
Printing and publishing.....	1909	44	689	40	282	367	347	1,065	221	288	419	1,269	850								
	1904	18	180	14	50	116		222	40	70	80	328	248								
	1899	4			7	40		33	5	20	11	54	43								
Tobacco manufactures.....	1909	6	11	6		5		4		4	8	10	11								
	1904	8	24	9		15		12		6	16	34	18								
	1899																				
All other industries.....	1909	44	590	30	103	457	1,090	1,404	114	275	2,086	2,991	815								
	1904	32	429	21	57	361		2,870	61	205	948	1,566	618								
	1899	21			11	125		180	10	59	96	224	128								

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

<b>Chickasha.....</b>	1909	30	465	30	71	364	1,488	\$1,117	\$73	\$242	\$1,285	\$1,807	\$582
	1904												
	1899												
<b>Enid.....</b>	1909	65	455	55	97	303	1,722	1,007	76	191	1,807	2,453	646
	1904												
	1899												
<b>Guthrie.....</b>	1909	34	385	32	71	282	1,281	1,062	76	163	948	1,443	495
	1904	34	410	28	40	333		794	46	186	701	1,201	500
	1899	33			30	241		371	32	90	337	649	312
<b>McAlester.....</b>	1909	29	240	28	32	180	895	619	29	101	195	451	256
	1904												
	1899												
<b>Muskogee.....</b>	1909	64	554	61	112	381	1,421	969	106	241	1,478	2,279	801
	1904												
	1899												
<b>Shawnee.....</b>	1909	40	1,147	35	98	1,014	1,801	1,532	80	615	1,163	2,081	918
	1904												
	1899												
<b>Tulsa.....</b>	1909	53	585	56	67	462	1,566	1,153	72	315	874	1,563	689
	1904												
	1899												

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

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

<sup>3</sup> Less than \$500.

<sup>4</sup> Figures not available.

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.....	2,310	18,934	2,698	932	1,059	202	13,143	Oc	14,659	Fe	11,782	(1)	(1)	(1)	(1)	(1)	71,139
2 Artificial stone.....	129	426	168	13	8	1	236	Je	282	Ja	128	329	328		1		166
3 Bread and other bakery products.....	252	766	298	11	26	13	418	De	433	Ap	403	449	406	37	5	1	223
4 Brick and tile.....	38	823	32	39	20	2	730	Jy	932	Ja	369	943	941		2		3,733
5 Brooms.....	23	109	27	1	4	1	76	Se <sup>2</sup>	81	Jy	69	83	80		2		51
6 Butter, cheese, and condensed milk.....	19	101	17	10	6	6	62	Jy	83	Ja	40	50	40	9	1		427
7 Canning and preserving.....	3	10	1	2			7	Se	33	Ja <sup>3</sup>	0	30	9	13	5	3	41
8 Carriages and wagons and materials.....	19	158	22		4	1	123	Jy	134	Ja	114	121	121				319
9 Cars and general shop construction and repairs by steam-railroad companies.....	8	1,495		38	43	2	1,412	De	1,612	Mh	1,268	1,599	1,594	1	34		957
10 Cars and general shop construction and repairs by street-railroad companies.....	4	51		3	1		47	De	56	Fe <sup>2</sup>	35	56	56				110
11 Clothing, men's, including shirts.....	3	122		6	3		113	Oc <sup>2</sup>	118	Jy	103	122	5	117			18
12 Confectionery.....	11	64	13	3	8	1	39	De	60	Ja <sup>2</sup>	21	61	38	21	2		26
13 Copper, tin, and sheet-iron products.....	62	344	79	10	21	1	233	Se	268	Ap	202	245	242	1	2		46
14 Flour-mill and gristmill products.....	295	1,679	533	126	153	25	842	Oc	922	Je	741	936	934		2		16,400
15 Foundry and machine-shop products.....	64	587	65	35	22	8	457	Au	491	My	420	512	512				1,113
16 Furnishing goods, men's.....	5	33	4	7			22	Se	38	Ja <sup>2</sup>	5	42	5	35		2	17
17 Furniture and refrigerators.....	5	73	5	1	7		60	De	92	Fe	44	92	90	2			210
18 Gas, illuminating and heating.....	6	59	1	7	10	3	38	Ja <sup>2</sup>	38	Fe <sup>2</sup>	37	38	38				181
19 Ice, manufactured.....	77	614	30	81	45	9	449	Jy	745	Fe	195	475	470		5		10,359
20 Leather goods.....	15	88	15	6		1	66	Jy	71	Oc	58	72	72				26
21 Lumber and timber products.....	312	3,809	429	110	84	11	3,175	De	3,401	Ja	2,837	4,045	4,035	1	9		12,397
22 Marble and stone work.....	41	220	50	6	15	2	147	Au <sup>2</sup>	165	Fe	121	165	165				257
23 Mattresses and spring beds.....	7	63	6	6	1	1	49	De	72	Ja	36	72	62	10			151
24 Oil, cottonseed, and cake.....	39	770	3	106	78	2	581	No	1,266	Jy	115	1,294	1,294				10,720
25 Patent medicines and compounds and druggists' preparations.....	13	52	16	3	5	6	22	Ap <sup>2</sup>	25	Ja <sup>2</sup>	20	22	14	8			8
26 Petroleum, refining.....	9	129	2	20	31	1	75	Oc	92	My	63	91	91				241
27 Printing and publishing.....	598	2,945	661	160	352	74	1,698	De	1,831	Ja	1,626	1,875	1,497	326	52		1,684
28 Slaughtering and meat packing.....	7	86	7	6	8	2	63	De	91	Fe	43	91	91				236
29 Smelting and refining, zinc.....	3	593		11	12	4	566	Je	626	Ja	481	608	608				1,181
30 Tobacco manufactures.....	29	75	30		1		44	De	60	Je	38	45	45	16	4		
31 Wall plaster.....	11	303		21	16	7	259	Oc	295	Ja	230	297	297				1,721
32 All other industries <sup>4</sup> .....	173	1,387	184	76	75	18	1,034										8,150

<sup>1</sup> No figures given for reasons explained in the Introduction, page 2. See also discussion of wage earners on page 6.

<sup>2</sup> Same number reported for one or more other months.

<sup>3</sup> None reported for one or more other months.

<sup>4</sup> All other industries embrace—

Automobiles, including bodies and parts.....	1	Dairy-men's, poulterers', and apsarists' supplies.....	2	Malt.....	1
Awnings, tents, and sails.....	5	Electrical machinery, apparatus, and supplies.....	1	Millinery and lace goods.....	1
Baking powders and yeast.....	1	Explosives.....	3	Mineral and soda waters.....	103
Belting and hose, woven and rubber.....	1	Food preparations.....	8	Mirrors.....	1
Bluing.....	1	Fuel, manufactured.....	1	Paint and varnish.....	1
Boots and shoes, including cut stock and findings.....	1	Gas and electric fixtures and lamps and reflectors.....	1	Photo-engraving.....	2
Boxes, fancy and paper.....	1	Glass.....	1	Scales and balances.....	1
Buttons.....	1	Glass, cutting, staining, and ornamenting.....	1	Show cases.....	1
Carpets, rag.....	1	Hand stamps and stencils and brands.....	2	Soda-water apparatus.....	1
Cement.....	2	Hats and caps, other than felt, straw, and wool.....	1	Vinegar and cider.....	2
Clothing, women's.....	1	Hats, fur-felt.....	1	Washing machines and clothes wringers.....	3
Coffee and spice, roasting and grinding.....	4	House-furnishing goods, not elsewhere specified.....	1	Wirework, including wire rope and cable.....	1
Cooperage and wooden goods, not elsewhere specified.....	1	Jewelry.....	1	Wood preserving.....	1
Cordage and twine and jute and linen goods.....	1	Leather, tanned, curried, and finished.....	2	Wood, turned and carved.....	3
	1	Lime.....	1		

MANUFACTURES—OKLAHOMA.

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	\$38,872,938	\$47,216,432	\$1,136,965	\$908,330	\$7,240,177	\$1,304,757	\$32,848,137	\$255,949	\$300,718	\$373,954	\$2,841,445	\$53,682,405	\$10,529,511
2	303,906	404,987	7,714	6,196	120,457	2,850	230,052	4,882	1,786	455	30,595	538,877	305,975
3	573,647	1,369,818	12,136	16,427	252,265	37,746	931,269	48,576	7,133	.....	64,200	1,794,113	825,008
4	1,303,172	755,496	47,902	12,621	378,350	169,924	56,117	1,754	6,663	2,300	79,805	1,028,093	802,652
5	122,331	205,448	1,020	4,500	42,546	856	144,583	1,459	643	11	0,830	248,337	102,898
6	197,251	1,072,347	12,550	6,072	36,239	14,458	913,842	1,467	1,083	.....	86,630	1,140,545	221,245
7	14,923	2,437	258	.....	739	150	1,108	.....	97	.....	85	2,822	1,564
8	172,487	184,715	10,000	2,410	72,481	3,382	77,492	6,340	1,542	10	11,058	232,880	152,006
9	1,359,022	1,701,851	50,020	38,027	941,923	44,027	597,863	.....	15,757	.....	13,634	1,701,851	1,059,901
10	70,298	64,532	3,600	360	20,540	760	25,227	.....	1,000	.....	4,045	64,532	38,545
11	82,104	185,054	7,080	2,925	42,172	1,343	125,000	2,940	445	.....	3,149	194,000	67,657
12	65,742	97,556	2,685	4,055	10,270	1,371	57,181	5,755	159	.....	9,180	114,719	56,167
13	305,460	671,838	7,935	21,607	184,139	3,339	407,930	11,744	2,594	720	31,821	799,273	387,995
14	7,690,613	17,950,820	154,541	168,743	472,977	173,435	16,319,400	4,347	61,348	.....	604,969	19,144,475	2,651,580
15	1,437,185	1,058,135	50,389	21,051	319,711	25,967	560,712	5,008	8,508	3,777	02,952	1,371,463	784,784
16	10,110	11,061	2,098	.....	2,654	157	5,635	361	.....	.....	156	9,530	3,738
17	163,050	154,224	700	3,500	42,085	2,312	97,667	1,210	.....	.....	5,927	205,852	105,873
18	382,131	90,444	6,482	5,105	20,700	40,630	2,942	.....	4,452	.....	10,133	114,851	71,270
19	2,719,197	902,240	73,841	27,372	270,051	195,206	111,700	1,287	32,626	8,147	181,860	1,272,515	965,459
20	140,175	323,135	7,100	350	61,561	521	225,928	4,350	1,000	.....	21,425	375,074	148,625
21	3,602,740	3,518,848	117,028	72,287	1,269,309	26,410	1,460,836	9,233	27,975	277,425	258,285	4,438,563	2,951,317
22	227,313	346,195	7,000	12,735	111,004	4,307	182,662	2,716	1,733	.....	23,948	418,148	231,089
23	105,309	146,111	7,780	400	20,005	2,598	96,641	1,856	260	.....	6,971	153,332	54,993
24	5,071,147	4,985,400	142,050	60,102	235,405	108,784	4,130,715	50	40,156	2,337	269,801	5,186,605	941,106
25	68,650	61,330	2,600	7,450	9,694	113	15,521	1,340	137	750	23,725	65,066	49,432
26	1,056,682	887,617	30,796	25,993	54,011	31,176	544,207	250	3,670	2,184	195,240	1,055,011	479,538
27	3,734,389	3,096,360	199,888	207,214	1,043,968	51,378	952,745	118,635	29,970	72,008	359,954	3,688,542	2,984,419
28	200,152	842,866	7,700	10,408	42,777	6,679	742,143	4,195	1,502	6	27,396	889,237	140,415
29	1,769,488	2,576,882	29,929	14,051	343,453	153,598	1,979,020	.....	10,708	.....	46,114	3,002,233	809,606
30	36,347	68,584	.....	500	20,960	281	34,617	1,448	.....	.....	3,364	85,544	59,646
31	1,033,670	408,204	22,800	21,871	141,930	52,782	111,842	.....	4,269	.....	62,701	434,064	270,040
32	4,704,187	3,062,897	111,334	72,498	631,141	148,037	1,609,312	14,086	30,205	3,224	352,400	3,602,058	1,754,700

## MANUFACTURES : OREGON

## 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 Oregon 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 Oregon, 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 Portland. It also gives, for 1909, the same items for all industries combined for Salem, the only 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 comparisons 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 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.**—Oregon, with a gross area of 96,699 square miles, of which 1,092 represent water surface, ranks ninth in size among the 49 states and territories of continental United States. Its population in 1910 was 672,765, as compared with 413,536 in 1900 and 317,704 in 1890. It ranked thirty-fifth among the 49 states and territories as regards population in 1910 and thirty-sixth in 1900. The density of population of the state was 7 per square mile in 1910, the corresponding figure for 1900 being 4.3.

Portland, with a population of 207,214, and Salem, with a population of 14,094, are the only cities in the state having more than 10,000 inhabitants. Of the entire population of the state, 45.6 per cent resided in cities and incorporated towns having a population of 2,500 or over in 1910, as against 32.2 per cent in 1900.

The northern and western parts of the state are traversed by trunk-line railways with terminals at Portland, from which city the Willamette and Columbia Rivers afford deep-water communication with the Pacific, making of Portland one of the leading ports of the Pacific coast. The Columbia River, which forms about three-fourths of the northern boundary of the state, affords cheap transportation for the products of the fertile valleys of the northeastern counties, and is the scene of extensive salmon fishing. The large arid area of southeastern Oregon is sparsely settled, lacks manufacturing interests of any impor-

tance, and is very deficient in transportation facilities. The slopes of the Cascades and sections of the northern counties are heavily wooded with an excellent quality of pine and fir. The waters of the numerous mountain streams of the state have been utilized to some extent for the development of power and for purposes of irrigation.

**Importance and growth of manufactures.**—Although Oregon is increasing in importance as a manufacturing state, the growth of its manufacturing industries during the past 60 years has not kept pace with that of its population. In 1849-50 the 52 manufacturing establishments reported at the census of that year gave employment to an average of 285 wage earners, representing 2.1 per cent of the total population of the state. In 1909 an average of 28,750 wage earners, or 4.3 per cent of the total population, were employed in manufactures. During this period, however, the gross value of products per capita of the total population decreased from \$168 in 1849 to \$138 in 1909, although 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 during the same time from two-tenths of 1 per cent to four-tenths of 1 per cent.

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.....	2,246	1,602	1,406	40.2	13.9
Persons engaged in manufactures.....	34,722	22,018	(1)	57.7	(1)
Proprietors and firm members.....	2,499	1,726	(1)	44.8	(1)
Salaried employees.....	3,473	1,769	1,143	96.3	54.8
Wage earners (average number).....	28,750	18,523	14,459	55.2	28.1
Primary horsepower.....	175,019	81,348	60,005	115.1	35.6
Capital.....	\$89,082,000	\$44,024,000	\$28,359,000	102.3	55.2
Expenses.....	82,124,000	48,360,000	30,812,000	69.8	57.0
Services.....	23,949,000	13,577,000	8,044,000	76.4	68.8
Salaries.....	4,047,000	2,133,000	1,222,000	89.7	74.5
Wages.....	19,902,000	11,444,000	6,822,000	73.9	67.8
Materials.....	50,552,000	30,597,000	20,789,000	65.2	47.2
Miscellaneous.....	7,623,000	4,186,000	1,979,000	82.1	111.5
Value of products.....	93,005,000	55,525,000	36,593,000	67.5	51.7
Value added by manufacture (value of products less cost of materials).....	42,453,000	24,928,000	15,804,000	70.3	57.7

<sup>1</sup> Figures not available.

In 1909 the state of Oregon had 2,246 manufacturing establishments, which gave employment to an average of 34,722 persons during the year and paid

out \$23,949,000 in salaries and wages. Of the persons employed, 28,750 were wage earners. These establishments turned out products to the value of \$93,005,000,

## MANUFACTURES—OREGON.

to produce which materials costing \$50,552,000 were utilized. The value added by manufacture was thus \$42,453,000, 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 Oregon as a whole showed a marked growth during the decade 1899-1909, the greater development having taken place during the five-year period 1904-1909. During this period the number of establishments increased 40.2 per cent and

the average number of wage earners 55.2 per cent, while the value of products increased 67.5 per cent, and the value added by manufacture 70.3 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 representing 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. <sup>1</sup>			
		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
<b>All industries</b> .....	2,246	28,750	100.0	\$93,005,000	100.0	\$42,453,000	100.0	67.5	51.7	70.3	57.7
Lumber and timber products.....	713	15,066	52.4	30,200,000	32.5	17,787,000	40.9	95.9	39.1	86.0	62.3
Flour-mill and gristmill products.....	114	394	1.4	8,891,000	9.6	1,224,000	2.8	5.0	38.0	9.7	10.7
Slaughtering and meat packing.....	14	366	1.3	5,880,000	6.3	865,000	4.3	102.3	77.5	67.3	85.3
Printing and publishing.....	324	1,459	5.1	5,041,000	5.4	3,938,000	9.1	81.6	85.8	85.9	89.1
Butter, cheese, and condensed milk.....	95	420	1.5	4,920,000	5.3	968,000	2.2				
Canning and preserving.....	71	661	2.3	3,207,000	3.4	1,020,000	2.4	10.2	46.0	0.3	46.1
Foundry and machine-shop products.....	82	1,055	3.7	3,135,000	3.4	1,663,000	3.8	97.4	87.3	76.0	81.7
Bread and other bakery products.....	151	613	2.1	2,829,000	3.0	1,208,000	2.8	88.1	93.1	92.0	100.3
Liquors, malt.....	18	204	0.7	1,857,000	2.0	1,403,000	3.2	66.1	56.6	103.6	27.4
Leather goods.....	48	353	1.2	1,629,000	1.8	640,000	1.5	76.1	42.3	67.1	46.7
Copper, tin, and sheet-iron products.....	30	431	1.5	1,611,000	1.7	776,000	1.8				
Confectionery.....	19	283	1.0	1,215,000	1.3	666,000	1.5	220.6	81.3	179.8	110.6
Cars and general shop construction and repairs by steam-railroad companies.....	8	777	2.7	1,163,000	1.2	654,000	1.5	-8.1	23.3	-25.6	62.2
Clothing, men's, including shirts.....	5	544	1.9	1,105,000	1.2	367,000	0.9				
Furniture and refrigerators.....	10	552	1.9	1,094,000	1.2	610,000	1.4	38.5	164.2	35.0	232.4
Woolen, worsted, and felt goods, and wool hats.....	8	469	1.6	929,000	1.0	402,000	0.9	-10.2	15.1	-25.3	24.5
Brick and tile.....	61	385	1.3	675,000	0.7	520,000	1.2	114.3	38.8	106.3	32.6
Shipbuilding, including boat building.....	24	212	0.7	477,000	0.5	273,000	0.6	60.6		56.9	
Tobacco manufactures.....	56	187	0.6	474,000	0.5	303,000	0.7	19.7	171.2	39.6	152.3
Stoves and furnaces, including gas and oil stoves.....	11	86	0.3	351,000	0.4	221,000	0.5	152.5		85.7	
Mattresses and spring beds.....	7	83	0.3	350,000	0.4	139,000	0.3	141.4		135.6	
Marble and stone work.....	23	76	0.3	297,000	0.3	184,000	0.4				
Ice, manufactured.....	25	69	0.2	257,000	0.3	181,000	0.4	18.4	87.1	2.8	81.4
Leather, tanned, curried, and finished.....	8	49	0.2	244,000	0.3	63,000	0.2	-49.7	94.0	-46.6	96.7
All other industries.....	303	3,956	13.8	15,174,000	16.3	6,378,000	14.7				

<sup>1</sup> Per cent of increase is based on figures in Table I, and a minus sign (-) denotes a decrease. Where the 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 product 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 on 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.*—This industry, which includes the operation of lumber camps, sawmills, shingle mills, planing mills, and establishments engaged in the manufacture of wooden packing boxes, is by far the most important branch of manufacture in the state. Oregon ranked ninth in the total cut of rough lumber in 1909. The industry gave employment to an average of 15,066 wage earners, or 52.4

per cent of the total for the state, and the value of its products amounted to \$30,200,000, or 32.5 per cent of the total value of all manufactured products.

*Flour-mill and gristmill products.*—This industry, which is second in importance among the industries of the state when measured by value of products, is largely dependent upon the extensive grain areas of the state for its raw material. Because of the comparatively simple processes involved in the industry and the extent to which these processes are carried on by machinery, the number of wage earners employed and the value added by manufacture are not commensurate with the gross value of products. This classification does not include custom flour mills and gristmills, statistics for which are shown separately on page 15.

*Slaughtering and meat packing.*—This industry includes wholesale slaughtering and meat packing and the manufacture of sausage. It does not include the retail butcher shops, which slaughter a large number

of animals. In 1909 the industry gave employment to an average of 366 wage earners and turned out products valued at \$5,880,000. The value of products shows an increase over 1904 of 102.3 per cent.

*Printing and publishing.*—This industry in Oregon includes book and job printing, the printing and publishing of newspapers and periodicals, bookbinding and blank-book making, steel and copper plate engraving, including plate printing, and lithographing. The increase in the value of products from 1904 to 1909 was 81.6 per cent, as compared with an increase of 85.8 per cent from 1899 to 1904. The average number of wage earners employed increased during the decade from 840 to 1,459, or 73.7 per cent. Although this industry ranked fourth among the manufacturing industries of the state in value of products in 1909, it ranked second when measured by number of wage earners and by value added by manufacture.

*Butter, cheese, and condensed milk.*—Improvements in machinery and in methods of handling the raw materials have resulted in increasing the average size of the establishments and in the centralization of the industry in the larger business centers. The statistics shown for this industry for 1904 do not include the entire product of the industry, as it was necessary to omit two large condensed-milk establishments to avoid disclosing the operations of individual concerns. The 95 establishments reported under this classification in 1909 may be grouped according to their chief products as follows: Butter factories, 55; cheese factories, 33; and condensed-milk factories, 7.

*Canning and preserving.*—The development of fruit growing and truck gardening in Oregon has greatly increased the activity of the canning and preserving industry since 1904. While there has been a considerable decrease since 1904 in the fish products, which represented about two-thirds of the total value of the output of the canneries in 1909, the rapid increase in the drying of fruits, especially prunes, so increased the total value of products that the industry as a whole showed a gain of 10.2 per cent during the five years.

In addition to the 24 industries presented separately, there are 16 industries which had a value of products in 1909 in excess of \$200,000. 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, as it is interwoven with one or more other industries. These industries are as follows: Awnings, tents, and sails; babbitt metal and solder; bags, other than paper; boxes, fancy and paper; cars and general shop construction and repairs by street-railroad companies; coffee and spice, roasting and grinding; cordage and twine and jute and linen goods; food preparations; gas, illuminating and heating; iron and steel, steel

works and rolling mills; mineral and soda waters; oil, linseed; paint and varnish; paper and wood pulp; soap; and wood preserving.

The rank of the leading industries on the basis of the value added by manufacture differs considerably from their order given in the table, where they are arranged according to the value of products. The lumber industry retains first place, and slaughtering and meat packing third. Printing and publishing advances from fourth to second place; the foundries and machine shops and the malt-liquor industry advance from seventh and ninth to fourth and fifth places, respectively; and the flour mills and gristmills and the butter, cheese, and condensed-milk industry drop from second and fifth to sixth and ninth places, respectively.

This table also shows 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. Slaughtering and meat packing, and the manufacture of confectionery, brick and tile, stoves and furnaces, and mattresses and spring beds showed large increases, both in value of products and in value added by manufacture.

Three of the industries shown separately—steam-railroad repair shops, woolen mills, and tanneries—showed decreases in value of products and value added by manufacture from 1904 to 1909.

**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.....	34,722	31,849	2,873
Proprietors and officials.....	3,719	3,607	52
Proprietors and firm members.....	2,499	2,453	46
Salaried officers of corporations.....	344	340	4
Superintendents and managers.....	876	874	2
Clerks.....	2,253	1,702	551
Wage earners (average number).....	28,750	26,480	2,270
16 years of age and over.....	28,652	26,406	2,246
Under 16 years of age.....	98	74	24

The average number of persons engaged in manufactures during 1909 was 34,722, of whom 28,750 were wage earners. Of the remainder, 3,719 were proprietors and officials and 2,253 were clerks. Corresponding figures for individual industries will be found in Table II, page 18.

## MANUFACTURES—OREGON.

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 13 important industries individually.

INDUSTRY.	PERSONS ENGAGED IN MANUFACTURES.			
	Total number.	Per cent of total.		
		Proprietors and officials.	Clerks.	Wage earners (average number).
<b>All industries</b> .....	34,722	10.7	6.5	82.8
Bread and other bakery products.....	905	22.0	10.3	67.7
Butter, cheese, and condensed milk.....	615	16.6	15.1	68.3
Canning and preserving.....	844	14.1	7.6	78.3
Clothing, men's, including shirts.....	576	2.6	3.0	94.4
Confectionery.....	408	7.6	23.0	69.4
Copper, tin, and sheet-iron products.....	525	11.4	0.5	82.1
Flour-mill and gristmill products.....	620	26.8	9.7	63.5
Foundry and machine-shop products.....	1,270	11.1	5.8	83.1
Furniture and refrigerators.....	621	5.2	6.0	88.9
Leather goods.....	484	15.5	11.6	72.9
Liquors, malt.....	272	12.9	12.1	75.0
Lumber and timber products.....	16,833	7.7	2.8	89.5
Printing and publishing.....	2,523	25.3	16.9	57.8
All other industries.....	8,226	9.8	8.6	81.6

Of the total number of persons engaged in all manufacturing industries, 10.7 per cent were proprietors and officials, 6.5 per cent clerks, and 82.8 per cent wage earners. The highest percentage of proprietors and officials shown for any individual industry, 26.8, is for the flour mills and gristmills. In this industry and also in the bakeries 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 very much higher than for most other industries or for all industries combined. On account of the large average number of wage earners per establishment engaged in making men's clothing and shirts, this industry shows the smallest proportion of proprietors and officials.

The next 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.

For all industries combined, 91.8 per cent of the average number of wage earners were males 16 years of age and over; 7.8 per cent females 16 years of age and over; and three-tenths of 1 per cent children under 16 years of age. The larger part of the total number of female wage earners were employed in the men's clothing and the canning and preserving industries.

In the men's clothing factories nearly nine-tenths of the wage earners were women 16 years of age and over, and in the canneries nearly two-fifths belonged to this class. In the manufacture of confectionery, a large proportion of female wage earners were employed, 67.8 per cent, but the number of women employed was not as large as in the canneries, where the proportion of such wage earners was smaller. The largest percentage of children was employed in the canneries, where much of the work requires but little strength or skill.

INDUSTRY.	WAGE EARNERS.			
	Average number. <sup>1</sup>	Per cent of total.		
		16 years of age and over.		Under 16 years of age.
Male.	Female.			
<b>All industries</b> .....	28,750	91.8	7.8	0.3
Bread and other bakery products.....	613	71.1	28.5	0.3
Butter, cheese, and condensed milk.....	420	91.4	7.6	1.2
Canning and preserving.....	661	59.6	36.9	3.5
Clothing, men's, including shirts.....	544	10.1	89.9	.....
Confectionery.....	283	32.2	67.8	.....
Copper, tin, and sheet-iron products.....	431	92.3	7.7	.....
Flour-mill and gristmill products.....	394	99.7	0.3	.....
Foundry and machine-shop products.....	1,055	100.0	.....	.....
Furniture and refrigerators.....	552	98.7	1.3	.....
Leather goods.....	353	96.6	3.4	.....
Liquors, malt.....	204	100.0	.....	.....
Lumber and timber products.....	15,066	99.6	0.3	0.1
Printing and publishing.....	1,459	83.7	14.3	2.0
All other industries.....	6,715	87.6	11.9	0.4

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

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.	
<b>Total</b> .....	34,722	100.0	22,018	100.0	57.7
Proprietors and firm members.....	2,499	7.2	1,726	7.8	41.8
Salaried employees.....	3,473	10.0	1,769	8.0	95.3
Wage earners (average number).....	28,750	82.8	18,523	84.1	55.2

Comparable figures are not obtainable for 1899. The table shows a greater percentage of increase in salaried employees than in that 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 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.....	28,750	100.0	18,523	100.0	14,459	100.0
16 years of age and over...	28,652	99.7	18,317	98.9	14,183	98.1
Male.....	26,406	91.8	16,843	90.9	13,037	90.4
Female.....	2,246	7.8	1,474	8.0	1,116	7.7
Under 16 years of age....	98	0.3	206	1.1	276	1.9

This table indicates that for all industries combined there has been during the past decade a diminution in the number and in the proportion of children under 16 years of age. Although there was an actual increase in the number of women wage earners, the proportion which such wage earners formed of the

total remained practically the same at each census. In 1909 males 16 years of age and over formed 91.8 per cent of all wage earners, as compared with 90.9 per cent in 1904 and 90.4 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 canning and preserving and the lumber and timber 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 18, are shown, for practically all of the important industries in 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.

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.....	23,354	75.4	110	7.3	11,545	70.1	8,496	71.1	3,040	66.6	11,693	86.1
February.....	24,833	80.2	113	7.1	12,812	78.0	9,480	79.4	3,362	73.4	11,878	87.4
March.....	26,859	86.7	172	10.8	14,353	87.2	10,427	87.3	3,926	85.7	12,334	90.8
April.....	29,179	94.2	277	17.4	15,607	95.2	11,271	94.3	4,396	96.0	13,235	97.4
May.....	30,302	97.8	524	33.0	16,191	98.4	11,611	97.2	4,580	100.0	13,587	100.0
June.....	30,806	99.4	874	55.0	16,492	100.0	11,947	100.0	4,515	98.6	13,470	99.1
July.....	30,175	97.4	1,102	69.4	15,746	95.6	11,551	96.7	4,195	91.6	13,327	98.1
August.....	30,269	97.7	921	58.0	15,857	96.3	11,567	96.8	4,290	93.7	13,491	99.3
September.....	30,978	100.0	1,588	100.0	16,244	98.7	11,898	99.6	4,346	94.9	13,146	96.8
October.....	30,402	98.1	1,250	78.7	15,960	97.0	11,700	97.9	4,260	93.2	13,183	97.0
November.....	29,423	95.0	580	36.5	15,382	93.4	11,298	94.6	4,084	89.2	13,461	99.1
December.....	28,416	91.7	419	26.4	14,532	88.3	10,907	91.3	3,625	79.1	13,465	99.1

The brick and tile and canning and preserving industries are the only decidedly seasonal industries in Oregon, but neither gives employment to a sufficiently large number of persons to influence greatly the variation of employment in the state. In both industries most of the work is done during the summer months. In the canneries the season of greatest activity extends from June to October, inclusive. Employment was given to 1,588 wage earners in September, the month of greatest activity, and to 113 in February, the month of minimum employment. The lumber industry in Oregon is not particularly seasonal, and the slight variations in the employment of the large number of wage earners in the industry do not greatly affect the total for all industries. Most of the large mills operate throughout the year, but many of the smaller ones shut down during the winter months, thus causing a fluctuation of nearly 5,000 in the number of wage earners. The greatest number employed during any one month was 16,462 in June, and the smallest number, 11,545 in January.

**Prevailing hours of labor.**—In the next 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.

It is evident from the figures that for the great majority of wage earners employed in the manufacturing industries of Oregon the usual hours of labor range from 54 to 60 a week, inclusive, only 14.5 per cent of the total being employed in establishments where less than 54 hours a week prevailed, and only 6.3 per cent in establishments where the hours of labor were more than 60 a week. In two important industries, men's clothing and printing and publishing, most of the wage earners work in establishments where the prevailing hours of labor are 48 or less per week. In the lumber industry, the most important in the state, 91.4 per cent of the wage earners worked in establishments where the prevailing hours were 60 per week.

MANUFACTURES—OREGON.

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.....	28,750	3,396	762	3,880	1,030	17,861	1,485	194	142
Bread and other bakery products.....	613	50	31	108	221	161	32	6	4
Brick and tile.....	385	43		96	8	238			
Butter, cheese, and condensed milk.....	420	34	12	72	36	96	168		2
Canning and preserving.....	661	15	28	134		280	172	1	31
Cars and general shop construction and repairs by steam-railroad companies.....	777	19		697		21	40		
Clothing, men's, including shirts.....	544	538			6				
Confectionery.....	283	19	75	24	127	37	1		
Copper, tin, and sheet-iron products.....	431	188	1	98	7	137			
Flour-mill and gristmill products.....	304	7		11		280	15	80	1
Foundry and machine-shop products.....	1,055	36	122	802	17	78			
Furniture and refrigerators.....	552		36	9	8	499			
Ice, manufactured.....	60	10		2	3	9	9	14	22
Leather goods.....	353	10	4	281	7	51			
Liquors, malt.....	204	170		2	19	12	1		
Lumber and timber products.....	15,066	360	105	243	186	13,766	303		13
Marble and stone work.....	76	72		2		2			
Mattresses and spring beds.....	83			47		36			
Printing and publishing.....	1,459	1,188	81	166	7	4			
Shipbuilding, including boat building.....	212	181	2	27		2			
Slaughtering and meat packing.....	366					340	6	5	16
Stoves and furnaces, including gas and oil stoves.....	86	27	5	20	25				
Tobacco manufactures.....	187	184	2			1			
Woolen, worsted, and felt goods, and wool hats.....	469			3		466			
All other industries.....	4,005	245	258	1,027	353	1,336	645	88	53

Location of establishments.—The next table shows the extent to which the manufactures of Oregon 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.	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	672,765 413,536	221,308 90,426	451,457 323,110	32.9 21.9	67.1 78.1
Number of establishments.	1909 1899	2,246 1,406	711 408	1,535 998	31.7 20.0	68.3 71.0
Average number of wage earners.	1909 1899	28,750 14,459	12,811 5,380	15,939 9,079	44.6 37.2	55.4 62.8
Value of products....	1909 1899	\$93,904,845 \$6,592,714	\$40,068,798 \$16,903,707	\$53,836,047 \$19,689,007	52.8 46.2	47.2 53.8
Value added by manufacture.	1909 1899	42,452,375 15,803,881	21,815,981 6,726,379	20,636,394 9,077,502	51.4 42.6	48.6 57.4

In 1909, 52.8 per cent of the total value of products was reported from the cities of Portland and Salem, the only cities in the state having over 10,000 population, and 44.6 per cent of the total number of wage earners were employed in these cities. There has been a change from the supremacy of the outside manufacturing districts in 1899 to that of the cities in 1909. This is partly due to the fact that Salem had a population of less than 10,000 in 1900 and was not included in the city group until 1909, but chiefly to the marked growth of the industries in the city of Portland, this city alone reporting slightly more than one-half of the

total value of products for the state in 1909. The large percentages shown for the outside districts are largely resultant from the activity in the lumber industry.

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

CITY.	1910	1900
Portland.....	207,214	90,426
Salem.....	14,094	4,258

The following table shows the average number of wage earners and the value of products for Portland for 1909, 1904, and 1899, and for Salem for 1909:

CITY.	AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.		
	1909	1904	1899	1909	1904	1899
Portland.....	12,214	8,171	5,380	\$46,860,767	\$28,651,321	\$16,003,707
Salem.....	597	(1)	(1)	2,208,031	(1)	(1)

<sup>1</sup> Figures not available.

Portland, the largest and by far the most important city in the state, shows an increase, from 1904 to 1909, of \$18,209,446, or 63.6 per cent, in value of products and of 4,043, or 49.5 per cent, in the average number of wage earners. When measured by value of products, the lumber industry was the most important branch of manufactures in Portland. In 1909 the value of products of this industry in this city amounted to \$10,110,975, representing 33.5 per cent of the total for the industry in the state, and employment was given to an average of 3,669 wage earners, or 24.4 per cent of the total number engaged in the industry in the state. In 1909 Portland reported

nearly three-fourths of the total value of products for printing and publishing in the state; over three-fourths that for the bakeries; more than four-fifths that for the foundries and machine shops, for the manufacture of copper, tin, and sheet-iron products, and for the leather goods industry; and over nine-tenths those for the confectionery and furniture industries, respectively. The manufacture of men's clothing in the state was confined to Portland.

Statistics of manufactures for Salem are shown for the first time in 1909; therefore no comparison can be made with former censuses. The most important industries in the city in that year were the lumber industry, the canneries, slaughtering and meat pack-

ing, the woolen-goods industry, printing and publishing, and the malt-liquor industry.

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.
<b>ALL INDUSTRIES:</b>					<b>Canning and preserving, 1909—</b>				
1909.....	2,246	28,750	\$93,004,845	\$42,452,375	Continued.				
1904.....	1,602	18,523	55,525,123	24,928,360	Per cent of total.....	100.0	100.0	100.0	100.0
Individual:					Individual.....	32.4	12.4	5.7	7.8
1909.....	1,031	3,552	11,482,192	5,774,363	Firm.....	18.3	8.2	4.5	6.2
1904.....	746	2,919	8,414,059	4,230,027	Corporation <sup>2</sup> .....	49.3	70.4	89.0	86.0
Firm:					<b>Flour-mill and gristmill products, 1909.....</b>				
1909.....	545	3,044	9,860,644	5,264,778	Individual.....	114	394	\$8,891,001	\$1,224,265
1904.....	439	2,559	6,972,525	3,449,733	Individual.....	45	88	1,845,411	304,044
Corporation:					Firm.....	24	47	1,065,993	194,134
1909.....	640	22,063	70,781,269	31,212,265	Corporation.....	45	259	6,039,597	726,087
1904.....	409	13,037	40,034,288	17,178,323	Per cent of total.....	100.0	100.0	100.0	100.0
Other:					Individual.....	39.5	22.3	20.8	24.8
1909.....	30	91	880,740	200,909	Firm.....	21.1	11.9	11.3	15.9
1904.....	8	8	104,251	14,227	Corporation.....	39.5	65.7	67.9	59.3
Per cent of total:					<b>Foundry and machine-shop products, 1909.....</b>				
1909.....	100.0	100.0	100.0	100.0	Individual.....	82	1,055	\$3,135,068	\$1,663,469
1904.....	100.0	100.0	100.0	100.0	Individual.....	31	170	51,277	293,631
Individual:					Firm.....	18	85	234,931	140,652
1909.....	45.9	12.4	12.3	13.6	Corporation.....	33	800	2,337,860	1,220,186
1904.....	46.6	15.8	15.2	17.2	Per cent of total.....	100.0	100.0	100.0	100.0
Firm:					Individual.....	37.8	16.1	17.9	17.7
1909.....	24.3	10.6	10.6	12.4	Firm.....	22.0	8.1	7.5	8.5
1904.....	27.4	13.8	12.6	13.8	Corporation.....	40.2	75.8	74.6	73.9
Corporation:					<b>Lumber and timber products, 1909.....</b>				
1909.....	28.5	76.7	76.1	73.5	Individual.....	713	15,066	\$30,199,857	\$17,786,429
1904.....	25.5	70.4	72.1	68.0	Individual.....	213	1,178	2,068,739	1,430,000
Other:					Firm.....	246	1,584	2,918,721	1,996,100
1909.....	1.3	0.3	0.9	0.5	Corporation.....	204	12,304	25,212,397	14,354,320
1904.....	0.5	(1)	0.2	0.1	Per cent of total.....	100.0	100.0	100.0	100.0
<b>Butter, cheese, and condensed milk, 1909.....</b>					Individual.....	36.9	7.8	6.8	8.1
Individual.....	95	420	\$4,920,462	\$968,242	Firm.....	34.5	10.5	9.7	11.2
Individual.....	29	53	928,188	148,068	Corporation.....	28.6	81.7	83.5	80.7
Firm.....	12	26	555,283	103,892	<b>Printing and publishing, 1909.....</b>				
Corporation.....	34	306	2,761,391	652,319	Individual.....	324	1,459	\$5,040,523	\$3,937,110
Other.....	20	35	675,600	63,963	Individual.....	200	375	1,108,857	906,158
Per cent of total.....	100.0	100.0	100.0	100.0	Firm.....	47	138	371,464	288,325
Individual.....	30.5	12.6	18.9	15.3	Corporation.....	60	912	3,410,957	2,121,924
Firm.....	12.6	6.2	11.3	10.7	Other.....	8	34	140,245	120,703
Corporation.....	35.8	72.9	56.1	67.4	Per cent of total.....	100.0	100.0	100.0	100.0
Other.....	21.1	8.3	13.7	6.6	Individual.....	61.7	25.7	22.0	23.0
<b>Canning and preserving, 1909.....</b>					Firm.....	14.5	9.5	7.4	7.3
Individual.....	71	661	\$3,207,080	\$1,019,628	Corporation.....	21.3	62.5	67.8	66.6
Individual.....	23	82	181,279	79,196	Other.....	2.5	2.3	2.8	3.1
Firm.....	13	54	143,816	63,042					
Corporation <sup>2</sup> .....	35	525	2,881,965	877,390					

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

<sup>2</sup> 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, 28.5 per cent of the total number of establishments in 1909 were under corporate ownership, as against 71.5 per cent under all other forms. The corresponding figures for 1904 were 25.5 per cent and 74.5 per cent, respectively. The

establishments operated by corporations, however, reported 76.1 per cent of the total value of products in 1909, and 72.1 per cent in 1904. The greatest decrease in relative numerical importance from 1904 to 1909 is shown for the establishments operated by firms, which represented only 24.3 per cent of the total number in 1909, as compared with 27.4 per cent in 1904.

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

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 combined are shown for the last two censuses, while for the individual industries 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.
<b>ALL INDUSTRIES:</b>									
1909	2,246	23,750	\$93,004,845	\$42,452,375	Flour-mill and gristmill products, 1909	114	394	\$8,891,001	\$1,224,265
1904	1,602	18,623	55,525,123	24,928,360	Less than \$5,000	8	6	27,503	7,632
Less than \$5,000:					\$5,000 and less than \$20,000	35	28	445,286	98,225
1909	780	957	1,920,913	1,343,938	\$20,000 and less than \$100,000	55	134	2,782,962	528,851
1904	584	747	1,520,491	1,040,739	\$100,000 and less than \$1,000,000 <sup>1</sup>	16	226	5,635,250	589,557
\$5,000 and less than \$20,000:					Per cent of total	100.0	100.0	100.0	100.0
1909	780	3,214	8,203,981	5,082,474	Less than \$5,000	7.0	1.5	0.3	0.8
1904	567	2,820	5,821,749	3,658,379	\$5,000 and less than \$20,000	30.7	7.1	5.0	8.0
\$20,000 and less than \$100,000:					\$20,000 and less than \$100,000	48.2	34.0	31.3	43.2
1909	482	7,104	21,453,056	10,626,549	\$100,000 and less than \$1,000,000	14.0	57.4	63.4	48.2
1904	332	5,228	14,162,072	6,960,113	Average per establishment		3	\$77,991	\$10,739
\$100,000 and less than \$1,000,000:					<b>Foundry and machine-shop products, 1909</b>				
1909	181	15,110	47,022,078	20,766,801	82	1,055	\$3,135,068	\$1,663,469	
1904	114	8,620	26,138,494	11,579,907	Less than \$5,000	15	11	32,724	20,548
\$1,000,000 and over:					\$5,000 and less than \$20,000	29	111	331,415	207,063
1909	8	2,365	14,398,817	4,032,613	\$20,000 and less than \$100,000	30	387	1,047,323	507,345
1904	5	1,108	7,873,317	1,680,162	\$100,000 and less than \$1,000,000	8	546	1,723,606	838,513
Per cent of total:					Per cent of total	100.0	100.0	100.0	100.0
1909	100.0	100.0	100.0	100.0	Less than \$5,000	18.3	1.0	1.0	1.2
1904	100.0	100.0	100.0	100.0	\$5,000 and less than \$20,000	35.4	10.5	10.6	12.4
Less than \$5,000:					\$20,000 and less than \$100,000	36.6	36.7	33.4	36.0
1909	35.1	3.3	2.1	3.2	\$100,000 and less than \$1,000,000	9.8	51.8	55.0	56.4
1904	36.5	4.0	2.8	4.2	Average per establishment		13	\$38,233	\$20,286
\$5,000 and less than \$20,000:					<b>Lumber and timber products, 1909</b>				
1909	35.0	11.2	8.8	12.0	713	15,066	\$30,199,857	\$17,788,420	
1904	35.4	15.2	10.5	14.7	Less than \$5,000	284	484	646,074	521,251
\$20,000 and less than \$100,000:					\$5,000 and less than \$20,000	224	1,382	2,210,788	1,614,307
1909	21.5	24.7	23.1	25.0	\$20,000 and less than \$100,000	130	3,493	6,210,660	4,210,587
1904	20.7	28.2	25.5	28.0	\$100,000 and less than \$1,000,000	63	8,538	17,399,242	9,503,248
\$100,000 and less than \$1,000,000:					\$1,000,000 and over	3	1,160	3,732,103	1,867,037
1909	8.1	52.6	50.6	48.9	Per cent of total	100.0	100.0	100.0	100.0
1904	7.1	46.5	47.1	46.5	Less than \$5,000	39.8	3.2	2.1	2.9
\$1,000,000 and over:					\$5,000 and less than \$20,000	31.4	9.2	7.3	9.1
1909	0.4	8.2	15.5	10.9	\$20,000 and less than \$100,000	10.5	23.2	20.6	23.7
1904	0.3	6.0	14.2	6.7	\$100,000 and less than \$1,000,000	8.8	56.7	57.6	53.8
Average per establishment:					\$1,000,000 and over	0.4	7.8	12.4	10.5
1909		13	\$41,409	\$18,991	Average per establishment		21	\$42,356	\$24,946
1904		12	34,660	15,561	<b>Printing and publishing, 1909</b>				
<b>Butter, cheese, and condensed milk, 1909</b>					324	1,459	\$5,040,523	\$3,937,110	
Less than \$5,000	95	420	\$4,920,462	\$968,242	Less than \$5,000	171	168	437,672	348,614
\$5,000 and less than \$20,000	16	6	46,021	9,500	\$5,000 and less than \$20,000	117	430	1,212,696	971,398
\$20,000 and less than \$100,000	27	33	345,779	54,003	\$20,000 and less than \$100,000	30	396	1,174,676	874,804
\$100,000 and less than \$1,000,000	40	104	1,834,374	248,958	\$100,000 and less than \$1,000,000	6	465	2,210,079	1,742,294
\$1,000,000 and less than \$1,000,000	12	277	2,695,288	655,781	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	52.8	11.5	8.7	8.9
Less than \$5,000	16.8	1.4	0.9	1.0	\$5,000 and less than \$20,000	36.1	29.5	24.0	24.7
\$5,000 and less than \$20,000	28.4	7.9	7.0	5.6	\$20,000 and less than \$100,000	9.3	27.1	23.3	22.2
\$20,000 and less than \$100,000	42.1	24.8	37.3	25.7	\$100,000 and less than \$1,000,000	1.0	31.0	44.0	44.3
\$100,000 and less than \$1,000,000	12.6	66.0	54.8	67.7	Average per establishment		4	\$15,557	\$12,152
Average per establishment		4	\$51,794	\$10,192	<b>Canning and preserving, 1909</b>				
<b>Butter, cheese, and condensed milk, 1909</b>					71	681	\$3,207,060	\$1,019,628	
Less than \$5,000	25	36	59,234	26,195	Less than \$5,000	25	36	59,234	26,195
\$5,000 and less than \$20,000	17	98	194,061	78,701	\$5,000 and less than \$20,000	17	98	194,061	78,701
\$20,000 and less than \$100,000	19	264	1,025,182	355,999	\$20,000 and less than \$100,000	19	264	1,025,182	355,999
\$100,000 and less than \$1,000,000	10	203	1,928,583	558,733	\$100,000 and less than \$1,000,000	10	203	1,928,583	558,733
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	35.2	5.4	1.8	2.6	Less than \$5,000	52.8	11.5	8.7	8.9
\$5,000 and less than \$20,000	23.9	14.8	6.1	7.7	\$5,000 and less than \$20,000	36.1	29.5	24.0	24.7
\$20,000 and less than \$100,000	26.8	39.9	32.0	34.9	\$20,000 and less than \$100,000	9.3	27.1	23.3	22.2
\$100,000 and less than \$1,000,000	14.1	39.8	60.1	54.8	\$100,000 and less than \$1,000,000	1.0	31.0	44.0	44.3
Average per establishment		9	\$45,170	\$14,361	Average per establishment		4	\$15,557	\$12,152

<sup>1</sup> Includes the group "\$1,000,000 and over."

This table shows that, in 1909, of the 2,246 manufacturing establishments in the state, only 8 had a value of products exceeding \$1,000,000. These establishments, however, employed an average of 2,365 wage earners, or 8.2 per cent of the total number in all establishments, and reported 15.5 per cent of the total value of products and 10.9 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 considerable proportion (35.1

per cent) of the total number of establishments, but the value of their products amounted to only 2.1 per cent of the total. The bulk of the manufacturing 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, as measured by value of products, in the relative importance of the large establishments—those reporting products valued at not less than \$100,000—and a decrease in that of the three other classes.

The fact that from 1904 to 1909 the average value of products per establishment increased from \$34,660 to \$41,409, and the average value added by manufacture from \$15,561 to \$18,901, 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 12 in 1904 to 13 in 1909.

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 13 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.										
<b>All industries</b> .....	2,246	232	1,310	449	141	59	39	13	3	
Bread and other bakery products.....	151	31	103	13	2	1	1			
Butter, cheese, and condensed milk.....	95	10	71	10	2	2				
Canning and preserving.....	71	1	46	17	5	2				
Clothing, men's, including shirts.....	5		1	1	1	1	1			
Confectionery.....	19		10	6	2	1				
Copper, tin, and sheet-iron products.....	39	3	21	10	4		1			
Flour-mill and gristmill products.....	114	15	86	9	3	1				
Foundry and machine-shop products.....	82	4	37	30	7	3	1			
Furniture and refrigerators.....	19	1	7	5	2	2	2			
Leather goods.....	48	3	33	6	5	1				
Liquors, malt.....	18	1	8	7	1					
Lumber and timber products.....	713	26	377	178	68	31	21	11	1	
Printing and publishing.....	324	72	195	49	4	3	1			
All other industries.....	548	65	315	108	36	10	11	1	2	
AVERAGE NUMBER OF WAGE EARNERS.										
<b>All industries</b> .....	28,759		2,938	4,757	4,729	4,225	5,944	4,335	1,822	
Bread and other bakery products.....	613		173	134	60	68	178			
Butter, cheese, and condensed milk.....	420		127	110	58	125				
Canning and preserving.....	601		118	228	172	143				
Clothing, men's, including shirts.....	544		1	6	6	150	321			
Confectionery.....	283		23	98	88	74				
Copper, tin, and sheet-iron products.....	431		54	96	147		134			
Flour-mill and gristmill products.....	394		180	86	73	55				
Foundry and machine-shop products.....	1,055		95	301	247	194	218			
Furniture and refrigerators.....	552		19	47	60	130	281			
Leather goods.....	353		69	49	176	59				
Liquors, malt.....	204		16	90	23	66				
Lumber and timber products.....	15,066		803	1,914	2,380	2,277	3,094	3,744	794	
Printing and publishing.....	1,459		416	497	118	208	220			
All other industries.....	6,715		784	1,092	1,121	751	1,669	270	1,028	
PER CENT OF AVERAGE NUMBER OF WAGE EARNERS.										
<b>All industries</b> .....	100.0		10.2	16.5	16.4	14.7	20.7	15.1	6.3	
Bread and other bakery products.....	100.0		28.2	21.9	9.8	11.1	20.0			
Butter, cheese, and condensed milk.....	100.0		30.2	26.2	13.8	29.8				
Canning and preserving.....	100.0		17.9	34.5	26.0	21.6				
Clothing, men's, including shirts.....	100.0		0.2	1.1		12.1	27.6	59.0		
Confectionery.....	100.0		8.1	34.6	31.1	26.1				
Copper, tin, and sheet-iron products.....	100.0		12.5	22.3	34.1		31.1			
Flour-mill and gristmill products.....	100.0		45.7	21.8	18.5	14.0				
Foundry and machine-shop products.....	100.0		9.0	28.5	23.4	18.4	20.7			
Furniture and refrigerators.....	100.0		3.4	8.5	12.0	25.2	50.9			
Leather goods.....	100.0		19.5	13.9	49.9	16.7				
Liquors, malt.....	100.0		7.8	48.5	11.3	32.4				
Lumber and timber products.....	100.0		5.7	12.7	15.8	15.1	20.5	24.8	5.3	
Printing and publishing.....	100.0		28.5	34.1	8.1	14.3	15.1			
All other industries.....	100.0		11.7	16.3	16.7	11.2	24.9	4.0	15.3	

Of the 2,246 establishments reported for all industries, 10.3 per cent employed no wage earners; 58.3 per cent, from 1 to 5; 20 per cent, 6 to 20; and 6.3 per cent, 21 to 50. The most numerous single group consists of the 1,310 establishments employing from 1 to 5 wage earners, and the next of the 449 establishments employing from 6 to 20 wage earners. There were 114 establishments that employed over 50 wage earners each, 55 employed over 100 each, 16 employed over 250 each, and 3 employed over 500

each. Of the 55 establishments that employed over 100 wage earners each, 33 were engaged in the lumber industry.

Of the total number of wage earners, 42.1 per cent were in establishments employing over 100 wage earners each. The single group having the largest number of wage earners was the group comprising the establishments employing from 101 to 250 wage earners. This group employed 5,944 wage earners, or 20.7 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.

INDUSTRY.	PER CENT OF TOTAL EXPENSES REPORTED.			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
<b>All industries</b> .....	4.9	24.2	61.6	9.3
Bread and other bakery products.....	3.3	18.6	68.6	9.5
Butter, cheese, and condensed milk.....	2.8	6.3	86.0	4.8
Canning and preserving.....	5.0	10.0	75.4	8.7
Clothing, men's, including shirts.....	2.7	22.6	70.0	4.7
Confectionery.....	9.4	14.3	56.8	19.5
Copper, tin, and sheet-iron products.....	3.8	25.0	59.0	12.3
Flour-mill and gristmill products.....	1.7	3.3	92.3	2.7
Foundry and machine-shop products.....	6.0	32.3	53.3	7.8
Furniture and refrigerators.....	6.3	17.9	67.6	8.4
Leather goods.....	6.3	16.8	37.1	38.8
Liquors, malt.....	7.3	38.4	46.9	10.0
Lumber and timber products.....	4.8	38.1	29.0	18.3
Printing and publishing.....	14.7	19.1	67.6	8.6
All other industries.....	4.7	19.1	67.6	8.6

This table shows that for all industries combined 61.6 per cent of the total expenses was incurred for materials, 29.1 per cent for services—that is, salaries and wages—and 9.3 per cent for other purposes. As would be expected, these proportions vary greatly in the different industries. Among the industries shown separately, printing and publishing shows the largest percentage of expenses for services and flour milling and grist milling the largest for materials. The largest percentage for miscellaneous expenses was reported by the breweries, owing to the inclusion of the internal-revenue tax 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.

Fifty-five and four-tenths per cent of the total increase in power from 1904 to 1909 is due to the increase in that used in the lumber industry alone. The largest actual increase was in steam power, which in 1909 represented 64.1 per cent of the primary power. Water power

more than doubled, and represented 27.1 per cent of the total in 1909. The practice of renting electric power has greatly increased during the decade, the proportion of such power having increased from 3.7 per cent of the total in 1899 to 8.4 per cent in 1909. In 1904 electric power generated in the manufacturing establishments reporting formed only 9.5 per cent of the total electric power reported, while in 1909 it formed 28.8 per cent, having increased from 496 horsepower in 1904 to 5,991 in 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899 <sup>1</sup>	1909	1904	1899 <sup>1</sup>	1909	1904	1899
<b>Primary power, total</b> .....	3,442	1,318	1,184	175,019	81,348	60,005	100.0	100.0	100.0
Owned.....	1,921	1,318	1,184	160,110	76,543	57,444	91.5	94.1	95.7
Steam.....	1,572	1,008	883	112,244	55,512	37,986	64.1	68.2	63.3
Gas.....	81	58	36	428	371	195	0.2	0.5	0.3
Water wheels.....	237	207	205	47,041	20,526	19,263	26.9	25.2	32.1
Water motors.....	31	45	( <sup>2</sup> )	397	134	( <sup>2</sup> )	0.2	0.2	( <sup>2</sup> )
Other.....									
Rented.....	1,521	( <sup>2</sup> )	( <sup>2</sup> )	14,909	4,805	2,561	8.5	5.0	4.3
Electric.....	1,521			14,811	4,727	2,243	8.4	5.8	3.7
Other.....		( <sup>2</sup> )	( <sup>2</sup> )	88	78	318	0.1	0.1	0.5
<b>Electric motors</b> .....	1,745	31	27	20,802	5,223	2,690	100.0	100.0	100.0
Run by current generated by establishment.....	224	31	27	5,991	496	447	28.8	0.5	16.6
Run by rented power.....	1,521	( <sup>2</sup> )	( <sup>2</sup> )	14,811	4,727	2,243	71.2	99.5	83.4

<sup>1</sup> Includes the neighborhood industries and hand trades omitted in 1904 and 1909.  
<sup>2</sup> Not reported.

**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 and for certain selected industries:

INDUSTRY.	An-thracite coal (tons).	Bitu-minous coal (tons).	Coke (tons).	Wood (cords).	Oil, including gaso-line (barrels).	Gas (1,000 feet).
<b>All industries</b> .....	462	18,158	5,808	116,762	599,121	25,921
Bread and other bakery products.....	36	344	226	4,415	9,102	6,137
Butter, cheese, and condensed milk.....	144	1,006	35	11,544	11,040	.....
Canning and preserving.....	18	122	.....	7,520	8,686	.....
Clothing, men's, including shirts.....	.....	80	.....	96	624	.....
Confectionery.....	10	170	138	481	1,085	3,600
Copper, tin, and sheet-iron products.....	.....	47	52	524	125	1,296
Flour-mill and gristmill products.....	.....	247	.....	6,854	1,633	.....
Foundry and machine-shop products.....	154	608	2,556	2,351	4,469	275
Furniture and refrigerators.....	.....	40	.....	825	1,720	1,092
Leather goods.....	6	29	.....	182	45	237
Liquors, malt.....	.....	504	764	15,004	8,029	390
Lumber and timber products.....	18	1,180	.....	4,474	11,180	590
Printing and publishing.....	27	469	.....	1,502	3,677	4,826
All other industries.....	49	13,312	2,037	60,990	536,620	7,153

<sup>1</sup> In addition there were 11,715 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. Certain data of this character for six important industries in Oregon are here presented.

**Lumber and timber products.**—The following is a statement of the quantity of the lumber, lath, and shingles produced in the sawmills and shingle mills as reported at the censuses of 1909 and 1899:

PRODUCT.	1909	1899
Rough lumber.....M feet b. m.	1,898,905	734,538
Lath.....thousands..	161,512	41,779
Shingles.....thousands..	293,644	31,189

The cut of rough lumber increased 1,164,457 M feet board measure, or 158.5 per cent, from 1899 to 1909; that of shingles, 262,455,000, or 841.5 per cent; and that of lath, 119,733,000, or 286.6 per cent.

Of the total cut for 1909, 1,895,950 M feet board measure, was softwood. Of this amount, 1,581,621 M feet board measure, or 83.4 per cent of the total for the state, was Douglas fir, and 169,592 M feet western pine; among other varieties are spruce, cedar, hemlock, and larch. There were only 3,045 M feet of hardwood lumber produced, of which maple, cottonwood, ash, and oak were the principal varieties. In 1909 Oregon was second among the states in the production of Douglas fir, reporting 32.6 per cent of the total. But two states, California and Oregon, reported sugar pine and Oregon reported 8.6 per cent of the total cut.

**Flour-mill and gristmill products.**—The following table gives the quantity and value of the various kinds of products of this industry for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value.....</b>	<b>\$8,891,001</b>	<b>\$8,407,613</b>	<b>\$6,136,250</b>
Wheat flour:			
White—			
Barrels.....	1,345,369	1,716,833	1,778,799
Value.....	\$5,950,611	\$6,236,291	\$4,620,351
Graham—			
Barrels.....	14,912	24,016	(1)
Value.....	\$65,234	\$88,041	(1)
Corn meal and corn flour:			
Barrels.....	550	685	3,632
Value.....	\$2,236	\$3,305	\$10,283
Rye flour:			
Barrels.....	1,209	285	1,854
Value.....	\$5,502	\$1,300	\$5,661
Buckwheat flour:			
Pounds.....	8,651	11,000	241,000
Value.....	\$376	\$385	\$6,238
Barley meal:			
Pounds.....	1,005,604	2,603,000	1,049,000
Value.....	\$17,003	\$32,750	\$10,430
Hominy and grits:			
Pounds.....	15,000	225,651	24,000
Value.....	\$300	\$4,515	\$450
Feed:			
Tons.....	53,460	32,270	49,548
Value.....	\$1,545,804	\$813,442	\$717,972
Offal:			
Tons.....	56,802	66,477	46,085
Value.....	\$1,142,201	\$1,247,728	\$638,822
All other products.....	\$160,504	\$39,166	\$226,013

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

As shown in the table, the principal product of this industry is white wheat flour, the value of which formed 66.9 per cent of the total value of all products for the industry in 1909, 73.6 per cent in 1904, and 75.3 per cent in 1899. During the decade there was a decrease in the quantity of every class of product except feed, offal, and barley meal. In 1909 the value of feed and of offal formed 17.4 per cent and 12.8 per cent, respectively, of the total value of products for the industry, as against 11.7 per cent and 8.8 per cent, respectively, in 1899. In 1909 the mills of the state were equipped with 976 pairs of rolls and 45 runs of stone. The corresponding figures for 1904 were 941 pairs of rolls and 55 runs of stone. Two mills reported the manufacture of sacks in 1909, but none the manufacture of barrels.

**Slaughtering and meat packing.**—This classification includes wholesale slaughtering and meat-packing establishments and those engaged in the manufacture of sausage only. The following table gives the quantities and values of the different products for 1909, 1904, and 1899:

PRODUCT.	1909	1904 <sup>1</sup>	1899 <sup>1</sup>
<b>Total value.....</b>	<b>\$5,879,615</b>	<b>\$2,907,154</b>	<b>\$1,638,480</b>
Beef, fresh:			
Pounds.....	28,750,934	13,625,565	7,583,840
Value.....	\$2,235,816	\$882,814	\$562,507
Beef, salted or cured:			
Pounds.....	57,316	425,000	502,500
Value.....	\$5,433	\$21,500	\$38,175
Veal, fresh:			
Pounds.....	\$51,558	293,980	198,410
Value.....	\$88,003	\$19,822	\$18,210
Mutton, fresh:			
Pounds.....	3,866,798	3,785,414	2,300,000
Value.....	\$351,170	\$223,207	\$164,780
Pork, fresh:			
Pounds.....	4,250,595	2,148,600	781,620
Value.....	\$517,074	\$185,657	\$62,897
Pork, salted or cured:			
Pounds.....	5,123,483	9,247,347	5,063,111
Value.....	\$752,137	\$898,605	\$455,606
Sausage, fresh or cured.....	\$250,822	\$79,150	\$33,265
Lard:			
Pounds.....	5,700,268	2,449,740	1,021,232
Value.....	\$635,628	\$220,023	\$65,902
Hides:			
Number.....	56,421	26,493	10,983
Pounds.....	3,360,352	1,533,083	861,140
Value.....	\$427,170	\$131,603	\$70,301
Pelts:			
Number.....	92,038	13,267	(2)
Value.....	\$52,530	\$9,306	(2)
All other products.....	\$562,204	\$234,777	\$137,837

<sup>1</sup> Excluding one establishment, to avoid disclosure of individual operations.  
<sup>2</sup> Figures not available.

During the decade the output of fresh beef in Oregon increased 279.2 per cent and that of fresh pork 444.7 per cent. Fresh veal, fresh mutton, lard, and hides all show large increases in quantity during the 10 years. Salted or cured pork shows only a small increase, while salted or cured beef decreased considerably during this period.

**Butter, cheese, and condensed milk.**—This is comparatively a new industry in Oregon. Since 1889, when there were only 12 establishments with a total value of products of \$66,426 classified as butter, cheese, or condensed-milk factories, the industry has grown

until in 1909 there were 95 establishments reporting a value of products amounting to nearly \$5,000,000.

The following table shows the quantity and value of the various classes of butter, cheese, and condensed-milk products for the censuses of 1909, 1904, and 1899:

PRODUCT.	1909	1904 <sup>1</sup>	1899
<b>Total value</b> .....	<b>\$4,920,462</b>	<b>\$1,629,343</b>	<b>\$639,222</b>
<b>Butter:</b>			
Packed solid—			
Pounds.....	992,102	855,962	425,727
Value.....	\$298,721	\$193,601	\$95,733
Prints and rolls—			
Pounds.....	7,480,558	4,224,637	1,549,630
Value.....	\$2,383,385	\$1,073,200	\$344,866
<b>Cream sold:</b>			
Pounds.....	1,019,230	477,218	470,000
Value.....	\$132,097	\$40,798	\$40,141
All other butter-factory products.....	\$21,727	\$16,828	\$21,846
<b>Cheese:</b>			
Full cream—			
Pounds.....	4,166,038	2,214,067	1,106,505
Value.....	\$631,259	\$244,621	\$126,827
Part cream—			
Pounds.....	37,415		
Value.....	\$5,369		
Other kind—			
Pounds.....	15,500	41,525	89,059
Value.....	\$4,240	\$4,755	\$9,054
All other cheese-factory products.....	\$176	\$964	\$755
<b>Condensed milk, unsweetened:<sup>2</sup></b>			
Pounds.....	21,788,937		
Value.....	\$1,164,360		
All other condensed-milk factory products.....	\$350		
All other products not specified.....	\$278,778	\$54,486	

<sup>1</sup> Excluding two establishments, to avoid disclosure of individual operations.  
<sup>2</sup> Includes one establishment reporting condensed milk sweetened.

The butter factories produced 57.6 per cent of the total value of products of the industry in 1909 and 78.6 per cent in 1899, while the cheese factories reported 13 per cent in 1909 and 21.4 per cent in 1899. The condensed-milk factories contributed 23.7 per cent of the total value of products in 1909.

The quantity of butter produced increased 3,392,061 pounds, or 66.8 per cent, from 1904 to 1909, and 3,105,242 pounds, or 157.2 per cent, from 1899 to 1904, and the quantity of cheese increased 1,963,361 pounds, or 87 per cent, from 1904 to 1909, and 1,060,028 pounds, or 88.7 per cent, from 1899 to 1904. Of the 4,218,953 pounds of cheese made in 1909, 4,166,038 pounds, or 98.7 per cent, was full-cream cheese.

The first report of a condensed-milk factory in Oregon was received at the census of 1904 but statistics for that year can not be shown without disclosing operations of individual concerns. In 1909 seven such establishments reported nearly 22,000,000 pounds of condensed milk, valued at over a million dollars.

**Canning and preserving.**—This is one of the important and distinctive industries of Oregon. The increase in the value of products from 1904 to 1909 was \$295,696, or 10.2 per cent, and from 1899 to 1904, \$917,257, or 46 per cent.

The following table gives the quantity and value of the principal products reported at the censuses of 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$3,207,060</b>	<b>\$2,911,364</b>	<b>\$1,994,107</b>
<b>Canned vegetables</b> .....	<b>\$48,219</b>	<b>\$30,045</b>	<b>\$14,300</b>
Beans—			
Cases.....	12,831	4,000	1,200
Value.....	\$26,179	\$10,892	\$2,565
Pumpkins—			
Cases.....	3,630	2,590	
Value.....	\$8,148	\$6,095	
All other—			
Cases.....	7,618	6,616	4,783
Value.....	\$13,892	\$13,058	\$11,735
<b>Canned fruits</b> .....	<b>\$177,818</b>	<b>\$214,363</b>	<b>\$106,550</b>
Apples—			
Cases.....	8,602	15,943	5,633
Value.....	\$15,918	\$35,170	\$13,800
Blackberries—			
Cases.....	4,639	4,694	8,800
Value.....	\$9,321	\$8,635	\$15,000
Cherries—			
Cases.....	25,068	27,346	14,570
Value.....	\$49,203	\$72,465	\$30,300
Pears—			
Cases.....	15,442	14,174	7,367
Value.....	\$42,842	\$43,464	\$22,000
Raspberries—			
Cases.....	9,897	4,342	2,602
Value.....	\$23,206	\$15,549	\$6,600
Strawberries—			
Cases.....	3,763	9,757	3,500
Value.....	\$10,361	\$30,324	\$9,500
All other—			
Cases.....	14,360	3,430	4,400
Value.....	\$26,067	\$8,756	\$9,350
<b>Dried fruits:</b>			
Pounds.....	14,028,251	863,000	397,350
Value.....	\$473,008	\$31,000	\$19,461
Prunes—			
Pounds.....	14,009,597	813,000	360,160
Value.....	\$470,911	\$28,000	\$17,451
All other—			
Pounds.....	18,654	50,000	37,250
Value.....	\$2,097	\$3,000	\$2,110
<b>Fish:</b>			
Pounds.....	18,303,344	27,191,650	16,250,080
Value.....	\$2,073,081	\$2,384,246	\$1,694,338
Salmon, canned—			
Pounds.....	12,960,670	20,187,559	15,915,352
Value.....	\$1,341,481	\$1,694,762	\$1,655,329
Salted fish—			
Pounds.....	5,333,674	7,004,091	335,338
Value.....	\$731,000	\$689,484	\$39,069
All other products, including smoked fish and pickles, preserves, and sauces.....	\$434,934	\$251,710	\$159,468

<sup>1</sup> Does not include products to the value of \$10,538, reported by establishments engaged primarily in other industries.

The products of this industry have been divided into five general classes—canned vegetables, canned fruits, dried fruits, fish, canned and salted, and "All other products," the latter classification including pickles, preserves, and sauces. The value of canned vegetables formed 1.5 per cent of the total value of products for the industry in 1909, 1 per cent in 1904, and seven-tenths of 1 per cent in 1899; that of canned fruits, 5.5 per cent in 1909, 7.4 per cent in 1904, and 5.3 per cent in 1899; that of dried fruits, 14.7 per cent in 1909, 1.1 per cent in 1904, and 1 per cent in 1899; that of fish products, 64.6 per cent in 1909, 81.9 per cent in 1904, and 85 per cent in 1899; and that of "All other products," 13.6 per cent in 1909, 8.6 per cent in 1904, and 8 per cent in 1899.

Although the output of canned salmon decreased both in quantity and in value from 1904 to 1909, it is still the most important product of the canning industry in Oregon. In 1909 the state produced 13 per cent of the total output of canned salmon for continental United

States. The most marked increase was that in the production of prunes from 813,000 pounds in 1904 to 14,009,597 pounds in 1909.

Beans were the principal vegetable canned, being in fact the only one, aside from pumpkins, which was reported by more than one establishment. Cherries and pears were more extensively canned than any other fruits, although the canning of apples was reported by a larger number of establishments. Salted fish was reported by 13 establishments.

**Printing and publishing.**—The printing and publishing industry in Oregon shows a decided growth during the last decade, when measured by the number of publications and the aggregate circulation. The following table shows the number of publications and aggregate circulation per issue, classified according to period of issue, for the years 1909, 1904, and 1899:

PERIOD OF ISSUE.	NUMBER OF PUBLICATIONS.			AGGREGATE CIRCULATION PER ISSUE.		
	1909	1904	1899	1909	1904	1899
<b>Total</b> .....	254	221	197	735,363	445,946	311,950
Daily.....	31	23	21	150,560	92,171	51,191
Sunday.....	6	8	9	93,142	58,800	( <sup>1</sup> )
Semiweekly.....	<sup>2</sup> 11	18	14	<sup>2</sup> 26,725	27,330	14,810
Weekly.....	176	152	124	229,585	180,305	166,511
Monthly.....	27	16	27	219,351	81,400	75,038
All other classes.....	3	4	2	16,000	5,850	4,400

<sup>1</sup> Included in circulation for daily.

<sup>2</sup> Includes one triweekly.

The weeklies showed the greatest increase in number, and the monthlies in aggregate circulation. There was a decrease in the number of Sunday and semiweekly publications, but an increase in the aggregate circulation of the Sunday publications.

In 1909, 13 of the 31 daily papers, with an aggregate circulation of 55,375, were morning editions. All of the publications were printed in the English language, except 1 daily in Japanese; 1 semiweekly in Finnish; 5 weeklies, of which 3 were in German, 1 in Swedish, and 1 in Danish and Norwegian; and 1 monthly in German.

**Laundries.**—Statistics for steam laundries are not included in the general tables or in the totals for manufacturing industries. In 1909 there were in the state 58 such establishments, of which 20 were in Portland and 2 in Salem. The following statement summarizes the statistics:

Number of establishments.....	58
Persons engaged in the industry.....	1,674
Proprietors and firm members.....	54
Salaried employees.....	163
Wage earners (average number).....	1,457
Primary horsepower.....	1,585
Capital.....	\$991,017
Expenses.....	1,252,614
Services.....	845,314
Materials.....	263,593
Miscellaneous.....	143,707
Amount received for work done.....	1,569,982

Twenty-two of the 58 establishments were under corporate ownership, 20 under individual ownership, and 16 under firm ownership. Four establishments reported receipts for the year's business amounting to between \$100,000 and \$1,000,000; 16, receipts of between \$20,000 and \$100,000; and 38 receipts of less than \$20,000.

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.	Percent of maximum.		Number.	Percent of maximum.
January.....	1,371	90.7	July.....	1,504	99.5
February.....	1,374	90.9	August.....	1,490	99.1
March.....	1,392	92.1	September.....	1,497	99.0
April.....	1,411	93.3	October.....	1,512	100.0
May.....	1,439	95.2	November.....	1,505	99.5
June.....	1,482	98.0	December.....	1,497	99.0

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.
<b>Primary power, total</b> .....		<b>1,585</b>
Owned:		
Steam.....	40	1,406
Gas.....	2	70
Water wheels.....	1	10
Rented:		
Electric.....	13	96
Other.....		3

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

KIND.	Unit.	Quantity.
Anthracite coal.....	Tons.....	11
Bituminous coal.....	Tons.....	720
Wood.....	Cords.....	11,753
Oil.....	Barrels.....	21,888
Gas.....	1,000 feet.....	2,732

**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.....	4	15
Persons engaged in industry.....	13	22
Proprietors and firm members.....	5	16
Salaried employees.....		
Wage earners (average number).....	8	6
Primary horsepower.....	90	344
Capital.....	\$6,580	\$40,710
Expenses.....	5,571	100,467
Services.....	4,614	2,046
Materials.....	135	197,323
Miscellaneous.....	822	1,008
Value of products.....	8,144	116,984

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

MANUFACTURES—OREGON.

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.	Salari- ed employ- ees.	Wage earners (average number).							
Expressed in thousands.													
STATE—All industries.....	1909 1904 1899	2,246 1,602 1,406	34,722 22,018	2,489 1,726	3,473 1,769 1,143	28,750 18,523 14,459	175,019 81,348 60,005	\$89,082 44,024 28,359	\$4,047 2,133 1,222	\$10,902 11,444 0,822	\$50,552 30,597 20,789	\$93,005 55,525 36,593	\$42,453 24,928 15,804
Bread and other bakery products.....	1909 1904 1899	151 93 53	905 618 348	182 118 64	110 70 41	613 430 243	336 253	1,609 775 288	78 74 33	441 221 106	1,621 875 465	2,820 1,504 779	1,208 620 314
Brick and tile.....	1909 1904 1899	61 43 46	487 330 290	71 56 58	31 10 12	385 264 220	1,022 760	1,250 365 194	34 9 9	266 132 98	155 63 37	675 315 227	520 252 190
Butter, cheese, and condensed milk.....	1909 1904 1899	95 98 68	615 257 142	63 91 60	132 36 20	420 130 62	1,035 715	1,718 420 223	131 17 9	290 81 27	3,952 1,361 509	4,920 1,620 630	968 298 130
Canning and preserving.....	1909 1904 1899	71 48 45	844 671 888	54 39 29	129 103 68	661 529 791	1,318 1,247	4,162 1,809 2,708	146 101 67	315 250 244	2,187 1,894 1,298	3,207 2,911 1,994	1,020 1,017 606
Cars and general shop construction and repairs by steam-railroad companies.....	1909 1904 1899	8 12 14	822 979 780	..... ..... .....	45 49 29	777 930 751	933 955	1,400 399 726	55 62 32	544 677 495	509 386 484	1,163 1,265 1,026	654 879 542
Clothing, men's, including shirts.....	1909 1904 1899	5 13 13	576 356 107	0 6 19	23 12 7	544 338 171	217 80	369 321 187	29 12 3	238 129 43	738 263 107	1,105 596 165	367 213 58
Confectionery.....	1909 1904 1899	10 13 9	408 191	18 15	107 43	283 133	217 59	612 189 125	91 33 19	138 57 28	549 141 96	1,215 379 299	696 238 113
Copper, tin, and sheet-iron products.....	1909 1904 1899	39 15 16	525 158	48 20	46 10	431 128	253 13	2,859 140 401	53 8 11	354 99 100	835 121 341	1,611 300 602	770 179 261
Flour-mill and gristmill products.....	1909 1904 1899	114 105 105	620 581	101 101	125 85	394 395	11,544 9,993	5,670 3,907 3,001	140 107 83	278 271 239	7,667 7,352 5,180	8,801 8,498 6,136	1,234 1,119 656
Foundry and machine-shop products.....	1909 1904 1899	82 42 45	1,270 898	71 44	144 67	1,055 787	2,700 1,172	3,670 1,882 903	183 79 52	892 596 230	1,472 643 328	3,135 1,588 848	1,663 945 520
Furniture and refrigerators.....	1909 1904 1899	19 18 11	621 486 220	16 20 10	53 41 12	552 425 198	1,501 609	1,232 786 280	62 64 11	323 233 81	484 358 163	1,094 790 299	610 452 136
Ice, manufactured.....	1909 1904 1899	25 20 9	122 107 51	27 14 7	20 18 9	69 75 35	1,569 1,416	632 451 173	29 15 14	53 57 25	76 41 19	257 217 110	181 176 97
Leather goods.....	1909 1904 1899	48 26 122	484 330	51 23	80 36	353 270	173 71	824 532 278	92 38 21	262 173 119	989 542 389	1,629 925 659	610 383 261
Leather, tanned, curried, and finished.....	1909 1904 1899	8 11 16	58 109 77	7 15 23	2 9 1	40 94 53	224 314	218 272 173	2 67 1	34 367 28	181 367 199	244 485 250	63 118 60
Liquors, malt.....	1909 1904 1899	18 24 24	272 201 170	14 21 24	54 29 19	204 151 130	2,018 1,001	2,470 2,130 819	90 62 24	206 137 106	454 429 173	1,857 1,118 714	1,404 889 541
Lumber and timber products.....	1909 1904 1899	713 477 410	16,833 9,587	846 601	921 428 284	15,068 8,558 6,056	95,213 43,364	35,031 13,193 6,048	1,207 520 262	10,172 5,450 2,887	12,413 5,856 5,101	30,200 15,418 11,084	17,787 9,532 5,890
Marble and stone work.....	1909 1904 1899	23 8 10	121 50	21 12	24 11	76 38	159 13	221 72	24 9	75 42	113 77	297 190	184 113
Mattresses and spring beds.....	1909 1904 1899	7 4	104 43	9 2	12 7	83 34	105 70	162 53	13 6	68 23	211 86	350 145	139 59
Printing and publishing.....	1909 1904 1899	324 245 207	2,523 1,561 1,170	514 240	550 207	1,459 1,018	1,027 993	3,457 1,688 1,675	558 356 116	1,448 724 400	1,103 658 374	5,041 2,776 1,494	3,938 2,118 1,120
Shipbuilding, including boat building.....	1909 1904 1899	24 11 16	250 181 361	29 8 15	0 4 8	212 169 338	287 70	240 126 127	10 7 10	199 122 187	204 123 307	477 297 654	273 174 347
Slaughtering and meat packing.....	1909 1904 1899	14 10 9	493 313 222	14 7 0	113 60 41	366 246 172	752 327	2,481 975 760	124 73 47	280 155 88	5,015 2,300 1,350	5,880 2,907 1,638	865 517 279
Stoves and furnaces, including gas and oil stoves.....	1909 1904 1899	11 3	123 46	11 2	26 14	86 30	183 28	287 214	27 22	79 26	130 20	351 139	221 119
Tobacco manufactures.....	1909 1904 1899	56 54 38	251 233 118	62 65 46	2 5 1	187 163 71	..... 3	196 123 59	2 4 1	172 92 33	171 170 60	474 396 146	303 217 86
Woolen, worsted, and felt goods, and wool hats.....	1909 1904 1899	8 7 11	598 594 704	2 3 3	37 25 20	460 566 672	1,028 955 1,113	1,265 1,272 1,176	42 43 33	202 220 209	627 496 460	1,034 898	402 538 432
All other industries.....	1909 1904 1899	363 212 210	4,887 3,138	259 196	320 204	3,956 2,622	47,899 16,681	17,047 11,836 6,940	765 441 355	2,582 1,419 1,025	8,796 5,866 3,200	15,174 9,823 5,900	6,378 3,957 2,700

<sup>1</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations. <sup>2</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.

<sup>3</sup> Figures can not be shown without disclosing individual operations. <sup>4</sup> Not reported separately.

MANUFACTURES—OREGON.

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.	Salaries employed.	Wage earners (average number).							
Expressed in thousands.													
All industries.....	1909 1904 1899	649 437 408	14,891 9,594	763 368	1,914 1,025 663	12,214 8,171 5,380	32,122	\$37,996 19,725 11,633	\$2,241 1,266 732	\$8,979 5,342 2,794	\$26,076 17,024 10,177	\$46,861 28,661 16,904	\$20,785 11,627 6,727
ery products.....	1909 1904 1899	63 40 35	606 475 272	79 52 42	76 65 36	511 358 194	297	1,353 673 220	62 72 32	363 178 78	1,275 701 401	2,196 1,182 641	921 481 240
.....	1909 1904 1899	9 8 5	106 109 72	13 10 5	5 5 4	88 94 63	309	342 153 48	6 4 3	71 48 28	49 30 13	200 127 67	157 97 54
condensed milk.....	1909 1904 1899	8 6 5	196 56 21	6 5 1	51 13 8	139 38 12	860	587 177 28	48 9 5	105 25 6	1,102 432 126	1,431 521 172	329 89 40
ing.....	1909 1904 1899	8 7 5	169 153 109	10 8 11	26 10 11	133 129 109	77	300 132 89	31 16 12	49 41 15	250 240 120	464 352 192	214 112 72
inding shirts.....	1909 1904 1899	5 3 3	576 356 197	9 6 10	23 12 7	544 338 171	217	360 321 187	29 12 3	238 120 43	738 293 107	1,105 506 165	367 213 58
.....	1909 1904 1899	11 10 2	366 169	9 11	89 43	268 115	203	587 172	84 33	130 50	519 126	1,128 342	609 210
et-iron products.....	1909 1904 1899	28 12	454	32	44 7	378 97	253	2,782 124	51 5	311 61	732 120	1,419 293	687 143
mill products.....	1909 1904 1899	5 5 6	97 117 129	1 2 3	23 27 33	73 88 93	1,222	793 675 994	29 51 46	54 60 64	1,179 2,467 1,528	1,337 2,713 1,759	158 256 231
ne-shop products.....	1909 1904 1899	44 21 25	947 673	34 21	114 51 43	799 601 277	2,080	2,593 1,279 593	140 58 42	704 481 164	1,222 455 228	2,527 1,200 610	1,305 745 382
erators.....	1909 1904 1899	11 11 7	530 405 156	11 8 3	41 37 11	478 300 142	1,207	1,110 734 225	50 42 10	283 205 57	458 322 139	993 720 225	535 398 80
.....	1909 1904 1899	4 6 4	31 53 33	1 2 2	14 6 9	16 45 22	575	268 257 166	22 7 14	14 38 16	45 26 13	108 137 91	63 111 78
.....	1909 1904 1899	26 15 13	399 288	21 11	74 35 19	304 242 245	136	587 437 207	88 37 21	220 154 107	868 488 336	1,386 800 542	518 312 206
' products.....	1909 1904 1899	42 28 17	3,914 2,206	12 18	233 116 78	3,660 2,072 1,260	13,998	8,693 3,875 1,783	366 184 97	2,072 1,455 687	5,067 3,161 2,462	10,111 5,435 3,925	5,044 2,334 1,463
ork.....	1909 1904 1899	7 4 4	59 32	5 6	16 26 7	38 26 20	90	102 51 32	19 5	38 31 14	71 64 32	175 149 76	104 85 44
hing.....	1909 1904 1899	132 178 180	1,681 840	311 59	418 253 81	952 534 395	1,402	2,239 952 1,174	446 311 101	1,036 458 230	847 491 267	3,736 1,943 964	2,889 1,452 697
ling boat building.....	1909 1904 1899	7 8 9	112 158 273	4 6 6	7 3 6	101 149 261	68	99 102 98	9 5 8	92 105 120	90 109 187	231 259 460	141 150 213
res.....	1909 1904 1899	21 25 15	131 112 53	23 32 18	2 80 1	106 80 34	.....	96 45 21	2 48 1	106 104 24	89 220 65	250 220 65	171 116 41
.....	1909 1904 1899	218 162 163	4,467 3,386	182 141	658 343 302	3,617 2,902 1,985	9,068	14,796 9,690 5,698	759 425 327	2,493 1,845 999	11,475 7,585 4,074	18,048 12,045 6,747	6,873 4,460 2,073

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

.....	1909	62	780	57	135	597	1,688	\$1,661	\$98	\$367	\$1,177	\$2,208	\$1,031
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<sup>1</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.  
<sup>2</sup> Figures can not be shown without disclosing individual operations.  
<sup>3</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.

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.....	2,246	34,722	2,499	1,220	1,702	551	28,750	Se 30,978	Ja 23,354	(1)	(1)	(1)	(1)	(1)	175,019		
2 Artificial stone.....	20	72	22	2	1	1	47	Se 61	Fe 34	64	64				40		
3 Baking powders and yeast.....	3	28	2	2	14	4	0	No 8	My 2	8	5	3			11		
4 Boots and shoes, including out stock and findings.....	5	67	2	3	4	2	56	Jy 59	Ja 53	59	54	4	1		39		
5 Brass and bronze products.....	4	50	2	3	1	2	42	Ja 43	Au 39	42	42				66		
6 Bread and other bakery products.....	151	905	182	17	47	46	613	Oc 666	Ja 575	670	477	191	2		330		
7 Brick and tile.....	61	487	71	14	16	1	385	Jy 747	Ja 78	735	729	1	5		1,922		
8 Butter, cheese, and condensed milk.....	95	615	63	39	63	30	420	Je 515	Ja 344	399	365	30	4		1,035		
9 Canning and preserving.....	71	844	54	65	49	15	661	Se 1,588	Fe 113	1,452	800	535	15	36	1,318		
10 Carpets, rag.....	3	18	6	1			11	Jy 13	Ja 9	9	9				26		
11 Carriages and wagons and materials.....	15	84	16	4	2		62	Jy 65	Fe 57	62	62				52		
12 Cars and general shop construction and repairs by steam-railroad companies.....	8	822		9	36		777	De 856	Fe 684	856	856				933		
13 Clothing, men's, including shirts.....	5	576	9	6	11	6	544	My 599	Se 487	540	55	485			217		
14 Confectionery.....	19	408	18	13	67	27	283	De 336	Ja 257	337	108	220			217		
15 Cooperage and wooden goods, not elsewhere specified.....	10	42	15	2	1	1	23	My 30	Oc 12	30	30				129		
16 Copper, tin, and sheet-iron products.....	30	525	48	12	23	11	431	Au 520	Ja 320	445	411	34			253		
17 Cutlery and tools, not elsewhere specified.....	5	30	5	1	1	1	23	My 25	Ja 23	23	21				40		
18 Dairymen's, poulterers', and apiarists' supplies.....	3	13	3		2	1	7	Mh 12	Je 4	11	11				28		
19 Flour-mill and gristmill products.....	114	620	101	65	46	14	394	Se 469	Mh 349	471	470	1			11,541		
20 Foundry and machine-shop products.....	82	1,270	71	70	58	16	1,055	Ap 1,180	Ja 925	1,072	1,072				2,709		
21 Fur goods.....	5	67	7	3	1	5	51	Se 65	Je 36	72	25	47			12		
22 Furniture and refrigerators.....	19	621	16	16	27	10	552	Oc 593	Ja 474	585	578	7			1,501		
23 Gas and electric fixtures and lamps and reflectors.....	4	89		10	16	4	60	No 71	Ap 40	59	50	9			50		
24 Hand stamps and stencils and brands.....	4	24	2	2	4	4	16	Fe 17	Ja 15	16	14	2			11		
25 Ice, manufactured.....	26	122	27	12	11	3	69	Au 111	Ja 42	70	70				1,559		
26 Jewelry.....	4	36	5				31	No 36	Ja 29	34	34				16		
27 Leather goods.....	48	484	51	24	44	12	353	De 367	Ja 332	369	356	13			173		
28 Leather, tanned, curried, and finished.....	8	68	7	1	1		40	Je 53	Ja 46	49	49				224		
29 Liquors, malt.....	18	272	14	21	30	3	204	Jy 222	Ja 183	191	191				2,018		
30 Lumber and timber products.....	713	16,833	846	453	385	83	15,066	Je 16,462	Ja 11,545	17,672	17,601	59	12		95,213		
31 Marble and stone work.....	23	121	21	8	12	4	76	My 90	Ja 63	74	74				159		
32 Mattresses and spring beds.....	7	104	9	3	8	1	83	De 105	Ja 65	105	92	13			105		
33 Models and patterns, not including paper patterns.....	5	17	5				12	Mh 13	Jy 9	11	11				29		
34 Patent medicines and compounds and druggists' preparations.....	11	45	12	3	3	7	20	Ja 38	Je 9	38	33	5			13		
35 Printing and publishing.....	324	2,523	514	124	307	119	1,459	De 1,505	Jy 1,424	1,528	1,270	219	25	5	1,927		
36 Shipbuilding, including boat building.....	24	250	29	7	1	1	212	Jy 271	Se 153	188	188				287		
37 Slaughtering and meat packing.....	14	493	14	12	87	14	366	De 418	Mh 346	417	414	3			752		
38 Steam packing.....	3	27	1	2		1	23	Oc 24	Ja 22	24	23	1			70		
39 Stoves and furnaces, including gas and oil stoves.....	11	123	11	13	9	4	86	Oc 122	Mh 61	119	118		1		183		
40 Surgical appliances and artificial limbs.....	3	10	4	1			5	No 7	Ja 5	7	4	2	1		5		
41 Tobacco manufactures.....	56	251	62		2		187	No 198	Jy 174	193	165	25	3		1		
42 Umbrellas and canes.....	3	9	3				6	Ja 6	Ap 5	6	2	4			1		
43 Woolen, worsted, and felt goods, and wool hats.....	8	508	2	12	22	3	469	De 573	My 420	573	339	214	16	4	1,628		
44 All other industries.....	193	4,159	147	165	295	96	3,456								47,240		

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 All other industries embrace—

Agricultural implements.....	2	Charcoal.....	1	Furnishing goods, men's.....	2
Automobiles, including bodies and parts.....	2	Clothing, women's.....	2	Gas, illuminating and heating.....	8
Awnings, tents, and sails.....	5	Coffee and spice, roasting and grinding.....	5	Glass, cutting, staining, and ornamenting.....	4
Babbitt metal and solder.....	1	Coffins, burial cases, and undertakers' goods.....	2	Gloves and mittens, leather.....	5
Bags, other than paper.....	2	Cordage and twine and lute and linen goods.....	2	Grease and tallow.....	2
Baskets, and rattan and willow ware.....	1	Cordage and finishing textiles.....	1	Hair work.....	3
Beet sugar.....	1	Electrical machinery, apparatus, and supplies.....	1	Hats and caps, other than felt, straw, and wool.....	1
Blacking and cleansing and polishing preparations.....	2	Engraving and diesinking.....	1	Hats, fur-felt.....	1
Boxes, cigar.....	1	Fancy articles, not elsewhere specified.....	1	Hosiery and knit goods.....	1
Boxes, fancy and paper.....	4	Flags, banners, regalia, society badges and emblems.....	1	Instruments, professional and scientific.....	1
Brooms.....	2	Flavors, extracts.....	5	Iron and steel, steel works and rolling mills.....	2
Card cutting and designing.....	1	Food preparations.....	8	Iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills.....	1
Cars and general shop construction and repairs by street-railroad companies.....	2			Labels and tags.....	1

MANUFACTURES—OREGON.

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	\$89,081,873	\$82,124,050	\$2,168,804	\$1,878,630	\$19,901,934	\$1,647,212	\$48,905,258	\$567,075	\$851,489	\$576,099	\$5,027,489	\$93,004,845	\$42,452,375
2	72,342	92,228	2,350	1,125	34,948	204	45,905	1,077	329	1,010	4,500	112,585	66,296
3	14,601	18,402	1,400	3,136	1,707	157	7,743	2,083	37	.....	2,139	19,506	11,669
4	68,177	149,656	4,200	4,860	39,548	947	94,056	2,115	232	.....	3,698	155,507	60,504
5	152,989	111,102	4,950	2,400	48,083	3,232	37,998	900	223	.....	12,770	121,885	80,655
6	1,608,556	2,391,436	34,330	43,708	440,577	45,420	1,575,647	40,207	10,882	144	173,512	2,820,428	1,208,352
7	1,240,815	516,078	19,282	14,942	265,838	139,103	16,044	4,743	4,472	13,254	38,400	674,520	519,373
8	1,718,088	4,594,168	59,577	71,363	290,269	60,129	3,892,091	23,597	9,291	5,409	182,442	4,920,462	908,242
9	4,162,401	2,899,916	96,907	49,134	315,208	42,018	2,144,514	3,400	14,946	64,954	107,935	3,207,000	1,019,628
10	12,900	15,141	1,820	.....	7,904	384	2,750	600	36	.....	1,617	18,409	15,275
11	64,965	146,059	6,000	1,200	55,473	3,851	64,308	11,050	354	.....	3,733	192,059	124,410
12	1,400,343	1,163,395	18,140	37,310	543,729	44,516	464,281	.....	29,803	.....	25,001	1,163,395	654,595
13	368,594	1,054,482	14,100	14,409	238,127	3,964	734,135	12,688	1,734	.....	35,265	1,105,248	367,149
14	611,702	967,404	25,050	65,951	137,939	11,812	537,557	23,781	3,007	.....	102,247	1,215,256	665,887
15	92,694	84,658	2,640	1,200	26,715	473	47,977	2,589	928	273	1,863	98,823	50,373
16	2,859,145	1,416,506	22,470	30,933	354,365	14,313	820,721	12,664	6,812	634	153,594	1,611,244	776,210
17	41,993	40,612	1,200	375	21,275	2,285	12,194	2,040	340	.....	903	48,770	34,291
18	26,975	10,319	.....	1,575	4,482	350	2,455	.....	160	1,138	153	12,713	9,908
19	5,669,890	8,310,471	85,383	54,180	277,784	82,246	7,584,490	8,810	32,518	.....	185,060	8,891,001	1,224,265
20	3,670,322	2,763,119	130,360	52,285	892,423	77,917	1,393,682	21,876	21,240	2,930	170,400	3,135,688	1,663,469
21	100,964	164,170	8,496	4,261	34,975	1,287	94,801	8,920	1,072	.....	10,358	191,109	95,021
22	1,232,090	988,947	32,069	29,784	322,900	12,446	471,370	11,189	7,320	.....	101,860	1,093,743	600,927
23	268,806	153,530	14,415	14,842	42,973	1,071	69,139	1,440	694	.....	8,962	171,949	101,439
24	47,795	40,253	4,000	1,116	11,494	381	13,758	2,700	67	15	6,662	48,151	34,012
25	631,775	188,892	19,700	9,542	52,568	53,678	21,899	4,370	4,306	125	22,524	250,906	181,389
26	17,558	44,042	.....	.....	24,800	610	14,730	3,204	148	.....	550	57,730	42,390
27	824,448	1,464,723	34,600	57,064	261,753	6,003	982,938	31,773	4,571	.....	86,021	1,620,441	640,500
28	218,480	224,895	1,400	720	33,617	3,446	177,594	.....	927	.....	7,191	244,248	63,208
29	2,469,927	1,224,916	54,200	35,735	205,653	61,462	392,833	4,200	238,964	.....	231,879	1,857,453	1,403,168
30	35,030,556	26,488,295	824,935	442,401	10,171,892	72,204	12,341,233	49,979	273,974	318,501	1,093,146	30,199,857	17,780,420
31	220,555	236,066	9,700	14,204	74,944	3,180	109,335	6,338	1,389	41	10,935	297,379	184,864
32	162,378	305,909	4,950	7,550	67,535	1,835	209,054	2,355	553	.....	12,077	350,284	139,395
33	15,911	16,715	.....	.....	11,919	522	2,741	854	38	.....	641	28,014	24,751
34	71,061	65,795	1,400	7,125	7,075	562	33,794	1,305	295	.....	13,639	84,469	50,113
35	3,457,464	3,803,963	198,290	359,927	1,447,620	64,466	1,038,947	111,181	26,027	155,876	401,629	5,040,523	3,637,110
36	240,120	419,974	8,404	1,980	190,203	1,761	202,379	5,674	1,216	276	8,082	477,116	272,976
37	2,481,137	5,036,593	29,423	94,803	280,104	57,209	4,057,637	16,834	8,531	.....	192,052	5,879,615	864,769
38	48,383	55,960	2,600	1,000	18,000	1,150	28,336	840	310	.....	3,724	68,018	38,532
39	286,897	296,863	20,047	7,030	79,233	4,570	124,966	7,258	1,421	10,237	42,101	351,283	221,747
40	4,900	8,561	1,500	.....	2,063	88	1,753	1,165	11	18	1,363	11,232	9,301
41	196,205	400,607	.....	1,800	171,659	1,060	170,393	9,142	28,418	.....	18,135	473,846	302,393
42	11,838	13,156	.....	.....	2,933	54	6,896	2,880	77	.....	406	17,356	10,496
43	1,264,624	822,127	18,240	23,096	202,461	32,320	494,453	675	7,449	.....	42,833	928,054	401,881
44	15,911,409	12,341,570	350,336	313,895	2,185,396	731,537	7,465,638	108,519	106,196	1,205	1,078,848	13,713,110	5,515,935

\* All other industries embrace—Continued.

Lapidary work.....	2	Paper and wood pulp.....	5	Upholstering materials.....	2
Line.....	6	Pottery, terra-cotta, and fire-clay products.....	3	Vinegar and cider.....	4
Matches.....	2	Pumps, not including steam pumps.....	1	Wall plaster.....	2
Millinery and lace goods.....	4	Rice, cleaning and polishing.....	2	Window shades and fixtures.....	2
Mineral and soda waters.....	29	Show cases.....	1	Whework, including wire rope and cable.....	4
Mirrors.....	1	Soap.....	4	Wood distillation, not including turpentine and rosin.....	1
Mucilage and paste.....	1	Sporting and athletic goods.....	1	Wood preserving.....	1
Oil, linseed.....	1	Statuary and art goods.....	1	Wood, turned and carved.....	9
Oil, not elsewhere specified.....	1	Stereotyping and electrotyping.....	2	Wool scouring.....	2
Optical goods.....	3	Toys and games.....	1		
Paint and varnish.....	5	Type founding and printing materials.....	1		

## MANUFACTURES : PENNSYLVANIA

## 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 Pennsylvania 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 Pennsylvania, 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 Allentown, Altoona, Erie, Harrisburg, Johnstown, Philadelphia, Pittsburgh, Reading, Scranton, and Wilkes-Barre. It also gives the same items for all industries combined for every place except Coatesville, Duquesne, Monessen, North Braddock, Old Forge, South Sharon, and Steelton 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 entirely different grouping is employed: That in to (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.**—Pennsylvania, with a gross area of 45,126 square miles, of which 294 represent water surface, ranks thirty-second in size among the states of the Union. Its population in 1910 was 7,665,111, as compared with 6,302,115 in 1900 and 5,258,113 in 1890. In 1910 the density of population for the state was 171 per square mile, the corresponding figure for 1900 being 140.6. It ranked second among the states as regards population in each of the census years named and at all prior censuses since the first in 1790, except two, those of 1810 and 1820, when it was third. Sixty and four-tenths per cent of the entire population of the state in 1910 resided in incorporated places having a population of 2,500 or over, as against 54.7 per cent in 1900.

In 1910, 10 cities in the state had a population of over 50,000, as follows: Philadelphia, 1,549,008, ranking third among the cities of the country; Pittsburgh, 533,905, ranking eighth; Scranton, 129,867; Reading, 96,071; Wilkes-Barre, 67,105; Erie, 66,525; Harrisburg, 64,186; Johnstown, 55,482; Altoona, 52,127; and Allentown, 51,913. There were also 53 cities and boroughs having a population of over 10,000 but less than 50,000. (See table on p. 15.) These 63 cities and boroughs contained 47.7 per cent of the total population of the state and were credited in 1909 with 63.3 per cent of the total value of its manufactures. Apart from these places, only 12.7 per cent of the population resided in places of 2,500 inhabitants or over.

The transportation facilities of the state, both by rail and by water, are excellent. The state is traversed by numerous lines of railway, some of which are the main lines of the most important systems in the United States. The total trackage within its borders in 1909 was 11,206 miles,<sup>1</sup> an amount which was exceeded by only two states, Texas and Illinois. Philadelphia is one of the most important ports of the country, Erie has one of the best harbors on the Great Lakes, and Pittsburgh has the advantages of river transportation via the Monongahela, Allegheny, and Ohio to the Mississippi River.

The natural resources of the state, which are varied and of great importance, have had a marked influence in the establishment and growth of many industries in the state. Some of the materials used in manu-

facture, such as petroleum, natural gas, bituminous coal, anthracite coal, iron ore, limestone, clay, glass sand, timber, and tobacco, are produced in large quantities. The accessibility and supply of these raw materials determine, in a large measure, the location of many manufacturing establishments, especially in the iron, coke, lumber, wood pulp, and glass industries.

**Importance and growth of manufactures.**—From the colonial period until the present time, Pennsylvania has been among the leading states in manufactures, holding third place as measured by gross value of manufactured products in 1849, when the first authoritative census of manufactures was taken, but advancing to second place in 1859, a position which it has since retained. During the census year 1849 an average of 146,766 wage earners, representing 6.3 per cent of the total population, were employed in manufactures, while in 1909 an average of 877,543, or 11.4 per cent of the total population, were so engaged. During this period the gross value of products per capita of the total population of the state increased from \$67 to \$343. With the rapid development of manufactures in other sections, however, Pennsylvania's proportion of the total value of manufactures in the country declined from 15.2 per cent in 1849 to 12.7 per cent in 1909.

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 Pennsylvania had 27,563 manufacturing establishments, which gave employment to an average of 1,002,171 persons during the year and paid out \$566,524,000 in salaries and wages. Of the persons employed, 877,543 were wage earners. These establishments turned out products to the value of \$2,626,742,000, to produce which materials costing \$1,582,560,000 were utilized. The value added by manufacture was thus \$1,044,182,000, 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 Pennsylvania, 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 five years

<sup>1</sup> Statistics of Railways in the United States, Interstate Commerce Commission, 1909.

MANUFACTURES—PENNSYLVANIA.

from 1904 to 1909 the number of establishments increased 17.3 per cent and the average number of wage earners 15 per cent, while the value of products increased 34.3 per cent and the value added by manufacture 28.5 per cent. As pointed out in the Introduc-

tion, it would be improper to infer that manufactures increased in volume to the full extent indicated by these figures relating to values, since the increase shown is certainly due, in part, to the increase which has taken place in the prices of commodities.

	NUMBER OR AMOUNT.			PER CENT OF INCREASE.	
	1909	1904	1899	1904-1909	1899-1904
Number of establishments.....	27,563	23,495	23,462	17.3	0.1
Persons engaged in manufactures.....	1,002,171	855,392	(1)	17.2	(1)
Proprietors and firm members.....	29,743	26,029	(1)	14.3	(1)
Salaried employees.....	94,885	66,081	43,935	43.6	50.4
Wage earners (average number).....	877,543	763,282	663,960	15.0	15.0
Primary horsepower.....	2,921,547	2,302,398	1,716,694	26.9	34.1
Capital.....	\$2,749,006,000	\$1,995,837,000	\$1,449,815,000	37.7	37.7
Expenses.....	2,355,385,000	1,751,440,000	1,412,796,000	34.5	24.0
Services.....	566,524,000	441,230,000	343,021,000	28.4	28.6
Salaries.....	110,897,000	73,269,000	46,145,000	51.4	58.8
Wages.....	455,627,000	367,961,000	296,876,000	23.8	23.9
Materials.....	1,582,560,000	1,142,943,000	953,301,000	38.5	19.3
Miscellaneous.....	206,301,000	167,267,000	111,474,000	23.3	50.1
Value of products.....	2,626,742,000	1,955,551,000	1,649,882,000	34.3	18.5
Value added by manufacture (value of products less cost of materials).....	1,044,182,000	812,608,000	691,581,000	28.5	17.5

<sup>1</sup> 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.

This table specifies 94 industries or industry groups which had in 1909 a product in excess of \$700,000 in value. Of the industries listed in the table

there are 3 whose product exceeds \$100,000,000 in value; 10 with a product between \$50,000,000 and \$100,000,000 in value; 11 with a product between \$25,000,000 and \$50,000,000 in value; and 19 with a product between \$10,000,000 and \$25,000,000 in value, making an aggregate of 43 industries which had a value of products in excess of \$10,000,000 each. Mention is also made of 14 other industries with a product between \$5,000,000 and \$10,000,000 in value; 36 with a product of \$1,000,000 to \$5,000,000 in value; and 1 with a product less than \$1,000,000 in value.

INDUSTRY.	Number of establishments.	WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.		PER CENT OF INCREASE. <sup>1</sup>			
		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
<b>All industries.....</b>	<b>27,563</b>	<b>877,543</b>	<b>100.0</b>	<b>\$2,626,742,000</b>	<b>100.0</b>	<b>\$1,044,182,000</b>	<b>100.0</b>	<b>34.3</b>	<b>18.5</b>	<b>28.5</b>	<b>17.5</b>
Iron and steel, steel works and rolling mills.....	189	120,911	14.5	509,344,000	19.0	171,331,000	16.4	37.5	9.3	36.1	10.6
Foundry and machine-shop products.....	1,695	86,821	9.9	210,746,000	8.0	109,735,000	10.5	37.4	.....	30.1	.....
Iron and steel, blast furnaces.....	66	14,521	1.7	108,578,000	4.1	26,504,000	2.5	56.0	5.8	25.4	-43.0
Leather, tanned, curried, and finished.....	163	14,008	1.6	77,920,000	3.0	18,813,000	1.8	12.2	24.8	34.2	6.1
Woolen, worsted, and felt goods, and wool hats.....	217	27,409	3.1	77,447,000	2.9	22,813,000	2.2	38.5	14.7	22.1	7.4
Cars and general shop construction and repairs by steam-railroad companies.....	132	46,645	5.3	76,035,000	2.9	34,634,000	3.3	24.6	41.7	20.8	43.0
Printing and publishing.....	2,461	24,606	2.8	70,584,000	2.7	47,881,000	4.6	28.2	36.4	22.7	33.7
Silk and silk goods, including throwsters.....	226	30,469	4.2	62,061,000	2.4	26,805,000	2.6	57.8	26.6	78.5	34.7
Lumber and timber products.....	2,667	26,873	3.1	57,454,000	2.2	30,140,000	2.9	1.3	5.2	-7.1	12.1
Petroleum, refining.....	41	2,000	0.3	53,088,000	2.0	5,648,000	0.5	11.9	35.7	33.8	14.4
Slaughtering and meat packing.....	180	3,050	0.3	51,851,000	2.0	7,006,000	0.7	56.6	29.4	47.2	27.6
Coke.....	148	15,331	1.7	51,816,000	2.0	18,054,000	1.7	79.1	29.8	29.5	31.6
Tobacco manufactures.....	2,432	33,188	3.8	50,161,000	1.9	29,448,000	2.8	22.7	24.9	18.0	20.4
Hosiery and knit goods.....	464	38,206	4.4	49,658,000	1.9	22,440,000	2.1	61.2	40.5	51.9	34.4
Liquors, malt.....	237	7,234	0.8	47,713,000	1.8	35,103,000	3.4	36.9	19.5	37.2	13.5
Bread and other bakery products.....	3,185	12,221	1.4	45,850,000	1.7	18,520,000	1.8	37.4	60.6	31.6	44.6
Flour-mill and gristmill products.....	1,450	2,432	0.3	44,783,000	1.7	6,613,000	0.6	16.3	39.3	24.4	12.9
Clothing, men's, including shirts.....	696	23,623	2.7	39,682,000	1.5	19,819,000	1.9	25.1	5.5	31.3	3.1
Cotton goods, including cotton small wares.....	175	16,293	1.9	33,917,000	1.3	15,180,000	1.4	29.0	3.3	20.0	2.4
Clothing, women's.....	401	15,701	1.8	32,837,000	1.3	14,681,000	1.4	117.7	29.0	104.4	32.4
Glass.....	112	23,710	2.7	32,818,000	1.2	20,184,000	1.9	18.6	25.7	10.0	17.8
Electrical machinery, apparatus, and supplies.....	84	11,025	1.3	31,361,000	1.2	17,816,000	1.7	10.4	37.4	19.6	62.4
Cars, steam-railroad, not including operations of railroad companies.....	13	7,766	0.9	27,510,000	1.0	8,508,000	0.8	41.0	0.9	51.7	-20.7
Tin plate and terneplate.....	17	2,346	0.3	25,234,000	1.0	2,336,000	0.2	30.5	54.4	33.3	-19.2
Carpets and rugs, other than rag.....	93	11,510	1.3	24,879,000	0.9	10,231,000	1.0	-8.3	17.3	-1.8	11.5

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

INDUSTRY.	Number of establishments.	WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.		PER CENT OF INCREASE. <sup>1</sup>			
		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
Boots and shoes, including cut stock and findings.....	140	10,822	1.2	20,210,000	0.8	8,155,000	0.8	35.8	7.6	36.4	10.1
Paper and wood pulp.....	62	6,056	0.8	19,873,000	0.8	8,475,000	0.8	29.0	25.6	22.8	17.1
Furniture and refrigerators.....	304	9,224	1.1	18,952,000	0.7	9,013,000	0.9	48.3	26.9	35.1	32.3
Cement.....	27	8,080	0.9	18,855,000	0.7	8,747,000	0.8	84.2	.....	48.0	.....
Iron and steel pipe, wrought.....	11	3,873	0.4	18,291,000	0.7	4,209,000	0.4	60.1	-37.5	74.3	-35.5
Copper, tin, and sheet-iron products.....	339	6,815	0.8	17,197,000	0.7	8,346,000	0.8	77.5	35.6	70.2	35.3
Chemicals.....	37	3,185	0.4	15,978,000	0.4	5,778,000	0.6	35.7	.....	28.1	.....
Gas, illuminating and heating.....	90	3,119	0.4	15,840,000	0.6	14,741,000	1.1	49.5	-37.3	53.2	62.4
Liquors, distilled.....	88	724	0.1	14,367,000	0.5	11,255,000	1.1	193.1	-8.5	330.6	-31.0
Paint and varnish.....	114	1,092	0.2	14,020,000	0.5	4,810,000	0.5	20.5	3.0	34.9	-24.1
Butter, cheese, and condensed milk.....	536	1,177	0.1	13,544,000	0.5	1,870,000	0.2	17.0	12.5	-2.0	22.0
Confectionery.....	251	5,408	0.6	13,542,000	0.5	5,330,000	0.5	34.4	34.0	27.4	31.5
Pottery, terra-cotta, and fire-clay products.....	139	9,003	1.0	13,072,000	0.5	8,963,000	0.9	21.5	32.4	14.2	38.3
Hats, fur-felt.....	38	7,220	0.8	13,023,000	0.5	8,010,000	0.8	77.2	73.2	73.3	64.5
Carriages and wagons and materials.....	655	7,498	0.9	12,748,000	0.5	7,041,000	0.7	10.9	9.9	6.8	6.2
Patent medicines and compounds and druggists' preparations.....	367	2,701	0.3	12,656,000	0.5	7,346,000	0.7	33.8	5.8	36.7	3.9
Dyeing and finishing textiles.....	135	6,086	0.7	12,050,000	0.5	4,728,000	0.6	77.7	-3.0	64.7	5.7
Marble and stone work.....	506	9,264	1.1	11,570,000	0.4	7,550,000	0.7	72.4	24.0	67.8	45.3
Canning and preserving.....	83	2,753	0.3	9,484,000	0.4	4,810,000	0.5	17.6	33.5	19.5	20.6
Brick and tile.....	325	8,058	0.9	9,225,000	0.4	6,772,000	0.6	26.7	22.3	10.2	18.0
Soap.....	50	1,197	0.1	9,124,000	0.3	3,177,000	0.3	31.1	02.4	9.4	01.1
Brass and bronze products.....	104	2,080	0.2	8,455,000	0.3	2,850,000	0.3	.....	.....	.....	.....
Cutlery and tools, not elsewhere specified.....	129	4,250	0.5	8,022,000	0.3	4,501,000	0.4	37.9	55.5	23.2	07.0
Stoves and furnaces, including gas and oil stoves.....	74	4,198	0.5	7,400,000	0.3	4,037,000	0.5	-3.7	.....	-8.5	.....
Millinery and lace goods.....	105	4,235	0.5	6,770,000	0.3	3,010,000	0.3	145.4	70.4	130.4	65.3
Fertilizers.....	48	1,224	0.1	6,543,000	0.3	1,030,000	0.2	50.8	12.4	60.3	13.0
Automobiles, including bodies and parts.....	44	3,109	0.4	6,532,000	0.3	2,481,000	0.2	432.8	1,138.4	207.0	810.1
Explosives.....	27	1,033	0.1	6,388,000	0.2	2,300,000	0.2	50.2	54.6	53.0	36.7
Shipbuilding, including boat building.....	31	3,558	0.4	6,178,000	0.2	3,468,000	0.3	-40.2	-28.7	-32.0	-29.7
Leather goods.....	156	2,524	0.3	5,824,000	0.2	2,671,000	0.3	13.0	28.0	6.4	18.4
Boxes, fancy and paper.....	118	4,604	0.5	5,184,000	0.2	2,894,000	0.3	32.7	30.8	20.8	20.2
Umbrellas and canes.....	45	2,315	0.3	5,060,000	0.2	1,912,000	0.2	-1.4	-12.6	5.4	-25.2
Steam packing.....	31	1,677	0.2	4,987,000	0.2	2,006,000	0.2	22.0	110.0	-15.7	132.0
Ice, manufactured.....	170	1,006	0.2	4,823,000	0.2	3,508,000	0.3	64.3	44.0	61.7	35.1
Chocolate and cocoa products.....	6	863	0.1	4,811,000	0.2	1,856,000	0.2	125.4	105.4	140.6	330.2
Cordage and twine and jute and linen goods.....	18	2,119	0.2	4,805,000	0.2	1,804,000	0.2	-6.5	-20.2	21.1	-17.6
Agricultural implements.....	36	2,401	0.3	4,805,000	0.2	2,723,000	0.3	-4.2	66.0	-7.4	40.6
Cooperage and wooden goods, not elsewhere specified.....	133	1,630	0.2	4,630,000	0.2	1,641,000	0.2	16.5	23.7	5.0	31.4
Saws.....	15	1,876	0.2	3,794,000	0.1	2,388,000	0.2	14.2	32.0	22.1	30.1
Paper goods, not elsewhere specified.....	34	1,357	0.2	3,719,000	0.1	1,464,000	0.1	.....	.....	.....	.....
Wall paper.....	11	1,056	0.1	3,665,000	0.1	1,380,000	0.1	22.2	4.5	11.2	10.1
Smelting and refining, not from the ore.....	24	206	( <sup>2</sup> )	3,577,000	0.1	590,000	0.1	29.8	9.3	26.1	4.2
Lime.....	348	3,258	0.4	3,342,000	0.1	2,364,000	0.2	32.0	.....	31.6	.....
Cork, cutting.....	10	1,727	0.2	2,965,000	0.1	1,204,000	0.1	-6.6	45.2	-5.7	28.7
Gas and electric fixtures and lamps and reflectors.....	75	1,482	0.2	2,902,000	0.1	1,723,000	0.2	16.5	1.2	0.9	17.2
Wood distillation, not including turpentine and resin.....	50	933	0.1	2,900,000	0.1	1,276,000	0.1	-4.3	.....	-7.8	.....
Clocks and watches, including cases and materials.....	8	1,395	0.2	2,873,000	0.1	1,701,000	0.2	.....	.....	.....	.....
Coffins, burial cases, and undertakers' goods.....	36	1,103	0.1	2,757,000	0.1	1,182,000	0.1	38.6	63.8	20.1	50.4
Cars and general shop construction and repairs by street-railroad companies.....	65	2,442	0.3	2,747,000	0.1	1,653,000	0.2	118.2	1.1	113.0	16.0
Dentists' materials.....	23	1,072	0.1	2,745,000	0.1	1,420,000	0.1	17.5	27.8	53.2	9.3
Musical instruments, pianos and organs and materials.....	30	1,182	0.1	2,382,000	0.1	1,134,000	0.1	35.0	18.1	2.1	27.0
Boxes, cigar.....	77	1,801	0.2	2,328,000	0.1	1,076,000	0.1	23.9	21.0	25.7	33.1
Brooms and brushes.....	139	800	0.1	2,304,000	0.1	1,040,000	0.1	34.9	-3.4	17.2	8.1
Mattresses and spring beds.....	83	745	0.1	2,223,000	0.1	800,000	0.1	11.0	6.7	-0.2	21.9
Shoddy.....	20	450	( <sup>2</sup> )	2,051,000	0.1	588,000	0.1	-6.0	52.1	10.8	20.6
Buttons.....	24	1,123	0.1	1,565,000	0.1	810,000	0.1	73.0	-0.9	51.7	-0.4
Files.....	7	1,217	0.1	1,540,000	0.1	1,113,000	0.1	30.6	-8.8	52.0	-5.9
Fancy articles, not elsewhere specified.....	52	828	0.1	1,385,000	0.1	703,000	0.1	54.0	0.9	50.2	11.9
Bolting and hose, leather.....	17	156	( <sup>2</sup> )	1,379,000	0.1	368,000	( <sup>2</sup> )	59.4	29.9	13.6	65.3
Safes and vaults.....	7	695	0.1	1,338,000	0.1	695,000	0.1	0.4	86.4	13.3	63.3
Artificial flowers and feathers and plumes.....	30	805	0.1	1,310,000	0.1	644,000	0.1	.....	.....	.....	.....
Jewelry.....	75	456	( <sup>2</sup> )	1,275,000	0.1	678,000	0.1	22.6	50.1	21.7	26.6
Fur goods.....	58	227	( <sup>2</sup> )	1,217,000	( <sup>2</sup> )	673,000	0.1	69.5	-8.5	95.1	-17.3
Photo-engraving.....	31	489	0.1	1,132,000	( <sup>2</sup> )	901,000	0.1	41.1	111.6	33.7	116.6
Hats and caps, other than felt, straw, and wool.....	33	744	0.1	1,097,000	( <sup>2</sup> )	554,000	0.1	3.2	.....	3.2	.....
Optical goods.....	24	579	0.1	1,063,000	( <sup>2</sup> )	602,000	0.1	125.7	-8.0	60.5	-0.3
Ink, printing.....	8	165	( <sup>2</sup> )	1,050,000	( <sup>2</sup> )	427,000	( <sup>2</sup> )	53.5	67.6	52.0	37.7
Typewriters and supplies.....	8	555	0.1	1,017,000	( <sup>2</sup> )	828,000	0.1	403.5	-54.4	483.1	-61.4
Crucibles.....	5	106	( <sup>2</sup> )	728,000	( <sup>2</sup> )	208,000	( <sup>2</sup> )	-7.1	-31.6	19.2	2.0
All other industries.....	2,893	56,433	6.4	211,025,000	8.0	75,276,000	7.2	.....	.....	.....	.....

<sup>1</sup> Percentages are based on figures in Table I; a minus sign (-) denotes decrease. Where the percentages are omitted, comparable figures can not be given.  
<sup>2</sup> Less than one-tenth of 1 per cent.

In addition to the industries presented separately in the above table, there were 42 other industries in the state which reported products in 1909 to the value of \$1,000,000 or over, distributed as follows: 35 with products valued at \$1,000,000 but less than \$5,000,000; 4 with products valued at \$5,000,000 but less than

\$10,000,000; 2 with products valued at \$10,000,000 but less than \$25,000,000; and 1 with products valued at \$25,000,000 and over. These industries are included under the head of "All other industries" in the table in some instances 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 industries of similar character, and in still others because comparative statistics can not be presented for either 1904 or 1899, on account of changes in classification or because such figures would disclose the operations of individual establishments.<sup>1</sup> The 1909 statistics, however, for 9 of these industries, namely, the manufacture of babbitt metal and solder; belting and hose, woven and rubber; dairymen's, poulterers', and apiarists' supplies; men's furnishing goods; haircloth; models and patterns, not including paper patterns; rubber goods, "not elsewhere specified;" sand and emery paper and cloth; and signs and advertising novelties are presented separately in Table II, page 60.

While a few industries predominate in the state, there are, as already noted, a very large number which are of considerable importance. Furthermore, it will be seen from Table II, that there is a wide diversity in the manufacturing activities of the state, since 245 of the 264 classifications used in compiling the 1909 statistics for manufactures in the United States were represented in Pennsylvania. The leading products of the state are from steel works and rolling mills, textile mills, foundries and machine shops, blast furnaces, and tanneries, which, with other important industries, call for special consideration.

*Iron and steel.*—Steel works and rolling mills, and blast furnaces ranked, respectively, first and third among the industries of the state. For convenience these two industries, together with the manufacture of tin plate and terneplate, may be considered as one group. The three allied industries gave employment in 1909 to an average of 143,778 wage earners, and turned out products valued at \$694,156,000, or 16.4 per cent and 26.4 per cent of the respective totals for all manufactures. These figures also represent an increase in number of wage earners over 1904 of 16,586, or 13 per cent, and in the value of products of \$203,585,000, or 41.5 per cent.

<sup>1</sup> These industries are:

Babbitt metal and solder.  
Bags, other than paper.  
Belting and hose, woven and rubber.  
Boots and shoes, rubber.  
Cars, street-railroad, not including operations of railroad companies.  
Coffee and spice, roasting and grinding.  
Dairymen's, poulterers', and apiarists' supplies.  
Dyestuffs and extracts.  
Food preparations.  
Furnishing goods, men's.  
Glass, cutting, staining, and ornamenting.  
Glue.  
Grease and tallow.  
Haircloth.  
House-furnishing goods, not elsewhere specified.  
Instruments, professional and scientific.  
Iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills.  
Iron and steel forgings.  
Locomotives, not made by railroad companies.

Mineral and soda waters.  
Models and patterns, not including paper patterns.  
Oil, linseed.  
Oil, not elsewhere specified.  
Oilcloth and linoleum.  
Roofing materials.  
Rubber goods, not elsewhere specified.  
Sand and emery paper and cloth.  
Signs and advertising novelties.  
Smelting and refining, lead.  
Smelting and refining, zinc.  
Sporting and athletic goods.  
Springs, steel, car and carriage.  
Stationery goods, not elsewhere specified.  
Sugar refining, not including beet sugar.  
Surgical appliances and artificial limbs.  
Upholstering materials.  
Washing machines and clothes wringers.  
Waste.  
Window shades and fixtures.  
Wire.  
Wirework, including wire rope and cable.  
Wood, turned and carved.

The classification "Steel works and rolling mills," includes establishments engaged in the manufacture of steel and the hot rolling of iron and steel. It also includes the making of forgings and castings and the manufacture of rolled iron and steel into more highly finished forms, when conducted as a part of the rolling-mill operations. The blast furnaces include the establishments engaged in the manufacture of pig iron from the ore. The plating of sheet metal with tin or with terne (a mixture of lead and tin) is treated as a separate industry notwithstanding the fact that nearly all of the establishments so engaged roll all or a portion of the plates dipped. The tin-plate and terneplate departments of the steel works and rolling mills, however, have been treated as separate establishments. Measured by value of products, Pennsylvania not only led all other states in the Union in the combined industries but also in each of the three branches, contributing \$500,344,000, or 50.8 per cent, of the total value of products reported in 1909 for all steel works and rolling mills in the United States; \$168,578,000, or 43.1 per cent, of the total value of products for all blast furnaces; and \$25,234,000, or 52.6 per cent, of the total value of products for all tin-plate and terneplate mills. Each of the three industries shows substantial gains in the value of products from 1904 to 1909, the largest percentage of increase, 56.9 per cent, being shown for blast furnaces.

*Textiles.*—Several of the industries listed separately in the table belong to the textile group and may be considered together. They are the manufacture of woolen, worsted, and felt goods and wool hats; silk and silk goods, including throwsters; hosiery and knit goods; cotton goods, including cotton small wares; carpets and rugs, other than rag; fur-felt hats; cordage and twine and jute and linen goods; and shoddy. The eight allied industries gave employment in 1909 to an average of 139,676 wage earners, and turned out products valued at \$267,841,000. These figures represent an increase over 1904 of 24,149, or 20.9 per cent, in number of wage earners and \$73,649,000, or 37.9 per cent, in value of products. It is noteworthy that although in the iron and steel group of industries, considered in the preceding paragraph, the value of the product is more than double that for the textile group, the former employs only 4,102 more wage earners than the latter group. Of the totals reported for all manufacturing industries in the state in 1909, the textile industries employed 15.9 per cent of the wage earners and contributed 10.2 per cent of the value of products. The corresponding proportions for 1904 were 15.1 per cent and 9.9 per cent, respectively. Pennsylvania is not only the second state in the Union in the production of all textiles combined, but is second in four of the important branches—woolen, worsted, and felt goods and wool hats; silk

and silk goods, including throwsters; hosiery and knit goods; and carpets and rugs, other than rag. It ranks sixth in the production of cotton goods, including cotton small wares; fifth in that of cordage and twine and jute and linen goods; and first in that of fur-felt hats and of shoddy. With the exception of a slight decrease in carpets and rugs, in cordage and twine, and in shoddy, each of these eight textile industries show decided development during the five-year period 1904 to 1909, the percentages of increase in the value of products being especially high in the manufacture of fur-felt hats and of hosiery and knit goods.

*Foundry and machine-shop products.*—This classification covers in Pennsylvania products of great diversity, embracing not only the output of general foundries and machine shops, but also that of establishments engaged in the manufacture of bells, gas and water meters, hardware, plumbers' supplies, steam fittings and heating apparatus, structural ironwork, and cast-iron and cast-steel pipe. The foundry and machine-shop industry in its broadest sense is of greater importance than is indicated by the statistics reported under this specific title, for the reason that some machine shops manufacture a special product, such as locomotives, electrical machinery, adding machines, cash registers, and sewing machines, and are assigned to other classifications. A number of the most important establishments included under this head were engaged in the manufacture of air brakes and friction draft gear, interlocking and signaling appliances, frogs, switches, crossings, and other specialties for steam and street railroads, structural steel, enameled iron plumbing supplies, apparatus for handling coal and for rolling steel, and other power machinery. Foundries and machine shops gave employment to an average of 86,821 wage earners in 1909, which was 9.9 per cent of the total reported for all manufactures in the state. The total value of their products, \$210,746,000, in 1909, was \$57,353,000, or 37.4 per cent, more than that reported in 1904. In this class of products Pennsylvania led all other states of the Union at each of the last three censuses.

*Leather, tanned, curried, and finished.*—The statistics of leather include not only establishments which were engaged primarily in the manufacture of leather, but also those which treated hides or skins for others. Neither the cost of materials nor the value of products stated, however, include the value of the hides or skins treated under contract. In 1849 Pennsylvania was the second state of the Union in this industry with respect to value of products, reporting 1,134 establishments, which employed 4,146 wage earners and turned out products valued at \$7,575,000. The state ranked first in 1909, in which year, although the establishments engaged in the industry numbered only 163, there were 14,008 wage earners employed, while the

value of products was \$77,926,000, the wage earners being over three times as numerous, and the value of the product over ten times as great as in 1849.

*Cars and general shop construction and repairs by steam-railroad companies.*—The statistics for this industry represent the work done in car shops by steam-railroad companies and exclude minor repairs in round-houses. The operations consist almost exclusively of repairs to rolling stock and equipment. The number of establishments decreased from 144 in 1899 to 132 in 1909, chiefly through the elimination of a number of roundhouses which were included in the prior census, but the value of the work performed increased from \$43,065,000 to \$76,035,000. Employment was given to 46,645 wage earners in 1909, which was the third largest number reported by any of the industries specified in the table. This number represents an increase over that reported in 1899 of 18,091, or 63.4 per cent.

*Clothing.*—The manufacture of men's clothing ranks eighteenth among the industries specified in the table and that of women's clothing twentieth. The two industries considered together had a combined output for 1909 valued at \$72,519,000. The increase in the value of products from 1904 to 1909 was \$25,719,000, or 55 per cent, and that from 1899 to 1904 was \$5,050,000, or 12.1 per cent. In 1849 Pennsylvania was the third state in the Union in the manufacture of clothing, with products valued at \$6,988,000. This figure included the value of the output for custom tailoring and repairing establishments. At the census of 1889, when the first attempt was made to segregate the statistics in order to show separately those for establishments manufacturing clothing under the factory system, Pennsylvania, with an output valued at \$34,020,000, was the third state in the combined industries, and has retained this position at each subsequent census. The proportions which this state contributed of the total value of products for the industries in the United States were small because New York, the first state, manufactured a product so large as to dwarf by comparison all others in the industry. The proportion which Pennsylvania furnished dropped from 9.6 per cent in 1889 to 7.6 per cent in 1909. The value of men's clothing has represented the major part of the total value shown for the combined industries at each census. This branch decreased in value of products from \$30,116,000 in 1889 to \$30,055,000 in 1899, but increased to \$39,682,000 in 1909. In the manufacture of women's clothing, the total value increased from \$3,904,000 in 1889 to \$11,695,000 in 1899, and \$32,837,000 in 1909.

*Printing and publishing.*—Under printing and publishing are included job-printing establishments, the printing and publishing of books, of newspapers and periodicals, and of music, bookbinding, and blank-book making, steel engraving, and lithographing. Pennsylvania was the third state in the industry as a whole,

with combined products valued at \$70,584,000 in 1909, this amount representing 9.6 per cent of the total value of products for the industry in the United States. In value of products the industry shows an increase from 1904 to 1909 of \$15,521,000, or 28.2 per cent, compared with a gain from 1899 to 1904 of \$14,709,000, or 36.4 per cent.

*Lumber and timber products.*—This industry includes the logging plants whose chief products are logs and bolts, the sawmills, shingle mills, and planing mills, which produce rough and dressed lumber, shingles, lath, cooperage stock, sash, doors, blinds, interior finish, and other millwork, and also wooden packing-box factories. In 1909 this industry in the state was represented by 1,924 sawmills and logging plants, 668 independent planing mills, and 75 packing-box factories, which reported, respectively, 50.5, 41.1, and 8.4 per cent of the total value of products for the industry. The corresponding percentages of the total value of lumber and timber products in 1899 contributed by these three branches were 65, 31.1, and 3.9, respectively. Although the industry as a whole shows only a slight increase during the decade, there was a loss in the value of the output of sawmills and logging plants which was more than offset, however, by the growth in that of the planing mills and box factories. With \$57,454,000 as the total value of products for all branches in 1909, Pennsylvania ranked sixth among the states of the Union in this industry, in 1904 with \$56,713,000 it held the same position, and with \$53,886,000 in 1899 it held the fourth place.

*Petroleum refining.*—Although the production of crude oil in Pennsylvania gradually decreased from 1891 to 1909 in the refining of petroleum, the state retained a high place among the states, being third in 1889, first in 1899 and 1904, and second in 1909. The value of products for the industry in the state was \$53,088,000, which represented 22.4 per cent of the total for the entire industry in 1909, compared with \$47,460,000, or 27.1 per cent, in 1904, and \$34,978,000, or 28.2 per cent, in 1899. This falling off in the proportion from 1904 to 1909 despite the increase in value was due to the remarkable increase during the five-year period in the production of crude oil in Oklahoma and California and the sudden development of the Illinois fields.

*Slaughtering and meat packing.*—This classification includes establishments doing wholesale slaughtering and meat packing and those engaged in the manufacture of sausage only. It does not include the numerous slaughterhouses killing for the retail trade which in the aggregate slaughter a large number of animals. The value of products for this industry in Pennsylvania increased from \$25,537,000 in 1899 to \$33,101,000 in 1904, and \$51,851,000 in 1909, a gain of \$26,314,000, or 103 per cent, for the decade. The

percentage of increase during the five-year period 1904–1909 in value of products was nearly twice as great as during the preceding five-year period, 1899–1904. Of the 180 establishments reported for the industry as a whole in 1909, 80 were engaged in both wholesale slaughtering and wholesale meat packing, 75 were engaged in wholesale slaughtering only, and 25 in the manufacture of sausage only, the value of the products of these three branches representing 75.8 per cent, 22.7 per cent, and 1.4 per cent, respectively, of the total for the combined industry. The industry as a whole is largely centered in Philadelphia, the value of the output of such establishments in that city representing 42.6 per cent of the total for the state in 1909, 39 per cent in 1904, and 47.4 per cent in 1899. For the last two censuses Pennsylvania has ranked seventh among the states in this industry, having risen from ninth place in 1899.

*Coke.*—The abundant supply of coal, which is easily accessible and suitable for coking, as well as the demand for coke for fuel in the manufacture of iron and steel, has made Pennsylvania the leading state of the Union in the coke industry, a position which it has held in this class of manufacture for a number of decades. The \$51,816,000 reported as the value of products in 1909 represents an increase of \$22,892,000 over 1904 and was 54.1 per cent of the total for the industry in all states combined. The absolute increase from 1899 to 1904 in the value of coke manufactured in the state was less than one-third as great as for the following five-year period.

*Tobacco manufactures.*—This industry includes establishments engaged in the manufacture of chewing and smoking tobacco and of snuff, and cigar and cigarette factories. The industry in the state is confined largely to the latter class of establishments, as they numbered 2,379 of the 2,432 reported for the entire industry in 1909, and had an output valued at \$46,124,000, or 92 per cent of the total. Pennsylvania ranked second among the states in 1909 in the value of tobacco manufactures, its product being valued at \$50,161,000, which represented nearly one-eighth of the total for the industry in the United States.

*Liquors, malt.*—The statistics for establishments in which such beverages as lager beer, porter, ale, and weiss beer are brewed are included under this head. Since 1849, when 102 establishments with products valued at \$1,173,000 were reported, the brewery industry has developed rapidly. Pennsylvania ranked second in importance among the states in 1849 and has retained the same position at each succeeding census. In 1899 the value of products was \$29,163,000, and in 1909 it was \$47,713,000, an increase for the decade of \$18,550,000, or 63.6 per cent. The state's proportion of the total value of malt liquors brewed in the United States was in 1849, 20.5 per cent, but in 1909 it was only 12.7 per cent.

*Flour-mill and gristmill products.*—The statistics for merchant mills grinding wheat, rye, buckwheat, corn, or other grains are included in this classification. It does not, however, include the factories making fancy cereals or other food preparations as a chief product, or small mills doing custom grinding exclusively, the statistics for the latter mills being presented separately on page 43. This is one of the oldest industries in the state and as early as 1849 there were 2,512 flour mills and gristmills in Pennsylvania, which reported an output for that year valued at \$24,116,000. In 1899 the value of such products reached \$29,571,000, an increase for the 50 years of only \$5,455,000, or 22.6 per cent. In 1909, however, it was \$44,783,000, an increase for the decade 1899-1909 of \$15,212,000, or 51.4 per cent. Measured by value of products Pennsylvania ranked sixth among the states of the Union in this industry at each of the last two censuses, having dropped from fourth place in 1899.

*Glass.*—Pennsylvania ranks first among the states in the manufacture of glass and owes this position largely to the great supply of fuel, of glass sand, and of fire clay suitable for furnaces. As early as 1849 there were 28 establishments in the state, which reported glass products amounting to \$1,179,000, or nearly one-fourth of the total for all states, and in 1909, 112 plants were in operation with an output valued at \$32,818,000, which was over one-third of the total for the entire country.

*Electrical machinery, apparatus, and supplies.*—The exceptionally rapid extension, during recent years, of the uses of electricity in science and industry has created an increasing demand for electrical appliances of all sorts. It was to be expected, therefore, that this industry would show remarkable development during the last decade, especially in Pennsylvania, where all the materials required are immediately available, and where there is a demand for the most modern types of electrical appliances. Measured by value of products, Pennsylvania, with \$19,113,000 in 1899 and \$31,351,000 in 1909, held second place among the states of the Union at both censuses. The increase in the value of products for the decade was \$12,238,000, or 64 per cent.

*Cars, steam-railroad, not including operations of railroad companies.*—The products of these plants in Pennsylvania include mail, express, and baggage cars, and refrigerator cars, as well as passenger coaches and many kinds of freight cars. While the number of establishments increased from 11 in 1899 to only 13 in 1909, the average number of wage earners showed a gain from 5,840 to 7,766, or 33 per cent, and the value of products a gain from \$19,261,000 to \$27,510,000, or 42.8 per cent, during the decade. Practically all of this increase was during the later five-year period 1904-1909. In 1909 the largest establishments were located at Berwick and at Butler and in Stowe township. In 1899 and 1904 Pennsylvania held second place in value of products for this industry in the

United States, but in 1909 it became first, having displaced Illinois. The proportion which this state contributed of the total value of products for the industry in the United States decreased from 21.3 per cent in 1899 to 17.5 per cent in 1904, but increased 22.2 per cent in 1909.

In addition to the statistics given for this industry, several thousand pressed-steel freight and industrial cars were manufactured in the state in 1909 as a secondary product of a steel works and rolling mill. The exact number and value of these cars, however, can not be given without disclosing the operations of this establishment.

*Boots and shoes, including cut stock and findings.*—Under this head are included factories making boots and shoes and those whose chief products are cut stock and findings, as well as shops especially engaged in stitching, crimping, fitting, and bottoming or performing special operations in connection with the manufacture of boots and shoes. Footwear not coming strictly under the head of boots and shoes, such as overgaiters, moccasins, and leggings, is also covered by this designation. The industry was carried on in the state as early as 1698, the workers being known as cordwainers.<sup>1</sup> In 1849 there were 2,136 establishments in the state, which gave employment to 10,785 wage earners and reported products valued at \$5,637,000. With products valued at \$13,830,000 in 1899, Pennsylvania held fifth place among the states in this respect, and sixth place in 1904 and 1909, with products valued at \$14,884,000 and \$20,219,000, respectively. The state's proportion of the total value of products for the industry in the United States was less at each of these censuses, being 4.8 per cent, 4.2 per cent, and 3.9 per cent, respectively. From 1904 to 1909 there was an increase of 1,832, or 20.4 per cent, in the average number of wage earners and of \$5,335,000, or 35.8 per cent, in the value of products, whereas from 1899 to 1904 there was a decrease in the average number of wage earners of 257, or 2.8 per cent, but an increase in value of products of \$1,054,000, or 7.6 per cent.

*Paper and wood pulp.*—Mills which manufacture paper exclusively, pulp exclusively, or both paper and pulp are included in this classification. The mills engaged in the production of paper largely predominated in Pennsylvania in 1909. The first paper mill in the United States was established in Germantown in 1693. In 1816 the first steam paper mill in the United States began operations in Pittsburgh, with an engine of 16 horsepower, and 40 employees. In 1849 there were 61 establishments reported for the state, which employed an average of 625 wage earners and manufactured products valued at \$1,037,000. The growth of the industry since that time has been rapid, and during the decade 1899-1909 it was particularly

<sup>1</sup> Eighth Census of the United States, 1860, Manufactures, Introduction, pp. lxxix, lxxx, and lxxxii.

noteworthy, the value of products having increased from \$12,268,000 to \$19,873,000, a gain of \$7,605,000, or 62 per cent. The percentage of increase in value of products for the decade was about the same for both five-year periods. Pennsylvania ranked third in the industry in both 1879 and 1889, fourth in 1899, and fifth in both 1904 and 1909. The principal products in 1909 were book and cover paper, valued at \$6,442,043; wrapping paper, valued at \$3,954,578; and writing and other fine paper, valued at \$3,508,067. Practically all of the news paper used in the state is manufactured beyond its borders, the pulp produced being almost entirely chemical.

*Furniture and refrigerators.*—This industry embraces the manufacture of wood and metal furniture of all kinds, refrigerators and ice boxes, and store and office fixtures with the exception of products, such as show cases, which are provided for by a distinct classification. This industry ranked twenty-first among those shown separately in the preceding table in average number of wage earners, twenty-third in value added by manufacture, and twenty-eighth in value of products. The value of the output of the furniture and refrigerator factories in Pennsylvania increased from \$10,069,000 in 1899 to \$12,776,000 in 1904, and \$18,952,000 in 1909; these figures representing 7.7 per cent, 7.2 per cent, and 7.9 per cent of the respective totals for the United States.

There are 10 industries presented separately in the table on pages 4 and 5 which are not among the leading ones in the state as measured by value of products, in which Pennsylvania leads all other states of the Union. In five of these industries the state contributed 30 per cent or more of the total value of products for the United States in 1909, as follows: The manufacture of wrought-iron pipe, 59.2 per cent; steam packing, 41 per cent; saws, 32.9 per cent; cork cutting, 49.9 per cent; and crucibles, 39.4 per cent. The remainder of these industries are the manufacture of cement, ice, lime, cigar boxes, and files.

The rank of industries or groups of industries when measured by the value added by manufacture differs considerably from the rank by value of products, which is the order of presentation in the table. Of all the industries listed in this table, nine only hold the same position when ranked according to value added by manufacture. Noticeable changes in rank are found in the case of the tin-plate and terneplate industry, which drops from twenty-fourth place in gross value to the fifty-sixth place in added value; in refining petroleum, which falls from tenth to thirty-ninth place; in the manufacture of butter, cheese, and condensed milk, which drops from thirty-sixth to sixty-second place; and in slaughtering and meat packing, which falls from eleventh to thirty-fourth place. On the other hand, the manufacture of pottery, terra-cotta, and fire-clay products advances from thirty-eighth to twenty-fourth place; the gas

industry, from thirty-third to twentieth; the distilled-liquor industry, from thirty-fourth to twenty-first; marble and stone work, from forty-third to thirty-first; and the malt-liquor industry, from fifteenth to fourth.

The table on pages 4 and 5 also shows the percentages of increase or decrease for these industries in respect to value of products and value added by manufacture in all cases where comparative figures are presented in Table I, page 44. Exceptionally large relative increases are shown for several of the industries during each of the five-year periods, while others show marked relative decreases. From 1904 to 1909 large increases in both items are shown by the manufacture of automobiles, the manufacture of typewriters and supplies, the distillation of liquors, the manufacture of millinery and lace goods, that of chocolate and cocoa products, the operations of street-railroad repair shops, and the manufacture of women's clothing. From 1899 to 1904 large gains in both items are shown by the manufacture of automobiles, for photo-engraving, the manufacture of steam packing and that of chocolate and cocoa products. Women's clothing is the only one of the industries just mentioned, however, which is among the first 27 industries shown in the table. For the more important industries the percentages in both items are generally larger for the five-year period 1904-1909 than for the preceding five-year period.

In value of products 10 of the 94 industries presented separately in the table showed a decrease from 1904 to 1909, and 13 a decrease from 1899 to 1904, while in value added by manufacture decreases were reported for 10 industries from 1904 to 1909 and 14 industries from 1899 to 1904. The largest percentage of decrease in the value of products from 1904 to 1909 was in the shipbuilding industry (40.2 per cent), but 9 other industries showed a decrease of less than 10 per cent in the value of products during the same period.

*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.....	1,002,171	802,548	199,623
Proprietors and officials.....	54,606	52,951	1,745
Proprietors and firm members.....	29,743	28,550	1,193
Salaried officers of corporations.....	8,410	8,286	124
Superintendents and managers.....	16,543	16,115	428
Clerks.....	69,932	55,703	14,229
Wage earners (average number).....	877,543	693,894	183,649
16 years of age and over.....	848,436	679,831	168,605
Under 16 years of age.....	29,107	14,063	15,044

The average number of persons engaged in manufactures during 1909 was 1,002,171, of whom 877,543 were wage earners. Of the remainder, 54,696 were proprietors and officials and 69,932 were clerks. Corresponding figures for individual industries will be found in Table II, page 60.

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 43 important industries individually.

INDUSTRY.	PERSONS ENGAGED IN MANUFACTURES.			
	Total number.	Per cent of total.		
		Proprietors and officials.	Clerks.	Wage earners (average number).
<b>All Industries</b> .....	<b>1,002,171</b>	<b>5.5</b>	<b>7.0</b>	<b>87.6</b>
Boots and shoes, including cut stock and findings.....	11,829	3.4	5.1	91.5
Bread and other bakery products.....	17,838	20.2	11.3	68.5
Butter, cheese, and condensed milk.....	2,093	37.9	5.9	56.2
Carpets and rugs, other than rag.....	12,078	2.1	2.6	95.3
Carriages and wagons and materials.....	8,757	11.1	3.3	85.6
Cars and general shop construction and repairs by steam-railroad companies.....	50,645	3.8	3.9	92.3
Cars, steam-railroad, not including operations of railroad companies.....	8,799	2.7	9.0	88.3
Cement.....	8,002	1.2	8.1	90.8
Chemicals.....	3,573	2.0	8.0	89.1
Clothing, men's, including shirts.....	20,405	5.4	5.2	89.5
Clothing, women's.....	18,080	5.1	8.1	86.8
Coke.....	16,210	2.8	2.7	94.5
Confectionery.....	6,436	6.4	6.6	84.0
Copper, tin, and sheet-iron products.....	7,992	7.8	6.9	85.3
Cotton goods, including cotton small wares.....	17,386	2.9	3.4	93.7
Dyeing and finishing textiles.....	6,688	4.6	4.4	91.0
Electrical machinery, apparatus, and supplies.....	14,641	3.8	20.9	75.3
Flour-mill and gristmill products.....	4,090	43.2	5.0	51.8
Foundry and machine-shop products.....	100,505	4.5	9.1	86.4
Furniture and refrigerators.....	11,338	6.5	5.0	87.5
Gas, illuminating and heating.....	4,584	4.8	27.1	68.0
Glass.....	24,924	1.8	3.0	95.1
Hats, fur-felt.....	7,537	1.5	2.7	95.8
Hosiery and knit goods.....	40,248	2.9	2.2	94.9
Iron and steel, blast furnaces.....	16,215	2.4	8.0	89.6
Iron and steel, steel works and rolling mills.....	137,433	1.5	0.2	92.3
Iron and steel pipe, wrought.....	4,143	2.2	4.3	93.5
Leather, tanned, curried, and finished.....	14,970	3.3	3.1	93.6
Liquors, distilled.....	1,144	22.0	14.7	63.3
Liquors, malt.....	9,007	7.1	12.6	80.3
Lumber and timber products.....	32,073	13.3	3.0	83.8
Marble and stone work.....	10,639	10.2	2.8	87.1
Paint and varnish.....	2,747	10.2	17.3	72.5
Paper and wood pulp.....	7,166	2.8	4.7	92.5
Patent medicines and compounds and druggists' preparations.....	4,290	12.6	23.1	64.2
Petroleum, refining.....	3,423	4.6	10.6	84.7
Pottery, terra-cotta, and fire-clay products.....	9,784	4.1	3.9	92.0
Printing and publishing.....	36,783	11.8	21.1	67.1
Silk and silk goods, including throwsters.....	38,178	1.7	2.8	95.5
Slaughtering and meat packing.....	3,957	8.0	14.4	77.1
Tin plate and terneplate.....	2,548	1.8	6.1	92.1
Tobacco manufactures.....	37,580	8.4	3.3	88.3
Woolen, worsted, and felt goods, and wool hats.....	28,692	2.3	2.1	95.5
All other industries.....	169,267	7.0	8.5	84.5

Of the total number of persons engaged in all manufacturing industries, 5.5 per cent were proprietors and officials, 7 per cent clerks, and 87.6 per cent wage earners. In some industries, such as flour mills and gristmills; butter, cheese, and condensed-milk factories; and bakeries, a majority of the establishments are small and the work is done to a large extent by the proprietors or their immediate representatives. Hence proprietors and officials form in such industries a much larger proportion of the total number of persons engaged in the industry than in most other industries or in all industries combined. Similar con-

ditions are also found in the following industries: The manufacture of carriages and wagons, distilled liquors, and lumber and timber products; marble and stone work; the manufacture of paint and varnish and of patent medicines; and printing and publishing. Certain industries require the employment of large numbers of wage earners and show, as a consequence, a small proportion of proprietors and officials. Among these are the textile, cement, glass, coke, and iron and steel industries.

The following table shows, in percentages, for 1909, 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. <sup>1</sup>	Per cent of total.		
		16 years of age and over.		Under 16 years of age.
Male.	Female.			
<b>All Industries</b> .....	<b>877,543</b>	<b>77.5</b>	<b>19.2</b>	<b>3.3</b>
Boots and shoes, including cut stock and findings.....	10,822	58.5	34.4	7.1
Bread and other bakery products.....	12,221	81.6	14.6	3.8
Butter, cheese, and condensed milk.....	1,177	93.5	5.8	0.7
Carpets and rugs, other than rag.....	11,510	59.9	35.0	5.1
Carriages and wagons and materials.....	7,498	98.4	0.4	1.1
Cars and general shop construction and repairs by steam-railroad companies.....	46,645	90.8	0.2	0.1
Cars, steam-railroad, not including operations of railroad companies.....	7,766	90.9	0.1	0.1
Cement.....	8,080	99.6	( <sup>2</sup> )	0.4
Chemicals.....	3,185	96.6	3.4	0.1
Clothing, men's, including shirts.....	23,623	33.1	62.5	4.4
Clothing, women's.....	15,701	30.1	68.2	1.7
Coke.....	15,331	100.0	( <sup>2</sup> )	( <sup>2</sup> )
Confectionery.....	5,408	34.3	57.9	7.8
Copper, tin, and sheet-iron products.....	6,815	89.7	7.1	3.1
Cotton goods, including cotton small wares.....	16,293	43.9	49.3	6.8
Dyeing and finishing textiles.....	6,686	84.1	12.1	3.8
Electrical machinery, apparatus, and supplies.....	11,025	84.9	14.5	0.6
Flour-mill and gristmill products.....	2,432	99.5	0.1	0.4
Foundry and machine-shop products.....	86,821	97.9	1.1	1.0
Furniture and refrigerators.....	9,924	96.0	2.1	1.9
Gas, illuminating and heating.....	3,119	99.6	0.4	.....
Glass.....	23,710	88.2	5.3	6.5
Hats, fur-felt.....	7,220	69.5	25.3	5.2
Hosiery and knit goods.....	38,206	19.3	69.5	11.2
Iron and steel, blast furnaces.....	14,521	99.9	.....	0.1
Iron and steel, steel works and rolling mills.....	126,911	98.9	0.2	0.8
Iron and steel pipe, wrought.....	3,873	99.8	.....	0.2
Leather, tanned, curried, and finished.....	14,008	94.0	4.6	1.4
Liquors, distilled.....	724	76.8	23.2	.....
Liquors, malt.....	7,234	99.7	0.2	0.1
Lumber and timber products.....	26,873	98.5	0.4	1.1
Marble and stone work.....	9,264	90.2	0.1	0.7
Paint and varnish.....	1,992	96.3	3.1	0.6
Paper and wood pulp.....	6,666	88.6	10.9	0.5
Patent medicines and compounds and druggists' preparations.....	2,761	43.9	53.7	2.3
Petroleum, refining.....	2,990	99.0	0.4	0.6
Pottery, terra-cotta, and fire-clay products.....	9,093	91.2	5.8	3.0
Printing and publishing.....	24,696	73.7	22.8	3.0
Silk and silk goods, including throwsters.....	36,469	26.2	60.0	13.8
Slaughtering and meat packing.....	3,050	99.1	0.7	0.2
Tin plate and terneplate.....	2,346	89.0	10.1	0.9
Tobacco manufactures.....	33,188	45.0	62.4	2.6
Woolen, worsted, and felt goods, and wool hats.....	27,409	44.3	40.2	9.5
All other industries.....	143,047	77.8	18.6	3.0

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

For all industries combined, 77.5 per cent of the average number of wage earners were males 16 years of age and over; 19.2 per cent, females 16 years of age and over; and 3.3 per cent, children under the age of 16. The larger part of the total number of female wage earners was made up of those employed in the textile, clothing, and boot and shoe industries and in tobacco manufactures. In the manufacture of hosiery and knit goods and of women's clothing over two-thirds of the employees were women 16 years of age and over; in the silk goods and men's clothing industries the proportion was three-fifths, in tobacco manufactures and in the cotton goods and woolen and worsted goods industries about one-half, and in the boot and shoe and the carpet industries over one-third. The confectionery and the patent-medicine industries also showed a large proportion of female wage earners, 57.9 per cent and 53.7 per cent, respectively.

The four leading textile industries—silk goods, hosiery and knit goods, woolen and worsted goods, and cotton goods—and the manufacture of glass and of men's clothing include the larger part of the total number of wage earners under 16 years of age. The proportion of such wage earners engaged in each industry was as follows: Silk goods, 13.8 per cent; hosiery and knit goods, 11.2 per cent; woolen and worsted goods, 9.5 per cent; cotton goods, 6.8 per cent; glass, 6.5 per cent; and men's clothing, 4.4 per cent. The boot and shoe and the confectionery industries also showed a large proportion of children among the wage earners, 7.1 per cent and 7.8 per cent, respectively.

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, 1901-1909.
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	1,002,171	100.0	855,392	100.0	17.2
Proprietors and firm members.....	29,743	3.0	26,029	3.0	14.3
Salaried employees.....	94,885	9.5	66,081	7.7	43.6
Wage earners (average number).....	877,543	87.6	763,282	89.2	15.0

Comparable figures are not obtainable for 1899. The table shows a greater percentage of gain for the five years in the number of salaried employees than for either of the other classes of persons engaged.

The next table shows the average number of wage earners, distributed according to age periods, and for 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.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	877,543	100.0	763,282	100.0	663,960	100.0
16 years of age and over.....	848,436	96.7	728,831	95.5	631,658	95.1
Male.....	679,831	77.5	594,487	77.9	516,101	77.7
Female.....	168,605	19.2	134,344	17.6	115,557	17.4
Under 16 years of age.....	29,107	3.3	34,451	4.5	32,302	4.9

This table indicates that for all industries combined there has been little variation from census to census in the proportions of men, women, and children employed. The number of children under 16 years of age and the proportion which they formed of the total number of wage earners employed was less in 1909 than in 1899, although from 1899 to 1904 the absolute number of such employees increased. The falling off in the proportion of children was more than made up by a larger proportion of women. In 1909 males 16 years of age and over formed 77.5 per cent of all wage earners, as compared with 77.9 per cent in 1904 and 77.7 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 60, is shown, for practically all 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.

MONTH.	WAGE EARNERS.		MONTH.	WAGE EARNERS.	
	Number.	Per cent of maximum.		Number.	Per cent of maximum.
January.....	819,027	85.3	July.....	860,435	89.0
February.....	825,082	85.9	August.....	873,308	90.9
March.....	835,617	87.0	September.....	911,802	94.9
April.....	844,230	87.9	October.....	933,852	97.2
May.....	850,373	88.5	November.....	947,698	98.6
June.....	867,526	90.3	December.....	960,660	100.0

There were no seasonal industries of importance in Pennsylvania, nor did any of the more important industries show very great fluctuations from month to month in the number of wage earners employed. Of the more important industries, the greatest variation is in the glass industry, in which the minimum number, 16,242, was employed in July, and the maximum number, 26,711, in December, the minimum figure being 60.3 per cent of the maximum. In the foundry and machine-shop industry the difference between the maximum and minimum months was a larger number, but on account of the larger average number em-

ployed the proportion of minimum to maximum was 78.8 per cent. For all industries combined the smallest number, 819,927, were employed in the month of January. The number increased steadily month by month, with the exception of a slight decrease from June to July, until in December 960,666 wage earners were employed, the largest number reported for any month. The difference between the months of greatest and least employment was thus 140,739, or 14.6 per cent of the maximum.

Prevailing hours of labor.—In the table following 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.
<b>All industries.....</b>	<b>877,543</b>	<b>61,857</b>	<b>46,203</b>	<b>109,826</b>	<b>301,035</b>	<b>258,257</b>	<b>45,703</b>	<b>27,203</b>	<b>20,799</b>
Agricultural implements.....	2,401	1		452	850	1,007		1	
Artificial flowers and feathers and plumes.....	805	135	501	160	9				
Automobiles, including bodies and parts.....	3,190	1		746	2,257	195			
Belting and hose, leather.....	156		2	16	110	28			
Boots and shoes, including cut stock and findings.....	10,822	21	402	514	8,568	1,140	117		
Boxes, cigar.....	1,801	25	230	114	1,074	340			
Boxes, fancy and paper.....	4,604	56	456	280	2,952	854			
Brass and bronze products.....	2,080	36	44	493	1,396	111			
Bread and other bakery products.....	12,221	577	207	813	2,812	5,423	1,188	553	648
Brick and tile.....	8,058	562	383	701	1,206	5,084		32	
Brooms and brushes.....	860	47	80	124	502	107			
Butter, cheese, and condensed milk.....	1,177	131	49	75	156	337	411	13	5
Buttons.....	1,123	4		110	915	94			
Canning and preserving.....	2,753	0	7	23	832	1,806	73	3	
Carpets and rugs, other than rag.....	11,510	120		615	3,267	7,499			
Carrriages and wagons and materials.....	7,498	44	165	826	3,086	2,752	10	1	5
Cars and general shop construction and repairs by steam-railroad companies.....	46,645	5,200	2,581	1,200	27,629	8,002	1,511		423
Cars and general shop construction and repairs by street-railroad companies.....	2,442			42	553	1,576	209	32	30
Cars, steam-railroad, not including operations of railroad companies.....	7,766		60	286	5,504	500	1,416		
Cement.....	8,080					2,276	2,788		3,016
Chemicals.....	3,185	5	98		68	2,130	177	13	694
Chocolate and cocoa products.....	863	1			748	114			
Clocks and watches, including cases and materials.....	1,395		36	3	1,356				
Clothing, men's, including shirts.....	23,623	570	2,204	6,823	11,508	2,440	67	4	7
Clothing, women's.....	15,701	689	6,631	3,439	4,491	451			
Coffins, burial cases, and undertakers' goods.....	1,103	22	14	108	353	606			
Coke.....	15,331	1,508		7,397	100	4,575	658		1,093
Confectionery.....	5,408	122	362	200	2,692	1,019	16	5	2
Cooperage and wooden goods, not elsewhere specified.....	1,630	245	132	432	352	469			
Copper, tin, and sheet-iron products.....	6,815	1,327	345	1,034	2,752	1,357			
Cordage and twine and jute and linen goods.....	2,119	49	111		1,110	849			
Cork, cutting.....	1,727		11	21	1,496	8	191		
Cotton goods, including cotton small wares.....	10,293		1,112		8,294	6,887			
Crucibles.....	106		10		10	86			
Cutlery and tools, not elsewhere specified.....	4,250	1,156	245	205	1,369	1,205	70		
Dentists' materials.....	1,072	17	130	50	875				
Dyeing and finishing textiles.....	6,086	10	39	33	2,078	3,874	52		
Electrical machinery, apparatus, and supplies.....	11,025	12	765	7,853	1,772	683			
Explosives.....	1,033	39		57	72	805			
Fancy articles, not elsewhere specified.....	828	32	83	60	544	100			
Fertilizers.....	1,224	0	8		197	425	169	410	
Files.....	1,217	1			1,216				
Flour-mill and gristmill products.....	2,432	273	49	147	211	1,088	377	263	24
Foundry and machine-shop products.....	86,821	2,636	1,442	22,360	31,874	26,079	2,157	87	186
Fur goods.....	227	12	82	111	9	13			
Furniture and refrigerators.....	0,924	175	500	503	3,742	4,884			
Gas and electric fixtures and lamps and reflectors.....	1,482	43	98	151	1,125	65			
Gas, illuminating and heating.....	3,119	16	3		24	1,780	705	15	576
Glass.....	23,710	3,049	4,406	1,645	6,235	5,468	1,257		1,650
Hats and caps, other than felt, straw, and wool.....	744	17	78	47	402	137	3		
Hats, fur-felt.....	7,220	65	370	4,919	1,533	333			
Hosiery and knit goods.....	38,206	275	381	496	24,508	12,472	74		
Ice, manufactured.....	1,606	38		69	19	220	138	271	842
Ink, printing.....	165	11		0	148				
Iron and steel, blast furnaces.....	14,521				117	601	166	467	13,170
Iron and steel, steel works and rolling mills.....	120,911	12,245	3,237	11,014	12,292	45,527	17,021	21,849	2,826
Iron and steel pipe, wrought.....	3,873	0			3,777	90			
Jewelry.....	466	20	110	170	80	67			
Leather goods.....	2,524	22	199	302	1,123	780	8		
Leather, tanned, curried, and finished.....	14,098	65	139	708	5,187	7,904		5	
Lime.....	3,258	5	75	135	515	2,010	425		93
Liquors, distilled.....	724	88	43	141	52	386		10	4
Liquors, malt.....	7,234	2,645	306	2,513	330	1,118	203	109	4
Lumber and timber products.....	26,873	790	995	4,105	3,084	12,975	3,822	41	161
Marble and stone work.....	9,264	1,896	2,032	1,870	2,188	1,252	26		
Mattresses and spring beds.....	745	52	63	70	442	118			
Millinery and lace goods.....	4,235	209	747	1,190	2,067	32			
Musical instruments, pianos and organs and materials.....	1,182		32	395	492	263			
Optical goods.....	579	28	43	30	475	3			

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.
Paint and varnish.....	1,992	49	90	326	1,127	345	38	17	.....
Paper and wood pulp.....	6,656	122	.....	100	168	3,643	91	2,532	.....
Paper goods, not elsewhere specified.....	1,357	28	749	48	514	18	.....	.....	.....
Patent medicines and compounds and druggists' preparations.....	2,761	288	460	1,603	291	110	.....	6	3
Petroleum, refining.....	2,900	.....	.....	1,596	.....	418	270	68	548
Photo-engraving.....	489	470	.....	9	1	.....	.....	.....	.....
Pottery, terra-cotta, and fire-clay products.....	9,003	579	404	1,739	1,464	4,380	66	156	206
Printing and publishing.....	24,696	14,412	3,207	4,267	1,965	730	25	.....	.....
Safes and vaults.....	695	30	26	60	185	385	.....	.....	.....
Saws.....	1,876	7	41	95	1,728	5	.....	.....	.....
Shipbuilding, including boat building.....	3,558	378	150	143	2,842	39	.....	.....	.....
Shoddy.....	450	.....	.....	3	88	359	.....	.....	.....
Silk and silk goods, including throwsters.....	36,469	289	490	490	27,001	7,590	.....	.....	.....
Slaughtering and meat packing.....	3,050	63	125	44	271	2,331	160	56	.....
Smelting and refining, not from the ore.....	206	22	7	7	100	54	.....	16	.....
Soap.....	1,197	520	16	19	396	235	11	.....	.....
Steam packing.....	1,677	8	18	52	936	663	.....	.....	.....
Stoves and furnaces, including gas and oil stoves.....	4,198	187	226	773	1,303	1,709	.....	.....	.....
Tin plate and terneplate.....	2,346	206	.....	1,539	400	201	.....	.....	.....
Tobacco manufactures.....	33,188	3,954	3,497	2,614	18,295	4,721	102	5	.....
Typewriters and supplies.....	555	5	18	.....	532	.....	.....	.....	.....
Umbrellas and canes.....	2,315	122	6	54	807	1,326	.....	.....	.....
Wall paper.....	1,056	.....	.....	.....	.....	1,056	.....	.....	.....
Wood distillation, not including turpentine and rosin.....	933	51	.....	39	.....	444	237	83	79
Woolen, worsted, and felt goods, and wool hats.....	27,409	2	.....	77	14,819	12,511	.....	.....	.....
All other industries.....	56,433	2,578	3,634	5,292	18,832	17,323	8,199	71	504

It is evident from these figures that for the great majority of wage earners employed in the manufacturing industries of Pennsylvania the prevailing hours of labor ranged from 54 to 60 a week, only 12.3 per cent of the total being employed in establishments where less than 54 hours per week were the prevailing hours, and only 11.4 per cent being employed in establishments where the hours of labor were more than 60 per week. The largest single group shown in the table is that "between 54 and 60" with 301,635, or 34.4 per cent of the total number of wage earners of the state.

Of the 99,705 wage earners who worked in establishments where over 60 hours per week were the prevailing hours of labor, 56,399, or 56.6 per cent, were employed in the blast furnaces and steel works and rolling mills. This number represents 39.9 per cent

of the total average number employed in these two industries combined. In three industries shown in the table—cement, ice, and blast furnaces—the greater proportion of wage earners worked more than 60 hours per week. While there were 108,120 wage earners in establishments where less than 54 hours per week were the prevailing hours, in only four industries presented in the table—the manufacture of artificial flowers and feathers and plumes, that of paper goods, photo-engraving, and printing and publishing—was the greater proportion of the total for the industry employed by such establishments.

**Location of establishments.**—The following table shows the extent to which the manufactures of Pennsylvania are centralized in cities and boroughs of 10,000 population or over. (See Introduction.)

ITEM.	Year.	Aggregate.	INCORPORATED PLACES HAVING A POPULATION OF 10,000 AND OVER.								DISTRICTS OUTSIDE OF INCORPORATED PLACES 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.	Percent of total.	Number or amount.	Percent of total.	Number or amount.	Percent of total.		
Population.....	1910	7,665,111	3,653,461	47.7	638,300	8.3	802,381	10.5	2,212,780	28.9	4,011,650	52.3
	1900	6,302,115	2,707,261	43.9	350,403	5.6	569,623	9.0	1,847,235	29.3	3,534,864	56.1
Number of establishments.....	1909	27,563	15,036	54.0	1,738	6.3	2,967	10.8	10,331	37.5	12,527	45.4
	1899	23,462	12,388	52.8	690	4.2	2,347	10.0	9,051	38.6	11,074	47.2
Average number of wage earners.	1909	877,543	552,134	62.9	83,433	9.5	136,492	15.6	332,209	37.9	325,400	37.1
	1899	663,960	431,181	64.9	30,845	5.5	96,628	14.6	297,708	44.8	232,779	35.1
Value of products.....	1909	\$2,626,742,034	\$1,662,897,973	63.3	\$276,462,645	10.5	\$370,521,221	14.1	\$1,015,914,107	38.7	\$963,844,061	36.7
	1899	1,049,882,380	1,074,530,373	65.1	81,717,638	5.0	229,891,021	13.9	762,921,714	46.2	575,352,007	34.0
Value added by manufacture..	1909	1,044,182,046	660,386,130	63.8	95,711,824	9.2	146,681,104	14.0	423,993,202	40.6	377,796,616	36.2
	1899	691,581,108	461,733,907	65.3	32,318,824	4.7	97,346,042	14.1	322,069,041	46.6	239,847,201	34.7

In 1909, 63.3 per cent of the total value of products for all manufacturing industries was reported from cities and boroughs having over 10,000 inhabitants, and 62.9 per cent of the average number of wage earners were employed in such places. The figures indicate

that on the whole the manufactures of the districts outside the cities and boroughs have gained slightly on the totals for the places having 10,000 inhabitants or over during the last decade. This is due in part to the size and rapid growth of the three classes of iron

and steel mills, the foundries and machine shops and the glass works located outside the cities. The fact that 21 boroughs (see the next table) were parts of the outside territory in 1899 and became a part of the group of cities and boroughs having 10,000 inhabitants or more in 1909 makes the gain in the outside districts more conspicuous. The value of products reported in 1909 for all these places combined was \$140,470,215, and 35,885 wage earners were employed there. These figures represent 5.3 per cent and 4.1 per cent of the respective totals for the state. The increase in the population of different places has also affected the grouping of cities and boroughs in the table. In 1900 Norristown, Shenandoah, and Hazleton were in the first group, 10,000 to 25,000; but during the following decade the population of each increased so that all advanced to the second group, 25,000 to 100,000.

Although a decided absolute gain is shown for all items of the three groups of cities and boroughs, the cities included in the group 100,000 and over show substantial decreases in relative importance. The largest gains in the proportions are shown for the first group, due mainly to the shifting of the 21 boroughs above referred to. There was scarcely any change during the decade in the proportions of the totals for the cities and boroughs of 25,000 to 100,000 inhabitants. Of the total value of products reported for the state in 1909, 10.5 per cent was reported from the 43 places having from 10,000 to 25,000 inhabitants, 14.1 per cent from the 17 places having from 25,000 to 100,000 inhabitants, and 38.7 per cent from the 3 cities having 100,000 inhabitants and over.

The population for 1910 and 1900 of the 63 places which had 10,000 inhabitants or over in 1910 is given in the following statement:

CITY OR BOROUGH.	1910	1900	CITY OR BOROUGH.	1910	1900
Philadelphia	1,549,008	1,293,087	Mount Carmel	17,532	13,179
Pittsburgh	533,906	1,451,512	Carbondale	17,040	13,536
Scranton	129,897	102,026	Plymouth	10,996	13,049
Reading	96,071	78,061	Pitston	10,267	12,550
Wilkes-Barre	67,105	51,721	Mahanoy City	15,936	13,504
Erie	66,525	52,733	Duquesne	15,727	9,036
Harrisburg	64,186	50,167	Oil City	15,057	13,204
Johnstown	55,482	35,936	Pottstown	15,590	13,096
Altoona	53,127	38,973	Sharon	15,270	8,916
Allentown	51,913	35,416	McKees Rocks	14,702	6,352
Lancaster	47,227	41,459	Bradford	14,544	15,029
York	44,750	33,708	Steelton	14,240	12,086
McKeesport	42,694	34,227	Sunbury	13,770	9,810
Chester	38,537	33,988	Uniontown	13,344	7,344
New Castle	36,280	28,339	Greensburg	13,012	6,508
Williamsport	31,800	28,757	Connellsville	12,845	7,160
Easton	28,523	25,238	Bethlehem	12,837	10,758
Norristown	27,875	22,205	Meadville	12,780	10,291
Shenandoah	25,774	20,321	Du Bois	12,191	9,375
Hazleton	25,452	14,230	Beaver Falls	12,093	10,054
Butler	20,728	10,853	North Braddock	11,824	6,535
Pottsville	20,236	15,710	Chambersburg	11,800	8,804
South Bethlehem	19,973	13,241	Monessen	11,775	2,197
Shamokin	19,588	18,202	West Chester	11,767	9,524
Bradford	19,357	15,654	Columbia	11,454	12,310
Lebanon	19,240	17,028	Old Forge	11,324	5,630
Williamsburg	18,924	11,886	Cotatesville	11,084	5,721
Nanticoke	18,877	12,116	Warren	11,080	8,043
Washington	18,778	7,770	Phoenixville	10,743	9,196
Homestead	18,713	12,554	Carlisle	10,303	9,626
Dunmore	17,015	12,583	South Sharon	10,190	( <sup>3</sup> )
			Carnegie	10,009	7,330

<sup>1</sup> Includes population of Allegheny, which was annexed in 1907.  
<sup>2</sup> Includes population of West Bethlehem, which was annexed in 1904.  
<sup>3</sup> Not incorporated in 1900.

The relative importance in manufactures of 56 of these cities and boroughs is shown in the following table, in which they are presented according to value of products in 1909. Both the value of products and the average number of wage earners for these places are shown separately for 1909, 1904, and 1899 so far as comparative figures can be given. The other 7 boroughs having a population of 10,000 or over in 1910—Cotatesville, Duquesne, Monessen, North Braddock, Old Forge, South Sharon, and Steelton—are not shown separately but grouped under the heading of "All other boroughs," to avoid the disclosure of individual establishments.

CITY OR BOROUGH.	AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.		
	1909	1904	1899	1909	1904	1899
Philadelphia	251,884	228,899	214,775	\$746,075,050	\$591,388,078	\$519,981,812
Pittsburgh	67,474	71,618	71,794	243,453,093	211,259,153	218,198,005
Reading	24,145	18,053	10,892	51,134,907	30,490,942	32,682,001
Johnstown	10,574	6,914	5,600	48,105,775	28,891,800	21,304,745
McKeesport	8,246	8,848	7,213	42,494,507	23,054,412	30,058,447
New Castle	5,339	5,433	4,529	38,037,522	28,023,234	26,115,798
South Bethlehem	7,985	5,754	4,045	26,417,103	15,275,411	0,904,054
Scranton	12,851	10,912	11,139	20,384,755	20,453,285	24,741,937
Allentown	11,481	8,984	7,855	20,263,327	10,841,043	14,990,437
Erie	9,796	8,415	8,032	24,225,933	18,039,161	16,492,886
Harrisburg	9,743	7,955	6,439	22,725,328	16,570,715	14,905,827
Chester	6,088	7,061	6,072	10,373,314	10,044,842	14,940,165
York	10,492	7,952	6,851	18,022,400	13,333,359	10,559,780
Altoona	8,469	9,540	6,573	10,702,738	14,349,093	11,273,287
Lancaster	7,057	8,693	7,504	15,978,060	14,047,681	12,750,429
Wilkes-Barre	7,553	5,920	4,749	13,525,957	10,999,754	8,610,765
Williamsport	5,641	5,296	4,717	13,347,943	11,966,599	9,725,726
Pottstown	3,650	3,457	2,081	12,505,196	8,144,723	7,357,503
Lebanon	5,591	4,387	4,475	11,423,003	6,978,458	7,658,206
Butler	2,823	2,003	792	11,058,353	6,232,007	1,403,026
Sharon	3,316	1,812	1,827	9,880,872	5,670,924	3,764,953
McKees Rocks	3,591	( <sup>3</sup> )	( <sup>3</sup> )	9,788,828	( <sup>3</sup> )	( <sup>3</sup> )
Pottsville	2,872	1,904	1,099	9,138,122	5,805,788	4,820,806
Norristown	3,818	3,517	2,944	7,413,211	5,925,243	4,100,834
Easton	3,388	2,720	3,202	6,015,345	5,050,064	5,424,068
Beaver Falls	2,180	2,232	2,174	6,400,338	4,907,530	6,228,808
Phoenixville	2,500	2,888	2,240	5,870,154	5,400,891	3,321,599
Warren	1,489	1,174	1,050	5,744,321	4,005,594	3,681,254
Bradford	1,040	1,225	815	5,094,382	4,125,470	4,000,748
Washington	2,125	( <sup>3</sup> )	( <sup>3</sup> )	4,837,055	( <sup>3</sup> )	( <sup>3</sup> )
Columbia	2,773	3,034	2,519	4,807,068	3,887,087	4,213,887
Hazleton	2,682	1,406	822	4,707,025	2,185,870	908,823
Sunbury	2,069	1,457	968	4,450,159	2,502,829	1,868,167
Oil City	1,333	1,657	1,683	4,121,892	3,082,208	5,104,059
Bradford	1,318	1,400	1,200	3,886,538	3,191,894	3,125,007
Bethlehem	1,583	( <sup>3</sup> )	( <sup>3</sup> )	3,711,602	( <sup>3</sup> )	( <sup>3</sup> )
Meadville	2,048	1,300	1,201	3,558,925	2,074,000	1,607,954
Shamokin	1,623	807	762	3,544,095	1,443,915	1,147,450
Carnegie	422	( <sup>3</sup> )	( <sup>3</sup> )	3,090,445	( <sup>3</sup> )	( <sup>3</sup> )
Carbondale	1,503	1,475	1,023	2,523,387	2,315,005	1,146,181
Carlisle	1,334	1,310	1,121	2,495,710	1,985,743	1,708,009
Chambersburg	1,364	843	612	2,450,035	1,085,183	814,856
West Chester	910	849	497	2,145,843	2,121,185	869,424
Connellsville	1,035	( <sup>3</sup> )	( <sup>3</sup> )	1,970,936	( <sup>3</sup> )	( <sup>3</sup> )
Pittston	792	830	357	1,909,462	1,474,928	997,789
Du Bois	1,015	900	817	1,890,168	1,709,360	1,767,090
Dunmore	1,308	1,133	614	1,850,654	1,400,445	1,132,322
Uniontown	335	( <sup>3</sup> )	( <sup>3</sup> )	1,346,865	( <sup>3</sup> )	( <sup>3</sup> )
Plymouth	908	827	756	1,178,006	850,542	532,835
Shenandoah	242	170	107	887,503	594,637	301,646
Mahanoy City	590	238	301	867,576	431,526	401,103
Mount Carmel	600	197	109	785,391	620,396	393,373
Greensburg	310	( <sup>3</sup> )	( <sup>3</sup> )	726,268	( <sup>3</sup> )	( <sup>3</sup> )
Homestead	171	307	164	659,166	712,830	265,654
Wilkesburg	185	184	100	538,217	471,960	246,148
Nanticoke	348	220	140	423,093	358,091	309,900
All other boroughs	18,283			103,287,937		

<sup>1</sup> Includes statistics for Allegheny, annexed in 1907.  
<sup>2</sup> 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.  
<sup>3</sup> Figures not available.  
<sup>4</sup> All other boroughs for which figures can not be shown without disclosing individual operations, embrace Cotatesville, Duquesne, Monessen, North Braddock, Old Forge, South Sharon, and Steelton in 1909.

From 1904 to 1909 the value of products shows an increase for each place for which comparative figures are given except Homestead, and from 1899 to 1904 for all but Pittsburgh, Reading, McKeesport, Scranton, Lebanon, Easton, Beaver Falls, Columbia, Oil City, and Du Bois. The rate of increase, however, was

generally greater from 1904 to 1909. The highest rate from 1904 to 1909, 145.4 per cent, was in Shamokin, due in a large measure to the increase in the production of silk goods and hosiery and knit goods, and the next highest, 126.3, in Chambersburg, on account of a general increase in the important manufacturing industries.

In the discussion of the larger cities—those having over 50,000 inhabitants—some important industries will be mentioned, for which the statistics are not shown separately in Table I, page 44. They are included in the group of "All other industries" for that city, for reasons similar to those which required a like treatment of certain industries in the state figures on pages 4 and 5.

Philadelphia, the largest and most important city in the state, occupies a prominent position among the cities of the country as regards the variety and magnitude of its manufacturing operations. At the census of 1809, it was the only city reported separately and then showed a value of manufactured products of nearly \$10,000,000. At the census of 1879 it ranked second, being surpassed by New York only, and held this rank until 1899, when it dropped to third place, being displaced by Chicago. The total value of products reported for the city in 1909 was \$746,075,659, which represents an increase over 1904 of \$154,687,581, or 26.2 per cent, while the increase for the preceding five-year period was \$71,406,266, or 13.7 per cent. The remarkable growth of manufactures in the newer sections of the country, however, has caused most of the older manufacturing centers to show a decrease in their proportion of the total production for the United States. Accordingly, Philadelphia, while reporting 4.6 per cent of the total value of products in 1899 and 4 per cent in 1904, shows only 3.6 per cent for 1909. The leading industries in the city, measured by value of products, together with the value of the products reported in 1909, were as follows: the woolen and worsted goods industry, \$54,922,000; printing and publishing, \$45,807,000; foundries and machine shops, \$38,685,000; and the manufacture of women's clothing, \$30,133,000. The refining of cane sugar had also a value of product large enough to include it in this group of industries, but the statistics can not be presented separately without disclosing the operations of individual establishments.

Among the cities of the United States, Philadelphia is preeminent in the production of all textiles combined and in each of four prominent branches, and so far outranked all other cities in 1909 that its combined value of such products was more than double that of its nearest competitor.

Of the total values for the United States, Philadelphia reported 12 per cent of the entire output of hosiery and knit goods, 31.8 per cent of the carpets and rugs, 12.6 per cent of the woolen and worsted goods, 3.6 per cent of the cotton goods, 21.7 per cent of the fur-felt hats, and 24.8 per cent of the shoddy. Other

leading industries in which the city holds high rank are the making of men's clothing, petroleum refining, the manufacture of leather (tanned, curried, and finished), and slaughtering and meat packing. The fact that the 8,379 establishments reported for Philadelphia in 1909 represented 211 of the 264 industry classifications used at that census indicates a great diversity in manufactures.

The importance of Philadelphia in manufactures as compared with the state as a whole is indicated by the fact that it turned out 28.4 per cent of the total value of manufactured products and employed 28.7 per cent of the total number of wage earners. Furthermore, the city in 1909 manufactured all of the files and printing ink reported for the state; at least 90 per cent of the output of artificial flowers, carpets and rugs, women's clothing, fancy articles, "not elsewhere specified," paper goods "not elsewhere specified," and shoddy; from 70 to 90 per cent of leather belting and hose, fancy and paper boxes, buttons, men's clothing, gas and electric fixtures and lamps and reflectors, fur-felt hats, millinery and lace goods, patent medicines and compounds and druggists' preparations, soap, and woolen, worsted, and felt goods, and wool hats; from 60 to 70 per cent of the chemicals, clocks and watches, including cases and materials, cordage and twine and jute and linen goods, cotton goods, fertilizers, jewelry, leather goods, printing and publishing, and signs and advertising novelties; and from 50 to 60 per cent of the confectionery, independent dyeing and finishing, optical goods, and paint and varnish.

In addition to the 71 industries presented separately for Philadelphia in Table I, page 50, there are 140 others which, for various reasons, are included in the group of "All other industries." Some of these were among the most important in the city, 34<sup>1</sup> of them having a product valued in 1909 in excess of \$1,000,000, distributed as follows: Twenty-nine, with products valued at \$1,000,000 but less than \$5,000,000; 1, with products valued at \$5,000,000 but less than \$10,000,000; and 4, with products valued at \$10,000,000 and over.

The totals presented for Philadelphia, or for the state as a whole, do not include the statistics for three establishments located in that city and operated by the Federal Government, namely, the Frankford Arsenal, with an average of 1,920 wage earners and products valued at \$4,257,939 in 1909, the United

<sup>1</sup> These industries are:

Agricultural implements.	rivets, not made in steel works or rolling mills.
Babbitt metal and solder.	Locomotives, not made by railroad companies.
Bags, other than paper.	Mineral and soda waters.
Belting and hose, woven and rubber.	Oil, linseed.
Cars and general shop construction and repairs by street-railroad companies.	Oil, not elsewhere specified.
Cars, street-railroad, not including operations of railroad companies.	Oilcloth and linoleum.
Chocolate and cocoa products.	Petroleum, refining.
Coffee and spice, roasting and grinding.	Roofing materials.
Dentists' materials.	Rubber goods, not elsewhere specified.
Food preparations.	Sand and emery paper and cloth.
Furnishing goods, men's.	Saws.
Gas, illuminating and heating.	Shipbuilding, including boat building.
Glass, cutting, staining, and ornamenting.	Signs and advertising novelties.
Glue.	Sporting and athletic goods.
Grease and tallow.	Sugar refining, not including beet sugar.
Haircloth.	Tin plate and template.
Iron and steel, bolts, nuts, washers, and	Upholstering materials.
	Waste.

States navy yard, with 1,564 wage earners and products valued at \$2,402,850, and the Philadelphia depot of the Quartermaster's Department, U. S. Army, with 168 wage earners and products valued at \$1,349,278. The three establishments combined reported 3,652 wage-earners and \$8,010,067 as the value of products.

Pittsburgh is the second city in the state in population and in value of manufactured products. In population it ranked eleventh in 1900 and eighth in 1910 among the cities of the United States, but in value of manufactured products was fourth in 1899 and seventh in 1909. This loss in relative standing is more apparent than real, for in the Pittsburgh district there has been for years a steady drift of important enterprises from the city proper to the surrounding boroughs and townships, some of which showed extraordinary gains during the decade 1899-1909. In value of products the manufactures of this city decreased from \$218,198,065 in 1899 to \$211,259,153 in 1904, a loss of 3.2 per cent, but increased to \$243,453,693 in 1909, making a gain for the decade of \$25,255,628, or 11.6 per cent. The leading industries in Pittsburgh are those which use ore and metal as the principal materials, such as blast furnaces, steel works and rolling mills, and foundries and machine shops; the combined output of these three industries in 1909 formed more than 50 per cent of the total value of all manufactured products for the city. Other important industries in the city are slaughtering and meat packing, with a product of \$13,107,000 in value; printing and publishing, with a product of \$9,071,000 in value; cars and general shop construction and repairs by steam-railroad companies, with a product of \$8,556,000 in value; bread and other bakery products, with a product of \$8,054,000 in value; canning and preserving, with a product of \$6,202,000 in value; the manufacture of malt liquors, with a product of \$5,420,000 in value; and tobacco manufactures, with a product of \$3,615,000 in value. In addition to the 41 industries presented separately for Pittsburgh in Table I, page 53, there were 9 others included in the group of "All other industries" each of which show products valued at more than \$1,000,000, namely, coke; cork cutting; iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills; iron and steel pipe, wrought; distilled liquors; locomotives; petroleum refining; smelting and refining, not from the ore; and steel springs, car and carriage.

Reading, with \$51,134,967 in 1909, ranked third in value of products among the cities of the state. There was an increase in the value of products of the city in 1909 over 1904 of \$20,644,025, or 67.7 per cent. Among the industries for which separate statistics for the city can be presented for Reading in Table I, page 55, steel works and rolling mills; with products valued at \$8,190,000 and giving employment to 3,011 wage earners, constitutes the leading industry in 1909, and steam-railroad repair shops, with products

valued at \$5,661,000 and employing 2,628 wage earners, came next in importance from the standpoint of value of products. The hosiery and knit-goods industry was third in value of products, with \$4,551,000, followed by foundries and machine shops, with \$3,889,000. Other industries showing a value of products exceeding \$1,000,000 were: Boots and shoes; confectionery; fur-felt hats; iron and steel pipe, wrought; malt liquors; slaughtering and meat packing; tobacco manufactures; and woolen, worsted, and felt goods, and wool hats. This city has long been one of the important wool-felt hat manufacturing centers in the United States. In 1909 Reading and its suburb, Mohnton, returned nearly 94.6 per cent of the total value reported for wool-felt hats in the state and 30.9 per cent of the total value for the United States.

Johnstown, the fourth city in the state in value of its manufactures, showed an increase in 1909 over 1904 of \$19,213,969, or 66.5 per cent. The manufacturing activities are confined largely to a single group of industries, as in 1909 the establishments engaged in metal working, which include, among others, blast furnaces, steel works and rolling mills, and foundries and machine shops, returned about 85 per cent of the total number of wage earners and almost 90 per cent of the total value of products for all manufacturing industries in the city. Detailed statistics, however, are not shown for these industries in Table I, page 50, because a large proportion of the total output was controlled by two corporations. Other industries are coke; flour-mill and gristmill products; malt liquors; pottery, terra-cotta, and fire-clay products; and slaughtering and meat packing.

McKeesport, the fifth city of the state in 1909 in the value of manufactures, reported in 1899 manufactured products valued at \$36,058,447. In 1904 the total reported was only \$23,054,412, a decrease of \$13,004,035, or 36.1 per cent, for the five-year period, but in 1909 the total had advanced to \$42,494,567, making a net gain for the decade of \$6,436,120, or 17.8 per cent. Practically the entire manufacturing activity of the city is in the iron and steel manufactures, five steel works and rolling mills and one blast furnace being located in the city in 1909. The most important product consists of pipe and tubes, in the output of which this city outranks all others in the United States. Other industries in the city are comparatively unimportant.

New Castle was in 1909 sixth in importance among the cities and boroughs of the state as measured by value of manufactured products. The city shows an increase of \$9,114,288, or 31.5 per cent, from 1904 to 1909, and \$8,907,436, or 44.5 per cent, from 1899 to 1904. The industrial importance of New Castle is dependent upon the metal-working industries, the most important of which were steel works and rolling mills, blast furnaces, tin-plate and terneplate mills, and also on the steam-railroad car construction shops.

These four classes of establishments reported more than 90 per cent of the total value of products and gave employment to over 70 per cent of the average number of wage earners shown for the city in 1909.

South Bethlehem was the seventh city of the state in manufactures in 1909, having advanced from twelfth place in 1904 and fifteenth place in 1899. This city has shown decided gains in recent years in the value of products, the increase being \$5,311,357, or 53.3 per cent, from 1899 to 1904 and \$11,141,692, or 72.9 per cent, from 1904 to 1909. The one steel works and rolling mill represents by far the leading industry in the city, although the two blast furnaces and one zinc smelter contribute considerably to its manufacturing activity. The six establishments engaged in the manufacture of tobacco products, the four knitting mills, and one foundry and machine shop also reported a large output of manufactured products in 1909. The exact value of these different classes of products can not be presented separately without disclosing the operations of individual establishments.

Scranton, although the third city of the state in population in 1910, held only eighth place in 1909 when ranked by value of products. This discrepancy, in a great measure, may be accounted for by the fact that a considerable portion of the population of the city were employed in the coal mines in the city and its immediate vicinity, the statistics for which are not embraced with those for manufactures. The value of products decreased from \$24,741,837 in 1899 to \$20,453,285 in 1904, but increased to \$26,384,755 in 1909, making a net gain for the decade of \$1,642,918, or 6.6 per cent. The rank of this city in manufactures was fifth in 1899 and seventh in 1904. The manufacture of silk goods was the leading industry. With 15 mills in operation in 1909, this industry turned out products valued at \$6,631,000, which represented 25.1 per cent of the total for all industries in the city and 10.7 per cent of the total for the silk industry in the state. Other important industries are steam-railroad repair shops, foundry and machine-shop products, malt liquors, hosiery and knit goods, printing and publishing, and slaughtering and meat packing.

Allentown ranked as the ninth city in the state in 1909 and 1904 and tenth in 1899 in the value of its manufactured products, and showed an increase of \$9,422,284, or 55.9 per cent, during the period from 1904 to 1909, and \$1,850,606, or 12.3 per cent, for the preceding five-year period. After Philadelphia, Allentown is the most important city of the state in the manufacture of textiles. The textile industries, including the dyeing and finishing of textiles, are the most important in the city, having a combined output valued at \$9,838,000, or 37.5 per cent of the total for all industries of the city in 1909. The manufacture of silk and silk goods is the leading branch of the textile industry in this city and increased

in value of product from \$3,468,000 in 1899 to \$7,456,000 in 1909. The metal-working industries reported products valued at nearly \$7,000,000; the boot and shoe industry, products valued at \$1,302,000; and tobacco manufactures, products valued at \$1,446,000. The manufacture of automobiles, bread and other bakery products, furniture and refrigerators, and malt liquors, together with slaughtering and meat packing, are also important.

Erie shows an increase in value of products from 1904 to 1909 of \$5,586,472, or 30 per cent, and from 1899 to 1904 of \$2,146,275, or 13 per cent. The leading industry in the city is foundry and machine-shop products, which were valued at \$8,715,000 in 1909 and formed 36 per cent of the total value of manufactures in the city. Other important industries are: Flour and grist mills; iron and steel, blast furnaces; lumber and timber products; the brewing of malt liquors; the paper and wood-pulp industry; printing and publishing; the manufacture of rubber goods; slaughtering and meat packing; the manufacture of stoves and furnaces; and of washing machines and clothes wringers.

Harrisburg shows an increase in value of products of \$6,154,613, or 37.1 per cent, from 1904 to 1909, which is nearly four times as great as that shown from 1899 to 1904. The steel works and rolling mills form the leading industry in the city. There are a number of other important industries, but the statistics for the most of them can not be presented separately without disclosing the operations of individual establishments. These industries are: Boots and shoes, bread and other bakery products, steam-railroad repair shops, foundry and machine-shop products, blast furnaces, printing and publishing, silk and silk goods, slaughtering and meat packing, tin plate and tennplate, tobacco manufactures, typewriters and supplies, and women's clothing.

In Chester the metal-working industries are the most important, as combined they reported more than one-third of the \$19,373,314 shown as the total value of products for the city. Next in importance are the textile industries, particularly cotton, and woolen and worsted goods, the combined output for the two classes of goods being more than one-fourth of the total value of all manufactured products reported for the city. The slaughtering and meat-packing; pottery, terracotta, and fire-clay; and leather (tanned, curried, and finished) industries rank in the order named.

York, the thirteenth city in the state in value of manufactured products, owes its industrial prominence to a number of industries, the most important being foundries and machine shops. In 1909 they employed 1,967 wage earners, and turned out products valued at \$3,985,000, representing 18.7 per cent and 21.4 per cent of the respective totals for the city. Five other industries in the city reported products valued at more than \$1,000,000, as follows: Agricultural implements, carriages and wagons, tex-

7 and knit goods, and silk and silk goods), manufactures, and wall paper.

with products valued at \$16,762,738 in 1909, an increase, compared with 1904, of 16.8 per cent. The leading industry is road repair shops, but the statistics can not be given separately for Altoona in Table I, page 48, closing the operations of individual establishments.

No other industry in the city is of special importance with the exception of silk and silk goods, represented by one establishment.

dropped in rank among the cities and towns of the state as measured by value of products manufactured in 1899 to thirteenth in 1904 and to fifteenth in 1909. In the manufacture of umbrellas and trunks it is the leading industry in the city, employing an average of 1,012 wage earners and turning out products valued at \$2,840,000, Lancaster ranks second among the cities of the United States. The leading industry in importance is tobacco manufactures, employing 1,453 wage earners and reported products valued at \$1,970,000 in 1909. Foundries and machine shops is another industry which reported products valued at more than \$1,000,000. In 1909, with manufactured products valued at \$1,057 in 1909, shows an increase over 1904 of 23 per cent. The largest industry in the city whose figures are shown separately for Wilkes-Barre in Table I, page 57, is the manufacture of silk and silk goods. The manufacture of carriages and wagon goods, malt liquors, locomotives, and other important.

transport the lumber industry was the most important in the city for many years. With the depletion of the forests in northern Pennsylvania, the production of lumber decreased; and the importance of this industry in the manufacturing activity has fallen off, until in 1909 the value of products manufactured mounted to less than \$2,000,000. The leading industry in 1909, followed by foundry and machine shops, lumber and timber products, the manufacture of rubber boots and shoes, the furniture and cabinet industry, and printing and publishing. The printing industry, which is of importance in the city, has decreased considerably during the five-year period from 1904 to 1909, but in the latter year its products in excess of three-quarters of a million

valued at \$46 in 46 cities and boroughs in the state, each had more than 10,000 inhabitants but only 100,000, owe their importance in manufacturing, to a single industry. The iron and steel industry, including foundries and machine shops, predominates in the following places: Pottstown, Lebanon, McKees Rocks, Pottsville, Beaver Falls, Erie, Braddock, Columbia, Oil City, Bradford, Chambersburg, Coatesville, Duquesne,

Monessen, South Sharon, and Steelton; silk and silk goods, in Easton, Hazleton, Sunbury, Bethlehem, Shamokin, and Old Forge; steam-railroad repair shops, in Meadville, Carbondale, Connellsville, Dubois, and Dunmore; malt liquors, in Pittston, Uniontown, Shenandoah, and Nanticoke; hosiery and knit goods, in Norristown and Plymouth; petroleum refining, in Warren; steam-railroad cars, in Butler; lead smelting and refining, in Carnegie; glass, in Washington; boots and shoes, in Carlisle; dairymen's, poulterers', and apiarists' supplies, in West Chester; shirts, in Mahanoy City; slaughtering and meat packing, in Mount Carmel; printing and publishing, in Greensburg; planing-mill products, in Wilkesburg; and brick and tile, in North Braddock.

**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. Of the total number of establishments in all industries combined, 21.3 per cent were under corporate ownership in 1909, as against 78.7 per cent under all other forms. The corresponding figures for 1904 were 19.3 per cent and 80.7 per cent, respectively. In respect to value of products the corresponding proportions are reversed, but the differences are not so pronounced. In 1909 the establishments operated by corporations reported 78.2 per cent of the total value, as against 21.8 per cent for those under all other forms of ownership, while in 1904 the corresponding figures were 71.7 per cent and 28.3 per cent, respectively. The greatest relative decreases are for establishments operated by firms, which represented only 19.6 per cent of the total number of establishments and 11.5 per cent of the total value of products in 1909, as compared with 21.9 per cent and 16.5 per cent for the respective totals in 1904.

The form of ownership prevailing in the different industries presented separately in the table varied greatly. In number of establishments, those owned by individuals ranged from 14.1 per cent in silk and silk goods to 91.3 per cent in bakery products, while those owned by corporations ranged from two-tenths of 1 per cent in the latter industry to 65.5 per cent in the former. The variation in the proportions owned by firms in the different industries was considerable, but not so pronounced as in the other two principal forms.

MANUFACTURES—PENNSYLVANIA.

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.
<b>ALL INDUSTRIES:</b>					<b>Hosiery and knit goods, 1909.</b>				
1909	27,563	877,543	\$2,626,742,034	\$1,044,182,046	Individual	185	38,206	\$49,057,506	\$22,430,555
1904	23,495	763,282	1,955,551,332	812,608,925	Firm	130	9,333	12,160,619	5,050,341
Individual					Corporation	149	7,714	10,952,157	4,888,038
1909	16,051	111,437	267,060,904	121,134,145	Per cent of total	100.0	100.0	100.0	100.0
1904	13,615	106,547	226,900,537	106,702,943	Individual	30.9	24.5	24.5	22.5
Firm					Firm	28.0	20.2	22.1	21.7
1909	5,408	122,625	301,405,058	131,028,704	Corporation	32.1	55.3	53.5	55.8
1904	5,144	145,445	322,330,429	143,632,042	<b>Leather, tanned, curried, and finished, 1909.</b>				
Corporation					Individual	163	14,008	\$77,926,321	\$18,813,197
1909	5,880	642,866	2,053,458,533	789,991,257	Firm	39	779	2,882,720	820,670
1904	4,540	510,711	1,403,081,857	561,519,993	Firm	36	2,272	13,092,835	3,080,233
Other					Corporation	88	10,957	61,050,766	14,912,294
1909	224	615	4,817,534	2,027,940	Per cent of total	100.0	100.0	100.0	100.0
1904	196	579	3,238,509	753,647	Individual	23.9	5.6	3.7	4.4
Per cent of total:					Firm	22.1	16.2	18.0	16.4
1909	100.0	100.0	100.0	100.0	Corporation	54.0	78.2	78.3	79.3
1904	100.0	100.0	100.0	100.0	<b>Liquors, malt, 1909</b>				
Individual					Individual	237	7,234	\$47,712,570	\$35,102,473
1909	58.2	12.7	10.2	11.6	Firm	52	813	4,630,838	3,132,904
1904	57.9	14.0	11.6	13.1	Firm	31	809	4,922,083	3,661,337
Firm					Corporation	154	5,612	38,150,640	28,408,232
1909	19.6	14.0	11.5	12.5	Per cent of total	100.0	100.0	100.0	100.0
1904	21.9	19.1	16.5	17.7	Individual	21.9	11.2	0.7	8.9
Corporation					Firm	13.1	11.2	10.3	10.1
1909	21.3	73.3	78.2	75.7	Corporation	65.0	77.6	80.0	80.9
1904	19.3	66.9	71.7	69.1	<b>Lumber and timber products, 1909</b>				
Other					Individual	2,687	26,873	\$57,453,583	\$30,139,347
1909	0.8	0.1	0.2	0.2	Individual	1,640	9,445	17,547,245	9,849,170
1904	0.8	0.1	0.2	0.1	Firm	757	6,020	13,718,916	7,275,119
<b>Bread and other bakery products, 1909</b>					Corporation	270	10,808	26,187,452	13,015,052
Individual	3,185	12,221	\$45,850,070	\$18,520,454	Per cent of total	100.0	100.0	100.0	100.0
Individual	2,907	6,991	25,107,663	10,124,331	Individual	61.5	35.1	30.5	32.7
Firm	206	906	3,293,151	1,325,184	Firm	28.4	24.6	23.9	24.1
Corporation	72	4,324	17,449,256	7,070,930	Corporation	10.1	40.2	45.6	43.2
Per cent of total	100.0	100.0	100.0	100.0	<b>Printing and publishing, 1909</b>				
Individual	91.3	57.2	54.8	54.7	Individual	2,461	24,696	\$70,584,179	\$47,831,430
Firm	6.5	7.4	7.2	7.2	Individual	1,445	6,029	14,139,129	10,190,621
Corporation	2.2	35.4	38.1	38.2	Firm	435	4,101	8,453,207	6,064,175
<b>Clothing, men's, including shirts, 1909</b>					Corporation	471	14,257	45,791,442	29,879,644
Individual	606	23,623	\$39,681,760	\$19,818,628	Other	110	309	2,200,311	1,687,990
Individual	407	7,545	9,244,332	5,511,082	Per cent of total	100.0	100.0	100.0	100.0
Firm	261	13,650	26,185,628	12,367,622	Individual	58.7	24.4	20.0	21.3
Corporation	28	2,428	4,251,800	1,939,022	Firm	17.7	16.0	12.0	12.7
Per cent of total	100.0	100.0	100.0	100.0	Corporation	19.1	57.7	64.9	62.5
Individual	58.5	31.9	23.3	27.8	Other	4.5	1.3	3.1	3.5
Firm	37.5	57.8	66.0	62.4	<b>Silk and silk goods, including throwsters, 1909</b>				
Corporation	4.0	10.3	10.7	8.8	Individual	226	36,469	\$62,061,302	\$26,895,731
<b>Clothing, women's, 1909</b>					Individual	32	3,097	5,708,036	2,040,572
Individual	401	15,701	\$32,837,424	\$14,681,191	Firm	46	7,231	12,370,475	5,729,753
Individual	175	5,309	10,300,487	4,518,025	Corporation	148	26,141	43,924,791	18,216,406
Firm	201	8,496	18,622,630	8,491,592	Per cent of total	100.0	100.0	100.0	100.0
Corporation	25	1,896	3,914,301	1,671,574	Individual	14.1	8.5	9.3	11.0
Per cent of total	100.0	100.0	100.0	100.0	Firm	20.4	10.8	10.9	21.3
Individual	43.6	33.8	31.4	30.8	Corporation	65.5	71.7	79.8	67.7
Firm	50.1	54.1	56.7	57.8	<b>Slaughtering and meat packing, 1909</b>				
Corporation	6.2	12.1	11.9	11.4	Individual	180	3,050	\$51,850,936	\$7,005,889
<b>Cotton goods, including cotton small wares, 1909</b>					Individual	92	693	9,496,946	1,079,096
Individual	175	16,293	\$33,917,033	\$15,180,008	Firm	44	388	6,985,578	979,826
Individual	48	2,424	5,355,654	2,609,366	Corporation	44	1,969	35,458,412	4,946,967
Firm	43	3,540	6,062,563	2,672,054	Per cent of total	100.0	100.0	100.0	100.0
Corporation	84	10,329	21,958,816	9,878,588	Individual	51.1	22.7	18.1	15.4
Per cent of total	100.0	100.0	100.0	100.0	Firm	24.4	12.7	13.5	14.0
Individual	27.4	14.9	15.8	17.2	Corporation	24.4	64.6	68.4	70.6
Firm	24.6	21.7	19.5	17.6	<b>Tobacco manufactures, 1909</b>				
Corporation	48.0	63.4	64.7	65.2	Individual	2,432	33,188	\$50,161,387	\$29,447,904
<b>Flour-mill and gristmill products, 1909</b>					Individual	2,061	10,010	14,018,961	8,404,675
Individual	1,450	2,432	\$44,782,558	\$6,612,430	Firm	253	10,332	16,172,156	6,116,610
Individual	1,034	1,254	19,789,007	3,156,422	Corporation	88	12,846	19,970,270	11,925,679
Firm	358	686	12,723,446	1,984,217	Per cent of total	100.0	100.0	100.0	100.0
Corporation	58	492	12,270,105	1,471,791	Individual	86.0	30.2	27.9	28.5
Per cent of total	100.0	100.0	100.0	100.0	Firm	10.4	31.1	32.2	31.0
Individual	71.3	51.6	44.2	47.7	Corporation	3.6	38.7	39.8	40.5
Firm	24.7	28.2	28.4	30.0	<b>Woolen, worsted, and felt goods, and wool hats, 1909</b>				
Corporation	4.0	20.2	27.4	22.3	Individual	217	27,400	\$77,446,000	\$22,812,911
<b>Foundry and machine-shop products, 1909</b>					Individual	59	4,340	12,195,424	4,576,306
Individual	1,695	86,821	\$210,746,257	\$109,735,517	Firm	73	7,942	22,897,665	7,006,445
Individual	646	5,923	11,096,806	6,629,411	Corporation	85	15,127	42,383,907	12,230,160
Firm	292	4,083	8,578,983	5,042,513	Per cent of total	100.0	100.0	100.0	100.0
Corporation	757	76,815	190,500,468	98,063,593	Individual	27.2	15.8	15.7	15.7
Per cent of total	100.0	100.0	100.0	100.0	Firm	33.6	29.0	29.5	30.7
Individual	38.1	6.8	6.5	6.0	Corporation	39.2	55.2	54.7	53.6
Firm	17.2	4.7	4.1	4.0	<b>Includes the group "Other," to avoid disclosure of individual operations.</b>				
Corporation	44.7	88.5	90.4	89.4					

<sup>1</sup> Includes the group "Other," to avoid disclosure of individual operations.

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 establishments for all industries combined and for 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.

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.
<b>ALL INDUSTRIES:</b>									
1909.....	27,563	877,543	\$2,626,742,034	\$1,044,182,046	<b>Cotton goods, including cotton small wares, 1909—Continued.</b>				
1904.....	23,495	703,282	1,955,551,332	812,608,625	Per cent of total.....	100.0	\$100.0	\$100.0	\$100.0
Less than \$5,000:					Less than \$5,000.....	2.9	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
1909.....	9,493	12,392	22,574,998	13,719,359	\$5,000 and less than \$20,000.....	12.6	1.1	0.8	1.0
1904.....	7,567	11,307	18,788,800	11,558,864	\$20,000 and less than \$100,000.....	36.6	11.8	11.0	10.3
\$5,000 and less than \$20,000:					\$100,000 and less than \$1,000,000.....	44.6	66.3	64.6	63.0
1909.....	8,764	46,720	90,897,095	48,251,171	\$1,000,000 and over.....	3.4	20.7	23.6	25.6
1904.....	46,076	80,441,200	43,384,120		Average per establishment.....		93	\$193,812	\$86,629
\$20,000 and less than \$100,000:					<b>Flour-mill and gristmill products, 1909.....</b>	1,450	2,432	\$44,782,558	\$6,612,430
1909.....	5,802	131,163	258,098,545	128,772,576	Less than \$5,000.....	234	94	731,508	134,652
1904.....	5,184	127,130	231,119,163	119,478,521	\$5,000 and less than \$20,000.....	676	589	7,657,933	1,358,650
\$100,000 and less than \$1,000,000:					\$20,000 and less than \$100,000.....	474	1,028	18,381,215	2,899,887
1909.....	3,104	370,082	923,159,484	412,461,025	\$100,000 and less than \$1,000,000.....	61	469	10,303,209	1,412,363
1904.....	2,684	325,475	723,662,644	326,666,667	\$1,000,000 and over.....	5	252	7,708,093	806,869
\$1,000,000 and over:					Per cent of total.....	100.0	100.0	100.0	100.0
1909.....	4,317,180	1,331,111,312	440,977,015	311,520,463	Less than \$5,000.....	16.1	3.9	1.0	2.0
1904.....	284	253,294	901,539,525	311,520,463	\$5,000 and less than \$20,000.....	46.6	24.2	17.1	20.5
Per cent of total:					\$20,000 and less than \$100,000.....	32.7	42.3	41.0	43.9
1909.....	100.0	100.0	100.0	100.0	\$100,000 and less than \$1,000,000.....	4.2	19.3	23.0	21.4
1904.....	100.0	100.0	100.0	100.0	\$1,000,000 and over.....	0.3	10.4	17.2	12.2
Less than \$5,000:					Average per establishment.....		2	\$30,885	\$4,500
1909.....	34.4	1.4	0.9	1.3	<b>Foundry and machine-shop products, 1909.....</b>	1,695	86,821	\$210,746,257	\$109,735,517
1904.....	32.2	1.5	1.0	1.4	Less than \$5,000.....	397	546	988,408	681,614
\$5,000 and less than \$20,000:					\$5,000 and less than \$20,000.....	450	2,618	4,782,893	3,013,043
1909.....	31.8	5.3	3.5	4.6	\$20,000 and less than \$100,000.....	465	11,799	22,363,155	12,593,764
1904.....	33.5	6.0	4.1	5.3	\$100,000 and less than \$1,000,000.....	344	46,441	107,648,955	56,358,299
\$20,000 and less than \$100,000:					\$1,000,000 and over.....	30	25,417	74,962,846	37,088,797
1909.....	21.0	14.9	9.9	12.3	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	22.1	16.7	11.8	14.7	Less than \$5,000.....	23.4	0.6	6.5	0.8
\$100,000 and less than \$1,000,000:					\$5,000 and less than \$20,000.....	27.1	3.0	2.3	2.7
1909.....	11.3	42.2	35.1	30.5	\$20,000 and less than \$100,000.....	27.4	13.6	10.6	11.5
1904.....	11.0	42.6	37.0	46.2	\$100,000 and less than \$1,000,000.....	20.3	53.5	61.1	61.4
\$1,000,000 and over:					\$1,000,000 and over.....	1.8	29.3	35.0	33.8
1909.....	1.5	36.1	50.7	42.2	Average per establishment.....		51	\$124,334	\$64,741
1904.....	1.2	33.2	46.1	38.3	<b>Hosiery and knit goods, 1909.....</b>	464	38,206	\$49,057,508	\$22,430,555
Average per establishment:					Less than \$5,000.....	35	102	82,031	42,803
1909.....		32	\$95,300	\$37,883	\$5,000 and less than \$20,000.....	84	1,175	1,030,114	539,428
1904.....		32	83,233	34,586	\$20,000 and less than \$100,000.....	204	8,481	9,991,390	4,640,244
<b>Bread and other bakery products, 1909.....</b>	3,185	12,221	\$45,850,070	\$18,520,454	\$100,000 and less than \$1,000,000.....	141	27,948	38,553,871	17,216,990
Less than \$5,000.....	1,306	970	3,897,535	1,620,376	Per cent of total.....	100.0	100.0	100.0	100.0
\$5,000 and less than \$20,000.....	1,576	4,137	14,569,504	6,003,773	Less than \$5,000.....	7.5	0.3	0.2	0.2
\$20,000 and less than \$100,000.....	258	2,660	9,127,760	3,543,466	\$5,000 and less than \$20,000.....	18.1	3.1	2.1	2.4
\$100,000 and less than \$1,000,000.....	40	2,576	9,307,437	3,443,676	\$20,000 and less than \$100,000.....	44.0	23.5	20.1	20.7
\$1,000,000 and over.....	5	1,878	8,857,885	3,900,173	\$100,000 and less than \$1,000,000.....	30.4	73.2	77.6	76.7
Per cent of total.....	100.0	100.0	100.0	100.0	Average per establishment.....		82	\$107,020	\$48,361
Less than \$5,000.....	41.0	7.9	8.5	8.7	<b>Leather, tanned, curried, and finished, 1909.....</b>	183	14,098	\$77,926,321	\$18,813,197
\$5,000 and less than \$20,000.....	40.5	33.9	31.8	32.4	Less than \$5,000.....	10	3	25,205	7,357
\$20,000 and less than \$100,000.....	8.1	21.8	19.9	19.1	\$5,000 and less than \$20,000.....	18	72	190,089	83,996
\$100,000 and less than \$1,000,000.....	1.3	21.1	20.5	18.6	\$20,000 and less than \$100,000.....	21	190	1,005,393	273,414
\$1,000,000 and over.....	0.2	15.4	19.2	21.1	\$100,000 and less than \$1,000,000.....	91	6,505	37,931,745	8,657,290
Average per establishment.....		0.4	\$14,366	\$5,815	\$1,000,000 and over.....	23	7,232	38,767,889	9,791,140
<b>Clothing, men's, including shirts, 1909.....</b>	696	23,623	\$39,681,760	\$19,818,026	Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	155	732	401,328	354,214	Less than \$5,000.....	6.1	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
\$5,000 and less than \$20,000.....	244	4,486	2,633,941	2,134,782	\$5,000 and less than \$20,000.....	11.0	0.5	0.3	0.4
\$20,000 and less than \$100,000.....	219	8,112	9,628,375	5,403,446	\$20,000 and less than \$100,000.....	12.9	1.4	1.3	1.5
\$100,000 and less than \$1,000,000.....	75	8,799	20,783,386	8,926,569	\$100,000 and less than \$1,000,000.....	55.8	46.4	48.7	46.0
\$1,000,000 and over.....	3	1,504	6,234,730	2,069,616	\$1,000,000 and over.....	14.1	51.0	49.7	52.0
Per cent of total.....	100.0	100.0	100.0	100.0	Average per establishment.....		86	\$478,076	\$115,418
Less than \$5,000.....	22.3	3.1	1.0	1.8	<b>Liquors, malt, 1909.....</b>	237	7,234	\$47,712,570	\$35,102,473
\$5,000 and less than \$20,000.....	35.1	19.0	6.6	10.8	\$5,000 and less than \$20,000.....	15	61	175,422	105,462
\$20,000 and less than \$100,000.....	31.5	34.3	24.3	27.3	\$20,000 and less than \$100,000.....	68	835	3,711,350	2,488,432
\$100,000 and less than \$1,000,000.....	10.8	37.2	52.4	45.0	\$100,000 and less than \$1,000,000.....	146	5,030	33,119,290	24,476,615
\$1,000,000 and over.....	0.4	6.4	15.7	15.1	\$1,000,000 and over.....	8	1,308	10,706,469	8,031,964
Average per establishment.....		34	\$57,014	\$28,475	Per cent of total.....	100.0	100.0	100.0	100.0
<b>Clothing, women's, 1909.....</b>	401	15,701	\$32,837,424	\$14,681,191	Less than \$5,000.....	6.3	0.8	0.4	0.3
Less than \$5,000.....	39	108	102,155	66,343	\$5,000 and less than \$20,000.....	28.7	11.5	7.8	7.1
\$5,000 and less than \$20,000.....	102	1,067	1,106,493	715,037	\$100,000 and less than \$1,000,000.....	61.6	69.5	69.4	69.7
\$20,000 and less than \$100,000.....	161	4,492	8,130,503	3,802,253	\$1,000,000 and over.....	3.4	18.1	22.4	22.9
\$100,000 and less than \$1,000,000.....	99	10,064	23,468,273	10,097,558	Average per establishment.....		31	\$201,319	\$148,112
Per cent of total.....	100.0	100.0	100.0	100.0	<b>Lumber and timber products, 1909.....</b>	2,667	26,873	\$57,453,583	\$30,139,347
Less than \$5,000.....	9.7	0.7	0.3	0.5	Less than \$5,000.....	1,281	2,427	2,961,331	1,933,415
\$5,000 and less than \$20,000.....	25.4	6.8	3.4	4.9	\$5,000 and less than \$20,000.....	850	5,288	8,580,334	5,153,976
\$20,000 and less than \$100,000.....	40.1	28.4	24.8	25.9	\$20,000 and less than \$100,000.....	438	8,367	18,480,505	9,116,893
\$100,000 and less than \$1,000,000.....	24.7	64.1	71.6	68.8	\$100,000 and less than \$1,000,000.....	93	8,491	21,876,012	10,541,809
Average per establishment.....		39	\$81,889	\$36,611	\$1,000,000 and over.....	5	2,299	5,555,401	3,343,254
<b>Cotton goods, including cotton small wares, 1909.....</b>	175	16,293	\$33,917,033	\$15,160,098					
Less than \$5,000.....	5	8	14,434	6,891					
\$5,000 and less than \$20,000.....	22	183	264,388	147,059					
\$20,000 and less than \$100,000.....	64	1,025	3,732,505	1,567,490					
\$100,000 and less than \$1,000,000.....	78	10,700	21,001,140	9,550,679					
\$1,000,000 and over.....	6	3,378	8,004,557	3,887,589					

<sup>1</sup> Includes the group "\$1,000,000 and over."

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

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.
<b>Lumber and timber products, 1909—Continued.</b>					<b>Slaughtering and meat packing, 1909—Continued.</b>				
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.....	48.0	9.0	5.2	6.6	Less than \$5,000.....	5.6	0.3	0.1	0.2
\$5,000 and less than \$20,000.....	31.9	19.7	14.9	17.1	\$5,000 and less than \$20,000.....	18.7	1.7	0.7	1.1
\$20,000 and less than \$100,000.....	16.4	31.1	32.2	30.2	\$20,000 and less than \$100,000.....	33.3	7.9	5.8	6.5
\$100,000 and less than \$1,000,000.....	3.5	31.6	38.1	35.0	\$100,000 and less than \$1,000,000.....	37.8	39.0	40.4	44.9
\$1,000,000 and over.....	0.2	8.6	9.7	11.1	\$1,000,000 and over.....	6.7	51.1	53.0	47.4
Average per establishment.....	10	10	\$21,542	\$11,301	Average per establishment.....	17	17	\$288,001	\$38,922
<b>Printing and publishing, 1909</b>					<b>Tobacco manufactures, 1909</b>				
Less than \$5,000.....	2,461	24,696	\$70,884,179	\$47,831,430	Less than \$5,000.....	2,432	33,188	\$50,161,387	\$29,447,964
\$5,000 and less than \$20,000.....	1,171	1,466	2,804,836	2,192,369	\$5,000 and less than \$20,000.....	1,650	1,511	2,846,418	1,827,835
\$20,000 and less than \$100,000.....	829	4,286	8,140,667	6,128,908	\$20,000 and less than \$100,000.....	471	3,753	4,620,579	2,935,571
\$100,000 and less than \$1,000,000.....	353	6,806	14,394,899	10,438,229	\$100,000 and less than \$1,000,000.....	212	7,122	9,081,005	5,260,243
\$1,000,000 and over.....	101	9,975	28,944,970	19,080,054	\$1,000,000 and less than \$1,000,000.....	96	18,930	28,679,959	16,277,457
Per cent of total.....	100.0	100.0	100.0	100.0	\$1,000,000 and over.....	3	1,872	4,923,526	3,146,858
Less than \$5,000.....	47.6	5.9	4.1	4.6	Per cent of total.....	100.0	100.0	100.0	100.0
\$5,000 and less than \$20,000.....	33.7	17.4	11.5	12.8	Less than \$5,000.....	67.8	4.6	5.7	6.2
\$20,000 and less than \$100,000.....	14.3	27.6	20.4	21.8	\$5,000 and less than \$20,000.....	19.4	11.3	9.2	10.0
\$100,000 and less than \$1,000,000.....	4.1	40.4	41.0	39.9	\$20,000 and less than \$100,000.....	8.7	21.5	18.1	17.9
\$1,000,000 and over.....	0.3	8.8	23.0	20.9	\$100,000 and less than \$1,000,000.....	3.9	57.0	57.2	55.3
Average per establishment.....	10	10	\$28,681	\$19,436	\$1,000,000 and over.....	0.1	5.6	9.8	10.7
<b>Silk and silk goods, including throwsters, 1909</b>					<b>Woolen, worsted, and felt goods, and wool hats, 1909</b>				
Less than \$5,000.....	226	36,469	\$62,061,302	\$28,895,731	Less than \$5,000.....	217	27,409	\$77,446,996	\$22,812,911
\$5,000 and less than \$20,000.....	9	96	22,456	1,560	\$5,000 and less than \$20,000.....	14	19	26,004	11,954
\$20,000 and less than \$100,000.....	23	378	271,109	174,328	\$20,000 and less than \$100,000.....	16	188	187,268	121,387
\$100,000 and less than \$1,000,000.....	84	6,941	4,518,202	3,049,315	\$100,000 and less than \$1,000,000.....	100	2,002	3,323,855	1,408,391
\$1,000,000 and over.....	07	18,250	33,362,541	15,191,962	\$1,000,000 and less than \$1,000,000.....	69	13,172	36,011,874	11,807,947
Per cent of total.....	100.0	100.0	100.0	100.0	\$1,000,000 and over.....	18	11,938	36,007,395	9,343,232
Less than \$5,000.....	4.0	0.3	( <sup>1</sup> )	( <sup>1</sup> )	Per cent of total.....	100.0	100.0	100.0	100.0
\$5,000 and less than \$20,000.....	10.2	1.0	0.4	0.6	Less than \$5,000.....	6.5	0.1	( <sup>1</sup> )	0.1
\$20,000 and less than \$100,000.....	37.2	19.0	7.3	11.3	\$5,000 and less than \$20,000.....	7.4	0.7	0.2	0.5
\$100,000 and less than \$1,000,000.....	42.9	50.0	53.8	56.5	\$20,000 and less than \$100,000.....	27.6	7.6	4.3	6.4
\$1,000,000 and over.....	5.8	20.6	38.5	31.5	\$100,000 and less than \$1,000,000.....	50.2	48.1	47.7	52.0
Average per establishment.....	161	161	\$274,608	\$119,008	\$1,000,000 and over.....	8.3	43.6	47.8	41.0
<b>Slaughtering and meat packing, 1909</b>					<b>Average per establishment.....</b>				
Less than \$5,000.....	180	3,050	\$51,850,936	\$7,005,889			126	\$350,899	\$105,120
\$5,000 and less than \$20,000.....	10	8	27,407	12,777					
\$20,000 and less than \$100,000.....	30	53	374,700	77,318					
\$100,000 and less than \$1,000,000.....	60	240	2,996,666	463,074					
\$1,000,000 and less than \$1,000,000.....	68	1,190	20,962,480	3,144,826					
\$1,000,000 and over.....	12	1,559	27,489,674	3,317,894					

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

This table shows that, in 1909, of the 27,563 establishments, only 400, or 1.5 per cent, had a value of product exceeding \$1,000,000. These establishments, however, employed an average of 317,186 wage earners, or 36.1 per cent of the total number in all establishments, and reported 50.7 per cent of the total value of products and 42.2 per cent of the total value added by manufacture.

On the other hand, the very small establishments—that is, those having a value of product of less than \$5,000—constituted a considerable proportion (34.4 per cent) of the total number of establishments, but the value of their products amounted to only nine-tenths of 1 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.

The above table shows 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 \$83,233 to \$95,300 and the average value added by manufacture from \$34,586 to \$37,883 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, 32, was the same at both censuses.

The average value of products per establishment is high in the leather, woolen and worsted goods, slaughtering and meat-packing, and silk-goods industries, while the average is low in the bakery and lumber industries and tobacco manufactures. The average value of products in the tanneries was \$478,076, and in the bakeries was \$14,396.

The largest establishments in the state, however, as measured by average value of products per establishment, were the steel works and rolling mills, with an average of \$2,647,323; the blast furnaces, with \$2,554,218; and the steam-railroad car construction shops, with \$2,116,134; but none of these industries are shown separately in the above table.

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 43 important industries individually, 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.....	27,563	3,539	13,040	5,313	2,610	1,356	1,051	387	178	89
Boots and shoes, including cut stock and findings.....	140	1	23	33	28	24	21	8	2	2
Bread and other bakery products.....	3,185	542	2,299	279	40	15	6	3	1	1
Butter, cheese, and condensed milk.....	536	79	425	25	5	2	2	1	1	2
Carpets and rugs, other than rug.....	93	6	4	18	23	19	12	6	3	1
Carriages and wagons and materials.....	655	56	343	203	31	14	6	1	1	1
Cars and general shop construction and repairs by steam-railroad companies.....	132	.....	11	15	20	17	29	12	15	13
Cars, steam-railroad, not including operations of railroad companies.....	13	.....	.....	1	2	3	3	1	.....	3
Cement.....	27	.....	.....	2	2	1	12	7	2	1
Chemicals.....	37	.....	9	10	10	2	3	.....	.....	1
Clothing, men's, including shirts.....	696	21	183	206	180	59	37	7	2	1
Clothing, women's.....	401	10	62	133	116	44	33	2	1	.....
Coke.....	146	.....	24	43	18	20	25	0	.....	1
Confectionery.....	251	30	118	57	17	11	16	.....	.....	.....
Copper, tin, and sheet-iron products.....	339	13	178	93	31	10	9	3	2	1
Cotton goods, including cotton small wares.....	175	1	15	35	48	26	36	11	2	1
Dyeing and finishing textiles.....	135	.....	29	46	32	15	9	3	1	.....
Electrical machinery, apparatus, and supplies.....	84	4	20	24	14	10	8	2	1	1
Flour-mill and gristmill products.....	1,450	359	1,033	53	4	1	.....	.....	.....	10
Foundry and machine-shop products.....	1,035	83	617	392	253	148	130	43	19	10
Furniture and refrigerators.....	304	14	101	79	58	25	21	6	.....	1
Gas, illuminating and heating.....	99	7	50	22	12	4	2	.....	1	2
Glass.....	112	.....	7	5	11	25	37	22	9	1
Hats, fur-felt.....	38	2	7	13	6	1	3	5	.....	1
Hosiery and knit goods.....	464	7	39	60	137	95	62	25	8	1
Iron and steel, blast furnaces.....	66	.....	1	5	6	15	22	11	5	30
Iron and steel, steel works and rolling mills.....	189	.....	1	5	12	25	34	40	42	2
Iron and steel pipe, wrought.....	11	.....	1	2	1	2	2	1	.....	.....
Leather, tanned, curried, and finished.....	163	7	25	22	24	50	22	10	3	.....
Liquors, distilled.....	88	.....	55	17	7	1	1	.....	.....	.....
Liquors, malt.....	237	1	18	100	88	21	8	1	.....	.....
Lumber and timber products.....	2,667	129	1,612	681	104	51	23	3	4	.....
Marble and stone work.....	596	29	333	119	75	29	1	1	1	.....
Paint and varnish.....	114	8	54	31	9	9	13	5	2	.....
Paper and wood pulp.....	62	.....	9	15	10	8	1	1	.....	.....
Patent medicines and compounds and druggists' preparations.....	367	121	190	42	7	3	2	1	.....	1
Petroleum, refining.....	41	.....	3	13	18	2	3	1	.....	.....
Pottery, terra-cotta, and fire-clay products.....	130	4	10	25	33	29	25	4	.....	.....
Printing and publishing.....	2,461	548	1,211	474	137	48	36	6	1	3
Silk and silk goods, including throwsters.....	220	.....	11	25	45	44	57	31	10	.....
Slaughtering and meat packing.....	180	15	88	42	20	10	5	1	.....	.....
Tin plate and terneplate.....	17	.....	.....	2	1	5	5	4	.....	1
Tobacco manufactures.....	2,432	892	900	352	121	63	49	18	10	3
Woolen, worsted, and felt goods, and wool hats.....	217	3	16	31	48	49	10	10	3	1
All other industries.....	6,083	600	2,812	1,434	686	207	165	59	21	9

AVERAGE NUMBER OF WAGE BARNERS.

INDUSTRY.	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.....	877,543	20,230	59,872	86,704	97,089	165,376	135,522	120,456	183,294	.....
Boots and shoes, including cut stock and findings.....	10,822	56	409	1,036	1,733	3,329	2,863	1,396	.....	.....
Bread and other bakery products.....	12,221	4,638	2,561	1,171	1,151	1,036	1,092	572	.....	.....
Butter, cheese, and condensed milk.....	1,177	645	247	137	148	.....	.....	.....	.....	.....
Carpets and rugs, other than rug.....	11,510	10	247	703	1,449	1,735	2,088	1,708	3,510	.....
Carriages and wagons and materials.....	7,468	953	2,038	975	953	982	255	.....	1,342	.....
Cars and general shop construction and repairs by steam-railroad companies.....	46,645	30	188	648	1,150	4,860	4,394	11,565	23,795	.....
Cars, steam-railroad, not including operations of railroad companies.....	7,766	.....	14	57	236	521	286	.....	6,652	.....
Cement.....	8,080	.....	20	64	62	1,951	2,334	1,007	2,513	.....
Chemicals.....	3,185	28	137	374	128	496	.....	.....	.....	.....
Clothing, men's, including shirts.....	23,623	490	2,513	6,084	4,211	5,262	2,566	1,331	1,166	.....
Clothing, women's.....	15,701	192	1,631	4,066	3,233	5,113	714	752	.....	.....
Coke.....	15,331	89	566	607	1,769	3,709	3,297	.....	5,214	.....
Confectionery.....	5,408	284	635	510	756	2,510	707	.....	.....	.....
Copper, tin, and sheet-iron products.....	6,815	457	1,030	1,019	621	1,501	898	1,280	.....	.....
Cotton goods, including cotton small wares.....	16,293	51	457	1,758	1,717	5,777	3,912	1,464	1,157	.....
Dyeing and finishing textiles.....	6,086	98	630	1,019	948	1,236	1,261	894	.....	.....
Electrical machinery, apparatus, and supplies.....	11,025	59	293	444	678	1,204	637	.....	7,083	.....
Flour-mill and gristmill products.....	2,432	1,709	470	188	85	.....	.....	.....	.....	.....
Foundry and machine-shop products.....	86,821	1,561	4,598	8,200	10,779	20,408	14,928	12,580	13,608	.....
Furniture and refrigerators.....	9,924	272	997	2,097	1,734	3,000	1,815	.....	.....	.....
Gas, illuminating and heating.....	3,119	124	41	238	455	310	.....	688	1,061	.....
Glass.....	23,710	3	62	442	1,038	5,805	7,811	5,295	2,354	.....
Hats, fur-felt.....	7,220	12	145	191	81	449	1,944	.....	4,398	.....
Hosiery and knit goods.....	38,206	108	1,181	4,738	6,790	9,584	6,209	4,798	1,702	.....
Iron and steel, blast furnaces.....	14,521	5	55	251	1,137	3,938	3,705	3,903	1,527	.....
Iron and steel, steel works and rolling mills.....	126,911	5	65	438	1,894	5,772	13,847	28,855	76,036	.....
Iron and steel pipe, wrought.....	3,873	5	27	24	142	410	430	.....	2,835	.....
Leather, tanned, curried, and finished.....	14,068	57	281	840	3,565	3,119	3,574	2,563	.....	.....
Liquors, distilled.....	724	83	211	226	86	.....	.....	.....	.....	.....
Liquors, malt.....	7,234	70	1,440	2,803	1,425	1,193	303	.....	.....	.....
Lumber and timber products.....	26,873	3,780	7,222	5,191	3,474	3,654	979	2,573	.....	.....
Marble and stone work.....	9,264	795	1,444	2,577	2,067	1,434	278	669	.....	.....
Paint and varnish.....	1,992	133	335	207	544	316	457	.....	.....	.....
Paper and wood pulp.....	6,656	25	201	359	580	2,374	1,802	1,315	.....	.....
Patent medicines and compounds and druggists' preparations.....	2,761	352	521	247	52	384	603	541	.....	.....
Petroleum, refining.....	2,909	12	183	578	115	550	289	.....	1,164	.....
Pottery, terra-cotta, and fire-clay products.....	9,003	53	353	1,137	2,123	4,061	1,276	.....	.....	.....
Printing and publishing.....	24,696	3,066	5,012	4,411	3,467	5,663	2,556	821	.....	.....
Silk and silk goods, including throwsters.....	36,469	37	334	1,049	3,395	6,688	10,515	6,861	3,990	.....
Slaughtering and meat packing.....	3,050	222	443	585	678	706	356	.....	.....	.....
Tin plate and terneplate.....	2,346	.....	24	50	301	662	1,219	.....	1,211	.....
Tobacco manufactures.....	33,188	2,093	3,813	3,872	4,496	7,656	6,295	3,782	1,211	.....
Woolen, worsted, and felt goods, and wool hats.....	27,409	35	408	1,659	3,595	7,481	3,575	7,299	3,357	.....
All other industries.....	143,047	6,534	16,184	22,608	21,258	25,146	20,602	13,286	17,529	.....

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	3.3	6.8	9.9	11.1	18.9	15.5	13.7	20.9	
Boots and shoes, including cut stock and findings	100.0	0.5	3.8	9.0	16.0	30.8	26.5	12.9	.....	
Bread and other bakery products	100.0	38.0	21.0	9.0	9.4	8.5	8.9	4.7	.....	
Butter, cheese, and condensed milk	100.0	54.8	21.0	11.6	12.6	.....	.....	.....	.....	
Carpets and rugs, other than rag	100.0	0.1	2.1	6.6	12.6	15.1	18.1	14.8	30.5	
Carriages and wagons and materials	100.0	12.7	27.2	13.0	12.7	13.1	3.4	.....	17.9	
Cars and general shop construction and repairs by steam-railroad companies	100.0	0.1	0.4	1.4	2.5	10.4	9.4	24.8	51.0	
Cars, steam-railroad, not including operations of railroad companies	100.0	.....	0.2	0.7	3.0	6.7	3.7	.....	85.7	
Cement	100.0	.....	0.4	0.8	1.1	24.1	28.0	13.0	31.1	
Chemicals	100.0	0.9	4.3	11.7	4.0	15.6	.....	03.5	.....	
Clothing, men's, including shirts	100.0	2.1	10.6	25.8	17.8	22.3	10.9	5.6	4.9	
Clothing, women's	100.0	1.2	10.4	25.9	20.6	32.6	4.5	4.8	.....	
Coke	100.0	0.6	3.6	4.0	11.5	24.8	21.5	.....	34.0	
Confectionery	100.0	5.3	11.7	9.4	14.0	46.5	13.1	.....	.....	
Copper, tin, and sheet-iron products	100.0	6.7	15.2	15.0	9.1	22.0	13.2	18.8	.....	
Cotton goods, including cotton small wares	100.0	0.3	2.8	10.8	10.5	35.5	24.0	9.0	7.1	
Dyeing and finishing textiles	100.0	1.6	10.4	16.7	15.6	20.3	26.7	14.7	.....	
Electrical machinery, apparatus, and supplies	100.0	0.5	2.7	4.0	6.2	11.7	5.8	4.9	64.2	
Flour-mill and gristmill products	100.0	70.3	19.3	6.9	3.5	.....	.....	.....	.....	
Foundry and machine-shop products	100.0	1.8	5.3	9.5	12.4	23.5	17.2	14.5	15.8	
Furniture and refrigerators	100.0	2.7	10.0	21.1	17.5	30.3	18.3	.....	.....	
Gas, illuminating and heating	100.0	4.0	7.6	14.6	7.8	9.9	.....	22.1	34.0	
Glass	100.0	(1)	0.3	1.0	8.2	24.5	32.0	22.3	9.9	
Hats, fur-felt	100.0	0.2	2.0	2.0	1.1	16.2	29.9	.....	60.9	
Hosiery and knit goods	100.0	0.3	3.1	12.4	17.8	25.1	24.3	12.6	4.5	
Iron and steel, blast furnaces	100.0	(1)	0.4	1.7	7.8	27.1	25.5	26.9	10.5	
Iron and steel, steel works and rolling mills	100.0	(1)	0.1	0.3	1.5	4.5	10.9	22.7	59.9	
Iron and steel pipe, wrought	100.0	0.1	0.7	0.6	3.7	10.6	11.1	.....	73.2	
Leather, tanned, curried, and finished	100.0	0.4	2.0	6.1	25.4	22.3	25.5	18.3	.....	
Liquors, distilled	100.0	11.5	20.1	31.2	11.9	16.3	.....	.....	.....	
Liquors, malt	100.0	1.0	19.9	38.7	19.7	16.5	4.2	.....	.....	
Lumber and timber products	100.0	14.1	26.9	19.3	12.9	13.6	3.6	0.6	.....	
Marble and stone work	100.0	8.6	15.6	27.8	22.3	15.5	3.6	7.2	.....	
Paint and varnish	100.0	6.7	10.8	10.4	27.3	15.9	22.9	.....	.....	
Paper and wood pulp	100.0	0.4	3.0	5.4	8.7	35.7	27.1	10.8	.....	
Patent medicines and compounds and druggists' preparations	100.0	12.7	18.9	8.9	1.9	13.0	24.0	10.6	.....	
Petroleum, refining	100.0	0.4	0.3	10.9	4.0	19.3	16.0	.....	40.1	
Pottery, terra-cotta, and fire-clay products	100.0	0.6	3.9	12.6	23.6	45.1	14.2	.....	.....	
Printing and publishing	100.0	12.4	20.3	17.9	14.0	22.0	0.1	3.3	.....	
Silk and silk goods, including throwsters	100.0	0.1	0.9	4.5	9.3	26.6	28.8	18.8	10.9	
Slaughtering and meat packing	100.0	7.3	14.5	19.2	22.2	25.1	11.7	.....	.....	
Tin plate and tereplate	100.0	.....	1.0	2.1	10.7	28.2	52.0	.....	.....	
Tobacco manufactures	100.0	6.3	11.5	11.7	13.5	23.1	19.0	11.4	3.6	
Woolen, worsted, and felt goods, and wool hats	100.0	0.1	1.5	6.1	13.1	27.3	13.0	24.6	12.2	
All other industries	100.0	4.6	11.3	15.7	14.0	17.6	14.4	9.3	12.3	

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

Of the 27,563 establishments reported for all industries, 12.8 per cent employed no wage earners; 47.3 per cent, from 1 to 5; 19.3 per cent, 6 to 20; and 9.5 per cent, 21 to 50. The most numerous single group consists of the 13,040 establishments employing from 1 to 5 wage earners, and the next, of the 5,313 establishments employing from 6 to 20. There were 267 establishments that employed over 500 wage earners, and of these, 89 employed over 1,000, of which 30 were steel works and rolling mills, 13 steam-railroad repair shops, and 10 foundries and machine shops.

Of the total number of wage earners, 50.1 per cent were in establishments employing over 250 wage earners. The single group having the largest number of employees was the group comprising the establishments employing over 1,000 wage earners. This group employed 183,294 wage earners, or 20.9 per cent of the total. The average per establishment in this group was 2,059. More than one-half of the total wage earners employed in the following industries were in this class of establishments: Steam-railroad repair shops; steam-railroad car construction shops; electrical machinery, apparatus, and supplies; fur-felt hats; steel works and rolling mills; and wrought iron and steel pipe.

All the individual industries listed in this table but

not in the preceding one, with the exception of butter, cheese, and condensed milk; the carriage and wagon, and the distilled-liquor industries, and marble and stone work are industries in which comparatively large establishments do most of the business, as appears from the classification according to the number of wage earners.

**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 60.

The table shows that for all industries combined 67.2 per cent of the total expenses was incurred for materials, 24 per cent for services—that is, salaries and wages—and but 8.8 per cent for other purposes. As would be expected, these proportions vary greatly in the different industries. The large proportions shown for miscellaneous expenses for the distilled and malt liquor and tobacco industries are due to the inclusion of internal-revenue taxes. The highest percentage

shown for materials, 93.8, and the lowest percentage shown for salaries and wages, 3.8, are for flour mills and gristmills, proportions which are due to the comparative simplicity of the mill operations.

INDUSTRY.	PER CENT OF TOTAL EXPENSES REPORTED.			
	Salaries.	Wages.	Materials.	Miscellaneous expenses.
All industries.....	4.7	19.3	67.2	8.8
Boots and shoes, including cut stock and findings.....	6.3	23.1	65.4	5.1
Bread and other bakery products.....	4.6	16.8	70.2	8.4
Butter, cheese, and condensed milk.....	1.2	4.4	92.0	2.4
Carpets and rugs, other than rag.....	3.4	22.8	64.7	9.1
Carriages and wagons and materials.....	4.6	35.5	52.4	7.5
Cars and general shop construction and repairs by steam-railroad companies.....	3.9	39.7	54.5	1.8
Cars, steam-railroad, not including operations of railroad companies.....	4.6	17.9	70.4	7.2
Cement.....	6.0	22.2	57.8	14.1
Chemicals.....	4.1	14.0	75.5	6.3
Clothing, men's, including shirts.....	4.8	25.5	50.2	13.5
Clothing, women's.....	5.8	24.9	63.3	5.0
Coke.....	2.1	10.0	75.8	3.1
Confectionery.....	6.8	14.8	69.0	9.3
Copper, tin, and sheet-iron products.....	6.2	24.1	62.0	7.6
Cotton goods, including cotton small wares.....	5.4	33.5	62.7	8.4
Dyeing and finishing textiles.....	5.9	29.6	62.9	11.5
Electrical machinery, apparatus, and supplies.....	14.6	22.4	48.7	14.3
Flour-mill and gristmill products.....	0.9	2.9	93.8	2.4
Foundry and machine-shop products.....	8.1	27.8	54.7	9.4
Furniture and refrigerators.....	7.3	28.8	53.8	10.1
Gas, illuminating and heating.....	13.5	16.3	44.6	25.6
Glass.....	5.6	43.2	40.6	10.6
Hats, fur-felt.....	4.3	37.7	50.7	7.3
Hosiery and knit goods.....	3.8	26.8	62.0	7.0
Iron and steel, blast furnaces.....	1.5	6.0	89.6	2.9
Iron and steel, steel works and rolling mills.....	3.0	18.8	72.8	5.4
Iron and steel pipe, wrought.....	2.0	12.9	82.8	2.3
Leather, tanned, curried, and finished.....	1.8	9.2	80.3	8.0
Liquors, distilled.....	2.7	3.1	23.2	71.0
Liquors, malt.....	8.6	14.4	35.4	43.5
Lumber and timber products.....	3.7	28.2	56.8	11.4
Marble and stone work.....	5.9	48.9	37.4	7.8
Paint and varnish.....	7.5	8.7	73.0	10.7
Paper and wood pulp.....	4.7	18.9	65.2	11.3
Patent medicines and compounds and druggists' preparations.....	12.5	10.6	40.3	27.5
Petroleum, refining.....	1.5	3.6	92.2	2.7
Pottery, terra-cotta, and fire-clay products.....	7.9	40.3	38.0	13.8
Printing and publishing.....	15.1	24.6	39.0	21.3
Silk and silk goods, including throwsters.....	3.8	20.6	63.2	12.4
Slaughtering and meat packing.....	1.8	4.0	91.2	3.0
Tin plate and terneplate.....	1.1	5.4	92.2	1.3
Tobacco manufactures.....	4.1	26.4	47.0	22.6
Woolen, worsted, and felt goods, and wool hats.....	2.5	15.4	76.8	5.4
All other industries.....	6.3	19.1	65.4	9.1

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 table indicates that the total primary horsepower increased 585,704, or 34.1 per cent, from 1899 to 1904, and 619,149, or 26.9 per cent, from 1904 to 1909. The greater part of the increase was in owned steam and rented electric power. In 1909, as in 1904, steam power formed the major part of the total power reported, but notwithstanding an increase during the five-year period of 452,344 horsepower, the proportion which this kind of power formed of the total primary power decreased from 90.7 per cent in 1904 to 87 per cent in 1909. The more general use of gas engines in recent years is shown, there being 4,415 such engines, with an indicated capacity of 153,508 horsepower, reported in 1909, as against 2,890 engines with 68,209 horsepower in 1904, and 1,620 engines with 26,246 horsepower in 1899. The figures also show that the practice of renting electric power is increasing rapidly, 145,621 horsepower, or 5 per cent of the total, being of this character in 1909, as compared with 35,701 horsepower, or 1.6 per cent, in 1904, and 22,362 horsepower, or 1.3 per cent, in 1899.

The use of electric motors for the purpose of applying the power generated within the establishments is also shown to be rapidly becoming more common, the horsepower of such motors having increased from 85,384 in 1899 to 311,096 in 1904 and 719,164 in 1909.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899 <sup>1</sup>	1909	1904	1899 <sup>1</sup>	1909	1904	1899
Primary power, total.....	44,204	24,355	23,646	2,921,547	2,302,398	1,716,094	100.0	100.0	100.0
Owned.....	27,213	24,355	23,646	2,757,792	2,243,331	1,678,485	94.4	97.4	97.8
Steam.....	20,764	19,478	19,011	2,541,117	2,088,773	1,687,706	87.0	90.7	92.5
Gas.....	4,415	2,890	1,820	153,508	68,209	26,246	5.3	3.0	1.5
Water wheels.....	1,917	1,872	2,115	53,762	50,220	54,001	1.8	2.2	3.2
Water motors.....	117	115	( <sup>2</sup> )	1,432	400	( <sup>2</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>2</sup> )
Other.....				7,073	35,729	9,632	0.3	1.6	0.6
Rented.....	16,991	( <sup>2</sup> )	( <sup>2</sup> )	163,755	59,067	38,209	5.6	2.0	2.2
Electric.....	16,991	( <sup>2</sup> )	( <sup>2</sup> )	145,621	35,701	22,362	5.0	1.6	1.3
Other.....				18,134	23,366	15,847	0.6	1.0	0.9
Electric motors.....	59,089	10,800	4,547	864,785	346,797	107,746	100.0	100.0	100.0
Run by current generated by establishment.....	42,098	10,800	4,547	719,164	311,096	85,384	83.2	89.7	79.2
Run by rented power.....	16,991	( <sup>2</sup> )	( <sup>2</sup> )	145,621	35,701	22,362	16.8	10.3	20.8

<sup>1</sup> Includes the neighborhood industries and hand trades, omitted in 1904 and 1909.

<sup>2</sup> Not reported.

<sup>3</sup> 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 table following 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	4,201,180	57,524,128	14,060,292	448,641	2,037,735	239,745,386
Boots and shoes, including cut stock and findings	9,675	8,428		12	325	3,128
Bread and other bakery products	77,981	20,424	21,837	10,887	602	870,758
Butter, cheese, and condensed milk	15,384	31,057		4,914	248	12,870
Carpets and rugs, other than rag	34,750	52,421		4	5	1,790
Carriages and wagons and materials	30,240	30,824	1,291	200	1,852	107,446
Cars and general shop construction and repairs by steam-railroad companies	255,490	643,881	6,992	7,576	75,081	134,868
Cars, steam-railroad, not including operations of railroad companies	34,516	109,305	9,763		47,960	453,862
Cement	155,856	1,060,750	168		11,891	
Chemicals	57,575	298,534	6,008	126	27,378	35,723
Clothing, men's, including shirts	15,940	5,637		13	1,505	131,770
Clothing, women's	3,135	1,592			20	18,125
Coke		36,886,592	13,668	50		348,958
Confectionery	16,412	11,618	312	123	6	92,390
Copper, tin, and sheet-iron products	11,376	19,276	2,010	212	424	600,245
Cotton goods, including cotton small wares	64,645	71,658			82	4,080
Dyeing and finishing textiles	69,512	166,532		228	92	5,750
Electrical machinery, apparatus, and supplies	3,876	116,955			10,223	131,782
Flour-mill and gristmill products	34,760	63,485	214	1,722	3,539	125,595
Foundry and machine-shop products	201,535	770,178	270,798	9,974	116,179	4,130,380
Furniture and refrigerators	13,168	60,682	1,295	244	101	23,052
Gas, illuminating and heating	99,297	348,241	79,675	4	948,620	41,298
Glass	6,788	453,613	4,093	2,079	34,960	22,605,773
Hats, fur-felt	27,526	13,608			85	7,624
Hosiery and knit goods	72,607	49,824		41	433	3,521
Iron and steel, blast furnaces	207,478	445,716	13,248,651	2,906	14	940,558
Iron and steel, steel works and rolling mills	650,587	9,447,159	238,459	25,294	520,604	189,133,915
Iron and steel pipe, wrought	64,974	155,065	4,995	75		120,960
Leather, tanned, curried, and finished	26,089	279,191	187	6,733	26	303,031
Liquors, distilled	5,281	56,430	96	453	1	176,589
Liquors, malt	194,532	250,475	576	5	114	1,345,457
Lumber and timber products	25,207	99,059	90	1,310	1,766	112,353
Marble and stone work	15,465	105,316	39	26	1,386	28,355
Paint and varnish	9,821	70,635	1,948	667	447	181,924
Paper and wood pulp	98,456	733,072		15,855	2,188	68,259
Patent medicines and compounds and druggists' preparations	8,104	4,111	7	96	00	29,270
Petroleum, refining	316,138	453,106			64,017	4,527,475
Pottery, terra-cotta, and fire-clay products	8,643	711,840	415	701	142	1,432,335
Printing and publishing	36,151	11,718	17	93	1,020	408,160
Silk and silk goods, including throwsters	148,313	41,746		43	637	5,508
Slaughtering and meat packing	26,795	68,697		3,396	265	35,744
Tin plate and terneplate		23,537				516,071
Tobacco manufactures	14,606	6,356	6	397	112	86,234
Woolen, worsted, and felt goods, and wool hats	53,238	210,160		25	1,448	63,302
All other industries	614,019	2,358,764	145,530	352,475	101,893	10,223,210

NOTE.—In addition there were 18,250 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. Certain data for some of the important industries in Pennsylvania are here presented.

Iron and steel.—Although iron was made in several of the colonies before its manufacture was attempted in Pennsylvania, the industry had a comparatively early beginning there under the encouragement of William Penn, the founder of the colony, and as early as 1692 a small amount of iron had been made in the colony. The first successful works were established in Berks County in 1716, and in 1728-29 the colony exported 274 tons of pig iron to England. In 1756 Pennsylvania was spoken of as "the most advanced of all the American colonies in regard to its iron works," and since that time it has been preeminent among the states in the iron and steel industry.

At the present time a great variety of products are made of iron and steel and in a census of manufactures the establishments producing them have to be divided into many classes according to the nature of their products. Among the more important classes

established for purposes of the census are: Steel works and rolling mills; blast furnaces; foundries and machine shops; and establishments manufacturing locomotives; horseshoes; wrought iron and steel pipe; forgings; bolts, nuts, washers, and rivets; steel car and carriage springs; cutlery and tools; doors and shutters; nails and spikes; and tin plate and terneplate. A given establishment may manufacture products which fall into two or more of these classes, but as the establishment itself can be placed in only one, it is classified according to its principal product. This method necessarily occasions a certain lack of precision in the figures for any class. An establishment classified as manufacturing forgings, because forgings are its principal product, may also make cutlery and tools or some other product of a different class, and hence the totals for establishments classified under the heading "Iron and steel forgings" include certain amounts which would be credited to some other class if the system was ideal; on the other hand, certain forgings made in establishments engaged primarily in some other line of manufacture are omitted from the totals for the forging industry because manufactured as secondary products by establishments engaged primarily in the manufacture

of a product of another class. In none of the classes mentioned, therefore, do the statistics deal exclusively with the manufacture of the products indicated by the industry designation nor do the data relate to the entire production of such products, owing to the overlapping of the several branches of the industry in so many particulars. Some of the establishments operating blast furnaces, or steel works and rolling mills, engaged also in further processes of manufacture and produce many of the articles made by establishments otherwise classified, and no well-defined line of demarcation exists by which any branch of the industry can be separated from the others. Detailed information regarding materials, products, and equipment is here presented for three of the industries, namely, steel works and rolling mills, blast furnaces, and tin-plate and terneplate dipping establishments.

**Steel works and rolling mills.**—The manufacture of steel was attempted in Pennsylvania about 1750, but the development of the industry was slow. In 1805 there were only two steel plants in the state, with a combined annual output of about 150 tons. In 1809 the number of furnaces had grown to five, and they produced 531 of the 917 tons of steel manufactured in the United States during that year. Three years later the first steel plant in Pittsburgh was erected, and from that time the quantity of steel manufactured increased rapidly, but the kind made varied considerably until 1859, when crucible cast steel was made in Pittsburgh as a regular product. This really marked the beginning of a new industry. Bessemer steel was first made in Pennsylvania in 1867 at Steelton (the third furnace of the kind in the United States). In the same year the first steel rails ever made in this country were manufactured at Johnstown, Pa.

The first rolling mill in the United States for the production of bar iron was built at Plumsock, Pa., in 1817, and in the same year the first puddling in this country was done at that mill. In 1879 the number of steel works and rolling mills was 158 and the value of their products was 48.4 per cent of the total for the United States. At each census since 1879 the mills of Pennsylvania have reported more than half of the total value of products, the proportion in 1909 being 50.8 per cent. To turn out these products the 189 establishments reported in 1909 employed an average of 126,911 wage earners, which was 52.9 per cent of the total number employed by the 446 steel works and rolling mills in the country as a whole.

The next table gives, for 1909, 1904, and 1899, the quantity and cost of the various materials used by steel works and rolling mills in Pennsylvania; the quantity and value of their different products; the principal equipment of the steel works; and the total daily capacity of the plants. The total quantity of steel is classified according to the form of the products and again according to process of manufacture. The ton of 2,240 pounds is used to show quantities.

MATERIAL, PRODUCT, OR EQUIPMENT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$329, 013, 421</b>	<b>\$237, 876, 025</b>	<b>\$219, 047, 508</b>
<b>Iron and steel:</b>			
<i>For furnaces and hot rolls:</i>			
Pig iron and ferroalloys—			
Tons.....	9,317, 063	6,550, 417	5,915, 321
Cost.....	\$147, 135, 383	\$94, 007, 564	\$87, 720, 436
Pig iron—			
Tons.....	9,158, 260	(3)	(2)
Cost.....	\$139, 208, 875	(2)	(2)
Ferroalloys, spiegeleisen, ferromanganese, etc.—			
Tons.....	150, 643	(3)	(2)
Cost.....	\$7, 926, 508	(2)	(2)
Scrap, including old rails not intended for re-rolling—			
Tons.....	2, 660, 773	2, 871, 810	2, 157, 468
Cost.....	\$41, 572, 010	\$38, 574, 301	\$32, 927, 014
Ingot, blooms, billets, slabs, muck and scrap bar, re-rolling rails, and sheet and tin-plate bars—			
Tons.....	3, 013, 148	2, 734, 746	2, 328, 970
Cost.....	\$08, 274, 443	\$00, 353, 171	\$50, 421, 973
<i>Rolled forms for further manufacture:</i>			
Skelp—			
Tons.....	110, 365	249, 278	(2)
Cost.....	\$3, 959, 918	\$7, 005, 688	(2)
Wire rods—			
Tons.....	43, 700	27, 530	32, 170
Cost.....	\$1, 244, 200	\$800, 252	\$1, 273, 635
Iron ore:			
Tons.....	508, 716	423, 188	243, 688
Cost.....	\$3, 169, 203	\$1, 883, 959	\$070, 028
All other materials.....	\$63, 658, 204	\$34, 259, 700	\$36, 734, 422
<b>Products, total value.....</b>	<b>\$500, 343, 005</b>	<b>\$303, 773, 577</b>	<b>\$332, 869, 713</b>
<b>Rails:</b>			
Tons.....	848, 924	812, 601	1, 218, 289
Value.....	\$24, 077, 184	\$20, 204, 210	\$24, 597, 034
Structural shapes, not including plates used for making girders:			
Tons.....	1, 507, 946	824, 727	766, 995
Value.....	\$49, 512, 361	\$27, 449, 607	\$25, 578, 658
Bars and rods, not including wire rods, sheet and tin-plate bars, splice bars, and bars for reinforced concrete:			
Tons.....	1, 749, 220		1, 036, 759
Value.....	\$56, 717, 882		\$43, 453, 494
Bars for reinforced concrete:			
Tons.....	36, 886	\$40, 425, 460	
Value.....	\$1, 084, 662		
Wire rods:			
Tons.....	861, 261	506, 802	276, 385
Value.....	\$23, 190, 920	\$16, 926, 605	\$11, 240, 537
Plates and sheets, not including black plates or sheets for tinning, nail and tack plates, tie-plates, fish-plates, or armor plates:			
Tons.....	2, 057, 176		1, 245, 843
Value.....	\$78, 938, 359		\$56, 984, 914
Black plates, or sheets, for tinning:			
Tons.....	308, 738	\$65, 988, 409	
Value.....	\$15, 400, 384		
Skelp, flue, and pipe:			
Tons.....	1, 087, 662		828, 050
Value.....	\$34, 278, 085		\$35, 398, 558
Hoops, bands, and cotton ties:			
Tons.....	279, 172	\$39, 576, 046	
Value.....	\$8, 305, 448		
Nail and tack plates:			
Tons.....	37, 802	41, 931	42, 217
Value.....	\$1, 469, 504	\$1, 156, 789	\$1, 087, 103
Axles, car, locomotive, automobile, wagon, carriage, etc., rolled or forged:			
Tons.....	97, 333	73, 388	81, 383
Value.....	\$3, 603, 095	\$2, 416, 226	\$3, 569, 888
Armor plates, gun forgings, and ordnance:			
Tons.....	22, 558	22, 648	15, 302
Value.....	\$8, 833, 336	\$9, 492, 082	\$7, 520, 479
Blooms, billets, and slabs, produced for sale or for transfer to other works of the same company:			
Tons.....	2, 699, 296		
Value.....	\$47, 413, 864		
Rolled forging blooms and billets produced for sale or for transfer to other works of the same company:			
Tons.....	37, 977	2, 582, 848	2, 277, 133
Value.....	\$1, 128, 694	\$58, 205, 781	\$51, 948, 174
Sheet and tin-plate bars produced for sale or for transfer to other works of the same company:			
Tons.....	778, 260		
Value.....	\$17, 430, 702		
Muck and scrap bar produced for sale or for transfer to other works of the same company:			
Tons.....	118, 759	111, 992	167, 165
Value.....	\$3, 605, 236	\$2, 791, 435	\$4, 901, 446

<sup>1</sup> Includes material purchased or transferred to the establishment reporting from other works of the same company.

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

<sup>3</sup> In addition, steel castings and rolled steel valued at \$2,175,339 were produced by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

MATERIAL, PRODUCT, OR EQUIPMENT.	1909	1904	1899
<b>Products—Continued.</b>			
Rail fastenings, splice bars, tie-plates, fishplates, etc.:			
Tons.....	124,049		
Value.....	\$4,030,802	900,220	356,761
All other rolled steel or iron:		\$22,156,436	\$11,201,989
Tons.....	470,679		
Value.....	\$31,391,361		
Ingots for sale or for transfer to other works of the same company:			
Tons.....	32,144	94,059	84,498
Value.....	\$1,525,021	\$1,850,146	\$2,459,693
Direct steel castings:			
Tons.....	197,405	114,411	69,711
Value.....	\$14,087,422	\$8,041,419	\$5,798,302
All other products, including value added to steel or iron rolling-mill products by further manufacture...	\$73,785,784	\$47,093,806	\$47,123,444
<i>Steel production, tons.</i>			
Total production.....	1,121,890,953	7,733,640	6,431,297
Ingots.....	11,992,548	7,618,833	6,361,586
Castings.....	197,405	114,807	69,711
Classified according to process:			
Open-hearth.....	9,281,936	4,230,657	2,437,918
Basic.....	8,536,726	3,638,986	1,746,522
Acid.....	745,210	591,671	691,396
Bessemer.....	2,846,360	3,442,312	3,911,127
Crucible and miscellaneous.....	61,657	60,671	82,252
<b>Equipment:</b>			
<i>Steel plants:</i>			
Steel furnaces and converters, daily capacity, double turn, tons.....	55,278	40,672	31,131
Open-hearth furnaces—			
Number.....	428	305	199
Daily capacity, tons of steel, double turn..	38,030	23,115	12,745
Basic—			
Number.....	332	205	100
Daily capacity, tons of steel, double turn..	33,300	17,597	8,404
Acid—			
Number.....	96	100	93
Daily capacity, tons of steel, double turn..	4,730	5,513	4,341
Converters, Bessemer or modified Bessemer—			
Number.....	31	28	33
Daily capacity, tons of steel, double turn.....	16,615	10,900	17,977
Crucible furnaces—			
Number.....	91	96	65
Number of pots that can be used at a heat.....	2,268	1,978	1,856
Daily capacity, tons of steel, double turn.....	561	585	409
All other steel furnaces—			
Number.....	14	18	( <sup>2</sup> )
Daily capacity, tons of steel, double turn.....	72	63	( <sup>2</sup> )
Metal mixers—			
Number.....	26	( <sup>2</sup> )	( <sup>2</sup> )
Capacity, tons.....	5,660	( <sup>2</sup> )	( <sup>2</sup> )
<i>Rolling mills:</i>			
Daily capacity of rolled steel and iron, double turn, tons.....	72,977	52,466	48,304

<sup>1</sup> In addition, 16,655 tons of steel castings were produced by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

<sup>2</sup> Not reported.

Under steel production is included the total product of steel works, whether cast in ingots or in direct castings. All ingots are included, whether consumed in the works where produced, transferred to other works of the producing company, or sold.

Establishments which are classified as steel works and rolling mills make four classes of products—(1) unrolled steel; (2) those which must be subjected to further rolling before they can be regarded as finished rolling-mill products; (3) those which have passed through all the contemplated rolling processes and may be termed finished rolling-mill products; and (4) those which have been subjected to processes beyond the rolling-mill stage. In the above table products of the last class, namely, those which have been subjected to processes beyond the rolling-mill stage, are not shown separately, but those finished rolling-mill

products that were made in the establishment and were there converted into these higher forms have been included with the other finished products of the industry, and the enhanced value which they have acquired through their manufacture beyond the rolling-mill product stage has been included with "All other products."

The existence of the second and third classes of products in the industry, namely, the finished rolled products and the unfinished rolled products, results in a certain amount of duplication in the figures for cost of materials and value of products. When crude iron or steel is worked up into partially rolled products in one steel-making and rolling-mill plant and the products are then sold or transferred to a second, where they are made into finished rolling-mill products, they appear twice in the cost of materials and twice in the value of products. This duplication does not exist where one establishment makes the ingots or other similar products and then rolls them into finished rolling-mill products. In this connection it should be noted that two branches of the same company frequently constitute different establishments according to the practice of the census, and hence duplication results when the products of one branch are used as the materials of the other.

In considering the comparative figures presented in the table it should be borne in mind that 1904 was a year of partial depression in the iron and steel industry, and that neither the small increases shown in quantity and value for 1904 as compared with 1899, nor the large increases shown for 1909 as compared with 1904, are representative of the normal rate of growth for the industry.

The total cost of materials used in this industry in 1909 was \$329,013,421, which was 38.3 per cent more than the cost of materials in 1904 and 50.2 per cent more than the cost in 1899. The cost of pig and scrap iron, ore, and the partially manufactured forms of iron combined constituted 80.6 per cent of the total cost of materials in 1909, as compared with 85.6 per cent in 1904 and 83.2 per cent in 1899.

The total value of products increased from \$332,869,713 in 1899 to \$500,343,995 in 1909, or 50.3 per cent. The general business depression beginning in 1903 affected this industry also for the greater part of 1904. Consequently, a gain of only 9.3 per cent in total value of products is shown for that year as compared with 1899. Comparing the finished rolled products of 1909 with those of 1899, rails show a decrease in both quantity and value, and nail and tack plates a decrease in quantity but an increase in value. All other finished rolled products show an increase in both quantity and value.

The decrease in the production of rails in Pennsylvania for the decade was 369,365 tons, or 30.3 per cent, while the industry in the country at large shows an increase of 607,262 tons, or 27 per cent. Bars and rods, including wire rods, with an increase of 1,334,213

tons, or 101.6 per cent, made the largest absolute gain in quantity from 1899 to 1909, while plates and sheets, with an increase of \$37,353,829, or 65.6 per cent, made the largest absolute gain in value. Muck and scrap bar produced for sale or transfer decreased 29 per cent in quantity and 28.5 per cent in value. Ingots produced for sale or transfer show a decrease of 62 per cent in quantity and 38 per cent in value, while direct steel castings show large relative increases, 183.2 per cent in quantity and 143 per cent in value.

The increase for the decade of \$26,662,340, or 56.6 per cent, in the value of all other products, which includes the value added to rolling-mill products by further manufacture, indicates an extension of the practice of carrying the processes of manufacture beyond the rolling-mill stage. Included in this item was the value added to skelp in the manufacture of 654,042 tons of pipe and tubes. The value of such pipe and tubes was \$36,929,123, and the assigned value of skelp used in their production was \$20,179,114, making approximately \$16,750,000 added by further manufacture of skelp alone.

The total production of steel in the state of Pennsylvania in 1909 was 12,189,953 tons, an increase over 1899 of 5,758,656 tons, or 89.5 per cent. Of the total production in 1909, 11,992,548 tons, or 98.4 per cent, were in the form of ingots and 197,405 tons, or 1.6 per cent, in the form of direct castings. The figures classifying the steel according to process of manufacture show that open-hearth steel formed 76.1 per cent of the total; Bessemer, 23.4 per cent; and crucible and miscellaneous, five-tenths of 1 per cent. Of the open-hearth steel 92 per cent was basic and 8 per cent acid. The proportion of open-hearth steel was 54.7 per cent in 1904 and 37.9 per cent in 1899. In 1909 the quantity of Bessemer steel was 17.3 per cent less than in 1904, in which year the production was 12 per cent less than in 1899. Crucible and miscellaneous steel, although showing a slight increase in 1909 over 1904, show a considerable decrease from 1899 to 1909. The figures thus indicate a growing use of the open-hearth process.

The daily capacity of the steel plants of Pennsylvania increased from 31,131 tons in 1899 to 40,672 tons in 1904, and to 55,278 tons in 1909, an increase of 77.6 per cent for the decade. Of the total daily capacity of the steel plants in 1909, open-hearth furnaces contributed 68.8 per cent; Bessemer and modified Bessemer converters, 30 per cent; and crucible and all other furnaces, 1.1 per cent. Corresponding figures for 1899 were: Open-hearth, 40.9 per cent; Bessemer, 57.7 per cent, and crucible, 1.3 per cent. At the census of 1909, metal mixers were first reported and the number returned was 26, with an aggregate capacity of 5,660 tons. During the decade the daily capacity of the rolling mills, on double turn, increased from 48,364 tons to 72,977 tons, or 50.9 per cent.

**Blast furnaces.**—In 1791 there were 16 blast furnaces in Pennsylvania. By 1849 the number had increased to 298, of which 230 were charcoal furnaces, 57 anthracite, and 11 bituminous coal or coke. Since 1849 the manufacture of charcoal iron has declined. In 1909, the active furnaces included but 4 small charcoal furnaces and 24 anthracite furnaces, and 115 coke furnaces. In 1879, 137 establishments were reported as operating blast furnaces in Pennsylvania and they produced 1,723,492 of the 3,375,912 long tons of pig iron made in the United States. The proportion which the state contributed to the total was, therefore, a little more than 51 per cent. A decreasing proportion has since been shown at each census period, although up to and including the last census its output has been more than double that of its nearest competitor. During this period the total annual output for the country has increased over 650 per cent.

In the next table are shown, for 1909, 1904, and 1899, the quantity and cost of the various materials used, the quantity and value of the different products, and the principal equipment of the establishments engaged in this branch of the iron and steel industry. The total quantity of pig iron manufactured is classified in four ways—(1) according to the fuel used in its production; (2) according to the disposition made of it; (3) according to grade; and (4) according to method of delivery or of casting. The ton of 2,240 pounds is used to show quantities.

In 1909 there were charged into the blast furnaces of Pennsylvania 20,822,023 tons of iron ore, mill cinder, scrap, etc., and 5,819,912 tons of flux. To convert this material, 12,095,186 tons of fuel were consumed. The principal product was 10,911,676 tons of pig iron, valued at \$167,588,407, but other products to the value of \$990,006 were reported. This work was accomplished by 143 active furnaces, with an aggregate daily capacity of 41,557 tons.

The figures for the pig iron classified according to fuel used in the production, show that coke pig iron constituted 94 per cent of the total, anthracite 6 per cent, and charcoal less than three-hundredths of 1 per cent. This is particularly striking when it is remembered that, in the beginning of the industry, charcoal was used exclusively. The figures concerning method of disposition show that 69.9 per cent of the iron was used in works of the company producing it, and 30.1 per cent was made for sale. Bessemer iron constituted 34.6 per cent of the total amount produced; basic, 44.1 per cent; foundry, 14.1 per cent; and all other, 7.1 per cent. Fifty-four per cent of the total was delivered in molten condition; 26 per cent was machine cast; 17.5 per cent was sand cast; 2.5 per cent was chill cast; and less than one-tenth of 1 per cent was in the form of direct castings.

MATERIAL, PRODUCT, OR EQUIPMENT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$142,074,028</b>	<b>\$86,321,875</b>	<b>\$64,095,277</b>
<b>Iron ore:</b>			
Tons.....	19,008,006	12,019,590	11,056,833
Cost.....	\$90,171,795	\$54,381,825	\$35,042,178
<b>Domestic—</b>			
Tons.....	18,421,398	12,537,891	10,641,035
Cost.....	\$82,790,018	\$51,563,986	\$32,294,561
<b>Foreign—</b>			
Tons.....	1,277,568	381,090	415,798
Cost.....	\$7,381,777	\$2,817,839	\$2,747,617
<b>Mill cinder, scrap, etc.:</b>			
Tons.....	1,123,027	1,161,063	1,108,007
Cost.....	\$3,332,335	\$2,160,422	\$2,686,743
<b>Fuel:</b>			
Tons.....	5,819,912	3,842,184	3,371,405
Cost.....	\$5,208,591	\$3,356,725	\$2,264,666
<b>Fuel<sup>1</sup></b>			
Coke—			
Tons (2,000 pounds).....	13,245,622	8,713,116	6,254,301
Cost.....	\$38,556,780	\$22,728,319	\$15,576,340
Anthracite coal—			
Tons.....	264,481	498,731	765,707
Cost.....	\$900,607	\$1,590,655	\$1,913,385
Charcoal—			
Bushels.....	476,790	410,610	787,606
Cost.....	\$48,069	\$27,225	\$47,256
Bituminous coal—			
Tons.....	300,043	300,043	257,194
Cost.....	\$30,506,082	\$400,806	\$255,313
<b>All other materials.....</b>	<b>\$3,765,245</b>	<b>\$1,501,808</b>	<b>\$6,309,306</b>
<b>Products, total value.....</b>	<b>\$168,878,413</b>	<b>\$107,455,267</b>	<b>\$101,575,487</b>
<b>Pig iron:</b>			
Tons.....	10,911,076	7,726,278	6,778,584
Value.....	\$107,888,407	\$107,395,757	\$101,555,787
<b>All other products.....</b>	<b>\$990,006</b>	<b>\$59,510</b>	<b>\$19,700</b>
<b>Pig iron, classified according to fuel used:</b>			
Coke—			
Tons.....	10,259,155	7,720,278	6,778,584
Value.....	\$156,834,060	\$107,395,757	\$101,555,787
All other—			
Tons.....	652,921		
Value.....	\$10,753,747		
<b>Pig iron, classified according to disposition:</b>			
Produced for consumption in works of company producing—			
Tons.....	7,028,653	5,573,808	( <sup>2</sup> )
Value.....	\$116,422,575	\$77,087,537	( <sup>2</sup> )
Produced for sale—			
Tons.....	3,283,023	2,155,380	( <sup>2</sup> )
Value.....	\$52,165,832	\$30,308,220	( <sup>2</sup> )
<b>Pig iron, classified by grades (tons):</b>			
Bessemer (0.04 to 0.10 per cent in phosphorus).....	3,775,728	4,467,613	4,617,969
Low phosphorus (below 0.04 per cent in phosphorus).....			
Basic.....	137,521	139,763	666,589
Foundry.....	4,815,840	1,827,121	856,472
Forge or mill.....	1,542,722	796,740	446,328
Malleable Bessemer.....	366,808	313,361	( <sup>2</sup> )
White, mottled, and miscellaneous.....	37,042	12,497	50,077
Direct castings.....	51,916	12,121	4,350
Spiegeleisen, ferromanganese, and ferrosilicon, including Bessemer ferrosilicon (7 per cent and over in silicon).....	4,563	2,941	
<b>Pig iron, classified by method of delivery or casting (tons):</b>			
Delivered in molten condition.....	5,887,507	3,579,501	( <sup>2</sup> )
Machine cast.....	2,837,576	2,376,870	( <sup>2</sup> )
Sand cast.....	1,907,514	1,400,312	( <sup>2</sup> )
Chill cast.....	274,516	270,654	( <sup>2</sup> )
Direct castings.....	4,563	2,941	
<b>Equipment:</b>			
<b>Furnaces in active establishments:</b>			
Completed stacks at end of year—			
Number.....	145	131	136
Daily capacity, tons.....	41,707	34,200	23,497
Active during the year—			
Number.....	143	120	127
Daily capacity, tons.....	41,557	( <sup>2</sup> )	( <sup>2</sup> )
In course of construction at end of year—			
Number.....	5	11	5
Daily capacity, tons.....	2,200	1,950	2,700
<b>Pig casting machines, number.....</b>	<b>56</b>	<b>(<sup>2</sup>)</b>	<b>(<sup>2</sup>)</b>
<b>Granulated slag pits:</b>			
Number.....	39	15	( <sup>2</sup> )
Annual capacity, tons.....	2,703,000	( <sup>2</sup> )	( <sup>2</sup> )
<b>Gas engines operated with blast-furnace gas:</b>			
Number.....	13	( <sup>2</sup> )	( <sup>2</sup> )
Horsepower.....	32,100	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> In 1909 includes fuel for smelting only; in 1904 and 1899 includes coal for steam raising.  
<sup>2</sup> Not reported.

The growth of the industry for the decade covered by the table was marked, the quantity of ore used increasing 78.2 per cent, the total quantity of iron produced 61 per cent, and the total value of products 66 per cent. During the decade 1899–1909 the number of furnaces in active establishments increased from 136 to 145, or 6.6 per cent, and the daily capacity of the furnaces from 23,497 tons to 41,707, or 77.5 per cent, indicating the building of furnaces of much greater capacity. An interesting point to be noted in the report of equipment for 1909 is that 13 gas engines, operated with blast-furnace gas, and developing a total of 32,100 horsepower, were in use.

**Tin plate and terneplate.**—Closely allied to the operation of steel works and rolling mills is the plating of iron and steel sheets with tin or alloys of tin and lead, inasmuch as practically all the concerns engaged in this industry also roll the greater portion of the iron or steel sheets used. Prior to 1899 the industry was of minor importance, but by 1899 it had assumed such proportions that in the Twelfth Census reports it was for the first time classed as a separate industry. In the manufacture of these products Pennsylvania ranks first among the states, reporting more than 50 per cent of the total product of the United States in 1909. In the following table are given for 1909, 1904, and 1899 the quantity and cost of the various materials used and the quantity and value of the different products:

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$22,808,352</b>	<b>\$17,590,077</b>	<b>\$10,364,084</b>
<b>Black plates or sheets:</b>			
Pounds.....	705,748,494	506,744,792	323,985,402
Cost.....	\$15,801,297	\$12,934,377	\$7,881,330
<b>Coating metals:</b>			
Pounds.....	20,269,205	16,809,196	12,158,400
Cost.....	\$5,305,175	\$3,933,061	\$2,025,532
Tin, including tin contents of terne mixture purchased, lbs.....	17,349,711	13,706,949	8,154,060
Lead, including lead contents of terne mixture purchased, lbs.....	2,920,494	3,012,247	4,003,431
<b>In condition purchased:</b>			
Pig tin—			
Pounds.....	16,858,292		
Cost.....	\$5,032,023		
Pig lead—			
Pounds.....	1,421,219	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$62,338		
Terne mixture—			
Pounds.....	1,989,694		
Cost.....	\$210,814		
<b>All other materials.....</b>	<b>\$1,701,880</b>	<b>\$722,600</b>	<b>\$457,213</b>
<b>Products, total value.....</b>	<b>\$25,234,066</b>	<b>\$19,341,961</b>	<b>\$12,530,991</b>
<b>Tin plate and terneplate:</b>			
Pounds.....	695,377,287	583,599,140	331,008,980
Value.....	\$23,750,750	\$18,928,397	\$12,401,252
Tin plate—			
Pounds.....	648,502,133	524,905,922	256,879,332
Value.....	\$21,687,492	\$16,547,120	\$9,137,483
Terneplate—			
Pounds.....	46,875,154	58,693,218	77,129,648
Value.....	\$2,063,258	\$2,381,277	\$3,263,760
<b>Other sheet iron or sheet steel, tinned or terneplated, taggers' tin, etc.:</b>			
Pounds.....	18,067,567	6,555,855	200,473
Value.....	\$484,211	\$217,476	\$6,462
<b>All other products.....</b>	<b>\$990,105</b>	<b>\$196,088</b>	<b>\$123,247</b>

<sup>1</sup> Figures not available.  
<sup>2</sup> Not including the product of one establishment engaged primarily in the manufacture of products other than those of the industry designation.

The industry shows a large gain during the 10-year period covered by the table, the total cost of materials

and the total value of products practically doubling. The basic material, black plates or sheets, shows a large increase for both five-year periods, while of the coating metals tin shows a large increase and lead a large decrease. The changes in the proportions of these two plating materials are reflected in the quantities of tin plate and of terneplate produced, the former showing a large increase and the latter a large decrease for each half of the decade. In 1899, 285 tin and terne sets were reported, with a daily capacity, on single turn, of 1,198,001 pounds, while in 1909 the number was 311 and the capacity 1,533,872 pounds. The daily capacity of the sets, as they were operated—that is, on single, double, or triple turn, as the case might be—was 3,618,308 pounds in 1909.

**Textiles.**—The relative importance of the different textile industries in Pennsylvania, as measured by value of products, is shown in the following table, which presents the total value of their products at the last three censuses.

INDUSTRY.	1909	1904	1899
<b>Total</b> .....	<b>\$287,840,570</b>	<b>\$194,214,389</b>	<b>\$163,286,038</b>
Woolen, worsted, and felt goods, and wool hats.....	77,446,996	55,034,250	48,765,445
Silk and silk goods, including throwsters.....	62,001,302	39,333,520	31,072,026
Hosiery and knit goods.....	49,657,506	30,812,211	21,929,426
Cotton goods, including cotton small wares.....	33,017,033	26,200,853	25,447,697
Carpets and rugs, other than rag.....	24,870,233	27,120,311	23,113,058
Hats, fur-felt.....	13,022,617	7,350,311	4,243,352
Cordage and twine and jute and linen goods.....	4,804,775	5,159,654	7,266,148
Shoddy.....	2,051,118	2,204,270	1,448,886

The progress of the textile industries in the state is reflected, to a large extent, by the increases or decreases in the number of spindles, looms, knitting machines, and other equipment. The following table shows the number of the principal machines used in the combined industries and in each of the five main branches for 1909, 1904, and 1899:

MACHINE.	Census.	Total.	Woolen, worsted, and felt goods, and wool hats.	Silk and silk goods, including throwsters.	Hosiery and knit goods.	Cotton goods, including cotton small wares.	Carpets and rugs, other than rag.
Producing spindles	1909	1,971,907	642,430	1,017,992	33,648	252,671	25,160
	1904	1,707,116	590,916	785,113	25,122	266,347	39,618
	1899	1,532,521	521,726	638,851	30,624	306,637	34,683
Looms.....	1909	63,038	11,420	26,240	.....	19,404	5,965
	1904	53,165	9,848	19,336	.....	17,250	6,731
	1899	47,838	10,681	12,949	133	17,409	6,570
Knitting machines	1909	44,960	.....	.....	44,960	.....	.....
	1904	33,816	.....	.....	33,816	.....	.....
	1899	26,120	.....	.....	26,120	.....	.....
Woolen cards (sets)	1909	947	840	.....	35	.....	72
	1904	971	856	.....	39	.....	76
	1899	1,203	1,170	.....	31	.....	92
Wool-combing machines.	1909	354	342	.....	.....	.....	12
	1904	377	349	.....	.....	.....	28
	1899	357	340	.....	.....	.....	17

The total number of producing spindles increased from 1,532,521 in 1899 to 1,707,116 in 1904 and 1,971,907 in 1909, an increase during the decade of 439,386 spindles, or 28.7 per cent. The largest gain, 379,141, was in the silk mills, and the next largest,

120,704, was in the woolen and worsted mills. The number of producing spindles in the knitting mills increased only slightly, while that in the cotton mills actually decreased 53,966, and that in the carpet and rug mills, 9,517. In addition to the spindles shown in the table, 16,788 were in active use during 1909 in establishments manufacturing cordage and twine and jute and linen goods, and 425 in establishments engaged primarily in the manufacture of shoddy. In this connection attention is called to the fact that the spindle capacity of the mills in Pennsylvania is small in comparison with that in some other states, and small in comparison with the magnitude of the industry there, because in that state the establishments are engaged principally in the final processes of manufacture. To such an extent is this the fact that the state furnishes the largest market in this country for the sale of cotton yarns.

The increase in the number of looms during the decade was 15,200, or 31.8 per cent, the major part of which (13,300) occurred in the silk mills. The number of looms in cotton mills increased 1,905, while that in woolen and worsted mills increased 739. This latter increase, however, was due entirely to an increase of 2,224 looms on worsted goods, as the number on woolen goods decreased 1,485. The number of looms engaged in the manufacture of carpets and rugs increased during the five-year period 1899-1904, but shows a decrease of 611 for the decade. The increase in the number of knitting machines from 26,120 in 1899 to 44,960 in 1909, or 72.1 per cent, corresponds with the increase in the production of hosiery and knit goods. The number of woolen cards decreased, owing to the decline in the manufacture of woolen goods. The number of combing machines increased during the five-year period 1899-1904, but a loss is shown for the following five-year period, making a slight decrease for the decade.

**Woolen, worsted, and felt goods, and wool hats.**—The woolen industry in Pennsylvania was established by the English settlers in Philadelphia soon after the founding of the colony. It was characterized for many years by the number of small independent factories and the extent of hand-loom weaving. The state, and especially that part embraced by the present limits of the city of Philadelphia, has always ranked high in this industry. The next table shows the quantity and cost of the principal materials used during 1909, 1904, and 1899.

The total cost of the materials used in this industry in 1909 was \$54,634,035, an increase over the amount reported for 1899 of \$23,270,224, or 74.2 per cent. In 1909 the cost of wool constituted 49.9 per cent of the total cost of materials used, which was practically the same as the proportion in 1899 (49.7 per cent). The total quantity of wool in condition purchased increased from 61,594,080 pounds in 1899 to 101,256,902 pounds in 1909, or 64.4 per cent, and the cost from \$15,596,216

to \$27,262,676, or 74.8 per cent. Domestic wool represented 52.9 per cent of the total quantity in 1899 and 56 per cent in 1909. The quantity of animal hair used shows a decrease of 4.7 per cent in 1909 as compared with 1899 and of 28.7 per cent in 1909 as compared with 1904. A large portion of the animal hair reported for this industry is used in the production of yarns for the carpet and rug mills, and hence the decrease may be accounted for at least, in part, by the decline in the production of ingrain carpets. The quantity of tailor's clippings and rags and of shoddy purchased decreased, owing to the decline in the woolen branch of the industry, where the main part of these materials are used. The quantities of raw cotton and of cotton yarn purchased by the woolen branch of the industry also decreased for the same reason. The consumption of cotton yarn in the worsted branch, however, increased substantially, rising from 2,685,332 pounds in 1899 to 6,973,960 pounds in 1909. Worsted yarn purchased increased in quantity 7,191,407 pounds, or 129.9 per cent, and in value \$7,970,466, or 204.5 per cent, while tops increased in quantity about 350 per cent and in value about 420 per cent. These large increases from 1899 to 1909 in tops and in worsted yarn purchased indicate not only a growth in the manufacture of worsted goods, but also an extension of the practice of conducting the different processes of this branch of the industry in separate establishments.

MATERIAL.	1909	1904	1899
<b>Total cost.....</b>	<b>\$54,634,085</b>	<b>\$37,246,755</b>	<b>\$31,363,861</b>
<b>Wool:</b>			
Foreign (in condition purchased)—			
Pounds.....	44,575,257	37,037,091	28,994,005
Cost.....	\$11,627,708	\$8,180,738	\$5,770,205
Domestic (in condition purchased)—			
Pounds.....	56,681,645	52,543,138	32,599,985
Cost.....	\$15,634,908	\$12,086,241	\$8,817,011
Equivalent in scoured condition, pounds.....	65,555,136	55,790,525	48,302,782
Tailors' clippings, rags, etc :			
Pounds.....	7,794,521	14,781,589	(1)
Cost.....	\$239,012	\$613,067	\$450,586
Shoddy:			
Pounds.....	4,645,405	5,070,444	6,136,770
Cost.....	\$499,133	\$705,280	\$704,050
Waste and noils:			
Pounds.....	5,716,904	4,360,585	5,721,017
Cost.....	\$1,448,961	\$669,216	\$1,180,286
Tops:			
Pounds.....	2,445,813	1,163,086	547,353
Cost.....	\$1,530,899	\$566,591	\$203,014
Animal hair:			
Pounds.....	18,776,578	26,329,597	19,668,817
Cost.....	\$900,431	\$1,529,873	\$1,108,649
Cotton:			
Pounds.....	5,017,001	5,059,285	12,322,020
Cost.....	\$536,262	\$625,052	\$860,452
Yarns, purchased:			
Woolen—			
Pounds.....	143,884	1,303,215	2,289,016
Cost.....	\$106,540	\$587,904	\$932,498
Worsted—			
Pounds.....	12,728,111	6,605,049	5,536,704
Cost.....	\$11,868,802	\$5,012,439	\$3,898,336
Merino—			
Pounds.....	1,658,124	1,779,805	3,272,029
Cost.....	\$223,853	\$349,975	\$560,000
Cotton—			
Pounds.....	11,969,645	7,191,952	12,102,014
Cost.....	\$2,801,570	\$1,514,340	\$2,273,305
Silk and spun silk—			
Pounds.....	50,663	50,132	49,074
Cost.....	\$278,289	\$268,405	\$215,609
All other—			
Pounds.....	998,600	335,186	1,055,824
Cost.....	\$20,729	\$6,615	\$51,100
Chemicals and dyestuffs.....	\$368,053	\$723,397	\$815,047
Fuel and rent of power.....	\$78,043	\$600,203	\$482,380
All other materials.....	\$5,970,832	\$2,547,850	\$1,924,333

<sup>1</sup> Not reported.

The quantity and value of the principal products returned for 1909, 1904, and 1899 are given in the following table:

PRODUCT.	1909	1904	1899
<b>Total value.....</b>	<b>\$77,446,996</b>	<b>\$55,934,250</b>	<b>\$48,765,445</b>
<b>All-wool woven goods:</b>			
Square yards.....	33,149,873	26,622,510	19,498,412
Value.....	\$22,653,317	\$16,102,796	\$10,776,645
Woolen suitings and overcoatings—			
Square yards.....	1,735,118	2,341,754	3,064,746
Value.....	\$1,266,236	\$2,058,448	\$2,363,841
Worsted suitings and overcoatings—			
Square yards.....	0,101,981	7,864,728	5,092,303
Value.....	\$7,602,570	\$5,052,400	\$3,346,842
Worsted dress goods—			
Square yards.....	18,462,858	11,662,226	5,812,516
Value.....	\$11,247,377	\$6,305,829	\$2,745,199
Flannels for underwear—			
Square yards.....	766,097	436,723	633,091
Value.....	\$430,876	\$120,696	\$238,201
Blankets—			
Square yards.....	1,424,062	1,395,707	1,463,544
Value.....	\$1,153,048	\$566,609	\$554,913
All other—			
Square yards.....	1,509,757	2,921,472	3,432,212
Value.....	\$863,210	\$1,398,814	\$1,527,649
<b>Cotton-mixed woven goods:</b>			
Square yards.....	5,104,428	14,026,477	17,380,245
Value.....	\$2,070,660	\$5,797,114	\$5,895,384
Unions, tweeds, cassimeres, etc.—			
Square yards.....	3,344,826	8,058,592	12,049,057
Value.....	\$1,255,914	\$2,782,678	\$3,875,522
All other—			
Square yards.....	1,759,602	5,967,885	5,330,188
Value.....	\$814,755	\$3,014,436	\$2,019,862
<b>Cotton-warp woven goods:</b>			
Square yards.....	30,735,663	19,452,881	31,460,590
Value.....	\$10,570,357	\$4,058,927	\$7,921,126
Wool-filling cassimeres, tweeds, suitings, etc.—			
Square yards.....	10,080,033	4,813,757	8,162,477
Value.....	\$3,662,508	\$1,457,164	\$2,285,377
Worsted-filling cassimeres, tweeds, suitings, etc.—			
Square yards.....	8,347,362	3,850,898	631,131
Value.....	\$3,996,018	\$913,490	\$331,010
Cotton-warp blankets—			
Square yards.....	3,498,778	2,063,200	6,665,804
Value.....	\$633,948	\$359,682	\$991,634
All other—			
Square yards.....	8,009,790	7,786,026	16,001,178
Value.....	\$2,377,883	\$2,228,591	\$4,313,105
Felt cloths, endless bolts, hair felting, and other felts.....	\$611,688	\$367,198	\$169,633
Hats, wool-felt:			
Dozens.....	303,308	158,585	279,768
Value.....	\$1,431,342	\$647,064	\$1,003,665
Partly manufactured products for sale:			
Woolen yarn—			
Pounds.....	25,211,815	37,044,638	29,161,075
Value.....	\$5,965,431	\$7,102,619	\$5,270,265
Worsted yarn—			
Pounds.....	28,656,142	23,371,893	16,813,647
Value.....	\$23,078,492	\$16,228,170	\$11,881,113
Merino yarn—			
Pounds.....	11,710,956	5,663,160	12,294,474
Value.....	\$4,180,074	\$1,202,628	\$2,601,468
Worsted tops and slubbing—			
Pounds.....	2,252,927	550,525	(1)
Value.....	\$1,401,562	\$330,798	(2)
Noils.....			
Pounds.....	6,006,230	3,898,629	2,084,381
Value.....	\$1,895,601	\$1,186,447	\$793,279
Waste.....			
Pounds.....	5,236,102	4,759,554	725,532
Value.....	\$590,466	\$329,565	\$109,466
Amount received for contract work.....	\$748,822	\$396,808	\$465,175
All other products.....	\$1,347,825	\$1,224,116	\$1,797,326

<sup>1</sup> Included in worsted yarn.

The total value of all products for the combined industry was \$77,446,996 in 1909, as compared with \$48,765,445 in 1899, representing a gain of \$28,681,551, or 58.8 per cent, during the decade. The value of products of the woolen branch of the industry, however, decreased about one-third, from \$25,389,344 in 1899 to \$16,033,077 in 1909, while the value of products of the worsted branch increased from \$22,109,392 in 1899 to \$59,416,106 in 1909. These figures show very forcibly the decline in the woolen branch of the industry and the marked growth in the worsted branch. The disparity between these two main branches of the industry would be greater were it not for the manufac-

ture of carpet yarns, the value of which forms a considerable portion of the total value of products of the woolen branch.

One of the striking features of the table is the steady increase from census to census in the production of all-wool woven goods. The output of such goods increased from 19,498,412 square yards, valued at \$10,776,645, in 1899, to 33,149,873 square yards, valued at \$22,653,317, in 1909, a gain of 70 per cent in quantity and of 110.2 per cent in value. The largest part of this gain was in worsted dress goods, although worsted suitings and overcoatings increased substantially. The production of cotton-mixed goods, which are more generally manufactured in the woolen branch of the industry, decreased from 17,389,245 square yards in 1899 to 5,104,428 square yards in 1909, a loss of 70.6 per cent for the decade. Cotton-warp woven goods show a small decrease in quantity between 1899 and 1909, but their value increased from \$7,921,126 to \$10,570,357. Worsted-filling cassimeres, tweeds, suitings, etc., show a very large increase, from 631,131 square yards in 1899 to 8,347,362 square yards in 1909. There was also a gain in wool-filling cassimeres, tweeds, suitings, etc., but a marked decrease in all other kinds of cotton-warp goods.

During the decade there was a decline in the quantity of woolen yarn and merino yarn manufactured for sale, and a large increase in the quantity of worsted yarn, the amount of this class of products being 16,813,647 pounds in 1899 and 28,656,142 pounds in 1909. Noils and waste sold as such show great increases, due almost entirely to the growth in the manufacture of worsted goods. The manufacture of wool-felt hats in the state shows some gain during the 10-year period, but the rate of increase was greater in the value than in the quantity of the output.

**Silk and silk goods, including throwsters.**—The silk industry was established in Pennsylvania in 1793, the products manufactured being fringes, coach laces, and tassels. For many years the products were limited to these goods and to ribbons and various trimmings. In recent years, however, the manufacture of broad silks has been taken up and the industry has developed rapidly. The state leads in the throwing of silk. It should be noted that much of the throwing is done on contract for establishments engaged in weaving and only the amount of the commission is included in the value of products of the establishments in such instances. If allowance were made for the value of the silk thrown on commission, Pennsylvania would take first place in the silk industry as a whole.

The next table shows the quantity and cost of materials used and the quantity and value of products manufactured for 1909, 1904, and 1899.

Raw silk purchased was the most important material in cost, contributing about three-fifths of the total for all materials used during each year, and shows a gain of \$7,672,585, or 56.7 per cent, during the decade.

Spun silk and organzine and tram also made gains. The total value of products practically doubled during the 10-year period. Broad silks, of which plain and fancy silks formed almost two-thirds in 1909, increased in quantity from 26,853,449 yards to 65,569,386 yards, or 144.2 per cent. The increase in ribbons is notable, as the value more than doubled. In 1899 \$1,070,133 were received for contract work, but in 1909 the amount was \$4,416,978, nearly all of which represented receipts for the throwing of silk on commission. In 1909, 7,733,016 pounds of silk were thrown on commission in the state, representing 60.6 per cent of the total quantity of silk thrown on contract in the United States. Of this amount, 4,150,688 pounds were thrown into organzine and 3,582,328 pounds into tram.

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$35,165,571</b>	<b>\$24,267,122</b>	<b>\$19,884,869</b>
<b>Silk:</b>			
Raw—			
Pounds.....	5,532,073	3,070,044	3,238,285
Cost.....	\$21,206,972	\$15,410,221	\$13,534,387
Spun—			
Pounds.....	605,067	454,074	477,543
Cost.....	\$1,506,914	\$876,485	\$979,506
Artificial—			
Pounds.....	127,486	127,192	529
Cost.....	\$273,640	\$394,126	\$3,115
Organzine and tram—			
Pounds.....	1,719,952	1,202,805	\$71,235
Cost.....	\$7,531,045	\$5,390,493	\$3,704,840
<b>Yarns other than silk:</b>			
Cotton—			
Pounds.....	2,809,000	2,591,135	1,759,759
Cost.....	\$1,077,157	\$995,915	\$465,812
Mercerized cotton—			
Pounds.....	309,063	227,044	30,070
Cost.....	\$224,029	\$168,025	\$23,121
Wool—			
Pounds.....	83,075	48,870	8,717
Cost.....	\$98,340	\$47,900	\$5,743
Other:			
Pounds.....	186,170	53,453	78,923
Cost.....	\$167,214	\$74,292	\$69,742
Chemicals and dyestuffs.....	\$53,080	\$26,363	(1)
Fuel and rent of power.....	\$495,850	\$317,231	\$174,388
All other materials.....	\$2,481,315	\$887,029	\$937,215
<b>Products, total value.....</b>	<b>\$62,061,302</b>	<b>\$39,333,520</b>	<b>\$31,072,026</b>
Organzine and tram for sale:			
Pounds.....	1,042,064	1,396,424	1,723,791
Value.....	\$7,475,327	\$9,124,717	\$8,011,155
Machinist, sewing, embroidery, and wash silks, and fringe and loss:			
Pounds.....	174,468	183,776	246,213
Value.....	\$824,613	\$837,466	\$1,279,218
Broad silks (all silk and silk mixed):			
Plain and fancies—			
Yards.....	43,380,999	26,465,296	18,566,855
Value.....	\$26,367,799	\$15,572,901	\$10,312,848
Jacquard—			
Yards.....	2,019,365	1,300,968	959,422
Value.....	\$1,123,523	\$821,834	\$529,545
Piece dyed—			
Yards.....	20,180,052	15,788,680	7,337,352
Value.....	\$8,280,870	\$4,427,795	\$2,140,806
Ribbons.....	\$16,008,146	\$5,573,799	\$4,368,399
Laces, embroideries, fringes, and braids..	\$780,047	\$773,847	\$293,008
Trimmings.....	\$1,498,148	\$1,326,307	\$1,010,146
All other products.....	\$1,285,821	\$1,880,535	\$2,048,609
Amount received for contract work.....	\$4,416,978	\$1,094,319	\$1,070,133
<b>Silk thrown on commission, total pounds.....</b>	<b>7,733,016</b>	<b>4,116,299</b>	<b>2,269,673</b>
Into organzine, pounds.....	4,150,688	2,288,174	1,332,758
Into tram, pounds.....	3,582,328	1,828,125	926,915

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

**Hosiery and knit goods.**—The manufacture of hosiery was introduced into the United States at Germantown, now a part of the city of Philadelphia, about 1698, and this city has always been the center of this branch of the textile industry in America. The next table shows the quantity and cost of materials used and the quantity and value of products manufactured for 1909, 1904, and 1899.

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$27,217,951</b>	<b>\$16,037,098</b>	<b>\$10,935,763</b>
<b>Cotton:</b>			
Pounds.....	2,506,120	1,874,685	2,218,426
Cost.....	\$302,702	\$226,907	\$189,401
<b>Wool (in condition purchased):</b>			
Pounds.....	467,877	1,168,283	1,347,914
Cost.....	\$205,403	\$432,069	\$474,260
Equivalent in scoured condition, pounds.....	435,848	1,056,052	1,069,994
<b>Shoddy and wool waste and noils:</b>			
Pounds.....	960,029	777,995	593,985
Cost.....	\$303,217	\$232,754	\$163,309
<b>Yarns, purchased:</b>			
<b>Cotton—</b>			
Pounds.....	59,035,958	46,895,164	38,323,301
Cost.....	\$16,283,401	\$10,305,172	\$7,183,052
<b>Woolen—</b>			
Pounds.....	618,809	661,645	469,163
Cost.....	\$399,134	\$360,533	\$219,025
<b>Worsted—</b>			
Pounds.....	1,684,786	1,584,717	1,116,863
Cost.....	\$1,616,975	\$1,350,070	\$861,068
<b>Merino—</b>			
Pounds.....	389,296	178,619	350,011
Cost.....	\$202,453	\$104,827	\$92,478
<b>Silk and spun silk—</b>			
Pounds.....	250,467	73,606	30,397
Cost.....	\$978,071	\$204,872	\$103,169
<b>Linen, jute, and other vegetable fiber—</b>			
Pounds.....	15,975	6,827	500
Cost.....	\$17,507	\$6,259	\$100
<b>Chemicals and dyestuffs.....</b>	<b>\$804,020</b>	<b>\$431,492</b>	<b>\$271,062</b>
<b>Fuel and rent of power.....</b>	<b>\$421,700</b>	<b>\$284,194</b>	<b>\$177,398</b>
<b>All other materials.....</b>	<b>\$5,683,362</b>	<b>\$2,097,943</b>	<b>\$1,200,761</b>
<b>Products, total value.....</b>	<b>\$49,057,506</b>	<b>\$30,812,211</b>	<b>\$21,929,426</b>
<b>Hose and half hose:</b>			
Total dozen pairs.....	27,832,001	20,327,710	15,232,324
Total value.....	\$30,847,344	\$19,182,697	\$13,189,964
<b>Cotton—</b>			
Dozen pairs.....	27,130,582	10,707,227	14,858,506
Value.....	\$28,607,548	\$17,704,113	\$12,466,182
<b>Hose—</b>			
Dozen pairs.....	13,876,803	11,769,534	7,803,561
Value.....	\$16,058,169	\$11,317,892	\$7,655,360
<b>Half hose—</b>			
Dozen pairs.....	13,262,080	7,937,693	6,994,045
Value.....	\$12,639,379	\$6,470,311	\$4,810,822
<b>Woolen or worsted and merino—</b>			
Dozen pairs.....	547,522	509,448	367,818
Value.....	\$950,391	\$1,100,325	\$633,782
<b>Hose—</b>			
Dozen pairs.....	295,023	354,240	187,871
Value.....	\$501,105	\$648,933	\$379,075
<b>Half hose—</b>			
Dozen pairs.....	252,499	245,208	179,947
Value.....	\$458,286	\$457,392	\$254,707
<b>Silk—</b>			
Dozen pairs.....	145,497	21,035	0,000
Value.....	\$1,190,405	\$282,259	\$90,000
<b>Shirts and drawers:</b>			
<b>Cotton—</b>			
Dozens.....	6,552,364	3,852,513	2,670,341
Value.....	\$8,833,761	\$4,950,879	\$3,456,095
<b>Merino—</b>			
Dozens.....	161,883	150,519	114,183
Value.....	\$921,319	\$710,547	\$647,285
<b>All other—</b>			
Dozens.....	7,322	26,456	60,813
Value.....	\$59,974	\$279,142	\$443,201
<b>Combination suits:</b>			
<b>Cotton—</b>			
Dozens.....	412,567	271,069	374,057
Value.....	\$1,155,327	\$657,824	\$702,523
<b>Merino—</b>			
Dozens.....	23,293	9,858	29,360
Value.....	\$234,855	\$76,211	\$208,844
<b>All other—</b>			
Dozens.....	440	(1)	1,115
Value.....	\$4,100	(1)	\$15,120
<b>Gloves and mittens:</b>			
Dozen pairs.....	284,031	152,714	82,163
Value.....	\$1,037,894	\$442,552	\$107,545
<b>Hoods, scarfs, nubias, etc.:</b>			
Dozens.....	138,427	70,400	42,760
Value.....	\$581,208	\$202,450	\$127,785
<b>Cardigan jackets, sweaters, etc.:</b>			
Dozens.....	221,700	145,503	86,191
Value.....	\$2,986,061	\$1,858,152	\$630,707
<b>All other products.....</b>	<b>\$2,995,663</b>	<b>\$2,445,727</b>	<b>\$2,433,757</b>

<sup>1</sup> Included in "All other products."

During the decade the cost of materials increased \$16,282,188, or 148.9 per cent. Cotton yarns purchased increased in quantity from 38,323,301 pounds in 1899 to 59,035,958 pounds in 1909, a gain of 54 per cent. The quantity of wool purchased declined, while there was an increase in the quantity of raw cotton, of shoddy and wool waste and noils, and of the different kinds of yarn purchased.

The total value of products was \$21,929,426 in 1899 and \$49,657,506 in 1909, an increase of 126.4 per cent during the 10-year period. Nearly two-thirds of the total represents the value of hosiery, which increased \$2.7 per cent in quantity and 133.9 per cent in value from 1899 to 1909. Almost all the hosiery produced was cotton. There was a gain of 48.9 per cent in the output of hosiery in which wool was the chief material and a large gain in silk hosiery. The production of shirts and drawers, gloves and mittens, hoods, scarfs, nubias, etc., and cardigan jackets, sweaters, etc., more than doubled during the decade, while the production of combination suits showed comparatively little increase.

**Cotton goods, including cotton small wares.**—As early as 1775 a spinning jenny, with 24 spindles, was operated in Philadelphia and in 1810, 611,481 yards of cotton goods were manufactured in the state. In the manufacture of certain kinds of cotton goods, such as lace and lace curtains and cotton tapestries, the state ranks first.

The following table shows the quantity and cost of the principal materials used and the quantity and value of the leading products for 1909, 1904, and 1899:

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$18,767,025</b>	<b>\$14,321,577</b>	<b>\$13,176,718</b>
<b>Cotton:</b>			
<b>Domestic—</b>			
Pounds.....	23,607,052	24,810,154	35,083,214
Cost.....	\$2,540,885	\$2,743,500	\$2,521,768
<b>Foreign—</b>			
Pounds.....	2,080,045	1,063,566	1,466,319
Cost.....	\$336,765	\$175,574	\$168,704
<b>Cotton yarn:</b>			
Pounds.....	46,787,095	41,262,481	39,037,206
Cost.....	\$10,862,298	\$9,780,109	\$7,337,382
<b>Silk and spun silk yarn:</b>			
Pounds.....	144,128	143,471	230,634
Cost.....	\$469,370	\$420,457	\$637,681
<b>Other yarns:</b>			
Pounds.....	1,709,440	1,082,762	1,715,626
Cost.....	\$965,106	\$359,136	\$604,219
<b>Cotton waste:</b>			
Pounds.....	1,310,239	2,140,344	2,266,614
Cost.....	\$80,421	\$122,785	\$108,042
<b>Starch.....</b>	<b>\$52,359</b>	<b>\$60,072</b>	<b>\$43,184</b>
<b>Chemicals.....</b>	<b>\$480,337</b>	<b>\$417,171</b>	<b>\$455,106</b>
<b>Fuel and rent of power.....</b>	<b>\$450,080</b>	<b>\$475,112</b>	<b>\$308,308</b>
<b>All other materials.....</b>	<b>\$2,528,405</b>	<b>\$801,655</b>	<b>\$841,274</b>
<b>Products, total value.....</b>	<b>\$33,917,033</b>	<b>\$26,299,853</b>	<b>\$25,447,697</b>
<b>Fancy woven fabrics:</b>			
Square yards.....	32,806,629	30,398,352	30,081,363
Value.....	\$5,119,822	\$3,983,365	\$3,006,347
<b>Coltonades:</b>			
Square yards.....	4,530,280	8,127,907	7,004,749
Value.....	\$1,150,291	\$1,471,202	\$1,134,039
<b>Corduroy, cotton velvet, and plush:</b>			
Square yards.....	3,038,045	2,944,944	3,045,504
Value.....	\$1,515,405	\$1,182,671	\$1,419,574
<b>Upholstery goods:</b>			
<b>Tapestries (piece goods and curtains)—</b>			
Square yards.....	8,783,807	8,601,354	9,586,600
Value.....	\$4,163,083	\$4,070,048	\$4,048,784
<b>Lace and lace curtains—</b>			
Square yards.....	66,807,709	41,374,250	30,925,198
Value.....	\$7,238,321	\$5,500,180	\$3,028,615
<b>All other, including covers—</b>			
Square yards.....	2,502,002	1,448,741	2,400,425
Value.....	\$1,072,348	\$601,133	\$527,302
<b>Cotton towels and toweling:</b>			
Square yards.....	10,501,557	5,408,582	(1)
Value.....	\$1,749,313	\$1,100,601	(1)
<b>All other woven goods:</b>			
Square yards.....	31,671,270	23,511,283	41,221,811
Value.....	\$3,347,791	\$2,344,249	\$3,323,550
<b>Tape and webbing.....</b>	<b>\$2,141,821</b>	<b>\$1,742,185</b>	<b>\$984,510</b>
<b>Yarns manufactured for sale:</b>			
Pounds.....	11,448,343	14,303,093	18,718,490
Value.....	\$2,591,458	\$2,812,445	\$2,811,123
<b>Cotton waste not used for further manufacture:</b>			
Pounds.....	3,038,771	2,277,242	5,664,523
Value.....	\$96,340	\$70,970	\$115,247
<b>All other products.....</b>	<b>\$3,720,940</b>	<b>\$1,341,824</b>	<b>\$3,848,594</b>

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

One of the striking changes in the industry in the state has been the decline in recent years in the spinning of cotton, which has been accompanied by an increased dependence upon yarns manufactured elsewhere. This is evidenced by the figures in the table, which show that the quantity of cotton used decreased from 36,549,533 pounds in 1899 to 25,688,597 pounds in 1909, while that of cotton yarn purchased increased from 39,937,206 pounds in 1899 to 46,787,905 pounds in 1909.

The most important single product manufactured was lace and lace curtains, which increased in value during the decade from \$3,028,615 to \$7,238,321, or 139 per cent. Of the total quantity of lace and lace curtains manufactured in the United States in 1909, 82.5 per cent was reported from Pennsylvania.

**Carpets and rugs, other than rag.**—In the manufacture of carpets and rugs, Pennsylvania has always held an important position among the states. As early as 1791 there was a factory in Philadelphia engaged in the manufacture of Turkey and Axminster carpets. At the census of 1849 Massachusetts led in the industry, but, at each census from 1859 to 1904, inclusive, Pennsylvania ranked first in value of products; New York took first place in 1909, but with a product only slightly greater in value than that reported for Pennsylvania. The industry in Pennsylvania is confined almost entirely to the city of Philadelphia, where the manufacture of ingrain is strongly established. With an output of 18,722,998 square yards in 1909, or 78.2 per cent of the total for the country, Philadelphia led all other cities in the production of ingrain carpets and rugs.

The next table shows the quantity and cost of the principal materials used and the quantity and value of the important products in 1909, 1904, and 1899.

The cost of materials and the value of products increased slightly during the 10-year period covered by the table, although there was a decrease in each between 1904 and 1909. The quantity of both wool and animal hair used decreased more than one-half. Tailors' clippings, rags, and shoddy increased markedly in quantity between 1899 and 1904, but from 1904 to 1909 they decreased more than one-half. Comparatively little change took place in the quantities of the other materials used.

The total output of carpet decreased from 38,373,245 square yards in 1899 to 36,953,509 square yards in 1904 and to 26,305,322 square yards in 1909, a loss for the decade of 12,067,923 square yards, or 31.4 per cent. This decrease is accounted for by the decline in the production of ingrain carpets. Axminster and Moquette, Wilton, and Brussels carpets all show marked increases in quantity, especially for the later period, 1904-1909. Velvet and tapestry Brussels, although showing a slight increase in quantity for the decade as a whole, decreased slightly between 1904 and 1909. The output of rugs woven whole more than doubled during the decade, but practically all of this increase came in the earlier five-year period.

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$14,648,268</b>	<b>\$16,706,481</b>	<b>\$13,773,788</b>
Wool (in condition purchased):			
Pounds.....	5,787,409	9,126,230	11,508,721
Cost.....	\$1,047,177	\$1,722,097	\$1,713,164
Equivalent in scoured condition,			
pounds.....	4,309,413	4,818,741	8,189,811
Animal hair:			
Pounds.....	1,795,124	4,253,081	4,307,897
Cost.....	\$131,765	\$277,186	\$389,831
Tailors' clippings, rags, and shoddy:			
Pounds.....	1,267,042	2,645,628	737,580
Cost.....	\$71,050	\$213,130	\$43,145
Yarns, purchased:			
Woolen—			
Pounds.....	22,320,073	26,077,069	28,029,987
Cost.....	\$4,306,006	\$5,144,231	\$4,218,605
Worsted—			
Pounds.....	5,360,220	6,202,815	6,504,583
Cost.....	\$2,592,410	\$2,045,955	\$2,481,729
Cotton—			
Pounds.....	14,385,050	17,296,402	13,215,760
Cost.....	\$2,674,810	\$2,937,387	\$1,939,047
Linen—			
Pounds.....	1,483,090	1,232,433	1,699,108
Cost.....	\$285,481	\$220,001	\$252,310
Jute, ramie, or other yarns of vegetable fiber—			
Pounds.....	16,646,563	17,990,828	15,784,309
Cost.....	\$1,213,413	\$1,331,559	\$1,101,507
All other—			
Pounds.....	779,528	1,112,138	418,114
Cost.....	\$404,521	\$330,285	\$331,525
Chemicals and dyestuffs.....	\$861,323	\$681,247	\$550,542
Fuel and rent of power.....	\$276,388	\$245,092	\$235,763
All other materials.....	\$783,945	\$648,061	\$516,620
<b>Products, total value.....</b>	<b>\$24,879,232</b>	<b>\$27,120,811</b>	<b>\$23,113,668</b>
Carpets and rugs of all kinds:			
Square yards.....	36,222,080	45,703,862	43,046,297
Value.....	\$21,570,818	\$23,050,927	\$19,179,041
Carpets, including rugs made by sewing strips of carpet—			
Square yards.....	26,305,322	36,953,509	38,373,245
Value.....	\$15,373,145	\$18,289,962	\$15,948,034
Axminster and Moquette—			
Square yards.....	1,249,311	226,500	.....
Value.....	\$1,375,832	\$231,510	.....
Wilton—			
Square yards.....	1,840,125	400,188	358,972
Value.....	\$2,710,730	\$682,825	\$509,637
Brussels—			
Square yards.....	1,121,788	564,095	567,261
Value.....	\$1,344,420	\$724,129	\$613,633
Velvet—			
Square yards.....	3,241,155	3,343,512	2,220,401
Value.....	\$2,041,704	\$2,850,000	\$1,880,137
Tapestry Brussels—			
Square yards.....	2,713,187	3,066,808	2,140,066
Value.....	\$1,927,853	\$2,650,086	\$1,340,978
Ingrain—			
Square yards.....	16,139,756	28,752,406	33,067,645
Value.....	\$5,072,588	\$11,150,812	\$11,603,649
Rugs woven whole—			
Square yards.....	9,916,758	8,810,343	4,673,052
Value.....	\$6,107,173	\$5,369,095	\$3,231,007
Wilton—			
Square yards.....	400,800	558,118	96,860
Value.....	\$762,534	\$1,052,071	\$138,842
Tapestry Brussels—			
Square yards.....	1,467,919	(1)	(1)
Value.....	\$1,104,682	(1)	(1)
Ingrain art squares—			
Square yards.....	5,439,266	5,747,587	2,380,126
Value.....	\$2,018,846	\$2,016,159	\$999,360
All other—			
Square yards.....	2,518,773	2,504,638	2,196,057
Value.....	\$2,311,111	\$2,292,135	\$2,092,805
All other products.....	\$3,308,914	\$3,469,384	\$3,934,817

<sup>1</sup> Included in "All other rugs."

**Fur-felt hats.**—Pennsylvania held first place among the states in the manufacture of fur-felt hats in 1909 and the city of Philadelphia reported about 80 per cent of the total value of these products for the state. The next table gives detailed statistics of materials and products for 1909, 1904, and 1899.

The industry shows a large increase for each of the five-year periods. During the decade the total cost of materials increased \$3,145,904, or 168.5 per cent. Hatters' fur increased in quantity from 817,311 pounds, costing \$933,748, to 1,976,118 pounds, costing \$2,420,635, thus more than doubling in both quantity and cost. During the same period the value of products more than trebled, increasing from \$4,243,352 to \$13,022,617, and the number of fur-felt hats produced

increased from 280,880 dozens to 668,696 dozens, or 138.1 per cent.

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost</b> .....	<b>\$5,012,770</b>	<b>\$2,728,895</b>	<b>\$1,866,306</b>
Hatters' fur:			
Pounds.....	1,976,118	1,227,951	817,311
Cost.....	\$2,420,635	\$1,307,816	\$933,748
Fur-felt hat bodies and hats in the rough:			
Dozens.....	26,084	23,512	5,045
Cost.....	\$175,642	\$156,420	\$42,341
Chemicals and dyestuffs.....	\$164,843	\$72,931	\$77,317
All other materials.....	\$2,251,650	\$1,191,728	\$813,460
<b>Products, total value</b> .....	<b>\$13,022,617</b>	<b>\$7,350,311</b>	<b>\$4,243,352</b>
Fur-felt hats:			
Dozens.....	668,696	413,506	280,880
Value.....	\$12,943,334	\$7,270,067	\$4,203,169
All other products.....	\$70,283	\$80,244	\$40,183

Leather, tanned, curried, and finished.—The following table gives for the tanning, currying, and finishing of leather the quantity and cost of the various materials and the quantity and value of the different products for 1909, 1904, and 1899:

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost</b> .....	<b>\$59,113,124</b>	<b>\$55,411,927</b>	<b>\$42,403,503</b>
Hides (all kinds):			
Number.....	5,449,826	5,447,947	4,848,759
Cost.....	\$30,118,025	\$26,416,581	\$22,955,326
Skins:			
Number.....	25,785,601	28,149,914	24,300,676
Cost.....	\$14,490,256	\$16,712,667	\$11,504,911
Calf and kip—			
Number.....	142,404	292,500	388,205
Cost.....	\$212,310	\$501,930	\$394,081
Goat—			
Number.....	23,117,712	24,220,530	21,854,197
Cost.....	\$12,900,125	\$13,046,179	\$10,566,740
Sheep—			
Number.....	2,445,024	2,402,204	1,949,730
Cost.....	\$1,160,130	\$715,166	\$492,520
All other—			
Number.....	80,401	1,234,680	108,544
Cost.....	\$208,685	\$1,849,392	\$50,661
Purchased rough leather used.....	\$2,692,729	\$1,573,680	\$301,969
Whole sides—			
Number.....	555,403	306,680	184,654
Cost.....	\$1,440,104	\$1,464,027	\$902,537
All other.....	\$1,252,625	\$109,662	\$220,412
All other materials.....	\$11,912,114	\$10,708,990	\$7,051,267
<b>Products, total value</b> .....	<b>\$77,928,321</b>	<b>\$69,427,852</b>	<b>\$55,615,000</b>
Leather.....	\$73,255,418	\$66,292,074	\$53,857,074
Sole.....	\$39,904,180	\$33,553,676	\$28,601,603
Hemlock—			
Sides.....	4,752,368	5,672,327	5,481,306
Value.....	\$17,194,832	\$17,829,564	\$16,779,341
Oak and chrome—			
Sides.....	779,242	331,766	335,894
Value.....	\$4,735,428	\$1,807,731	\$1,854,243
Union—			
Sides.....	3,675,802	3,472,046	2,366,322
Value.....	\$17,973,900	\$13,856,381	\$10,088,019
Upper, other than calf or kip skins.....	\$1,821,432	\$642,193	\$2,032,111
Grain, satin, pebble, etc. (side leather)—			
Sides.....	315,210	70,461	632,780
Value.....	\$1,049,815	\$158,721	\$1,400,727
Finished splits—			
Number.....	588,730	64,413	636,969
Value.....	\$303,409	\$83,472	\$626,134
Patent and enameled shoe—			
Sides.....	127,952	392,000	2,500
Value.....	\$408,208	\$400,000	\$5,250
Horsehides and coltskins—			
Number.....	626,556	1,234,119	6,263
Value.....	\$2,413,861	\$3,450,959	\$25,677
Calf and kip skins, tanned and finished—			
Number.....	145,139	243,956	419,593
Value.....	\$334,002	\$621,893	\$641,955
Goatskins, tanned and finished—			
Number.....	23,822,068	22,909,407	21,602,961
Value.....	\$19,975,045	\$19,150,181	\$15,706,782
Black—			
Number.....	22,415,255	20,623,993	19,828,120
Value.....	\$18,091,232	\$17,153,227	\$14,182,422
Colored—			
Number.....	1,406,753	1,985,414	1,774,832
Value.....	\$1,283,813	\$2,022,954	\$1,614,360
Sheepskins, tanned and finished—			
Number.....	1,772,091	1,090,180	1,080,822
Value.....	\$1,267,974	\$597,879	\$600,423

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Products—Continued.</b>			
Leather—Continued.			
Harness—			
Sides.....	257,044	518,178	450,362
Value.....	\$1,960,659	\$2,980,450	\$2,491,722
Carriage, automobile, and furniture—			
Hides.....	83,836	47,418	42,000
Value.....	\$591,980	\$307,278	\$479,256
Trunk, bag, and pocketbook.....	\$1,608,576	\$751,772	\$475,939
Leather sold in the rough.....	\$1,182,142	\$2,298,580	\$1,318,801
All other.....	\$2,104,967	\$1,952,243	\$1,302,805
All other products.....	\$1,412,742	\$1,166,086	\$592,954
Work on materials for others.....	\$3,258,161	\$1,009,092	\$1,164,981

The cost of materials was \$42,403,503 in 1899, \$55,411,927 in 1904, and \$59,113,124 in 1909, representing an increase of 30.7 per cent in the earlier five-year period and of 6.7 per cent in the later. The number of hides and skins treated increased 15.3 per cent from 1899 to 1904 and decreased 7 per cent from 1904 to 1909. Included in the cost of "All other materials" is that of bark and extracts. In 1909, 310,279 tons of tan bark were reported, costing \$2,997,026, and 124,742,847 pounds of tanning extract, costing \$3,665,942.

Of the total value of leather tanned, curried, and finished in the United States, this state reported 23.8 per cent in 1909, 27.5 per cent in 1904, and 27.3 per cent in 1899. It is especially prominent in the manufacture of sole leather and goatskins, producing in 1909 nearly one-half of the total output of each for the United States. The value of "All other products" and the amount received for work on materials for others also show large increases for both census periods. Practically all the leather was finished in the establishment tanning it, as comparatively little rough leather for currying is shown under materials or products.

Printing and publishing.—The following tabular statement shows, by period of issue, the number of publications and their aggregate average circulation for 1909, 1904, and 1899:

PERIOD OF ISSUE.	NUMBER OF PUBLICATIONS.			AGGREGATE CIRCULATION PER ISSUE.		
	1909	1904	1899	1909	1904	1899
<b>Total</b> .....	<b>1,520</b>	<b>1,474</b>	<b>1,386</b>	<b>19,674,336</b>	<b>17,867,706</b>	<b>11,280,367</b>
Daily.....	223	220	196	2,024,300	2,520,587	1,917,420
Sunday.....	27	27	21	1,481,282	1,269,160	(9)
Semiweekly and tri-weekly.....	52	52	52	243,089	467,339	290,348
Weekly.....	847	887	883	5,319,621	5,282,091	3,691,954
Monthly.....	253	212	178	6,107,571	4,385,080	3,246,779
Quarterly.....	97	60	42	3,516,933	3,758,107	1,991,810
All other classes.....	21	10	14	82,134	154,225	142,041

1 Included in circulation for dailies.

The total number of publications increased from 1,386 in 1899 to 1,520 in 1909, and the aggregate average circulation increased from 11,280,367 to 19,674,336. The largest increase in circulation, 2,860,792, is shown for monthlies, while dailies also show a large gain. The aggregate average circulation of weeklies increased 44.1 per cent and of quarterlies 76.6 per cent, while semiweeklies and triweeklies and "All other classes" show decreases.

The following statement shows for 1909 and 1904 the number and circulation of the various classes of pub-

lications, classified as printed in English or printed in a foreign language. Papers printed partly in English and partly in a foreign language are classified in the foreign group.

PERIOD OF ISSUE.	TOTAL.		IN ENGLISH.		IN FOREIGN LANGUAGES. <sup>1</sup>	
	Number.	Aggregate circulation per issue.	Number.	Aggregate circulation per issue.	Number.	Aggregate circulation per issue.
Total.....	1,520	19,674,336	1,424	19,265,581	96	408,755
Daily.....	223	2,924,306	215	2,848,657	8	75,649
Sunday.....	27	1,481,282	22	1,424,350	5	56,932
Weekly.....	847	5,319,021	778	5,132,782	69	186,239
Monthly.....	253	6,107,571	244	6,050,536	9	57,035
All other classes.....	170	3,842,156	165	3,809,256	5	32,900

<sup>1</sup> Includes those printed in English and a foreign language.

Ninety-three and seven-tenths per cent of the total number of publications, with 97.9 per cent of the total circulation, were printed in English. Of the 8 dailies printed in foreign languages, 5 were published in German and 2 in Italian, while 1 was reported as Slovak. The 69 weeklies were made up of 33 published in German, 20 in Letto-Slavic languages, 11 in Italian, 2 in Hungarian, and 1 each in French, Hebrew, and Swedish. Of the 9 monthlies, 4 each were published in German and in Letto-Slavic, and 1 in Swedish; and of the 5 publications included under the head of "All other classes," 4 were published in German and 1 in Lithuanian.

**Lumber.**—Although Pennsylvania is not specially prominent in the production of rough lumber, standing fourteenth among the states in this respect at the census of 1909, it ranked fourth in 1899 and was the leading state in this branch of the industry at the census of 1859. In the following tabular statement is shown the production of rough lumber, lath, and shingles in 1909 and 1899:

PRODUCT.	QUANTITY.	
	1909	1899
Lumber.....M feet b. m.....	1,462,771	2,333,278
Lath.....thousands.....	143,059	266,949
Shingles.....thousands.....	79,336	309,858

From 1899 to 1909 there was a decrease of 37.3 per cent in the production of rough lumber, of 46.4 per cent in the production of lath, and of 78.5 per cent in the production of shingles. The decline, during recent years, in the production of lumber in this state is due, in the main, to the rapidly diminishing supply of merchantable timber. As a result of this condition the annual output was not only substantially smaller at the end than at the beginning of the decade covered, but the composition of the total was materially changed. Whereas the conifers, particularly hemlock, white pine, and spruce, were drawn upon chiefly for many decades as a source of lumber, the diminished supply of this class of timber has brought into greater relative prominence the hardwoods. In 1909 only 56.1 per cent of the total quantity of lumber

produced was softwood, whereas in 1899 the proportion was 77.2 per cent. The output of oak lumber in 1909 formed more than one-fifth of the total, and relatively large quantities were also cut from chestnut, maple, beech, birch, hickory, yellow poplar, basswood, and ash, ranking in order named. In 1909 there were 15 mills which cut from 10,000 to 25,000 M feet board measure, 4 that cut from 25,000 to 50,000 M feet, and 3 that cut over 50,000 M feet.

**Petroleum refining.**—The high rank of Pennsylvania in petroleum refining is due largely to the fact that petroleum was first produced on a commercial basis in this state and that the refineries were built near the source of supply. In the following table figures are presented showing the cost of materials, the quantity and value of the principal products, and details as to the main equipment reported for 1909, 1904, and 1899:

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$47,440,316</b>	<b>\$38,921,010</b>	<b>\$27,513,735</b>
Crude petroleum:			
Barrels of 42 gallons.....	21,893,871	17,977,686	14,500,461
Cost.....	\$38,914,307	\$31,957,135	\$23,172,609
Containers.....	\$4,481,540	\$3,184,412	\$1,802,460
All other materials.....	\$4,044,469	\$3,780,372	\$2,448,666
<b>Products, total value.....</b>	<b>\$53,088,109</b>	<b>\$47,459,502</b>	<b>\$34,977,706</b>
Illuminating oil:			
Barrels of 50 gallons.....	8,328,488	8,328,883	7,276,712
Value.....	\$24,319,743	\$25,849,501	\$20,390,603
Fuel oils (including gas oils):			
Barrels of 50 gallons.....	2,712,073	1,648,535	1,161,435
Value.....	\$4,207,308	\$2,563,439	\$1,644,044
Lubricating oils:			
Barrels of 50 gallons.....	3,124,921	1,870,437	1,271,372
Value.....	\$12,065,591	\$7,177,818	\$4,497,470
Naphtha and gasoline (including gas naphtha):			
Barrels of 50 gallons.....	2,051,118	1,774,626	1,582,262
Value.....	\$8,063,575	\$6,402,492	\$4,687,560
Paraffin wax:			
Barrels of 50 gallons.....	326,809	279,511	255,327
Value.....	\$2,450,178	\$3,017,004	\$2,244,836
Residuum, tar, greases, oil asphaltum, coke, and black naphtha.....	\$534,180	\$809,252	\$433,081
All other products.....	\$1,541,624	\$1,639,006	\$1,070,140
<b>Equipment:</b>			
Stills, number.....	579	516	528
Heated by steam—			
Number.....	102	112	100
Capacity (barrels, 42 gallons).....	170,904	( <sup>1</sup> )	( <sup>1</sup> )
Heated by superheated steam—			
Number.....	6	4	8
Capacity (barrels, 42 gallons).....	1,750	( <sup>1</sup> )	( <sup>1</sup> )
Heated by fire—			
Number.....	471	400	414
Capacity (barrels, 42 gallons).....	571,234	( <sup>1</sup> )	( <sup>1</sup> )
Agitators, number.....	143	120	113
Chilling houses for paraffin, number.....	43	48	21
Hydraulic or other presses, number.....	124	124	208
Storage tanks:			
For crude petroleum—			
Number.....	118	131	152
Capacity, gallons.....	64,429,951	42,683,050	( <sup>1</sup> )
For refined petroleum—			
Number.....	2,138	1,191	1,198
Capacity, gallons.....	224,531,444	110,111,758	( <sup>1</sup> )
Cooper shops, number.....	20	30	25
Tin shops, number.....	3	3	2

<sup>1</sup> Not reported.

From 1899 to 1909 the cost of materials increased 72.4 per cent and the value of products 51.8 per cent. The quantity of crude petroleum used as material increased from 14,500,461 barrels of 42 gallons to 21,893,871 barrels of 42 gallons, or 51 per cent, and the quantity of oils produced, including naphtha and gasoline, increased from 11,291,781 barrels of 50 gallons to 16,547,600 barrels of 50 gallons, or 46.5 per cent. The value of illuminating oil constituted 45.8 per cent of the total value of products in 1909, as compared with

54.5 per cent in 1904 and 58.3 per cent in 1899. Lubricating oils, the product second in importance, show the largest absolute and relative increase in quantity from 1904 to 1909. Comparative figures for the quantities of the other products, except paraffin wax, are not available, but the value of all such products increased 20.6 per cent during the decade.

The development of the industry is also reflected in the figures for the equipment, such as stills, storage tanks, and agitators.

**Slaughtering and meat packing.**—The following table shows the quantity and cost of the principal materials used and the quantity and value of the leading products reported for 1909, 1904, and 1899:

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost</b> .....	\$44,845,047	\$28,339,983	\$21,805,858
Beeves slaughtered:			
Number.....	252,897	197,581	130,073
Cost.....	\$14,997,080	\$10,068,306	\$6,497,257
Calves slaughtered:			
Number.....	152,851	112,807	51,510
Cost.....	\$1,704,473	\$1,025,377	\$445,811
Sheep slaughtered:			
Number.....	445,471	368,494	231,556
Cost.....	\$2,332,533	\$1,570,071	\$971,583
Hogs slaughtered:			
Number.....	1,222,880	1,085,634	831,821
Cost.....	\$10,934,874	\$10,156,069	\$6,977,465
Dressed meat purchased.....	\$4,898,407	\$3,363,793	\$5,518,048
Fuel and rent of power.....	\$239,663	\$150,750	\$94,769
All other materials.....	\$3,677,957	\$2,005,617	\$1,300,925
<b>Products, total value</b> .....	\$51,850,936	\$33,100,878	\$25,537,390
Beef, fresh:			
Pounds.....	136,838,202	117,319,123	84,181,747
Value.....	\$13,072,530	\$9,436,086	\$7,059,719
Beef, salted or cured:			
Pounds.....	2,795,672	924,173	2,515,208
Value.....	\$448,471	\$88,394	\$191,168
Veal:			
Pounds.....	13,405,455	9,007,823	4,371,144
Value.....	\$1,671,022	\$987,297	\$465,336
Mutton:			
Pounds.....	17,316,377	15,035,808	9,604,293
Value.....	\$2,149,700	\$1,440,490	\$979,064
Pork, fresh:			
Pounds.....	50,210,292	37,333,942	45,896,941
Value.....	\$0,072,517	\$3,205,575	\$3,488,370
Pork, salted or cured:			
Pounds.....	78,550,883	78,070,062	93,425,184
Value.....	\$11,110,844	\$7,079,340	\$7,906,670
Sausage, fresh or cured.....	\$5,421,307	\$2,805,029	\$1,532,434
All other fresh meat:			
Pounds.....	3,189,364	13,408,980	1,634,720
Value.....	\$195,490	\$939,079	\$128,003
Lard:			
Pounds.....	36,121,032	34,120,473	26,811,272
Value.....	\$4,522,249	\$2,534,018	\$1,733,824
Tallow and oleo stock:			
Pounds.....	6,594,450	(1)	(1)
Value.....	\$370,411	(1)	(1)
Stearin:			
Pounds.....	2,371,256	(1)	(1)
Value.....	\$303,015	(1)	(1)
Fertilizers and fertilizer materials:			
Tons.....	9,973	8,415	3,108
Value.....	\$190,762	\$140,642	\$88,009
Hides:			
Number.....	397,448	296,250	181,533
Pounds.....	10,170,059	14,019,034	8,303,766
Value.....	\$2,426,372	\$1,409,705	\$725,637
Pelts:			
Number.....	444,480	363,494	(1)
Value.....	\$455,030	\$336,037	(1)
All other products, including custom or contract work.....	\$3,426,216	\$1,947,907	\$1,238,416

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

The total cost of materials and the total value of products more than doubled during the period covered by the table. An increase in the number slaughtered is shown for each class of animals. The largest absolute increase was in the number of hogs, while the largest relative increase was in the number of calves.

Fresh meat sold as such increased 75,270,845 pounds, or 51.6 per cent, in quantity, and \$11,040,117, or 91.1 per cent, in value between 1899 and 1909, while cured

meats decreased 15.2 per cent in quantity and increased 42.8 per cent in value. In this connection attention is called to the fact that in 1904 a considerable quantity of fresh pork was reported under "All other fresh meats." During the decade lard increased 34.7 per cent in quantity and 160.8 per cent in value, and fertilizers and fertilizer materials, 220.9 per cent in quantity and 116.5 per cent in value.

**Coke.**—The manufacture of coke in the United States was begun in 1841 near Connellsville, Pa. For many years the industry was confined almost entirely to the western part of Pennsylvania, because coal suited to its manufacture was abundant there and because the iron mills of the Pittsburgh district which consumed it were near. While coke is now manufactured in a number of other states, Pennsylvania still leads in its production and supplies about two-thirds of the total for the country.

The following table presents the statistics for the principal items of materials used and of products manufactured, together with the kind and number of ovens used, for 1909, 1904, 1899:

MATERIAL, PRODUCT, OR EQUIPMENT.	1909	1904	1899
<b>Materials used, total cost</b> .....	\$33,762,453	\$14,978,581	\$11,678,079
Coal charged into ovens, tons.....	36,083,568	23,083,044	19,400,030
Run of mine—			
Unwashed.....	31,712,482	20,505,557	(1)
Washed.....	2,278,027	505,527	(1)
Slack—			
Unwashed.....	1,016,576	1,070,682	(1)
Washed.....	1,075,583	902,278	(1)
Cost.....	\$32,065,720	\$14,423,048	\$10,809,832
All other materials.....	\$1,696,724	\$555,533	\$778,247
<b>Products, total value</b> .....	\$51,816,449	\$28,924,229	\$22,282,358
Coke:			
Tons.....	24,005,525	16,273,046	13,245,594
Value.....	\$50,377,035	\$28,593,136	\$22,039,151
Made in beehive ovens—			
Tons.....	22,966,105	15,767,652	(1)
Value.....	\$45,315,189	\$27,542,495	(1)
Made in retort or by-product ovens—			
Tons.....	1,939,420	505,394	(1)
Value.....	\$5,061,840	\$1,050,641	(1)
By-products obtained from retort or by-product ovens:			
Gas made, cubic feet (thousands).....	22,255,825	4,772,401	(1)
Used in process or wasted, cubic feet (thousands).....	21,526,611	4,638,367	(1)
Sold—			
Cubic feet (thousands).....	720,214	134,034	153,201
Value.....	\$10,083	\$11,560	\$32,009
Tar—			
Gallons.....	14,248,101	3,815,240	3,504,428
Value.....	\$200,000	\$84,812	\$64,429
Ammonia sulphate—			
Pounds.....	12,483,510	1,467,317	3,046,683
Value.....	\$327,554	\$38,733	\$78,000
Ammonia liquor—			
Gallons.....	5,898,883	1,334,775	800,184
Value.....	\$504,378	\$100,104	\$61,073
All other.....	\$290,899	\$5,815	\$0,037
<b>Equipment:</b>			
Ovens, number at end of year.....	54,506	37,205	26,920
Beehive ovens.....	53,210	36,675	26,505
Retort or by-product ovens.....	1,296	530	355

<sup>1</sup> Figures not available.

During the period covered by the table the quantity of coke produced almost doubled, while its value considerably more than doubled. Although still of minor importance, coke manufactured in retort, or by-product, ovens almost quadrupled in quantity from 1904 to 1909. The value of by-products in 1909 shows a large increase over former years. The growth in the use of by-product ovens promises an important saving through the utilization of a former waste.

Flour-mill and gristmill products.—The following table gives the quantity and value of the several products of the flour mills and gristmills for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$44,782,558</b>	<b>\$38,518,702</b>	<b>\$29,570,943</b>
Wheat flour:			
White—			
Barrels.....	3,738,812	3,952,446	
Value.....	\$20,004,935	\$19,764,264	4,450,832
Graham—			
Barrels.....	11,030	16,783	\$15,935,708
Value.....	\$56,043	\$79,805	
Corn meal and corn flour:			
Barrels.....	767,462	1,097,993	864,007
Value.....	\$2,369,701	\$2,601,670	\$1,684,721
Rye flour:			
Barrels.....	154,679	128,566	124,878
Value.....	\$628,909	\$536,576	\$385,834
Buckwheat flour:			
Pounds.....	50,760,006	45,117,852	46,144,362
Value.....	\$1,289,949	\$1,076,989	\$968,470
Barley meal:			
Pounds.....	196,800	331,600	42,240
Value.....	\$2,776	\$4,106	\$1,018
Hominy and grits:			
Pounds.....	52,105,637	33,938,974	16,308,420
Value.....	\$796,433	\$411,670	\$167,793
Feed:			
Tons.....	458,007	413,246	426,431
Value.....	\$13,206,931	\$9,000,426	\$7,985,043
Offal:			
Tons.....	191,629	185,642	162,548
Value.....	\$4,774,378	\$3,774,327	\$2,300,062
All other products.....	\$1,472,413	\$189,960	\$41,734

The value of products of the industry increased from \$29,570,943 in 1899 to \$44,782,558 in 1909, an increase which is due, to a large extent, to the advance in the prices of these commodities. The quantity of wheat flour and of corn meal and corn flour manufactured decreased during the decade, while the quantity of rye flour, buckwheat flour, hominy and grits, feed, and offal increased. Barley meal, although showing a considerable increase for the decade, decreased markedly in quantity in the five-year period 1904-1909.

Glass.—In 1909 Pennsylvania reported 35.6 per cent of the total value of glass products manufactured in the United States, as against 34.8 per cent in 1904 and 38.9 per cent in 1899. The next table gives detailed statistics of materials and products in 1909, 1904, and 1899.

Large increases are shown for both five-year periods covered by the table in the total cost of all materials and in the quantities of practically all the principal materials used. The increase in the total cost of materials was 44.9 per cent from 1899 to 1904 and 35.5 per cent from 1904 to 1909. During the last-named five-year period the quantity of window glass increased 50.8 per cent, while the value per 50-foot box decreased 35.6 per cent. Plate glass, both rough and polished, also increased in quantity and decreased in value per square foot. The reductions in the value per unit of these products are due largely to the more extensive use of improved machinery. The total value of pressed and blown glass increased from \$8,453,550 in 1899 to \$9,847,228 in 1909, or 16.5 per cent, and that of bottles and jars from \$4,162,990 to \$7,778,787, or 86.9 per cent. Of the 112 establishments engaged in the manufacture of glass in Pennsylvania in 1909, 44 produced building glass; 32, pressed and blown glass; and 41, bottles, jars, etc.

MATERIAL OR PRODUCT.	1909	1904	1899
<b>Materials used, total cost</b> .....	<b>\$12,633,913</b>	<b>\$9,325,184</b>	<b>\$6,435,463</b>
Glass sand, tons.....	341,319	219,958	191,859
Soda ash, tons.....	85,607	51,742	46,398
Salt cake, tons.....	40,444	28,749	34,297
Nitrate of soda, tons.....	3,616	3,451	4,330
Limestone, tons.....	72,958	45,974	38,309
Lime, bushels.....	337,726	331,816	184,970
Arsenic, pounds.....	1,540,298	990,496	896,074
Carbon, tons.....	2,701	1,508	1,926
Manganese, pounds.....	705,021	648,924	467,581
Charge and red lead, pounds.....	4,709,539	4,030,785	3,143,727
Polish and pearlash, pounds.....	2,170,837	1,021,380	1,038,334
Grinding sand, tons.....	485,363	273,428	182,117
Itouge, pounds.....	955,525	717,071	532,524
<b>Products, total value</b> .....	<b>\$32,817,936</b>	<b>\$27,671,693</b>	<b>\$22,011,130</b>
Building glass.....	\$14,958,649	\$12,169,013	\$9,213,545
Window glass:			
50-foot boxes.....	3,635,449	2,410,400	2,068,340
Value.....	\$5,786,591	\$5,063,874	\$5,301,131
Plate glass:			
Sold rough—			
Square feet.....	151,009	8,652	579,905
Value.....	\$20,717	\$2,045	68,032
Polished—			
Square feet.....	31,841,174	17,086,094	10,877,250
Value.....	\$8,210,104	\$5,138,509	\$3,441,734
Skylight glass:			
Square feet.....	10,792,914	7,745,349	3,036,536
Value.....	\$543,019	\$357,487	\$101,293
All other.....	\$538,218	\$703,998	\$121,445
Pressed and blown glass.....	\$9,847,228	\$9,406,183	\$8,453,550
Bottles and jars.....	\$7,778,787	\$5,061,444	\$4,162,990
All other products.....	\$233,272	\$146,363	\$181,045

**Boots and shoes, including cut stock and findings.—**

The following table shows the total number of pairs of the various kinds of footwear turned out by the boot and shoe factories of Pennsylvania in 1909, 1904, and 1899:

KIND.	NUMBER OF PAIRS.		
	1909	1904	1899
Boots and shoes.....	11,631,329	9,998,589	10,978,367
Men's, boys', and youths'.....	2,048,307	2,151,742	2,082,210
Women's, misses', and children's.....	9,583,022	7,846,847	8,896,157
Slippers, all kinds.....	1,165,117	328,741	275,600
All other kinds.....	4,792,028	3,009,000	1,224,023

The total number of pairs of footwear produced in the state in 1909 was 17,588,474, a gain of 4,252,054 pairs, or 31.9 per cent, over 1904, and of 5,110,418 pairs, or 41 per cent, over 1899. Of the 11,631,329 pairs of boots and shoes made in 1909, men's, boys', and youths' formed 17.6 per cent and women's, misses', and children's 82.4 per cent. The corresponding proportions for 1904 were 21.5 per cent and 78.5 per cent, respectively.

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

KIND.	NUMBER OF PAIRS, BY METHOD OF MANUFACTURE.				
	Total.	Machine or hand welt.	Turned.	McKay.	All other methods. <sup>1</sup>
Boots and shoes.....	11,631,329	2,764,754	4,170,122	4,187,893	508,560
Men's, boys', and youths'.....	2,048,307	673,025	( <sup>2</sup> )	889,977	485,305
Women's, misses', and children's.....	9,583,022	2,091,729	4,170,122	3,297,916	23,255
Slippers, all kinds.....	1,165,117	91,739	583,741	489,637	( <sup>2</sup> )
All other kinds.....	4,792,028	579,602	3,801,268	222,783	128,375

<sup>1</sup> Includes "wooden-pegged" and "wire-screw or metal-fastened."  
<sup>2</sup> Not reported.

The greater part of the footwear manufactured in Pennsylvania, in 1909, was McKay and turned sewed, over 4,500,000 pairs of the former class and over 8,500,000 of the latter class being reported, while slightly less than 3,500,000 pairs were made by the machine or hand-welt method.

**Paper and wood pulp.**—Paper was manufactured in Pennsylvania as early as 1690 by William Rittenhouse at Roxboro, now a part of the city of Philadelphia. In the development of the industry, both in the use of new paper-making materials and in the improvement of machinery, the manufacturers of the state have taken a prominent part. Since the use of wood fiber in the manufacture of many kinds of paper has become general several of the states having an abundant supply of timber suited to the manufacture of pulp have outranked Pennsylvania in this industry. The state ranked first in 1810, second in 1840, fourth in 1849, third from 1859 to 1889, fourth in 1899, and fifth in 1904 and 1909.

The next table shows the quantity and cost of the principal materials used in the industry, the quantity and value of the principal products, and the principal equipment for the census years 1909, 1904, and 1899.

The total cost of the materials used, including fuel and rent of power, amounted to \$6,374,315 in 1899, \$8,509,546 in 1904, and \$11,398,311 in 1909, a gain of 78.8 per cent during the decade. The cost of pulp wood consumed almost trebled during this period, increasing from \$711,450 to \$2,111,025. The total quantity of wood used in the manufacture of pulp was 181,850 cords in 1899 and 243,420 cords in 1904. The schedule used in collecting the data regarding the operations of pulp mills for 1909 did not call for the quantity of pulp wood used, because this bureau, in collaboration with the Forest Service, now obtains information on this subject in connection with its annual compilation of statistics of forest products. These reports show that in 1909, 295,038 cords of pulp wood were used, representing an increase of 62.2 per cent for the decade. Of the wood pulp manufactured, 120,261 tons were for use in the establishments making it. Of this amount, 2,760 tons consisted of ground wood; 64,187 tons, of soda fiber; and 53,314 tons, of sulphite fiber. In addition, 41,062 tons of wood pulp were purchased, of which 30,712 tons, or nearly 75 per cent, were sulphite fiber. Thus the total quantity of wood pulp used during the year in the manufacture of paper was 161,323 tons, as compared with 96,022 tons in 1904 and 98,907 tons in 1899, making an increase of 63.1 per cent for the decade.

In this connection it should be explained that separate reports were secured for paper mills and pulp mills operating under the same ownership if they were located at different points; in such instances, pulp transferred from one plant to another and not actually sold was treated, for statistical purposes, as sold by the pulp mill and as purchased by the paper mill.

MATERIAL, PRODUCT, OR MACHINE.	1909	1904	1899
<b>Materials used, total cost.....</b>	<b>\$11,398,311</b>	<b>\$8,509,546</b>	<b>\$6,374,315</b>
Pulp wood.....	\$2,111,025	\$1,222,491	\$711,450
Wood pulp, purchased:			
Tons.....	41,062	30,945	30,303
Cost.....	\$1,773,404	\$1,181,511	\$929,066
Ground—			
Tons.....	6,942	6,747	5,340
Cost.....	\$163,187	\$125,463	\$116,993
Soda fiber—			
Tons.....	3,408	4,451	9,513
Cost.....	\$151,337	\$189,892	\$284,449
Sulphite fiber—			
Tons.....	30,712	19,747	15,450
Cost.....	\$1,458,970	\$866,156	\$527,624
Rags, including cotton and flax waste and sweepings:			
Tons.....	64,654	56,207	34,969
Cost.....	\$1,226,978	\$866,616	\$626,705
Old or waste paper:			
Tons.....	106,150	65,726	46,607
Cost.....	\$1,208,765	\$719,574	\$465,872
Manila stock, including jute bagging, rope, waste, and thread:			
Tons.....	9,544	11,971	7,851
Cost.....	\$327,212	\$209,469	\$270,466
Fuel and rent of power.....	\$1,544,116	\$1,196,885	\$627,866
All other materials.....	\$3,206,721	\$1,023,000	\$2,743,390
<b>Products, total value.....</b>	<b>\$10,872,717</b>	<b>\$15,411,032</b>	<b>\$12,267,900</b>
Book and cover paper:			
Tons.....	80,439	61,256	61,136
Value.....	\$6,442,043	\$4,905,068	\$4,729,921
Writing and other fine paper:			
Tons.....	39,251	22,095	19,944
Value.....	\$3,508,007	\$2,322,427	\$1,749,511
Wrapping paper:			
Tons.....	63,905	58,192	36,110
Value.....	\$3,964,578	\$3,154,038	\$2,024,486
Manila (rope, jute, tag, etc.)—			
Tons.....	5,702	5,964	6,930
Value.....	\$670,071	\$582,076	\$585,224
Heavy (mill wrappers, etc.)—			
Tons.....	36,619	31,043	5,921
Value.....	\$1,777,450	\$1,306,455	\$265,034
Bogus or wood manila—			
Tons.....	6,107	1,571	11,457
Value.....	\$278,093	\$72,898	\$657,003
All other—			
Tons.....	15,507	19,614	11,802
Value.....	\$1,228,064	\$1,131,709	\$617,225
Boards:			
Tons.....	53,963	26,398	20,486
Value.....	\$1,406,309	\$688,358	\$605,414
Building, roofing, asbestos, and sheathing paper:			
Tons.....	60,468	67,797	45,023
Value.....	\$1,937,000	\$1,847,762	\$1,313,436
All other products.....	\$2,624,720	\$2,408,379	\$1,855,132
<b>Wood pulp produced (including that used in mills where manufactured), total tons.....</b>	<b>136,850</b>	<b>83,114</b>	<b>85,433</b>
Ground, tons.....	2,760	19,000	4,505
Soda fiber, tons.....	80,774	53,082	61,662
Sulphite fiber, tons.....	53,314	10,432	19,266
<b>Machinery:</b>			
Paper machines:			
Total number.....	126	134	122
Capacity, yearly, tons.....	419,207	327,505	237,434
Fourdriner—			
Number.....	68	65	59
Capacity per 24 hours, tons.....	736	580	(1)
Cylinder—			
Number.....	58	69	63
Capacity per 24 hours, tons.....	706	543	(1)
Pulp equipment:			
Grinders, number.....	5	5	20
Digesters, number.....	105	89	71
Soda fiber.....	83	73	(1)
Sulphite fiber.....	22	16	(1)
Capacity, yearly, tons of pulp.....	169,961	130,547	94,525
Ground, tons.....	10,908	4,400	(1)
Soda, tons.....	87,903	73,873	(1)
Sulphite, tons.....	65,150	52,274	(1)

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

During 1909 the industry used 64,654 tons of rags, including cotton and flax waste and sweepings, costing \$1,226,978, and 106,150 tons of old and waste paper, costing \$1,208,765. The increases in both items for the 10-year period 1899-1909 were large, being especially true of waste paper, the increased use of which reflects the scarcity of paper-making materials.

The total value of paper manufactured and of pulp manufactured for sale increased from \$12,267,900 in 1899 to \$15,411,032 in 1904, and \$19,872,717 in 1909, an increase of 62 per cent during the 10-year

period. Book and cover paper was the principal product in value and contributed about one-third of the total for all products in 1909. The product ranking next in value was wrapping paper, which had a value somewhat greater than that of writing and other fine paper.

The total amount of wood pulp produced, including 120,261 tons used in the establishments in which it was manufactured, increased from 85,433 tons in 1899 to 136,850 tons in 1909, a gain of 51,417 tons, or 60.2 per cent. Of the total production in 1909, 80,776 tons, or 59 per cent, consisted of soda fiber and 53,314 tons, or 39 per cent, of sulphite fiber.

Chemicals.—In the following table are shown the quantity and value of the principal products or groups of products reported for this industry, which does not include sulphuric, nitric, and mixed acids, in 1909 and 1904:

PRODUCT.	1909	1904
<b>Total value</b> .....	<b>\$16,978,162</b>	<b>\$11,773,719</b>
<b>Acids:</b>		
Muriatic—		
Pounds.....	10,753,080	.....
Value.....	\$176,318	(1)
Citric, oxalic, lactic, and hydrofluoric.....	\$322,503	(1)
All other.....	\$1,427,442	\$1,086,023
<b>Sodas:</b>		
Tons.....	25,090	(2)
Value.....	\$614,985	\$1,066,134
<b>Alums:</b>		
Pounds.....	84,273,500	100,832,827
Value.....	\$1,139,000	\$1,249,856
Coal-tar distillery products.....	\$318,046	\$15,120
<b>Cyanides:</b>		
Pounds.....	2,800,326	3,137,776
Value.....	\$337,567	\$435,770
Bleaching materials.....	\$8,830	\$35,644
Electrochemicals.....	\$903,196	(3)
Compressed or liquefied gases.....	\$930,873	\$382,330
<b>Fine chemicals:</b>		
Gold salts—		
Ounces.....	3,059	6,435
Value.....	\$35,030	\$65,249
Silver salts—		
Ounces.....	803,128	521,161
Value.....	\$299,414	\$211,812
All other, including alkaloids, platinum salts, and other.....	\$4,004,389	\$2,842,634
<b>Copperas:</b>		
Pounds.....	21,531,000	6,032,050
Value.....	\$48,062	\$18,200
Epsom salts, tin salts, and zinc salts.....	\$499,756	\$416,380
All other general chemicals.....	\$4,795,557	\$1,870,840
All other products.....	\$115,685	\$1,168,727

<sup>1</sup> Included in other acids.

<sup>2</sup> Figures not available.

In the chemical industry proper the cost of materials increased \$2,934,676, or 40.4 per cent, from 1904 to 1909. In value of products the increase was \$4,204,443, or 35.7 per cent, during the same five-year period. In addition to the products shown in the table, chemicals valued at \$1,999,718 were manufactured by establishments included under other classifications.

Paint and varnish.—The next table shows the quantity and value of the paints and varnishes reported at the censuses of 1909, 1904, and 1899.

The largest gain reported for any product was that for white lead, both dry and in oil, which increased from 32,478,546 pounds, valued at \$1,516,121, in 1899, to 50,819,314 pounds, valued at \$2,885,786, in 1909. Paints mixed ready for use, pulp color sold moist, pyroxylin varnishes, and japans, dryers, and lacquers also show conspicuous increases.

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$14,019,744</b>	<b>\$11,637,038</b>	<b>\$11,299,465</b>
<b>Pigments:</b>			
White lead, dry—			
Pounds.....	18,418,107	13,562,706	132,478,546
Value.....	\$800,607	\$633,620	\$1,516,121
Oxides of lead—			
Pounds.....	21,406,303	19,602,384	27,893,478
Value.....	\$1,183,506	\$1,039,468	\$1,338,959
Iron oxides and other earth and dry colors—			
Pounds.....	78,874,244	54,337,906	70,266,323
Value.....	\$772,332	\$708,675	\$933,425
Pulp colors sold moist—			
Pounds.....	6,158,306	3,343,280	594,370
Value.....	\$200,206	\$47,772	\$12,842
<b>Paints in oil:</b>			
White lead in oil—			
Pounds.....	32,401,207	35,780,225	(2)
Value.....	\$1,995,179	\$1,808,758	(2)
Paste—			
Pounds.....	29,741,101	22,061,202	<sup>3</sup> 59,071,523
Value.....	\$1,009,481	\$1,308,355	<sup>3</sup> \$3,050,976
Already mixed for use—			
Gallons.....	3,083,523	2,190,972	2,163,259
Value.....	\$2,708,202	\$1,846,900	\$1,505,049
<b>Varnishes and japans:</b>			
Oleoresinous varnishes—			
Gallons.....	397,010		
Value.....	\$350,105		
Damar and similar turpentine and benzine varnishes—			
Gallons.....	502,957	1,174,352	1,408,656
Value.....	\$300,029	\$1,082,384	\$1,236,672
Spirit varnishes, not turpentine—			
Gallons.....	72,567	83,536	45,130
Value.....	\$93,945	\$130,980	\$77,653
Pyroxylin varnishes—			
Gallons.....	50,808	30,073	.....
Value.....	\$85,230	\$10,585	.....
Dryers, japans, and lacquers—			
Gallons.....	2,190,056	(4)	(4)
Value.....	\$800,082	\$257,502	\$458,036
All other.....	\$170,121	\$374,489	\$92,455
<b>Fillers, putty, and water paints.....</b>	<b>\$408,517</b>	<b>\$300,439</b>	<b>(2)</b>
All other products.....	\$2,338,073	\$1,775,012	\$1,076,377

<sup>1</sup> Includes "White lead in oil."  
<sup>2</sup> Included in "White lead, dry."

<sup>3</sup> Includes paste fillers.  
<sup>4</sup> Not reported.

Butter, cheese, and condensed milk.—In 1909 Pennsylvania ranked sixth among the states in the factory production of butter, fifth in cheese, and seventh in condensed milk. The following table shows the quantity and value of the several products for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$13,544,065</b>	<b>\$11,581,115</b>	<b>\$10,290,006</b>
<b>Butter:</b>			
Packed solid—			
Pounds.....	9,283,220	10,660,820	13,458,287
Value.....	\$2,741,957	\$2,278,140	\$2,797,190
Prints or rolls—			
Pounds.....	21,200,997	25,094,021	23,678,874
Value.....	\$6,871,342	\$6,413,222	\$5,536,722
<b>Cheese:</b>			
Full cream—			
Pounds.....	9,423,849		
Value.....	\$1,314,704		
Part cream—			
Pounds.....	490,685	11,453,424	10,267,443
Value.....	\$42,021	\$1,007,815	\$888,733
Other kinds—			
Pounds.....	1,319,593		
Value.....	\$57,265		
<b>Condensed milk:</b>			
Sweetened—			
Pounds.....	10,777,613	19,160,432	
Value.....	\$738,309	\$1,177,969	
Unsweetened—			
Pounds.....	15,683,771	1,204,268	2,802,000
Value.....	\$743,014	\$51,033	\$255,835
<b>Cream sold:</b>			
Pounds.....	4,754,954	1,778,703	686,316
Value.....	\$531,432	\$161,913	\$396,108
All other products.....	\$503,031	\$400,423	\$445,418

This table shows an increase in 1909, as compared with 1899, of \$3,254,059, or 31.6 per cent, in the total value of products. Butter contributed 71 per cent of the total value of products in 1909. The quantity produced decreased between 1899 and 1904 and again

between 1904 and 1909, but the value increased a little at each census. Cheese, which contributed 10.4 per cent of the total value of products of the industry in 1909, showed no very marked change in either quantity or value, while condensed milk, which contributed 10.9 per cent of the total value of products, shows enormous increases in both quantity and value. Cream sold as such also shows a very large increase during the decade.

**Brick and tile, and pottery, terra-cotta, and fire-clay products.**—Statistics for these two allied industries for 1909 were collected and compiled by the Bureau of the Census in cooperation with the Geological Survey. The quantities given for that year include the entire output of these products, whether manufactured by establishments covered by the industry designation or by establishments primarily engaged in some other industry, while the amounts for 1904 and 1899 include only the products of establishments engaged chiefly in manufacturing such products. The value of the table for comparative purposes is not appreciably affected, however, because the quantities reported by establishments not covered by the industry designation were relatively very small.

The following table presents statistics for this industry, as above described, for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$22,297,310</b>	<b>\$18,030,187</b>	<b>\$14,081,844</b>
Brick and tile, terra-cotta, and fire-clay products.....	\$19,463,479	\$16,510,697	\$12,017,327
Brick.....	\$17,246,388	\$13,709,969	\$11,156,544
Common—			
Thousands.....	872,658	809,154	780,387
Value.....	\$5,607,490	\$4,903,194	\$4,510,324
Fire—			
Thousands.....	1,417,830	350,666	558,016
Value.....	\$8,107,807	\$6,289,231	\$4,921,339
Vitrified paving, etc.—			
Thousands.....	116,735	91,046	89,017
Value.....	\$1,320,317	\$941,588	\$702,782
Front, including fancy colored—			
Thousands.....	104,005	121,798	88,784
Value.....	\$2,111,656	\$1,281,558	\$959,000
Fancy or ornamental.....	\$27,003	\$134,854	\$54,000
Sand lime—			
Thousands.....	10,001	7,792	.....
Value.....	\$62,255	\$69,544	.....
Drain tile.....	\$14,068	\$14,000	\$20,510
Other tile.....	\$441,243	\$215,688	\$61,036
Sewer pipe.....	\$445,594	\$809,374	\$204,400
Architectural terra-cotta.....	\$428,522	\$341,077	\$139,100
Fireproofing, terra-cotta lumber, and hollow building tile or blocks.....	\$324,860	\$198,437	\$110,210
Stove lining.....	\$97,270	(?)	\$100,851
All other.....	\$464,934	\$1,228,053	\$1,112,607
<b>Pottery</b> .....	<b>\$1,024,335</b>	<b>\$1,325,581</b>	<b>\$1,104,517</b>
White ware, including C. C. ware, white granite, semiporcelain ware, and semivitreous porcelain ware.....	\$812,338	\$547,798	\$200,757
Sanitary ware.....	\$252,951	\$50,058	\$41,727
Stoneware and yellow and Rockingham ware.....	\$297,029	\$386,423	\$174,450
China, bone china, delft, and bel-leek ware.....	\$91,757	\$20,000	.....
Red earthenware.....	\$159,706	\$136,532	\$60,786
All other.....	\$10,404	\$138,770	\$647,797
All other products.....	\$1,209,406	\$196,909	.....

<sup>1</sup> Includes refractory block or tile, boiler and locomotive tile, and tank blocks and other refractory products (9-inch equivalent).

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

Measured by value of products the industries as a whole and practically all the several branches individually show a steady increase. In 1909 products to the value of \$22,297,310 were manufactured, an increase of \$4,258,123, or 23.6 per cent, over 1904 and

of \$8,215,466, or 58.3 per cent, over 1899. Of the total value of products in 1909, brick of all kinds contributed 77.3 per cent, as compared with 76 per cent in 1904 and 79.2 per cent in 1899. Common brick increased 92,271 thousand, or 11.8 per cent, in quantity and \$1,088,166, or 24.1 per cent, in value during the decade, while fire-brick shows an increase of 64.7 per cent in value. All the other kinds of brick for which quantities are given show increases in both quantity and value. Sewer pipe shows a large decrease in 1909 as compared with 1904 but an increase over 1899. Architectural terra-cotta, and fire-proofing and other miscellaneous building materials, show large increases for both 1904 and 1909.

Pottery products, as a whole, which in 1909 contributed 7.3 per cent of the total value of products for the combined industries, show considerable growth. The most important single item, white ware, etc., representing, in 1909, 50 per cent of the total value of all pottery products, shows a rapid increase in the value of the output. The value of stoneware, while showing an increase for the decade, decreased considerably from 1904 to 1909. Chinaware and the other finer grades of ware combined are relatively unimportant but show a large growth, more than trebling in value. Red earthenware also shows a steady increase in value.

**Carriages and wagons.**—The following table shows the number and value of the several products of this industry for 1909, 1904, and 1899:

PRODUCT.	1909	1904	1899
<b>Total value</b> .....	<b>\$12,748,383</b>	<b>\$11,493,128</b>	<b>\$10,455,016</b>
Carriages, family and pleasure:			
Number.....	23,395	33,467	41,400
Value.....	\$1,738,125	\$2,355,043	\$2,816,780
Wagons:			
Number.....	33,634	35,395	27,138
Value.....	\$2,096,485	\$2,830,372	\$2,161,435
Business—			
Number.....	21,414	21,722	( <sup>1</sup> )
Value.....	\$2,143,007	( <sup>1</sup> )	( <sup>1</sup> )
Farm—			
Number.....	11,964	13,321	( <sup>1</sup> )
Value.....	\$766,490	( <sup>1</sup> )	( <sup>1</sup> )
Government, municipal, etc.—			
Number.....	256	352	( <sup>1</sup> )
Value.....	\$80,970	( <sup>1</sup> )	( <sup>1</sup> )
Public conveyances:			
Number.....	432	333	141
Value.....	\$133,811	\$117,093	\$27,645
Sleighs and sleds:			
Number.....	3,210	5,551	5,509
Value.....	\$60,610	\$150,461	\$118,449
All other products, including parts and repair work.....	\$7,789,343	\$6,031,159	\$5,330,707

<sup>1</sup> Not reported.

The increase of \$2,293,367 shown in the total value of products for the decade is more than covered by the advance in the one item "All other products, including parts and repair work," the gain in the value of which was \$2,458,636. Wagons and public conveyances combined show an increase in value of \$941,216. A decided decrease is shown in the number and value of family and pleasure carriages, and sleighs and sleds.

**Laundries.**—Statistics for steam laundries are not included in the general tables or in the tables for manufacturing industries. There were 385 such establishments in Pennsylvania, 92 of which were in Phila-

delphia, 26 in Pittsburgh, 9 in Harrisburg, 8 in Reading, and 7 each in Erie, Wilkes-Barre, Williamsport, and York. No other city or borough having more than 10,000 inhabitants reported as many as 7 laundries. The following statement summarizes the statistics:

Number of establishments.....	385
Persons engaged in the industry.....	10,915
Proprietors and firm members.....	436
Salaried employees.....	840
Wage earners (average number).....	9,639
Primary horsepower.....	10,730
Capital.....	\$6,685,132
Expenses.....	6,821,427
Services.....	4,167,836
Materials.....	1,449,517
Miscellaneous.....	1,204,074
Amount received for work done.....	8,331,834

The most common form of ownership was the individual, with 218 establishments. Partnership or firm ownership was represented by 100 establishments and corporate ownership by 67. Ninety-eight establishments had receipts for the year's business of less than \$5,000; 174, receipts of \$5,000 but less than \$20,000; 98, receipts of \$20,000 but less than \$100,000; and 15, receipts of \$100,000 but less than \$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.....	9,331	94.7	July.....	9,756	99.1
February.....	9,357	95.0	August.....	9,716	98.9
March.....	9,380	95.2	September.....	9,820	99.7
April.....	9,474	96.1	October.....	9,849	100.0
May.....	9,630	97.8	November.....	9,802	99.5
June.....	9,771	99.2	December.....	9,782	99.3

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.....		10,730
Owned:		
Steam.....	345	9,124
Gas.....	52	987
Rented:		
Electric.....	136	540
Other.....		70

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

KIND.	Unit.	Quantity.
Anthracite coal.....	Tons.....	48,729
Bituminous coal.....	Tons.....	42,139
Coke.....	Tons.....	444
Wood.....	Cords.....	71
Oil.....	Barrels.....	166
Gas.....	1,000 feet.....	433,028

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.....	267	530
Persons engaged in the industry.....	675	773
Proprietors and firm members.....	342	611
Salaried employees.....	1	
Wage earners (average number).....	332	162
Primary horsepower.....	5,541	13,893
Capital.....	\$388,261	\$1,570,025
Expenses.....	127,663	2,678,065
Services.....	103,648	47,804
Materials.....	5,025	1,258,513
Miscellaneous.....	18,990	51,748
Value of products.....	284,056	1,3,070,504

<sup>1</sup> Includes estimate of all grain ground. A similar estimate of the value of the lumber sawed by custom sawmills is impracticable.

MANUFACTURES—PENNSYLVANIA.

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	27,563	1,002,171	29,743	94,885	877,543	2,921,547	\$2,749,000	\$110,897	\$455,627	\$1,532,560	\$2,626,742	\$1,044,182
	1904	23,496	855,392	26,029	66,081	763,282	2,302,398	1,996,837	73,269	387,961	1,142,943	1,955,551	812,608
	1899	23,462	.....	.....	43,935	663,960	1,716,694	1,449,815	46,145	296,876	958,301	1,649,882	691,581
Agricultural implements .....	1909	36	2,671	37	233	2,401	3,842	6,491	257	1,223	2,082	4,805	2,723
	1904	43	2,668	54	220	2,394	3,230	5,460	227	1,103	2,075	5,017	2,942
	1899	50	1,825	64	107	1,564	2,240	4,102	184	688	1,232	3,198	1,905
Artificial flowers and feathers and plumes.	1909	30	917	35	77	805	75	943	72	262	675	1,319	644
	1904	19	627	27	47	553	52	409	38	170	367	722	355
	1899	25	950	35	42	873	.....	545	53	209	467	950	483
Automobiles, including bodies and parts.	1909	44	3,500	20	338	3,190	2,740	6,971	384	1,808	4,051	6,532	2,481
	1904	6	631	.....	65	566	423	1,453	79	352	601	1,220	625
	1899	8	.....	.....	16	60	.....	297	18	43	31	90	68
Belting and hose leather .....	1909	17	243	16	71	156	363	973	74	105	1,011	1,379	368
	1904	14	182	17	38	127	205	709	35	84	541	865	324
	1899	9	125	13	25	87	.....	488	15	53	470	666	196
Boots and shoes, including cut stock findings.	1909	140	11,820	107	840	10,822	4,337	11,661	1,161	4,266	12,064	20,219	8,155
	1904	133	9,085	195	500	8,990	3,221	7,394	485	3,263	8,907	14,884	5,977
	1899	160	10,162	241	674	9,247	.....	7,051	588	3,148	8,682	13,830	5,148
Boxes, cigar .....	1909	77	1,070	96	73	1,801	1,818	1,026	67	580	1,252	2,328	1,076
	1904	88	1,779	115	79	1,585	1,754	1,194	48	428	1,023	1,870	856
	1899	101	1,334	128	36	1,170	.....	693	22	310	910	1,553	643
Boxes, fancy and paper .....	1909	118	5,050	133	313	4,604	2,121	3,422	308	1,472	2,290	5,184	2,894
	1904	98	4,516	118	219	4,179	1,560	2,388	190	1,213	1,670	3,006	2,230
	1899	87	3,670	101	126	3,443	.....	1,978	110	878	1,260	2,986	1,726
Brass and bronze products .....	1909	104	2,524	94	350	2,080	4,090	8,392	456	1,234	5,605	8,455	2,850
	1904	98	2,029	100	234	1,695	5,261	5,261	273	949	3,271	5,443	2,172
	1899	85	2,100	92	233	1,781	.....	4,348	251	830	3,920	5,930	2,060
Bread and other bakery products .....	1909	3,185	17,838	3,375	2,242	12,221	10,806	30,888	1,807	6,528	27,330	45,850	18,520
	1904	2,817	15,011	3,009	1,638	10,904	6,044	19,100	861	5,392	19,300	33,370	14,070
	1899	2,443	10,981	2,552	1,031	7,398	.....	10,986	721	3,255	11,055	20,784	9,720
Brick and tile .....	1909	326	8,943	349	536	8,058	38,247	20,150	546	3,881	2,453	9,225	6,772
	1904	370	8,430	445	424	7,561	31,235	13,887	355	3,213	1,590	7,280	5,681
	1899	385	7,509	507	269	6,733	20,921	10,507	248	2,026	1,138	5,954	4,810
Brooms and brushes .....	1909	130	1,139	162	117	800	811	1,552	97	410	1,255	2,304	1,049
	1904	152	1,109	173	88	848	467	961	83	365	813	1,708	895
	1899	107	1,210	206	88	925	.....	1,026	62	348	941	1,769	828
Butter, cheese, and condensed milk .....	1909	636	2,093	635	281	1,177	7,613	4,291	155	556	11,074	13,544	1,870
	1904	645	2,152	623	311	1,218	9,483	3,649	89	556	9,656	11,581	1,925
	1899	749	1,795	692	127	976	8,858	3,033	46	446	8,712	10,200	1,578
Buttons .....	1909	24	1,219	25	71	1,123	858	977	95	404	746	1,565	819
	1904	21	1,087	20	58	1,009	796	719	54	365	360	900	540
	1899	21	1,212	30	42	1,140	471	557	39	321	403	990	596
Canning and preserving .....	1909	83	4,379	97	1,529	2,753	3,474	8,867	1,518	947	4,665	9,484	4,819
	1904	89	3,405	97	1,093	2,215	2,894	6,156	1,123	762	4,033	8,005	4,032
	1899	77	.....	.....	797	2,197	.....	3,490	730	637	2,027	6,039	3,112
Carpets and rugs, other than rag .....	1909	93	12,078	108	460	11,510	13,073	24,721	762	5,169	14,648	24,879	10,231
	1904	102	14,356	136	504	13,716	11,871	22,284	652	5,820	16,706	27,120	10,414
	1899	93	13,358	103	336	12,919	10,537	17,958	375	5,331	13,774	23,113	9,339
Carriages and wagons and materials .....	1909	655	8,757	781	478	7,498	11,544	14,365	500	3,861	5,707	12,748	7,041
	1904	656	8,089	825	403	7,461	9,107	12,308	397	3,647	4,902	11,493	6,591
	1899	797	.....	.....	318	6,309	.....	10,684	206	3,070	4,246	10,455	6,209
Cars and general shop construction and repairs by steam-railroad companies.	1909	132	50,545	.....	3,900	46,645	56,774	45,341	2,980	30,157	41,401	76,635	34,634
	1904	123	44,100	.....	2,271	41,838	32,157	30,418	1,853	25,517	32,361	61,021	28,690
	1899	144	29,619	.....	1,065	28,554	12,386	19,132	811	15,826	23,148	43,005	19,917
Cars and general shop construction and repairs by street-railroad companies.	1909	65	2,568	.....	126	2,442	4,370	2,464	110	1,477	1,094	2,747	1,653
	1904	9	1,220	.....	44	1,176	40	1,164	45	637	483	1,259	776
	1899	10	1,027	.....	22	1,005	.....	760	13	574	596	1,245	649
Cars, steam-railroad, not including operations of railroad companies.	1909	13	8,799	.....	1,033	7,766	31,732	31,282	1,242	4,819	10,002	27,510	8,508
	1904	9	6,007	.....	546	5,461	13,842	31,524	842	3,061	13,821	19,428	5,607
	1899	11	6,260	.....	6	5,840	4,426	33,829	426	3,112	12,180	19,261	7,072
Cement .....	1909	27	8,002	.....	822	8,080	102,904	50,856	1,047	3,875	10,108	18,855	8,747
	1904	22	6,891	.....	379	6,509	39,174	28,165	484	2,088	4,360	10,234	5,874
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chemicals .....	1909	37	3,573	19	369	3,185	9,771	23,535	559	1,892	10,200	15,978	5,778
	1904	41	3,632	29	290	3,373	10,662	20,657	456	1,892	7,265	11,774	4,509
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chocolate and cocoa products .....	1909	6	1,033	.....	170	863	2,885	3,484	286	324	2,955	4,811	1,850
	1904	4	407	.....	3	351	865	1,124	83	121	1,390	2,134	744
	1899	3	174	.....	3	123	.....	800	35	40	870	1,039	189
Clocks and watches, including cases and materials.	1909	8	1,587	.....	3	189	1,395	4,651	183	728	1,172	2,873	1,701
	1904	6	906	.....	5	103	798	2,774	107	373	814	1,549	735
	1899	.....	.....	.....	74	1,180	.....	3,387	75	549	801	1,751	950

<sup>1</sup>Excluding statistics for two establishments, to avoid disclosure of individual operations.  
<sup>2</sup>Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>3</sup>Not reported separately.  
<sup>4</sup>Comparable figures not available.

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

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

INDUSTRY.	Consus.	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.													
<b>STATE—Continued</b>													
Clothing, men's, including shirts.....	1909	606	26,405	1,099	1,683	23,623	5,288	\$20,700	\$1,092	\$8,992	\$19,863	\$30,682	\$19,819
	1904	451	19,570	706	1,290	17,574	4,198	16,644	1,015	5,853	16,617	31,714	15,097
	1899	621	.....	.....	1,166	17,198	.....	13,443	1,097	6,088	15,405	30,055	14,650
Clothing, women's.....	1909	401	18,080	646	1,733	15,701	2,514	12,255	1,607	7,140	18,156	32,837	14,681
	1904	223	9,879	330	859	8,000	1,585	5,992	616	3,427	7,903	15,086	7,183
	1899	230	9,253	340	596	8,311	862	5,197	525	2,600	6,270	11,605	5,425
Coffins, burial cases, and undertakers' goods.	1909	36	1,309	36	170	1,103	1,447	2,877	186	514	1,575	2,757	1,182
	1904	24	985	23	94	868	1,137	1,733	94	427	1,005	1,989	984
	1899	22	767	27	74	666	.....	2,017	71	281	585	1,214	629
Coke.....	1909	146	16,219	83	805	15,331	26,091	68,023	943	8,436	33,792	51,816	18,054
	1904	110	10,975	72	749	10,154	44,478	56,839	734	5,173	14,979	28,024	13,946
	1899	89	9,841	40	518	9,283	24,525	20,213	481	4,517	11,678	22,282	10,604
Confectionery.....	1909	251	6,436	255	773	5,408	3,869	8,204	813	1,760	8,203	13,542	5,339
	1904	150	5,543	162	652	4,729	3,603	6,979	536	1,400	5,881	10,073	4,192
	1899	135	.....	.....	616	4,240	.....	4,367	490	1,101	4,204	7,483	3,186
Cooperage and wooden goods, not elsewhere specified.	1909	133	1,003	155	118	1,630	3,681	3,631	122	756	2,989	4,630	1,041
	1904	129	1,745	139	110	1,496	2,970	2,563	108	720	2,419	3,973	1,554
	1899	110	.....	.....	66	1,326	.....	2,091	48	565	2,030	3,213	1,183
Copper, tin, and sheet-iron products....	1909	339	7,992	382	795	6,815	8,245	17,083	889	3,444	8,851	17,197	8,346
	1904	205	5,731	260	450	5,021	2,535	9,192	475	2,523	4,040	9,087	4,738
	1899	179	.....	.....	349	3,677	.....	5,591	324	1,652	3,643	7,144	3,501
Cordage and twine and jute and linen goods.	1909	18	2,228	12	97	2,119	4,630	5,161	185	685	3,001	4,805	1,804
	1904	20	2,328	16	80	2,232	4,344	4,798	150	660	3,048	5,138	1,490
	1899	21	2,798	25	90	2,683	.....	6,163	104	762	5,448	7,267	1,800
Cork, cutting.....	1909	10	1,789	9	53	1,727	2,045	3,362	104	535	1,660	2,065	1,296
	1904	13	2,097	10	61	2,026	1,989	3,114	116	620	1,802	3,176	1,374
	1899	10	1,500	9	43	1,538	.....	1,483	73	402	1,120	2,188	1,068
Cotton goods, including cotton small wares.	1909	175	17,386	156	937	16,293	24,589	33,692	1,612	7,034	18,757	33,917	15,190
	1904	165	16,090	200	627	15,263	22,611	27,174	918	5,043	14,322	26,300	11,978
	1899	178	17,817	241	565	17,011	23,403	24,332	742	6,057	13,177	25,448	12,271
Crucibles.....	1909	5	135	4	25	106	336	910	59	60	430	728	298
	1904	5	124	1	34	89	360	960	63	53	534	784	250
	1899	5	87	11	7	69	.....	617	12	40	902	1,147	245
Cutlery and tools, not elsewhere specified.	1909	129	4,832	114	468	4,250	11,311	12,406	540	2,280	3,431	8,022	4,591
	1904	102	4,096	96	265	3,735	13,416	8,311	307	1,735	2,094	5,819	3,725
	1899	82	2,377	101	149	2,127	.....	4,201	183	1,046	1,523	3,741	2,218
Dentists' materials.....	1909	23	1,218	27	119	1,072	427	2,790	254	494	1,325	2,745	1,420
	1904	20	1,010	21	102	887	339	2,079	108	368	1,410	2,937	927
	1899	18	720	20	70	630	.....	1,288	79	327	981	1,829	848
Dyeing and finishing textiles.....	1909	135	6,088	155	447	6,086	13,560	13,242	598	2,988	5,331	12,059	6,728
	1904	123	5,070	161	324	4,585	9,712	9,923	445	2,070	2,701	6,786	4,085
	1899	105	5,087	155	216	4,716	10,100	7,680	260	2,066	3,175	7,038	3,803
Electrical machinery, apparatus, and supplies.	1909	84	14,641	42	3,574	11,025	33,829	59,974	4,058	6,237	13,535	31,351	17,816
	1904	80	12,200	56	2,746	9,404	29,248	58,393	3,090	5,300	11,365	26,258	14,893
	1899	63	8,511	48	646	7,817	8,137	20,968	837	4,003	11,373	19,113	7,740
Explosives.....	1909	27	1,225	20	172	1,033	4,594	6,313	231	630	4,088	6,388	2,300
	1904	40	1,079	10	163	897	5,699	5,320	233	529	2,516	4,013	1,497
	1899	36	748	17	102	629	3,673	2,810	130	320	1,500	2,595	1,005
Fancy articles, not elsewhere specified..	1909	52	951	55	68	828	498	990	57	322	592	1,385	793
	1904	44	783	54	54	675	358	480	46	206	366	804	528
	1899	48	823	64	47	712	.....	470	25	210	414	880	472
Fertilizers.....	1909	48	1,517	52	241	1,294	5,174	6,532	203	575	4,613	6,543	1,930
	1904	43	1,135	48	129	958	4,551	5,386	170	447	2,891	4,005	1,204
	1899	51	975	43	167	765	3,835	3,803	201	352	2,584	3,644	1,000
Files.....	1909	7	1,208	4	77	1,217	1,313	2,686	91	528	427	1,540	1,113
	1904	8	963	8	32	953	1,682	1,368	53	390	395	1,127	732
	1899	14	1,205	17	39	1,149	.....	1,650	58	445	458	1,236	778
Flour-mill and gristmill products.....	1909	1,450	4,696	1,899	368	2,432	69,212	21,277	372	1,188	38,170	44,783	6,613
	1904	1,195	4,496	1,558	306	2,632	61,538	18,766	237	1,247	33,205	38,519	5,314
	1899	1,073	.....	.....	265	1,906	.....	14,986	202	946	24,865	29,571	4,706
Foundry and machine-shop products...	1909	1,695	100,505	1,389	12,295	80,821	162,414	283,556	15,034	51,366	101,611	210,746	109,735
	1904	1,415	85,974	1,371	9,022	75,581	127,846	216,023	10,712	40,664	69,036	163,398	84,357
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fur goods.....	1909	58	340	72	50	227	14	1,080	37	160	544	1,217	673
	1904	27	255	36	29	100	5	424	20	110	373	718	345
	1899	26	.....	.....	48	219	.....	607	27	122	368	785	417
Furniture and refrigerators.....	1909	304	11,338	376	1,038	9,024	17,211	18,542	1,232	4,820	9,030	18,952	9,013
	1904	220	8,944	250	647	8,047	12,292	11,163	640	3,608	5,430	12,776	7,337
	1899	197	7,410	301	520	6,589	.....	7,961	488	2,827	4,524	10,069	5,545
Gas and electric fixtures and lamps and reflectors.	1909	75	1,376	73	321	1,482	1,240	2,863	333	765	1,230	2,962	1,723
	1904	60	1,628	66	224	1,348	783	2,130	255	703	835	2,543	1,708
	1899	48	1,562	53	157	1,352	.....	2,201	181	677	1,055	2,512	1,457

<sup>1</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>2</sup> Comparable figures not available.

MANUFACTURES—PENNSYLVANIA.

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.													
<b>STATE—Continued.</b>													
Gas, illuminating and heating.....	1909	90	4,584	13	1,452	3,119	9,374	\$61,857	\$1,230	\$1,501	\$4,000	\$15,840	\$11,741
	1904	90	3,953	3	1,068	2,882	6,582	57,064	846	1,478	3,143	10,809	7,666
	1899	89	3,721		577	3,144	3,091	47,313	457	1,500	3,151	7,871	4,720
Glass.....	1909	112	24,924	34	1,180	23,710	55,182	58,632	1,730	13,436	12,634	32,818	20,184
	1904	122	21,993	32	1,167	20,794	47,750	40,612	1,597	12,518	9,325	27,672	18,347
	1899	119	20,343	81	842	19,420	29,595	28,287	1,110	10,287	6,435	22,011	15,576
Hats and caps, other than felt, straw, and wool.	1909	53	877	71	62	744	163	652	70	273	543	1,097	554
	1904	43	773	60	29	684	149	453	43	264	526	1,003	537
	1899												
Hats, fur-felt.....	1909	38	7,537	46	271	7,220	5,335	14,430	423	3,725	5,013	13,023	8,010
	1904	25	4,931	29	283	4,619	2,745	8,778	346	2,122	2,729	7,350	4,621
	1899	20	3,092	22	180	2,890	1,737	6,726	270	1,187	1,867	4,243	2,376
Hosiery and knit goods.....	1909	404	40,248	509	1,533	38,206	21,797	38,089	1,058	11,750	27,218	40,658	22,440
	1904	377	30,054	506	1,377	28,171	14,749	23,933	1,067	7,961	16,088	30,812	14,774
	1899	327	22,648	376	688	21,584	9,478	15,760	638	5,834	10,936	21,920	10,993
Ice, manufactured.....	1909	170	2,086	110	304	1,606	35,800	14,404	338	1,023	1,225	4,823	3,598
	1904	109	1,577	57	284	1,236	23,576	9,712	262	732	711	2,036	2,225
	1899	73	1,227	51	246	930	16,646	8,200	170	538	392	2,039	1,647
Ink, printing.....	1909	8	240	6	75	165	483	742	94	105	623	1,050	427
	1904	8	178	6	73	99	443	590	86	73	403	684	281
	1899	7	114	7	20	78		471	61	48	204	408	204
Iron and steel, blast furnaces.....	1909	66	16,215	34	1,060	14,521	476,060	194,708	2,400	9,457	142,074	168,578	26,504
	1904	65	14,782	24	891	13,867	304,154	107,742	1,114	7,764	86,322	107,455	13,137
	1899	77	16,712	28	900	16,075	217,326	72,513	787	8,038	64,095	101,575	37,480
Iron and steel, steel works and rolling mills.	1909	189	137,433	34	10,488	126,011	896,440	522,898	13,934	85,113	329,013	500,344	171,331
	1904	186	110,082	40	8,129	110,004	820,823	355,592	10,958	65,306	237,875	393,774	125,890
	1899	214	99,350	102	4,459	94,789	675,930	237,216	6,398	53,870	210,048	332,870	113,822
Iron and steel pipe, wrought.....	1909	11	4,143	5	265	3,873	12,472	15,325	337	2,177	14,022	18,291	4,290
	1904	11	3,201	3	150	3,048	8,277	8,506	219	1,340	7,172	9,621	2,449
	1899	10	3,797	1	121	3,675		11,698	151	1,670	11,586	15,384	3,798
Jewelry.....	1909	75	624	66	72	456	160	612	54	292	597	1,275	678
	1904	43	603	60	51	492	164	762	43	206	483	1,040	557
	1899	22	522	28	60	434		685	39	201	253	693	440
Leather goods.....	1909	156	3,124	210	300	2,524	1,107	4,527	470	1,137	3,153	5,824	2,471
	1904	134	3,012	170	320	2,522	900	3,553	286	1,061	2,643	5,153	2,510
	1899	134		202	202	2,300		2,464	182	852	1,878	3,098	2,120
Leather, tanned, curried, and finished..	1909	163	14,070	151	811	14,008	37,440	80,989	1,344	6,801	59,113	77,929	18,813
	1904	205	15,383	216	754	14,413	31,075	72,072	927	6,418	55,412	69,428	14,016
	1899	254	14,162	260	506	13,306	23,760	67,320	644	5,458	42,404	55,015	13,211
Lime.....	1909	348	3,791	303	140	3,258	8,082	6,950	137	1,259	1,038	3,342	2,304
	1904	124	2,601	143	92	2,306	4,096	3,979	96	592	704	2,515	1,751
	1899												
Liquors, distilled.....	1909	88	1,144	148	272	724	7,578	16,217	360	411	3,112	14,367	11,255
	1904	85	807	111	140	547	5,585	8,748	231	294	2,288	4,902	2,614
	1899	78	667	99	97	471	3,409	5,840	123	250	1,500	5,368	3,789
Liquors, malt.....	1909	237	9,007	121	1,642	7,234	54,860	94,135	3,261	5,453	12,610	47,713	35,103
	1904	225	7,076	153	1,059	5,804	40,519	68,834	2,253	4,072	9,277	34,864	25,587
	1899	208	5,402	171	810	4,505	29,472	63,084	1,474	2,884	6,610	29,163	22,553
Lumber and timber products.....	1909	2,067	32,073	3,473	1,727	26,873	113,412	54,638	1,758	13,558	27,314	57,454	30,140
	1904	1,866	31,262	2,527	1,595	27,140	93,228	44,336	1,507	13,520	24,280	50,713	32,427
	1899	2,273		1,100	1,100	31,008		43,852	979	13,017	24,004	53,886	28,922
Marble and stone work.....	1909	599	10,639	764	611	9,204	20,637	13,064	585	4,860	3,720	11,570	7,850
	1904	255	5,215	340	261	4,614	11,171	6,200	285	2,611	2,032	6,710	4,678
	1899	280		162	162	3,241		4,912	144	1,793	2,153	5,373	3,220
Mattresses and spring beds.....	1909	83	961	84	132	745	1,102	1,655	118	361	1,333	2,223	890
	1904	65	906	73	83	750	1,143	1,241	94	345	1,110	2,002	892
	1899	68		93	93	782		965	69	298	1,144	1,876	732
Millinery and lace goods.....	1909	105	4,697	141	321	4,235	841	3,552	288	1,327	3,754	6,770	3,016
	1904	53	2,315	83	143	2,050	1,135	1,272	100	645	1,483	2,750	1,276
	1899	41	1,071	50	75	946		670	57	305	792	1,504	772
Musical instruments, pianos and organs and materials.	1909	30	1,331	21	128	1,182	1,200	3,158	165	505	1,248	2,382	1,134
	1904	28	1,110	20	82	1,008	877	2,286	104	525	646	1,767	1,111
	1899	31	807	36	64	707	737	1,389	91	415	613	1,488	875
Optical goods.....	1909	24	744	24	141	570	292	926	117	219	461	1,063	602
	1904	18	421	20	40	352	184	620	55	120	155	471	310
	1899	17		54	54	424		497	35	128	195	512	317
Paint and varnish.....	1909	114	2,747	105	650	1,992	9,862	14,834	947	1,102	9,201	14,020	4,819
	1904	98	2,432	96	517	1,819	7,714	12,319	913	928	8,065	11,637	3,572
	1899	93	2,405	64	525	1,816	6,025	12,080	625	850	6,595	11,299	4,704
Paper and wood pulp.....	1909	62	7,106	32	508	6,656	66,910	27,747	820	3,303	11,398	10,873	8,475
	1904	65	6,283	53	324	5,966	54,837	21,460	518	2,839	8,510	15,411	9,091
	1899	73	5,105	281	4,840		41,849	16,424	385	1,989	6,374	12,268	5,894

1 Comparable figures not available.  
 2 Excluding statistics for two establishments, to avoid disclosure of individual operations.  
 3 Not reported separately.  
 4 Excluding statistics for one establishment, to avoid disclosure of individual operations.

MANUFACTURES—PENNSYLVANIA.

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.													
<b>STATE—Continued.</b>													
Paper goods, not elsewhere specified	1909	34	1,700	32	311	1,357	1,348	\$3,304	\$320	\$538	\$2,225	\$3,719	\$1,494
	1904	128	771	39	105	627	549	790	119	985	1,062	1,062	677
	1899	120	494	25	47	422		749	44	154	651	1,194	543
Patent medicines and compounds and druggists' preparations.	1909	367	4,200	334	1,204	2,761	2,610	12,409	1,342	1,145	5,310	12,650	7,346
	1904	243	3,420	235	890	2,325	1,402	7,899	721	824	4,087	9,460	5,373
	1899	195	3,276	212	747	2,317		7,775	677	831	3,775	8,945	5,170
Petroleum, refining	1909	41	3,423	36	487	2,000	35,212	38,990	768	1,861	47,440	53,088	5,648
	1904	43	4,657	22	408	4,227	11,900	32,847	557	2,371	38,922	47,460	8,538
	1899	38	3,616	40	277	3,209	13,328	26,581	403	1,682	27,514	34,978	7,464
Photo-engraving	1909	31	682	33	160	489	197	660	175	446	231	1,132	901
	1904	23	623	32	148	443	168	585	110	301	128	802	674
	1899	17	335	22	43	270		295	35	160	59	379	320
Pottery, terra-cotta, and fire-clay products.	1909	139	0,784	99	682	0,003	23,142	27,225	556	4,357	4,109	13,072	8,963
	1904	158	0,375	87	610	8,069	23,475	25,707	738	3,079	2,909	10,759	7,850
	1899	143	0,512	172	408	8,872	16,057	11,300	451	3,070	2,452	8,127	5,675
Printing and publishing	1909	2,461	36,783	2,557	0,560	24,006	25,839	71,453	8,836	14,335	22,753	70,594	47,831
	1904	2,162	31,079	2,354	0,397	22,328	20,029	51,094	6,218	12,093	16,074	55,063	39,989
	1899	1,969	26,464	2,271	4,292	19,001		41,772	3,960	0,785	11,190	40,354	20,158
Safes and vaults	1909	7	777	1	81	695	1,163	1,827	96	391	643	1,338	695
	1904	7	841	3	76	762	891	1,282	82	414	542	1,344	802
	1899	6	425	3	52	370		753	55	164	230	721	401
Saws	1909	15	2,087	18	193	1,870	3,309	5,961	205	1,158	1,400	3,794	2,388
	1904	10	1,909	11	61	1,837	2,574	4,747	117	1,025	1,367	3,323	1,956
	1899	12	1,513	15	87	1,411		4,602	93	735	966	2,500	1,504
Shipbuilding, including boat building	1909	31	3,833	34	241	3,558	7,771	15,203	415	2,120	2,710	6,178	3,468
	1904	33	6,869	28	321	6,511	8,583	18,007	482	3,473	5,180	10,327	5,147
	1899	38	7,279	41	161	7,077	10,366	14,141	254	3,545	7,173	14,403	7,320
Shoddy	1909	20	518	32	36	450	2,170	1,627	47	186	1,463	2,051	588
	1904	23	429	35	34	360	1,900	1,216	43	142	1,713	2,204	491
	1899	26	421	19	34	368	1,632	1,072	25	148	1,070	1,440	379
Silk and silk goods, including throwsters	1909	226	38,178	143	1,566	36,409	41,062	40,679	2,132	11,443	35,166	62,001	26,895
	1904	168	28,240	133	1,192	26,915	28,390	31,312	1,300	6,973	24,267	39,334	15,067
	1899	121	21,004	131	745	21,028	23,210	20,894	719	4,630	19,885	31,073	11,188
Slaughtering and meat packing	1909	180	3,957	198	709	3,050	12,139	13,504	862	1,987	44,845	51,851	7,006
	1904	177	3,074	205	341	2,528	7,366	8,338	347	1,518	28,340	33,101	4,791
	1899	131	2,283	183	377	1,723		6,636	318	945	21,806	26,537	3,731
Smelting and refining, not from the ore	1909	24	278	17	55	206	566	1,605	89	143	2,078	3,577	599
	1904	18	307	17	50	240	419	1,161	77	150	2,230	2,755	475
	1899	16	303	18	72	213		864	50	110	2,064	2,520	456
Soap	1909	69	1,746	74	475	1,197	2,598	5,428	344	556	5,947	9,124	3,177
	1904	50	1,460	71	205	1,184	2,152	4,411	253	499	4,054	6,950	2,905
	1899												
Steam packing	1909	31	2,231	18	536	1,677	5,817	7,022	471	814	2,981	4,987	2,006
	1904	24	1,383	11	175	1,107	4,704	4,689	252	533	1,680	4,050	2,379
	1899	22	822	31	136	655		1,823	184	278	830	1,853	1,023
Stoves and furnaces, including gas and oil stoves	1909	74	4,721	42	481	4,198	4,675	10,643	635	2,465	2,472	7,400	4,937
	1904	78	5,198	62	455	4,681	3,953	10,884	487	2,723	2,302	7,096	5,394
	1899												
Tin plate and ternoplate	1909	17	2,548	3	190	2,346	1,565	5,520	275	1,339	22,898	25,234	2,336
	1904	19	2,613	1	191	2,421	5,805	4,692	219	1,207	17,590	19,342	1,752
	1899	25	1,778	11	180	1,578	1,420	3,027	147	814	10,364	12,531	2,167
Tobacco manufactures	1909	2,432	37,580	2,099	1,693	33,188	2,638	27,604	1,785	11,620	20,713	50,161	29,448
	1904	2,808	35,265	3,139	1,378	30,748	1,714	23,371	1,117	10,438	15,937	40,897	24,990
	1899	2,684	29,177	2,954	921	25,302	1,724	15,602	860	8,507	11,904	32,731	20,737
Typewriters and supplies	1909	8	872	5	312	555	264	1,152	320	209	189	1,017	828
	1904	5	204	2	20	182	182	430	22	84	60	202	142
	1899	4	406	4	74	328	202	416	68	179	75	443	308
Umbrellas and canes	1909	45	2,551	44	102	2,315	1,670	5,119	325	906	3,148	5,000	1,912
	1904	37	2,883	37	110	2,736	1,601	6,081	131	842	3,310	5,133	1,814
	1899	44			184	2,830		1,898	199	834	3,444	5,870	2,426
Wall paper	1909	11	1,196		140	1,056	1,371	3,511	249	520	2,306	3,695	1,386
	1904	12	1,060	8	89	963	1,044	2,712	139	454	1,777	3,023	1,246
	1899	13	1,025	8	96	921		2,194	184	432	1,848	2,894	1,046
Wood distillation, not including turpentine and rosin	1909	50	1,093	36	124	933	1,749	5,111	133	522	1,684	2,900	1,276
	1904	63	1,426	42	135	1,249	2,207	5,009	111	598	1,709	3,093	1,384
	1899												
Woolen, worsted, and felt goods, and wool hats	1909	217	28,692	245	1,038	27,409	60,405	75,170	1,746	10,947	54,634	77,447	22,813
	1904	232	25,367	291	825	24,251	39,082	45,193	1,151	8,791	37,247	55,934	18,687
	1899	260	25,406	301	504	24,631		39,739	692	8,715	31,364	48,705	17,401
All other industries	1909	2,893	68,062	3,129	8,600	56,433	125,775	195,692	10,259	28,745	135,749	211,025	75,276
	1904	2,313	64,665	2,674	4,900	57,091	107,376	146,717	5,691	27,709	106,067	175,101	69,034
	1899	4,374			10,027	124,597		319,514	11,078	60,014	171,100	303,922	132,822

1 Excluding statistics for one establishment, to avoid disclosure of individual operations.  
 2 Not reported separately.

MANUFACTURES—PENNSYLVANIA.

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

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

INDUSTRY.	Consus.	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 employees.	Wage earners (average number).							
Expressed in thousands.													
<b>ALLENTOWN—All industries..</b>	1909	274	12,628	314	833	11,481	19,101	\$21,569	\$874	\$5,061	\$15,581	\$28,263	\$10,682
	1904	257	9,859	312	583	8,984		13,455	524	3,312	9,873	16,841	6,968
	1899	216			356	7,355		11,343	310	2,634	8,977	14,990	6,013
Boots and shoes, including cut stock and findings.	1909	9	770	10	38	724	395	669	40	207	762	1,302	540
	1904	10	778	16	46	716		569	30	251	601	1,126	435
	1899	29	715	14	38	603		649	25	210	586	901	315
Bread and other bakery products.....	1909	32	183	31	6	146	82	295	4	77	276	475	190
	1904	28	170	35	5	130		134	2	62	192	348	156
	1899	24	148	29	17	102		149	8	39	119	232	113
Brick and tile.....	1909	6	158	11	6	141	335	260	6	56	37	175	138
	1904	5	111	3	6	102		228	5	37	21	101	80
	1899	5	106	9	2	95		118	1	20	15	76	61
Brooms and brushes.....	1909	4	21	5		16	5	11		5	10	21	11
	1904	4	22	4		18		12		7	9	22	13
	1899	4	27	4	1	22		10	(?)	8	8	24	16
Carriages and wagons and materials.....	1909	4	38	8		30	33	99		18	26	61	35
	1904	2 5	40	9		31		75		18	14	52	38
	1899	5				24		51		12	13	42	20
Clothing, men's, including shirts.....	1909	5	183	8	6	169	14	275	6	64	130	252	122
	1904	6	242	13	2	227		168	3	85	247	429	182
	1899	2 6	239	12	20	207		204	10	78	270	456	186
Copper, tin, and sheet-iron products.....	1909	3	53	6	1	46	23	53	1	25	40	83	43
	1904	3	78	8	5	65		96	3	27	59	118	50
	1899	3			6	33		60	4	16	27	72	45
Foundry and machine-shop products...	1909	23	1,011	30	130	851	1,286	1,777	111	400	760	1,632	863
	1904	20	900	32	63	805		1,163	55	356	451	1,202	751
	1899	4 13	667	22	29	616		879	25	328	631	1,243	612
Furniture and refrigerators.....	1909	7	593	10	54	529	640	712	78	252	205	733	528
	1904	9	497	13	42	442		513	46	182	149	481	332
	1899	6	440	7	35	398		402	33	167	147	390	252
Hosiery and knit goods.....	1909	8	614	7	35	572	423	678	20	147	457	717	260
	1904	7	422	7	15	400		368	15	108	285	465	180
	1899	5	275	8	12	255		103	15	57	189	320	137
Leather goods.....	1909	3	23	4	1	18	1	51	1	10	18	44	26
	1904	3	20	4		25		129		13	24	63	39
	1899	6											
Liquors, malt.....	1909	4	129	8	18	103	501	1,032	29	63	193	657	464
	1904	4	65	7	12	46		938	12	36	110	434	324
	1899	4	62	5	10	47		633	21	33	87	311	224
Lumber and timber products.....	1909	10	171	20	14	137	629	413	8	80	157	319	162
	1904	7	133	13	6	114		258	4	59	107	211	104
	1899	7	118	12	4	102		157	2	46	92	180	97
Marble and stone work.....	1909	4	23	5	1	17	18	22	(?)	10	13	32	10
	1904	3	15	4		11		13		7	6	19	13
	1899	6											
Printing and publishing.....	1909	28	255	31	34	190	147	490	26	68	101	339	238
	1904	20	190	34	23	139		330	16	62	61	250	160
	1899	4 17	140	24	5	111		317	3	52	44	174	130
Silk and silk goods, including throwstors.	1909	15	3,937	9	150	3,778	2,868	6,405	171	1,484	4,299	7,456	3,157
	1904	9	2,806	3	62	2,711		3,142	108	826	2,230	3,901	1,671
	1899	7	2,449	4	65	2,380		2,140	68	607	2,008	3,468	1,460
Tobacco manufactures.....	1909	47	1,100	47	39	1,104	152	439	34	439	682	1,446	764
	1904	2 50	1,122	58	72	992		328	54	305	593	1,280	697
	1899	48	375	47	20	308		196	15	96	234	464	230
All other industries.....	1909	62	3,276	64	302	2,910	11,633	7,282	330	1,541	7,406	10,519	3,113
	1904	41	2,233	49	174	2,010		4,941	162	871	4,624	6,349	1,725
	1899	53			92	1,902		5,266	80	866	4,507	6,613	2,106
<b>ALTOONA—All industries.....</b>	1909	44	8,100	41	650	8,409	9,158	\$16,094	\$649	\$5,750	\$9,134	\$16,763	\$7,629
	1904	73	10,069	81	448	9,540		11,238	359	5,564	7,248	14,350	7,102
	1899	57			303	6,573		6,380	210	3,717	6,883	11,273	4,390
Bread and other bakery products.....	1909	11	64	12	7	45	55	138	3	22	68	122	54
	1904	15	60	17	4	39		30	1	17	67	115	48
	1899	11	58	12	6	40		20	2	17	49	98	49
Liquors, malt.....	1909	3	118	5	17	96	730	1,061	20	42	238	520	288
	1904	3	394	5	6	59		762	7	45	87	323	236
	1899	3	42	5	6	31		288	5	17	57	186	120
Lumber and timber products.....	1909	3	104	4	12	88	186	267	14	44	113	250	137
	1904	2 5	214	7	20	187		172	16	102	208	476	178
	1899	7	110	7	5	98		158	3	52	139	234	95
Printing and publishing.....	1909	10	209	7	48	154	177	406	34	87	81	260	179
	1904	9	125	7	26	92		186	20	51	46	159	113
	1899	6	155	7	12	130		133	11	58	33	144	111
All other industries.....	1909	17	8,605	13	566	8,026	8,010	14,222	572	5,555	8,634	15,005	6,971
	1904	41	9,276	45	392	9,163		10,088	315	5,949	6,750	13,277	6,327
	1899	30			274	6,298		5,781	189	3,573	6,605	10,611	4,006

<sup>1</sup> 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.  
<sup>2</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>3</sup> Less than \$500.  
<sup>4</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.  
<sup>5</sup> Figures can not be shown without disclosing individual operations.

MANUFACTURES—PENNSYLVANIA.

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.	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.													
ERIE—All industries.....	1909	391	11,142	364	982	9,796	22,038	\$30,620	\$1,289	\$5,101	\$12,064	\$24,226	\$12,162
	1904	261	9,337	233	689	8,415	.....	22,963	819	4,363	9,427	18,639	9,212
	1899	260	.....	.....	617	8,032	.....	19,063	655	3,925	8,208	16,493	8,285
Brass and bronze products.....	1909	4	55	4	6	45	80	117	7	25	72	127	55
	1904	5	64	7	5	52	.....	85	4	33	58	107	49
	1899	3	31	4	.....	27	.....	63	.....	13	30	60	30
Bread and other bakery products.....	1909	48	210	48	12	150	117	264	5	91	364	561	197
	1904	28	160	27	2	121	.....	160	3	53	190	311	121
	1899	28	143	27	13	103	.....	188	12	43	143	288	145
Carriages and wagons and materials....	1909	4	35	7	2	26	41	64	1	15	21	51	30
	1904	3	20	6	1	19	.....	38	1	9	16	37	21
	1899	2 3	29	6	1	22	.....	36	1	12	11	32	21
Confectionery.....	1909	8	52	8	7	37	34	42	9	16	116	171	55
	1904	3	46	2	2	42	.....	16	3	14	56	94	38
	1899	4	.....	.....	7	15	.....	13	3	7	9	30	21
Cooperage and wooden goods, not elsewhere specified.	1909	5	51	4	6	41	80	90	6	23	63	105	42
	1904	2 3	12	2	.....	10	.....	7	.....	7	31	46	15
	1899	5	123	4	7	112	.....	108	9	34	82	192	110
Copper, tin, and sheet-iron products....	1909	10	143	10	9	124	163	216	8	65	111	216	105
	1904	2 6	80	9	3	68	.....	84	2	35	55	126	71
	1899	3	.....	.....	.....	17	.....	15	.....	8	11	31	20
Cutlery and tools, not elsewhere specified	1909	4	137	2	22	113	168	493	24	67	65	197	132
	1904	3	94	1	7	86	.....	171	10	40	39	105	66
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Flour-mill and gristmill products.....	1909	4	54	2	20	32	540	341	24	18	764	843	79
	1904	3	61	3	16	42	.....	316	22	13	1,359	1,444	85
	1899	5	.....	.....	9	37	.....	226	12	20	595	673	78
Foundry and machine-shop products...	1909	69	4,982	40	370	4,572	8,626	13,517	516	2,499	3,516	8,715	5,190
	1904	43	4,320	15	299	4,036	.....	10,819	346	2,180	3,085	7,319	4,231
	1899	45	.....	.....	282	4,118	.....	9,562	314	2,148	3,142	7,177	4,035
Liquors, malt.....	1909	3	153	.....	30	123	373	2,449	46	90	212	926	714
	1904	4	161	.....	30	131	.....	1,847	44	94	167	882	715
	1899	5	145	.....	30	115	.....	1,100	46	90	138	697	559
Lumber and timber products.....	1909	16	368	12	44	312	896	1,179	54	175	610	964	354
	1904	11	331	13	20	298	.....	571	22	148	442	731	289
	1899	4 11	348	19	32	297	.....	727	31	121	439	769	339
Marble and stone work.....	1909	6	22	9	.....	13	24	51	.....	12	55	99	44
	1904	4 5	27	7	.....	20	.....	31	.....	16	34	65	31
	1899	2 6	40	7	5	28	.....	66	2	27	56	110	54
Musical instruments, pianos and organs and materials.	1909	4	123	2	21	100	190	258	26	64	104	237	133
	1904	3	128	3	12	113	.....	173	11	77	52	210	158
	1899	4	.....	.....	5	158	.....	299	8	103	78	250	172
Patent medicines and compounds and druggists' preparations.	1909	27	56	28	6	22	2	95	5	8	57	132	75
	1904	6	28	6	6	16	.....	60	4	7	12	46	34
	1899	7	30	6	7	17	.....	55	4	5	21	48	27
Printing and publishing.....	1909	23	518	20	89	499	610	1,247	90	182	250	829	579
	1904	2 20	508	13	72	423	.....	932	63	230	250	694	444
	1899	22	.....	.....	32	308	.....	474	26	159	140	462	322
Slaughtering and meat packing.....	1909	6	75	10	11	54	159	207	10	31	740	957	217
	1904	3	23	5	1	17	.....	35	1	10	339	433	94
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stoves and furnaces, including gas and oil stoves.	1909	8	575	3	41	531	468	1,013	63	324	249	843	594
	1904	6	502	3	42	457	.....	844	58	264	270	774	504
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tobacco manufactures.....	1909	23	95	26	1	68	.....	90	1	41	63	157	94
	1904	29	133	39	2	92	.....	105	3	45	63	168	105
	1899	26	124	32	2	90	.....	82	1	45	62	156	94
All other industries.....	1909	119	3,438	129	285	3,024	9,467	8,887	394	1,355	4,632	8,096	3,404
	1904	77	2,643	72	199	2,372	.....	6,669	222	1,088	2,909	5,047	2,138
	1899	83	.....	.....	185	2,568	.....	6,049	186	1,090	3,200	5,518	2,258
HARRISBURG—All industries.	1909	199	11,024	190	1,001	9,743	22,355	\$22,925	\$1,008	\$4,541	\$14,083	\$22,725	\$8,642
	1904	175	8,691	169	477	7,955	.....	15,921	500	3,673	10,327	16,571	6,244
	1899	175	.....	.....	377	6,439	.....	7,997	382	2,528	9,005	14,996	5,991
Bread and other bakery products.....	1909	39	237	40	12	185	143	301	11	91	362	601	239
	1904	40	178	45	4	129	.....	156	1	60	226	372	146
	1899	44	125	48	2	75	.....	92	1	36	116	226	110
Carriages and wagons and materials....	1909	7	61	7	4	50	67	85	2	29	37	92	55
	1904	5	60	4	2	54	.....	104	2	29	23	75	52
	1899	7	.....	.....	5	43	.....	81	5	21	23	50	26

<sup>1</sup> 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.  
<sup>2</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.  
<sup>3</sup> Figures can not be shown without disclosing individual operations.  
<sup>4</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>5</sup> Not reported separately.

MANUFACTURES—PENNSYLVANIA.

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.	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.													
<b>HARRISBURG—Continued.</b>													
Foundry and machine-shop products...	1909	8	449	10	45	304	529	\$1,757	\$70	\$205	\$209	\$610	\$401
	1904	4	621	3	53	565	.....	1,315	64	283	310	954	638
	1899	6	625	4	42	579	.....	1,271	56	261	374	841	467
Iron and steel, steel works and rolling mills.	1909	5	2,214	.....	78	2,136	15,037	7,660	147	964	6,157	7,621	1,464
	1904	4	2,122	.....	73	2,049	.....	5,777	128	871	3,502	4,529	967
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liquors, malt.....	1909	3	67	2	8	57	347	398	18	37	105	361	256
	1904	3	51	4	6	41	.....	350	7	25	64	218	181
	1899	3	30	3	4	32	.....	261	2	21	42	180	144
Lumber and timber products.....	1909	3	132	4	13	115	325	284	13	46	214	350	136
	1904	5	160	6	20	134	.....	315	13	59	287	400	113
	1899	4	91	3	6	82	.....	129	5	42	84	151	67
Patent medicines and compounds and druggists' preparations.	1909	11	37	11	12	14	2	53	3	5	25	57	32
	1904	5	10	5	2	3	.....	19	2	(2)	15	25	10
	1899	6	11	6	1	5	.....	23	1	2	9	20	11
Printing and publishing.....	1909	30	658	28	147	483	460	1,119	124	267	204	954	690
	1904	28	582	26	110	437	.....	888	86	229	152	846	694
	1899	19	394	17	34	343	.....	619	36	160	113	440	333
Tobacco manufactures.....	1909	20	1,630	19	31	1,580	73	1,210	38	497	682	1,762	1,080
	1904	28	916	24	18	874	.....	943	29	308	494	1,258	764
	1899	25	640	28	9	600	.....	89	4	132	269	536	267
All other industries.....	1909	73	5,539	60	741	4,729	4,472	10,058	642	2,400	6,028	10,317	4,289
	1904	58	3,901	52	180	3,669	.....	6,948	168	1,869	5,188	7,864	2,676
	1899	62	.....	.....	274	4,071	.....	5,432	272	1,853	7,975	12,531	4,556
<b>JOHNSTOWN—All industries..</b>													
Bread and other bakery products.....	1909	97	11,671	121	976	10,574	119,508	\$47,242	\$1,003	\$6,304	\$32,348	\$48,106	\$15,758
	1904	82	7,716	99	703	6,014	.....	59,589	729	3,895	19,755	28,892	9,137
	1899	66	.....	.....	367	5,600	.....	16,437	433	2,965	13,906	21,355	7,457
Copper, tin, and sheet-iron products....	1909	11	83	10	12	61	84	156	6	35	146	219	73
	1904	9	55	9	4	42	.....	119	2	25	75	127	52
	1899	11	48	13	.....	35	.....	32	.....	17	40	70	30
Liquors, malt.....	1909	4	176	5	32	139	1,020	1,670	42	91	186	808	622
	1904	3	125	3	22	100	.....	734	30	64	110	508	398
	1899	4	64	3	12	60	.....	525	12	42	58	395	307
Lumber and timber products.....	1909	8	85	9	17	59	510	177	15	43	99	195	96
	1904	5	55	9	6	40	.....	60	6	33	83	142	59
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Printing and publishing.....	1909	11	181	12	37	132	121	379	35	87	74	281	207
	1904	8	124	10	32	82	.....	193	31	56	45	188	143
	1899	10	87	12	1	74	.....	146	1	30	17	94	77
All other industries.....	1909	58	11,069	80	870	10,110	117,683	44,727	807	6,014	31,786	46,465	14,079
	1904	54	7,332	64	638	6,630	.....	58,423	659	3,673	19,420	27,880	8,460
	1899	41	.....	.....	354	5,422	.....	15,734	420	2,876	13,763	20,797	7,034
<b>PHILADELPHIA—All industries.</b>													
Artificial flowers and feathers and plumes.	1909	8,379	294,498	9,162	33,452	251,884	365,950	\$691,397	\$39,446	\$128,381	\$429,092	\$746,076	\$316,984
	1904	7,087	259,878	8,140	22,839	228,899	.....	520,179	25,398	107,640	333,352	591,388	258,036
	1899	7,503	.....	.....	17,498	214,775	.....	445,725	18,831	94,737	295,175	519,982	224,807
Belting and hose, leather.....	1909	20	915	35	76	804	70	934	72	262	675	1,314	639
	1904	19	627	27	47	553	.....	409	38	170	367	722	355
	1899	24	949	34	42	873	.....	544	53	209	467	949	482
Boots and shoes, including cut stock and findings.	1909	13	188	13	50	119	286	637	63	81	809	1,104	295
	1904	10	135	10	29	96	.....	495	27	68	424	642	218
	1899	5	83	8	15	60	.....	340	9	35	299	428	129
Boxes, cigar.....	1909	58	3,820	74	280	3,406	872	3,968	375	1,504	3,703	6,517	2,814
	1904	53	3,282	82	166	3,034	.....	2,498	172	1,321	2,043	5,386	2,443
	1899	80	4,170	118	224	3,828	.....	2,804	224	1,595	3,790	6,395	2,635
Boxes, fancy and paper.....	1909	7	346	9	17	320	362	364	26	125	323	543	220
	1904	7	311	12	8	291	.....	318	12	90	203	394	101
	1899	10	225	14	9	202	.....	190	6	66	105	339	144
Brass and bronze products.....	1909	65	3,682	67	236	3,379	1,382	2,457	238	1,113	1,631	3,822	2,191
	1904	54	3,435	65	170	3,200	.....	1,790	165	959	1,268	3,037	1,769
	1899	50	2,874	55	110	2,709	.....	1,598	99	709	1,006	2,413	1,407
Bread and other bakery products.....	1909	49	1,293	42	179	1,042	1,651	3,214	248	625	2,518	4,057	1,539
	1904	45	831	55	79	697	.....	1,604	97	394	1,396	2,428	1,032
	1899	45	1,414	63	142	1,209	.....	2,551	157	637	2,186	3,515	1,829
Bread and other bakery products.....	1909	1,208	6,936	1,225	1,113	4,598	4,159	14,890	951	2,592	11,650	19,018	7,368
	1904	1,198	6,216	1,217	372	4,627	.....	9,162	354	2,388	8,344	14,440	6,096
	1899	1,299	5,051	1,320	458	3,273	.....	4,992	350	1,569	5,709	10,465	4,756

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

MANUFACTURES—PENNSYLVANIA.

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.	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.													
<b>PHILADELPHIA—Continued.</b>													
Brick and tile.....	1909	31	1,468	51	48	1,369	2,715	\$3,038	\$50	\$786	\$456	\$1,885	\$1,420
	1904	31	1,443	45	39	1,350	.....	2,196	45	697	347	1,596	1,219
	1899	37	1,547	49	47	1,451	.....	2,440	54	678	283	1,497	1,214
Brooms and brushes.....	1909	59	530	70	51	409	255	662	51	223	614	1,132	518
	1904	65	501	72	40	389	.....	396	36	184	403	782	379
	1899	69	597	80	45	472	.....	466	40	200	477	938	461
Buttons.....	1909	21	740	23	49	668	393	551	67	285	586	1,159	573
	1904	15	530	18	33	470	.....	288	32	158	212	481	209
	1899	17	677	26	25	626	.....	377	27	216	331	720	398
Canning and preserving.....	1909	23	804	26	150	628	723	1,528	166	226	1,772	2,538	766
	1904	14	363	13	51	290	.....	615	50	123	553	887	334
	1899	20	.....	.....	77	330	.....	554	48	128	551	926	375
Carpets and rugs, other than rag.....	1909	84	10,863	96	404	10,363	11,435	22,803	684	4,722	13,375	23,629	9,254
	1904	91	13,292	126	458	12,618	.....	20,558	579	5,426	15,560	25,233	9,673
	1899	88	12,588	102	296	12,190	.....	16,867	330	5,092	13,223	21,986	8,703
Carriages and wagons and materials....	1909	90	1,511	96	99	1,316	1,100	2,392	125	839	901	2,458	1,557
	1904	102	1,646	131	80	1,426	.....	1,988	87	832	775	2,183	1,408
	1899	113	.....	.....	68	1,411	.....	2,301	78	754	692	2,035	1,343
Cars and general shop construction and repairs by steam-railroad companies.	1909	10	3,963	.....	294	3,669	2,250	4,471	232	2,527	2,416	5,318	2,602
	1904	8	3,652	.....	283	3,369	.....	3,452	195	2,164	2,207	4,673	2,466
	1899	10	2,861	.....	81	2,780	.....	1,434	72	1,609	1,640	3,651	1,705
Chemicals.....	1909	16	1,972	17	202	1,753	4,875	12,997	346	1,046	6,519	9,643	3,124
	1904	23	2,101	21	210	1,870	.....	14,035	329	1,109	5,484	8,452	2,068
	1899	24	2,169	4	248	1,917	.....	13,400	391	1,026	4,334	7,810	3,476
Clocks and watches, including cases and materials.	1909	5	937	3	160	774	793	2,737	162	399	978	1,965	987
	1904	3	847	2	102	743	.....	2,724	106	346	783	1,466	683
	1899	3	.....	.....	65	930	.....	2,862	62	434	609	1,455	750
Clothing, men's, including shirts.....	1909	456	14,675	716	1,144	12,215	2,472	14,871	1,250	5,962	14,488	29,001	14,513
	1904	256	9,869	394	898	8,577	.....	12,661	745	3,773	12,293	23,642	11,349
	1899	445	.....	.....	799	9,215	.....	10,242	855	4,190	11,642	22,090	11,157
Clothing, women's.....	1909	351	15,627	570	1,551	13,500	1,955	10,590	1,531	6,574	16,066	30,133	13,467
	1904	183	8,019	274	727	7,018	.....	4,715	598	2,964	6,933	12,871	5,938
	1899	101	7,926	283	510	6,233	.....	3,385	428	2,122	5,040	9,452	4,412
Confectionery.....	1909	129	3,371	128	352	2,891	1,609	4,264	446	1,008	4,340	7,315	2,075
	1904	76	3,140	88	383	2,660	.....	3,852	301	832	3,350	5,557	2,201
	1899	79	.....	.....	354	2,092	.....	2,325	307	615	2,572	4,855	1,783
Cooperage and wooden goods, not elsewhere specified.	1909	44	814	47	34	733	729	1,591	57	344	1,449	2,214	705
	1904	41	514	47	29	438	.....	888	30	242	1,038	1,678	636
	1899	41	.....	.....	22	377	.....	1,070	20	186	1,011	1,698	492
Copper, tin, and sheet-iron products....	1909	134	3,490	150	302	2,939	2,074	6,511	414	1,559	4,331	7,493	3,162
	1904	85	3,471	106	261	3,104	.....	5,591	275	1,494	2,714	5,470	2,756
	1899	84	.....	.....	144	1,912	.....	2,152	141	868	1,632	3,300	1,668
Cordage and twine and jute and linen goods.	1909	8	1,214	8	43	1,163	2,250	3,810	105	420	2,135	3,325	1,190
	1904	12	1,335	12	39	1,284	.....	3,766	114	434	3,048	4,121	1,073
	1899	13	1,871	16	68	1,787	.....	4,833	81	597	4,734	6,162	1,428
Cork, cutting.....	1909	6	75	8	7	60	49	74	8	24	40	106	57
	1904	8	106	10	11	85	.....	178	13	33	70	173	94
	1899	6	178	8	9	161	.....	161	11	35	103	196	93
Cotton goods, including cotton small wares.	1909	136	10,527	135	658	9,734	14,160	20,808	1,135	4,411	12,327	22,638	10,211
	1904	129	10,093	175	473	9,445	.....	17,070	726	3,712	9,168	17,463	8,295
	1899	143	11,301	206	400	10,695	.....	14,380	513	4,009	9,112	17,620	8,568
Cutlery and tools, not elsewhere specified.	1909	33	1,036	30	114	883	2,086	2,619	137	536	605	1,086	1,081
	1904	30	852	36	72	744	.....	1,367	78	376	495	1,301	806
	1899	25	434	29	39	366	.....	698	43	105	331	840	509
Dyeing and finishing textiles.....	1909	104	3,691	133	283	3,575	7,037	6,179	358	1,820	2,413	6,327	3,914
	1904	97	3,241	134	225	2,882	.....	5,068	261	1,366	1,671	4,371	2,700
	1899	91	3,762	143	164	3,455	.....	4,981	172	1,578	2,441	5,562	3,121
Electrical machinery, apparatus, and supplies.	1909	45	2,317	23	535	1,750	2,693	6,739	570	923	3,241	7,065	3,824
	1904	40	1,949	32	381	1,536	.....	3,748	417	773	2,878	5,066	2,188
	1899	40	1,429	33	143	1,253	.....	3,663	196	491	2,198	4,231	2,033
Fancy articles, not elsewhere specified..	1909	42	827	47	61	719	341	883	53	296	545	1,281	736
	1904	33	688	40	48	600	.....	416	40	181	324	772	448
	1899	36	672	45	38	589	.....	431	20	177	342	760	418
Fertilizers.....	1909	6	896	4	128	764	3,020	4,340	202	375	3,054	4,268	1,214
	1904	5	645	2	63	580	.....	3,535	104	270	1,972	2,697	625
	1899	6	542	3	96	443	.....	2,331	137	210	1,755	2,876	621
Files.....	1909	7	1,298	4	77	1,217	1,313	2,086	91	528	427	1,540	1,113
	1904	5	979	3	32	944	.....	1,356	53	385	392	1,114	722
	1899	8	961	10	33	918	.....	1,202	51	350	373	1,014	641
Flour-mill and gristmill products.....	1909	28	154	36	29	89	1,116	886	35	53	2,624	2,877	253
	1904	14	132	18	19	95	.....	534	19	66	1,666	1,905	239
	1899	15	.....	.....	15	70	.....	336	16	40	1,208	1,369	161

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

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

## MANUFACTURES—PENNSYLVANIA.

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.	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.													
<b>PHILADELPHIA—Continued.</b>													
Foundry and machine-shop products...	1909	545	20,641	508	2,902	17,141	23,020	\$56,020	\$3,072	\$10,135	\$10,245	\$38,085	\$22,440
	1904	440	19,060	459	2,291	16,310	.....	50,849	2,775	9,201	12,853	32,955	20,102
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fur goods.....	1909	47	284	59	44	181	10	872	31	129	462	1,032	570
	1904	25	244	34	29	181	.....	392	20	105	360	677	317
	1899	23	.....	.....	41	194	.....	489	24	114	290	670	350
Furniture and refrigerators.....	1909	147	4,042	105	484	3,303	3,870	7,451	604	1,940	3,731	8,052	4,321
	1904	59	3,288	110	268	2,910	.....	4,352	271	1,577	2,187	5,452	3,265
	1899	80	2,715	105	163	2,446	.....	3,130	202	1,281	1,940	4,517	2,568
Gas and electric fixtures and lamps and reflectors.	1909	41	1,376	38	242	1,096	879	2,083	254	604	813	2,177	1,304
	1904	39	1,375	36	193	1,146	.....	1,808	221	621	623	2,135	1,512
	1899	31	1,250	34	125	1,091	.....	1,749	138	543	892	2,023	1,131
Glass.....	1909	4	1,185	1	72	1,112	410	1,252	89	559	498	1,367	860
	1904	5	1,376	1	62	1,313	.....	1,259	79	656	352	1,294	942
	1899	8	1,603	8	60	1,520	.....	1,253	85	618	388	1,347	950
Hats and caps, other than felt, straw, and wool.	1909	42	502	55	43	464	51	426	54	188	413	803	390
	1904	30	490	40	18	432	.....	249	33	173	206	637	341
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hats, fur-felt.....	1909	27	6,080	34	221	5,825	4,163	13,337	341	3,101	3,503	10,402	6,839
	1904	16	3,807	14	233	3,560	.....	7,700	305	1,754	1,885	6,848	3,963
	1899	12	2,286	11	159	2,116	.....	5,051	249	893	1,000	3,075	1,985
Hosiery and knit goods.....	1909	177	17,027	105	833	15,090	7,962	18,782	888	5,753	12,870	23,971	11,101
	1904	151	14,263	213	764	13,286	.....	12,585	615	4,201	7,817	15,825	8,008
	1899	150	12,532	180	364	11,088	.....	10,040	388	3,575	6,182	13,074	6,892
Ice, manufactured.....	1909	31	645	12	98	535	11,703	5,258	88	375	524	1,603	1,139
	1904	32	495	11	77	407	.....	3,635	60	250	353	1,188	835
	1899	20	405	3	117	345	.....	3,159	71	191	204	895	691
Ink, printing.....	1909	8	246	6	75	165	483	742	94	105	623	1,050	427
	1904	8	178	6	73	99	.....	590	86	73	403	684	281
	1899	7	114	7	29	78	.....	471	61	48	204	408	204
Iron and steel, steelworks and rolling mills.	1909	8	5,248	6	421	4,821	27,009	18,016	742	2,774	5,588	11,789	6,201
	1904	6	4,000	6	308	3,746	.....	6,452	420	2,003	3,742	7,095	3,353
	1899	8	3,034	6	213	2,815	.....	6,070	299	1,867	3,565	7,209	3,644
Jewelry.....	1909	52	411	69	47	295	110	664	38	186	427	884	457
	1904	35	487	48	45	394	.....	681	38	241	398	854	456
	1899	19	485	25	58	402	.....	679	37	183	244	648	404
Leather goods.....	1909	84	2,002	108	277	1,707	430	2,696	371	781	2,141	3,094	1,853
	1904	70	2,055	88	224	1,743	.....	2,181	206	727	1,937	3,071	1,734
	1899	67	.....	.....	137	1,648	.....	1,414	134	531	1,205	2,708	1,503
Leather, tanned, curried, and finished..	1909	41	6,400	36	392	5,972	8,664	16,523	619	3,009	17,140	23,526	6,386
	1904	43	6,555	56	391	6,108	.....	13,078	411	2,800	17,732	23,903	6,171
	1899	44	6,015	65	169	5,781	.....	9,106	185	2,529	13,429	18,187	4,758
Liquors, malt.....	1909	48	2,290	31	402	1,857	13,368	28,676	1,028	1,443	3,933	14,257	10,324
	1904	51	2,008	43	313	1,652	.....	23,628	887	1,351	3,441	12,315	8,874
	1899	50	2,144	50	303	1,791	.....	27,636	652	1,229	2,877	12,607	9,730
Lumber and timber products.....	1909	98	3,600	103	258	3,248	7,872	5,972	319	1,812	4,453	7,703	3,250
	1904	75	2,604	102	176	2,416	.....	3,574	202	1,255	2,906	5,243	2,337
	1899	69	.....	.....	157	2,286	.....	3,603	155	1,106	2,963	5,155	2,202
Marble and stone work.....	1909	98	1,860	127	123	1,619	2,662	2,991	142	1,089	1,432	3,464	2,032
	1904	71	1,400	97	84	1,228	.....	2,264	110	852	880	2,476	1,596
	1899	76	.....	.....	55	1,029	.....	2,235	55	680	874	2,057	1,183
Mattresses and spring beds.....	1909	38	408	37	62	309	471	603	50	138	657	1,069	412
	1904	33	433	31	54	348	.....	507	64	170	522	982	460
	1899	35	.....	.....	43	339	.....	321	26	139	515	880	305
Millinery and lace goods.....	1909	96	3,104	124	270	2,770	370	2,205	222	956	2,773	5,052	2,279
	1904	42	1,614	66	97	1,451	.....	858	69	491	1,134	2,132	908
	1899	37	859	48	52	759	.....	607	45	275	743	1,446	703
Musical instruments, pianos and organs and materials.	1909	14	561	13	30	458	361	563	42	155	400	775	375
	1904	10	342	11	18	313	.....	384	23	160	110	459	349
	1899	13	280	16	28	236	.....	416	35	154	157	521	364
Optical goods.....	1909	14	419	12	116	291	110	455	90	123	273	621	348
	1904	10	240	11	19	219	.....	243	23	75	90	249	159
	1899	11	.....	.....	18	255	.....	148	14	79	82	209	187
Paint and varnish.....	1909	50	1,612	40	369	1,197	4,027	8,193	552	689	5,194	8,045	2,851
	1904	47	1,388	53	281	1,054	.....	7,288	351	557	4,778	6,949	2,171
	1899	40	1,583	27	350	1,200	.....	9,058	412	594	4,208	7,447	3,230
Paper and wood pulp.....	1909	7	1,395	2	92	1,301	10,645	4,923	183	629	2,352	4,122	1,770
	1904	6	1,158	3	66	1,089	.....	3,856	115	506	1,640	2,921	1,281
	1899	7	983	5	45	933	.....	2,671	61	389	1,511	2,636	1,125
Paper goods, not elsewhere specified....	1909	31	1,600	31	258	1,311	1,213	3,169	300	518	2,161	3,597	1,436
	1904	25	760	35	105	620	.....	777	119	238	676	1,651	675
	1899	410	488	24	46	418	.....	744	44	153	649	1,188	539

1 Comparable figures not available.

2 Excluding statistics for six establishments, to avoid disclosure of individual operations.

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

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

MANUFACTURES—PENNSYLVANIA.

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.	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.													
<b>PHILADELPHIA—Continued.</b>													
Patent medicines and compounds and druggists' preparations.	1909	174	3,175	153	882	2,140	2,012	\$0,752	\$1,074	\$897	\$4,087	\$9,423	\$5,336
	1904	108	2,760	107	730	1,923	.....	5,996	613	600	3,258	7,371	4,113
	1899	114	2,702	124	585	1,903	.....	6,927	583	711	3,228	7,445	4,217
Photo-engraving.....	1909	16	546	15	134	307	105	523	141	381	185	917	732
	1904	12	383	12	84	287	.....	320	66	224	85	547	462
	1899	9	263	8	37	218	.....	258	32	141	44	296	252
Pottery, terra-cotta, and fire-clay products.	1909	13	640	0	46	585	803	1,244	60	345	233	823	590
	1904	14	622	11	34	577	.....	1,079	50	394	152	781	620
	1899	16	540	18	37	494	.....	987	41	229	132	557	425
Printing and publishing.....	1909	931	20,912	885	6,346	13,081	12,267	42,591	5,005	8,240	15,387	45,807	30,420
	1904	756	17,288	788	4,167	12,333	.....	27,430	4,288	6,821	10,772	35,205	24,433
	1899	740	15,262	817	3,068	11,377	.....	25,545	2,096	5,760	7,702	26,740	19,047
Safes and vaults.....	1909	3	278	.....	33	245	418	506	33	160	238	493	205
	1904	3	335	2	23	310	.....	425	20	180	193	491	298
	1899	4	247	3	33	211	.....	479	43	111	165	565	400
Shoddy.....	1909	15	442	20	20	393	1,718	1,504	39	160	1,363	1,840	483
	1904	20	370	28	31	311	.....	1,070	40	121	1,562	2,002	440
	1899	21	368	12	32	324	.....	823	23	132	906	1,285	319
Silk and silk goods, including throwsters.	1909	32	3,348	20	293	3,056	2,156	6,091	315	1,235	3,472	6,502	3,030
	1904	31	2,924	32	211	2,681	.....	5,125	288	950	2,852	5,070	2,227
	1899	28	2,730	40	184	2,506	.....	3,814	179	826	2,202	4,532	2,240
Slaughtering and meat packing.....	1909	81	1,430	110	211	1,109	3,004	4,605	285	793	10,781	22,070	2,298
	1904	95	990	115	80	795	.....	2,034	90	510	11,205	12,922	1,627
	1899	69	879	99	142	638	.....	1,914	113	353	10,368	12,006	1,728
Smelting and refining, not from the ore..	1909	15	160	14	25	121	208	597	35	80	908	1,226	818
	1904	12	162	12	23	127	.....	470	20	80	817	1,051	234
	1899	7	163	9	56	98	.....	382	27	48	612	1,062	180
Soap.....	1909	32	1,059	40	220	799	1,520	3,051	109	388	5,071	7,319	2,248
	1904	31	997	35	149	813	.....	2,619	105	360	3,349	5,770	2,421
Steam packing.....	1909	15	351	12	146	193	413	760	132	100	566	1,136	570
	1904	11	137	9	35	93	.....	477	25	45	215	407	192
	1899	17	329	20	68	238	.....	387	79	90	386	760	383
Stoves and furnaces, including gas and oil stoves.	1909	20	984	18	120	846	891	2,393	174	550	786	2,070	1,284
	1904	17	1,022	16	88	918	.....	2,175	117	551	752	1,955	1,203
Tobacco manufactures.....	1909	490	7,034	528	561	6,545	891	7,820	686	2,650	5,300	13,429	8,030
	1904	617	6,710	602	402	5,646	.....	7,720	366	2,296	3,279	8,655	5,376
	1899	650	6,960	607	273	6,080	.....	4,896	320	2,593	3,424	8,991	5,507
Umbrellas and canes.....	1909	31	1,297	31	100	1,166	1,342	3,413	102	595	1,060	2,075	1,015
	1904	24	1,484	23	67	1,394	.....	4,515	86	495	1,321	2,288	967
	1899	34	.....	135	1,626	.....	.....	1,244	158	560	1,879	3,143	1,204
Wall paper.....	1909	4	504	.....	50	454	525	1,368	117	196	1,047	1,732	685
	1904	6	510	6	33	471	.....	1,057	60	219	741	1,415	674
	1899	11	741	8	70	603	.....	1,472	103	316	1,424	2,002	638
Woolen, worsted, and felt goods, and wool hats.	1909	131	20,073	160	746	19,177	33,428	54,914	1,311	7,906	37,869	54,922	17,053
	1904	130	17,681	173	580	16,822	.....	30,357	836	6,160	25,574	39,258	13,684
	1899	129	17,348	140	354	16,845	.....	26,954	454	6,052	22,270	34,583	12,312
All other industries.....	1909	1,331	48,009	1,420	6,497	40,092	97,447	183,308	7,706	22,293	125,313	183,006	58,598
	1904	1,080	51,669	1,268	4,070	46,331	.....	144,630	4,695	24,020	110,424	167,728	57,304
	1899	1,782	.....	4,894	.....	57,953	.....	173,664	5,408	20,060	115,220	179,875	64,665
<b>PITTSBURGH—All industries.</b>													
Boxes, fancy and paper.....	1909	7	237	7	16	214	105	100	16	62	80	215	120
	1904	5	181	6	6	169	.....	60	5	46	68	140	72
	1899	4	144	0	1	137	.....	49	( <sup>1</sup> )	32	46	102	56
Brass and bronze products.....	1909	12	740	14	97	629	2,756	4,026	130	379	2,373	3,188	815
	1904	15	625	7	91	527	.....	2,965	112	287	1,783	2,462	679
	1899	9	.....	50	231	.....	.....	1,122	50	138	1,286	1,701	415
Bread and other bakery products.....	1909	248	2,791	264	518	2,009	2,222	5,873	506	1,048	4,472	8,054	3,582
	1904	208	2,538	232	434	1,872	.....	4,237	371	933	3,525	6,302	2,777
	1899	125	1,701	132	254	1,315	.....	2,465	222	510	1,647	3,211	1,564
Brick and tile.....	1909	17	457	17	33	407	2,614	947	36	198	173	555	382
	1904	22	535	32	28	475	.....	989	32	221	125	546	421
	1899	21	735	33	31	671	.....	1,232	28	301	149	730	581
Brooms and brushes.....	1909	9	131	10	21	100	165	308	22	57	162	325	163
	1904	11	148	10	29	109	.....	255	30	58	143	374	231
	1899	8	199	14	5	180	.....	321	5	57	221	348	127

<sup>1</sup> Not reported separately.  
<sup>2</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.  
<sup>3</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>4</sup> Less than \$500.

## MANUFACTURES—PENNSYLVANIA.

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.	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).							
<b>PITTSBURGH—Continued.</b>													
Canning and preserving.....	1909	11	3,073	14	1,349	1,710	1,811	\$6,823	\$1,338	\$615	\$2,392	\$6,202	\$3,810
	1904	<sup>1</sup> 6	2,405	8	991	1,405	.....	4,678	1,050	496	2,882	6,217	3,335
	1899	<sup>2</sup> 5	2,110	6	609	1,444	.....	2,473	672	409	1,932	4,429	2,497
Carriages and wagons and materials....	1909	28	358	30	30	298	726	928	28	216	227	582	355
	1904	<sup>2</sup> 37	499	49	18	432	.....	735	10	321	241	763	522
	1899	37	.....	.....	18	347	.....	513	15	207	186	573	387
Cars and general shop construction and repairs by steam-railroad companies.	1909	7	4,827	.....	514	4,313	9,898	4,379	391	3,052	4,967	8,556	3,589
	1904	8	4,880	.....	295	4,555	.....	2,378	243	2,895	2,884	6,107	3,223
	1899	8	2,234	.....	111	2,123	.....	1,384	95	1,110	625	1,887	1,292
Chemicals.....	1909	3	92	.....	14	48	290	446	25	32	392	531	130
	1904	<sup>3</sup> 13	87	2	27	58	.....	301	28	30	270	351	81
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clothing, men's, including shirts.....	1909	24	1,011	43	102	806	340	1,237	88	342	1,122	1,950	828
	1904	18	925	34	104	787	.....	983	64	291	859	1,428	569
	1899	16	.....	.....	73	856	.....	968	50	277	801	1,381	520
Clothing, women's.....	1909	5	72	6	6	60	13	104	6	24	80	134	54
	1904	11	212	16	22	174	.....	322	41	97	208	430	222
	1899	<sup>1</sup> 9	370	17	28	325	.....	1,011	35	133	388	691	303
Confectionery.....	1909	10	713	7	93	613	549	1,127	86	210	1,282	1,853	571
	1904	<sup>1</sup> 10	468	6	77	325	.....	654	62	118	601	1,048	447
	1899	11	.....	.....	144	517	.....	638	72	133	507	1,021	514
Cooperage and wooden goods, not elsewhere specified.	1909	12	202	13	21	168	144	430	23	94	340	567	218
	1904	<sup>1</sup> 15	201	17	12	172	.....	314	15	94	300	493	193
	1899	<sup>1</sup> 10	268	13	3	252	.....	214	3	131	424	606	182
Copper, tin, and sheet-iron products....	1909	48	608	51	86	471	349	1,002	91	297	495	1,121	626
	1904	35	830	44	98	697	.....	1,512	100	404	896	1,618	722
	1899	30	.....	.....	74	662	.....	854	63	282	641	1,263	622
Cutlery and tools, not elsewhere specified.	1909	16	743	20	59	664	1,238	1,258	78	346	927	1,654	727
	1904	<sup>2</sup> 10	439	13	24	402	.....	562	35	218	361	757	396
	1899	9	.....	.....	30	346	.....	567	44	208	332	720	304
Electrical machinery, apparatus, and supplies.	1909	13	1,012	8	142	862	1,640	3,321	182	433	1,843	3,324	1,461
	1904	<sup>1</sup> 12	807	14	256	537	.....	3,105	235	261	1,074	1,707	723
	1899	<sup>1</sup> 7	.....	.....	34	379	.....	2,142	60	190	1,705	2,304	590
Foundry and machine-shop products....	1909	155	9,742	81	1,446	8,215	18,311	31,027	1,963	5,773	9,943	21,691	11,748
	1904	151	11,024	109	1,182	9,733	.....	30,076	1,569	5,728	9,382	20,757	11,375
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Furniture and refrigerators.....	1909	11	373	12	46	315	629	826	54	188	440	900	460
	1904	11	317	13	34	270	.....	511	54	176	192	587	395
	1899	<sup>2</sup> 9	160	21	29	110	.....	92	8	64	105	244	130
Gas and electric fixtures and lamps and reflectors.	1909	16	302	16	53	233	212	435	48	95	262	467	205
	1904	<sup>1</sup> 4	120	2	11	107	.....	84	17	37	143	246	103
	1899	9	.....	.....	30	232	.....	495	41	110	150	443	293
Glass.....	1909	9	1,263	6	86	1,171	915	2,483	134	608	440	1,443	904
	1904	11	2,055	6	141	1,068	.....	3,134	204	987	748	2,131	1,383
	1899	<sup>2</sup> 16	2,210	5	107	2,104	.....	3,588	137	1,133	742	2,430	1,688
Ice, manufactured.....	1909	15	268	2	70	106	6,384	2,965	91	131	190	658	759
	1904	10	465	3	79	383	.....	2,283	97	227	140	815	609
	1899	<sup>1</sup> 4	83	5	8	70	.....	547	10	44	15	111	96
Iron and steel, blast furnaces.....	1909	6	1,740	.....	366	1,383	50,768	30,134	619	1,053	16,038	20,608	4,030
	1904	<sup>2</sup> 4	1,503	.....	154	1,439	.....	12,960	182	830	12,581	15,500	2,919
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iron and steel, steel works and rolling mills.	1909	25	25,341	.....	1,781	23,560	150,512	105,053	2,344	14,455	55,887	82,307	26,420
	1904	25	27,334	.....	1,589	25,745	.....	101,217	2,045	14,910	50,667	77,440	26,773
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jewelry.....	1909	6	96	9	10	77	19	89	7	55	88	183	95
	1904	4	76	6	2	68	.....	38	2	42	63	128	65
Leather goods.....	1909	12	154	13	17	124	79	318	10	64	136	260	124
	1904	9	130	9	18	103	.....	200	15	60	120	243	123
	1899	14	.....	.....	11	116	.....	120	8	60	83	221	138
Leather, tanned, curried, and finished..	1909	6	273	2	27	244	846	1,553	46	139	914	1,162	248
	1904	6	452	3	41	408	.....	2,009	64	224	1,189	1,640	451
	1899	9	471	8	33	430	.....	2,190	52	186	1,138	1,582	444
Liquors, malt.....	1909	12	694	.....	121	873	6,591	14,028	299	686	1,267	5,420	4,153
	1904	11	851	.....	100	742	.....	11,246	288	560	1,222	4,083	2,801
	1899	11	633	.....	100	533	.....	16,832	208	404	1,014	4,840	3,826
Lumber and timber products.....	1909	40	780	46	89	645	2,836	2,019	100	433	980	1,604	734
	1904	42	943	51	104	788	.....	2,108	108	543	1,105	2,231	1,066
	1899	29	.....	.....	55	633	.....	1,556	50	331	1,051	1,858	807

<sup>1</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.<sup>2</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.<sup>3</sup> Comparable figures not available.<sup>4</sup> Not reported separately.

MANUFACTURES—PENNSYLVANIA.

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.	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.													
<b>PITTSBURGH—Continued.</b>													
Marble and stone work.....	1909	25	348	30	33	285	700	\$503	\$44	\$194	\$248	\$503	\$350
	1904	16	266	23	24	210	.....	342	24	156	146	443	297
	1899	23	.....	.....	.....	25	612	633	27	316	339	836	547
Mattresses and spring beds.....	1909	6	256	5	28	223	261	574	38	124	337	500	253
	1904	14	132	3	5	124	.....	218	6	60	183	335	152
	1899	7	230	8	24	108	.....	271	23	75	331	500	169
Paint and varnish.....	1909	16	362	12	98	252	1,700	2,361	137	138	1,740	2,419	679
	1904	15	394	10	93	291	.....	1,942	129	143	1,514	2,127	613
	1899	12	334	9	82	243	.....	1,412	109	101	1,210	2,029	819
Patent medicines and compounds and druggists' preparations.	1909	31	214	25	75	114	263	685	96	51	313	808	585
	1904	31	209	25	48	136	.....	492	49	63	475	1,019	544
	1899	14	.....	.....	.....	86	.....	270	51	49	343	804	461
Photo-engraving.....	1909	6	100	6	26	77	71	108	34	55	41	187	146
	1904	8	91	10	16	59	.....	79	17	52	13	127	114
	1899	6	67	11	6	50	.....	34	4	28	14	79	65
Pottery, terra-cotta and fire-clay products.	1909	3	337	.....	17	320	850	1,173	26	155	195	507	312
	1904	15	393	.....	44	354	.....	3,454	66	132	218	598	350
	1899	17	.....	.....	78	662	.....	1,550	77	262	462	1,046	584
Printing and publishing.....	1909	254	4,216	255	1,156	2,805	4,173	9,000	1,314	1,960	2,069	9,071	6,402
	1904	211	3,832	212	847	2,773	.....	9,074	928	1,877	2,156	7,789	5,633
	1899	147	.....	.....	552	2,359	.....	5,184	483	1,599	1,435	4,958	3,523
Shipbuilding, including boat building..	1909	4	169	4	21	144	530	533	42	96	107	268	161
	1904	4	133	7	13	113	.....	474	22	63	64	220	156
	1899	4	.....	.....	8	58	.....	123	4	22	32	71	39
Slaughtering and meat packing.....	1909	14	1,063	7	215	841	3,301	3,510	276	553	11,406	13,107	1,041
	1904	21	1,036	22	128	886	.....	2,784	145	575	8,345	9,995	1,060
	1899	13	706	19	99	598	.....	2,284	101	327	5,118	6,051	933
Soap.....	1909	7	469	12	214	243	488	1,185	106	104	458	1,207	749
	1904	6	199	9	27	163	.....	738	35	72	347	627	180
Stoves and furnaces, including gas and oil stoves.	1909	9	285	8	44	233	256	1,226	49	133	161	416	255
	1904	9	145	5	25	115	.....	221	28	53	103	243	140
Surgical appliances and artificial limbs..	1909	9	60	13	11	42	31	36	12	37	20	111	91
	1904	6	64	4	18	42	.....	31	10	23	7	71	64
	1899	3	48	4	11	33	.....	20	4	14	11	56	45
Tobacco manufactures.....	1909	215	3,450	223	108	3,005	213	1,878	144	844	1,172	3,615	2,443
	1904	243	3,520	257	110	3,144	.....	2,324	113	944	1,084	3,986	2,902
	1899	201	2,391	213	70	2,099	.....	1,048	59	617	539	2,448	1,909
All other industries.....	1909	271	9,903	262	1,279	8,302	25,628	34,950	1,598	4,444	21,675	34,496	12,821
	1904	269	9,899	231	890	8,778	.....	48,767	1,107	4,487	16,088	27,175	11,087
	1899	454	.....	.....	2,896	50,748	.....	157,664	3,481	27,841	103,370	199,568	63,192
<b>READING—All industries.....</b>													
	1909	482	26,407	517	1,745	24,145	43,193	\$41,035	\$1,810	\$11,011	\$29,848	\$51,135	\$21,287
	1904	402	19,763	441	1,269	18,053	.....	27,123	1,098	7,265	16,769	30,491	13,782
	1899	403	.....	.....	941	16,892	.....	25,934	855	6,583	16,996	32,682	15,686
Automobiles, including bodies and parts.	1909	5	398	2	41	355	235	572	34	187	314	666	352
	1904	3	183	.....	19	164	.....	308	12	91	133	269	130
Boxes, cigars.....	1909	4	110	4	7	108	99	118	5	39	62	128	66
	1904	4	116	6	19	91	.....	70	8	27	55	114	59
	1899	3	80	5	1	74	.....	67	(6)	20	71	104	33
Boxes, fancy and paper.....	1909	6	164	10	9	145	115	127	7	50	79	164	85
	1904	4	154	4	11	139	.....	88	7	35	47	105	58
	1899	5	122	9	2	111	.....	60	2	27	30	100	61
Brass and bronze products.....	1909	8	79	9	13	57	72	116	10	30	91	149	58
	1904	5	200	3	20	186	.....	616	12	73	138	273	135
	1899	3	24	4	5	15	.....	32	3	9	15	35	20
Bread and other bakery products.....	1909	55	447	68	37	342	282	517	16	191	536	950	414
	1904	53	387	64	29	294	.....	332	18	137	373	676	303
	1899	51	307	59	31	217	.....	285	19	104	234	501	267
Brooms and brushes.....	1909	6	61	8	6	47	26	82	(6)	16	88	159	71
	1904	5	48	.....	.....	41	.....	40	.....	16	39	72	33
	1899	7	59	11	5	43	.....	28	1	13	45	74	29
Carriages and wagons and materials....	1909	8	314	11	13	200	224	292	11	145	163	413	250
	1904	6	276	8	18	250	.....	600	15	105	265	394	189
	1899	8	.....	.....	15	190	.....	398	8	78	94	284	190
Cars and general shop construction and repairs by steam-railroad companies.	1909	6	2,765	.....	137	2,028	5,752	3,985	82	1,681	3,767	5,661	1,894
	1904	5	2,648	.....	76	2,572	.....	3,264	65	1,476	2,719	4,275	1,556
	1899	4	2,008	.....	46	1,962	.....	2,069	46	1,046	2,255	6,315	4,060

1 Excluding statistics for one establishment, to avoid disclosure of individual operations.  
 2 Excluding statistics for two establishments, to avoid disclosure of individual operations.  
 3 Not reported separately.  
 4 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.  
 5 Less than \$500.

MANUFACTURES—PENNSYLVANIA.

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.	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.										
<b>READING—Continued.</b>													
Clothing, men's, including shirts.....	1909	10	608	20	54	534	118	\$508	\$56	\$107	\$567	\$938	\$371
	1904	8	320	10	29	281	.....	223	18	81	377	561	184
	1899	9	283	18	19	246	.....	227	24	69	281	436	155
Clothing, women's.....	1909	7	161	9	2	150	46	63	1	36	71	130	59
	1904	4	50	6	1	43	.....	18	2	10	19	46	27
	1899	5	58	9	.....	49	.....	18	.....	12	30	55	25
Confectionery.....	1909	10	507	13	109	385	388	515	72	96	600	1,047	447
	1904	5	422	4	39	379	.....	377	45	84	427	781	354
	1899	3	.....	.....	34	203	.....	128	31	58	200	325	125
Copper, tin, and sheet-iron products....	1909	3	15	2	.....	13	3	21	.....	9	15	33	18
	1904	4	37	3	.....	31	.....	39	2	18	18	47	29
	1899	7	.....	.....	5	25	.....	89	2	12	43	79	36
Dyeing and finishing textiles.....	1909	4	298	1	25	272	625	290	21	84	134	294	160
	1904	3	150	4	11	135	.....	131	13	51	70	180	110
	1899	4	31	5	3	23	.....	37	1	9	16	33	17
Foundry and machine-shop products...	1909	37	3,079	26	221	2,832	3,389	4,293	227	1,384	1,716	3,889	2,173
	1904	30	2,904	35	149	2,810	.....	3,135	138	969	1,200	2,991	1,791
	1899	34	.....	.....	216	3,106	.....	4,335	186	1,282	1,606	3,892	2,196
Hats, fur-felt.....	1909	5	870	6	28	836	87	550	68	367	885	1,571	686
	1904	3	641	6	18	617	.....	537	23	230	532	947	415
Hosiery and knit goods.....	1909	38	4,521	30	95	4,396	2,097	4,025	114	1,323	2,132	4,551	2,419
	1904	27	2,966	23	130	2,813	.....	2,098	81	721	1,161	2,540	1,376
	1899	21	1,741	24	50	1,667	.....	710	38	391	697	1,326	620
Iron and steel, steel works and rolling mills.	1909	6	3,218	.....	207	3,011	11,200	6,824	268	1,670	5,350	8,190	2,840
	1904	6	2,209	.....	125	2,084	.....	3,885	120	1,081	3,437	4,818	1,381
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leather goods.....	1909	5	89	6	9	74	84	63	5	24	63	128	65
	1904	3	20	2	4	23	.....	29	2	8	24	43	19
	1899	3	.....	.....	.....	10	.....	11	.....	4	6	16	10
Liquors, malt.....	1909	4	153	4	44	105	1,555	2,546	87	73	349	1,417	1,068
	1904	4	118	1	25	92	.....	984	64	68	267	1,168	901
	1899	5	.....	.....	18	109	.....	906	25	62	170	834	655
Lumber and timber products.....	1909	6	240	1	23	222	722	427	21	106	306	547	241
	1904	4	196	3	22	171	.....	212	15	88	253	401	148
	1899	5	159	7	6	146	.....	179	5	69	185	302	117
Marble and stone work.....	1909	9	110	10	3	91	179	131	4	53	47	156	109
	1904	5	62	5	1	56	.....	90	1	38	40	103	63
	1899	10	.....	.....	5	86	.....	159	3	44	39	117	78
Optical goods.....	1909	3	288	2	13	273	170	392	18	86	139	330	200
	1904	3	167	3	29	135	.....	374	31	41	52	191	139
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Patent medicines and compounds and druggists' preparations.	1909	13	32	16	1	15	10	13	1	6	33	67	34
	1904	8	26	12	2	12	.....	24	1	5	9	41	32
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Printing and publishing.....	1909	37	452	42	134	270	355	571	80	199	162	743	581
	1904	34	410	42	128	240	.....	416	72	122	110	564	454
	1899	30	339	34	33	272	.....	540	22	127	92	435	343
Tobacco manufactures.....	1909	81	1,589	107	79	1,403	49	1,250	95	563	1,282	2,574	1,292
	1904	81	1,734	101	105	1,528	.....	1,078	100	595	1,056	2,484	1,428
	1899	476	1,260	91	62	1,107	.....	750	53	422	784	1,683	899
Woolen, worsted, and felt goods, and wool hats.	1909	5	543	12	37	494	628	793	37	237	740	1,315	575
	1904	3	318	8	13	297	.....	372	13	116	302	484	182
	1899	4	304	8	1	295	.....	450	1	127	294	528	234
All other industries.....	1909	101	5,281	92	398	4,791	14,674	11,012	470	2,189	10,157	14,016	4,759
	1904	75	2,893	81	243	2,569	.....	7,773	210	979	3,643	5,923	2,280
	1899	106	.....	.....	384	6,786	.....	14,360	385	2,598	9,701	15,208	5,507
<b>SCRANTON—All Industries</b>													
	1909	293	14,242	270	1,121	12,851	20,584	\$22,494	\$1,337	\$5,146	\$14,302	\$26,385	\$12,683
	1904	258	11,901	243	746	10,912	.....	19,161	840	4,428	11,253	20,453	9,200
	1899	247	.....	.....	550	11,139	.....	18,984	710	4,388	17,220	24,742	7,522
Bread and other bakery products.....	1909	38	322	36	42	244	200	412	31	118	479	759	280
	1904	25	250	26	32	192	.....	204	29	88	331	572	241
	1899	27	190	30	28	132	.....	192	18	55	208	358	150
Brick and tile.....	1909	3	74	1	8	65	525	166	6	29	15	59	44
	1904	4	128	4	7	117	.....	102	5	45	17	88	71
	1899	3	80	11	2	67	.....	60	2	23	4	42	38
Carriages and wagons and materials.....	1909	13	230	18	15	197	294	534	15	103	160	331	181
	1904	10	158	14	15	129	.....	259	10	63	74	200	126
	1899	48	.....	.....	8	127	.....	344	4	65	81	217	136

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

MANUFACTURES—PENNSYLVANIA.

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.	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.													
<b>SCRANTON—Continued.</b>													
Clothing, women's.....	1909	7	446	9	16	421	103	\$270	\$15	\$128	\$285	\$550	\$205
	1904	4	167	6	12	149	.....	187	9	55	98	109	101
	1899	3	332	4	6	322	.....	30	3	60	50	133	83
Copper, tin, and sheet-iron products.....	1909	8	35	8	4	48	5	40	2	22	31	75	44
	1904	3	60	4	.....	31	.....	18	.....	24	21	63	42
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Flour-mill and gristmill products.....	1909	4	35	5	11	19	208	127	6	6	180	227	38
	1904	6	65	4	20	41	.....	343	17	20	828	948	120
	1899	4	46	3	8	35	.....	335	12	18	395	402	67
Foundry and machine-shop products...	1909	20	1,280	16	187	1,083	2,467	5,463	228	567	853	2,218	1,365
	1904	<sup>2</sup> 13	1,200	7	153	1,040	.....	5,759	180	540	704	1,902	1,198
	1899	<sup>1</sup> 13	1,443	10	52	1,381	.....	3,954	91	707	820	1,756	936
Gas and electric fixtures and lamps and reflectors.	1909	3	27	2	2	23	10	50	3	10	10	33	17
	1904	3	31	2	3	26	.....	32	3	10	13	32	19
	1899	3	.....	.....	2	13	.....	6	2	7	8	23	15
Liquors, malt.....	1909	5	341	.....	60	281	1,172	2,130	164	214	500	1,047	1,438
	1904	4	135	.....	36	149	.....	1,342	91	110	264	1,227	963
	1899	6	210	.....	29	181	.....	1,431	92	117	220	1,196	976
Lumber and timber products.....	1909	9	432	9	34	380	737	1,095	40	212	603	933	330
	1904	10	382	5	35	312	.....	683	35	199	490	860	370
	1899	11	.....	.....	21	277	.....	593	20	120	379	610	231
Patent medicines and compounds and druggists' preparations.	1909	10	96	8	28	60	1	72	18	17	37	197	160
	1904	<sup>2</sup> 9	24	8	1	15	.....	20	( <sup>4</sup> )	5	16	46	30
	1899	<sup>1</sup> 6	14	7	1	0	.....	4	( <sup>4</sup> )	.....	4	11	7
Printing and publishing.....	1909	48	800	50	102	588	700	1,452	163	354	445	1,309	864
	1904	43	647	40	78	529	.....	1,078	51	338	292	1,098	806
	1899	<sup>3</sup> 30	.....	.....	77	369	.....	994	53	179	196	832	689
Silk and silk goods, including throwsters.	1909	15	3,908	9	85	3,814	4,738	2,987	121	976	4,640	6,631	1,901
	1904	10	3,125	8	56	3,061	.....	2,389	70	607	3,287	4,427	1,140
	1899	6	.....	.....	59	2,517	.....	1,878	85	400	2,078	3,810	841
Tobacco manufactures.....	1909	28	339	32	43	204	135	549	40	88	288	638	350
	1904	<sup>3</sup> 32	173	36	4	133	.....	64	2	52	64	178	114
	1899	27	271	34	27	210	.....	274	22	70	210	500	296
All other industries.....	1909	82	5,840	67	424	5,355	9,200	7,147	485	2,305	5,762	10,478	4,710
	1904	82	5,331	79	294	4,958	.....	6,081	338	2,272	4,784	8,643	3,859
	1899	94	.....	.....	230	5,502	.....	8,883	306	2,556	11,067	14,727	3,060
<b>WILKES-BARRE—All industries.</b>													
	1909	176	8,329	177	599	7,553	12,109	\$16,011	\$743	\$3,323	\$6,433	\$13,526	\$7,093
	1904	129	6,495	152	423	6,020	.....	11,710	481	2,496	5,265	11,000	5,735
	1899	138	.....	.....	302	4,749	.....	9,702	381	1,745	4,309	8,617	4,308
Bread and other bakery products.....	1909	28	254	31	27	196	126	278	27	100	418	660	242
	1904	13	161	14	18	129	.....	197	13	67	287	446	159
	1899	15	165	18	9	138	.....	146	6	51	123	247	124
Brick and tile.....	1909	3	85	3	7	75	190	37	4	30	11	63	52
	1904	3	63	5	2	56	.....	21	1	22	5	36	31
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clothing, women's.....	1909	3	322	2	21	299	46	333	33	76	213	383	170
	1904	3	473	5	32	436	.....	298	17	92	255	503	248
	1899	3	607	7	24	636	.....	512	44	137	317	627	310
Flour-mill and gristmill products.....	1909	4	27	3	6	18	270	147	4	10	293	332	39
	1904	4	31	3	4	24	.....	101	4	15	273	315	42
	1899	4	29	3	11	15	.....	122	8	7	120	148	28
Furniture and refrigerators.....	1909	4	84	5	9	70	56	100	7	26	33	80	47
	1904	3	76	5	2	69	.....	62	3	17	16	46	30
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Printing and publishing.....	1909	31	462	36	99	327	320	597	94	206	206	706	500
	1904	22	371	24	69	278	.....	526	56	168	137	570	433
	1899	<sup>2</sup> 26	335	20	50	259	.....	370	37	118	84	411	327
Silk and silk goods, including throwsters.	1909	6	1,113	.....	30	1,083	1,866	1,300	27	247	407	1,066	659
	1904	3	953	4	31	918	.....	743	39	195	649	1,055	406
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tobacco manufactures.....	1909	13	36	14	.....	22	.....	36	.....	11	16	40	24
	1904	17	67	18	3	46	.....	39	2	24	23	72	49
	1899	16	59	20	1	38	.....	33	1	16	29	67	38
All other industries.....	1909	84	5,946	83	400	5,463	9,235	13,093	547	2,008	4,836	10,136	5,300
	1904	61	4,300	74	262	3,904	.....	9,639	340	1,908	3,620	7,957	4,337
	1899	74	.....	.....	207	3,663	.....	8,519	285	1,416	3,636	7,117	3,481

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

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

<sup>3</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.

<sup>4</sup> Less than \$500.

<sup>5</sup> 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—PENNSYLVANIA.

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

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

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).							
Expressed in thousands.													
Beaver Falls.....	1909	44	2,456	34	242	2,180	5,141	\$7,503	\$287	\$1,218	\$3,015	\$6,400	\$3,385
	1904	42	2,402	26	234	2,232	.....	6,518	280	1,123	2,242	4,908	2,666
	1899	47	.....	.....	142	2,174	.....	6,521	174	971	3,850	6,220	2,370
Bethlehem.....	1909	49	1,727	54	90	1,583	3,086	3,300	105	593	2,330	3,712	1,382
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bradnock.....	1909	41	1,218	36	142	1,040	7,332	5,369	100	785	3,347	5,094	1,747
	1904	38	1,365	34	100	1,225	.....	3,283	118	756	2,738	4,125	1,387
	1899	30	.....	.....	64	815	.....	2,472	55	526	2,565	4,091	1,526
Bradford.....	1909	82	1,650	104	228	1,318	3,856	4,226	229	655	2,442	3,887	1,445
	1904	80	1,734	91	163	1,490	.....	3,273	161	841	1,593	3,192	1,599
	1899	65	.....	.....	74	1,200	.....	2,122	80	697	1,635	3,125	1,490
Butler.....	1909	61	3,344	102	419	2,823	10,405	16,769	457	1,571	7,594	11,058	3,404
	1904	48	2,489	74	322	2,093	.....	9,910	374	1,114	4,660	6,832	2,172
	1899	41	.....	.....	33	792	.....	1,419	44	416	520	1,403	883
Carbondale.....	1909	34	1,636	29	104	1,503	1,407	2,307	123	636	1,253	2,523	1,270
	1904	32	1,631	22	134	1,475	.....	2,679	171	606	1,113	2,316	1,203
	1899	26	.....	.....	67	1,023	.....	1,452	68	340	470	1,146	676
Carlisle.....	1909	50	1,590	148	108	1,334	1,735	2,054	144	511	1,431	2,496	1,065
	1904	48	1,496	53	103	1,340	.....	1,474	101	411	1,120	1,986	857
	1899	39	.....	.....	74	1,121	.....	923	90	328	1,047	1,768	661
Carnegie.....	1909	19	599	17	70	422	1,245	2,371	94	275	2,441	3,099	658
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chambersburg.....	1909	57	1,631	56	211	1,364	3,126	3,484	177	599	1,170	2,456	1,280
	1904	47	981	52	86	843	.....	1,033	58	312	569	1,085	510
	1899	44	.....	.....	34	612	.....	722	25	222	478	815	337
Chester.....	1909	128	7,867	102	779	6,986	17,131	23,928	965	3,392	11,576	19,373	7,797
	1904	131	7,612	120	431	7,061	.....	22,070	607	3,417	10,422	16,645	6,223
	1899	121	.....	.....	307	6,972	.....	17,672	486	3,131	8,571	14,940	6,369
Columbia.....	1909	47	2,044	45	126	2,773	6,589	3,599	130	1,107	2,671	4,807	2,136
	1904	44	3,187	38	115	3,034	.....	2,994	105	943	2,453	3,887	1,434
	1899	53	.....	.....	83	2,519	.....	2,256	61	881	2,572	4,214	1,642
Connellsville.....	1909	30	1,269	28	206	1,035	4,526	3,275	194	576	817	1,671	1,154
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dubois.....	1909	37	1,210	37	158	1,015	3,199	2,394	133	507	926	1,890	904
	1904	32	1,041	32	109	900	.....	2,598	85	459	961	1,799	748
	1899	24	.....	.....	33	817	.....	1,411	32	320	1,153	1,768	615
Dunmore.....	1909	18	1,423	16	99	1,308	1,266	938	133	603	670	1,851	1,181
	1904	15	1,210	9	77	1,133	.....	1,041	114	464	550	1,460	910
	1899	18	.....	.....	50	614	.....	1,021	47	276	400	1,132	642
Easton.....	1909	126	3,769	138	243	3,388	5,965	7,687	246	1,524	3,424	6,015	3,491
	1904	97	3,047	106	221	2,720	.....	4,336	190	1,180	2,684	5,059	2,375
	1899	106	.....	.....	147	3,202	.....	4,346	129	1,200	3,193	5,425	2,232
Greensburg.....	1909	47	393	50	33	310	738	938	32	163	330	726	396
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hazleton.....	1909	77	2,998	84	232	2,682	3,112	5,209	250	940	2,702	4,707	2,095
	1904	62	1,575	65	194	1,406	.....	2,575	107	434	1,130	2,186	1,056
	1899	46	.....	.....	72	822	.....	1,320	50	234	293	999	706
Homestead.....	1909	26	248	17	60	171	890	1,273	40	111	322	659	337
	1904	27	369	27	35	307	.....	733	45	171	265	713	448
	1899	15	.....	.....	12	164	.....	173	10	63	101	266	105
Lancaster.....	1909	306	8,981	317	707	7,957	10,037	17,443	813	3,236	8,841	15,979	7,138
	1904	300	9,432	324	415	8,693	.....	12,395	415	3,089	7,598	14,648	7,050
	1899	284	.....	.....	362	7,504	.....	9,470	356	2,569	6,453	12,750	6,297
Lebanon.....	1909	109	6,077	105	381	5,591	21,717	12,276	409	2,441	6,778	11,429	4,651
	1904	103	4,841	111	343	4,387	.....	7,831	304	1,791	3,279	6,078	3,699
	1899	97	.....	.....	177	4,475	.....	5,675	175	1,770	4,745	7,658	2,913
McKees Rocks.....	1909	31	3,993	21	291	3,591	8,872	10,328	335	2,399	5,407	9,787	4,380
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
McKeesport.....	1909	68	9,093	58	789	8,240	49,935	43,433	891	6,031	27,296	42,495	15,199
	1904	75	9,618	74	696	8,848	.....	16,286	778	5,521	12,310	23,054	10,744
	1899	67	.....	.....	473	7,213	.....	15,083	445	4,147	21,835	30,058	14,223
Mahanoy City.....	1909	33	666	44	32	590	753	994	20	166	383	868	485
	1904	29	293	33	22	238	.....	467	41	93	133	431	298
	1899	20	.....	.....	23	301	.....	511	15	74	113	401	288
Meadville.....	1909	62	2,566	54	404	2,048	2,539	2,725	337	974	1,716	3,569	1,843
	1899	52	1,520	63	157	1,309	.....	1,761	115	602	964	2,075	1,111
	1904	46	.....	.....	95	1,201	.....	1,168	74	535	880	1,668	779

<sup>1</sup> Figures not available.<sup>2</sup> 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—PENNSYLVANIA.

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

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

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)							
Expressed in thousands.													
Mount Carmel.....	1909	20	651	28	23	600	322	\$435	\$19	\$144	\$416	\$785	\$309
	1904	10	238	20	12	107	.....	317	11	79	427	620	193
	1899	9	.....	.....	11	109	.....	334	7	39	260	393	193
Nanticoke.....	1909	17	378	15	15	348	447	420	24	120	180	423	243
	1904	12	263	13	21	229	.....	314	16	65	160	358	198
	1899	17	.....	.....	20	140	.....	291	6	44	182	310	128
New Castle.....	1909	82	6,063	73	651	5,339	64,697	27,028	753	3,870	30,974	38,038	7,064
	1904	71	6,050	69	548	5,433	.....	18,490	611	3,430	21,212	28,923	7,711
	1899	71	.....	.....	184	4,529	.....	12,053	239	2,988	13,146	20,016	6,870
Norristown.....	1909	111	4,223	104	301	3,818	5,713	0,984	378	1,553	3,274	7,413	4,130
	1904	84	3,781	66	198	3,517	.....	5,307	226	1,315	2,897	5,925	3,058
	1899	77	.....	.....	154	2,944	.....	3,074	126	977	2,150	4,107	1,948
Oil City.....	1909	34	1,593	44	211	1,338	2,467	3,847	227	903	2,300	4,122	1,822
	1904	36	1,755	31	167	1,557	.....	4,387	171	928	1,334	3,082	1,748
	1899	42	.....	.....	105	1,683	.....	3,804	138	878	3,688	5,164	1,476
Phoenixville.....	1909	31	2,822	37	186	2,599	15,152	8,765	235	1,180	3,717	5,876	2,150
	1904	31	3,027	43	96	2,888	.....	7,461	140	1,314	3,023	5,500	2,477
	1899	32	.....	.....	111	2,249	.....	5,820	107	910	1,847	3,322	1,475
Pittston.....	1909	40	942	30	111	792	2,133	2,337	92	316	1,067	1,969	902
	1904	40	937	44	63	830	.....	1,614	72	307	728	1,475	747
	1899	27	.....	.....	41	357	.....	902	39	158	623	998	375
Plymouth.....	1909	23	980	21	57	908	1,412	2,544	49	281	704	1,179	475
	1904	23	900	23	56	827	.....	669	34	210	447	860	413
	1899	24	.....	.....	37	756	.....	470	20	130	241	533	262
Pottstown.....	1909	78	4,123	84	369	3,650	17,415	9,961	494	1,722	8,999	12,505	3,506
	1904	77	3,825	97	271	3,457	.....	6,420	295	1,610	5,438	8,145	2,707
	1899	65	.....	.....	159	2,081	.....	4,683	135	1,100	4,845	7,357	2,512
Pottsville.....	1909	91	3,342	100	370	2,872	15,202	13,982	341	1,326	5,927	9,138	3,211
	1904	79	2,127	87	136	1,904	.....	3,304	150	759	4,025	5,806	1,781
	1899	77	.....	.....	139	1,099	.....	3,107	105	501	3,430	4,830	1,400
Shamokin.....	1909	39	1,744	34	87	1,623	1,862	3,227	121	499	2,120	3,544	1,415
	1904	48	980	61	22	897	.....	1,115	27	200	1,026	1,444	418
	1899	46	.....	.....	34	762	.....	685	29	107	700	1,147	447
Sharon.....	1909	45	3,795	51	428	3,310	27,402	14,649	455	2,000	6,683	9,881	3,108
	1904	37	2,029	34	183	1,812	.....	6,564	198	997	3,791	5,671	1,880
	1899	35	.....	.....	62	1,827	.....	4,134	77	898	2,264	3,765	1,601
Shenandoah.....	1909	29	301	24	35	242	1,382	1,051	37	134	336	887	551
	1904	30	219	30	19	170	.....	740	18	100	181	595	414
	1899	22	.....	.....	9	107	.....	313	11	47	94	302	208
South Bethlehem.....	1909	40	8,469	65	419	7,985	31,562	41,121	604	4,973	15,967	26,417	10,450
	1904	46	6,104	45	305	5,754	.....	18,050	395	2,753	7,261	15,275	8,014
	1899	38	.....	.....	254	4,045	.....	8,047	321	2,113	4,862	9,604	5,102
Sunbury.....	1909	39	2,339	42	228	2,000	2,835	4,708	207	1,118	2,228	4,450	2,222
	1904	32	1,651	38	50	1,457	.....	1,138	57	678	1,702	2,593	891
	1899	20	.....	.....	72	968	.....	1,893	51	358	1,158	1,868	710
Uniontown.....	1909	41	492	38	110	335	1,620	1,680	163	225	379	1,347	908
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Warren.....	1909	72	1,767	70	208	1,489	3,960	5,796	266	836	3,676	5,744	2,008
	1904	63	1,412	66	172	1,174	.....	4,982	180	645	2,719	4,666	1,947
	1899	43	.....	.....	60	1,050	.....	2,724	71	480	2,154	3,681	1,527
Washington.....	1909	75	2,387	68	193	2,126	4,216	3,983	264	1,110	2,447	4,837	2,300
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Chester.....	1909	35	1,113	35	162	916	934	2,489	182	478	697	2,140	1,479
	1904	35	993	33	111	849	.....	1,671	102	412	674	2,121	1,447
	1899	35	.....	.....	63	497	.....	1,051	48	234	316	859	543
Wilkesburg.....	1909	24	231	21	25	185	1,016	535	21	120	262	538	276
	1904	30	230	24	22	184	.....	427	23	127	235	472	237
	1899	10	.....	.....	8	100	.....	216	4	62	126	246	120
Williamsport.....	1909	159	6,534	139	754	5,641	11,713	14,070	768	2,527	7,060	13,348	6,288
	1904	115	5,880	133	451	5,296	.....	12,004	485	2,020	6,016	11,367	5,351
	1899	142	.....	.....	358	4,717	.....	8,661	320	1,707	5,601	9,726	4,125
York.....	1909	218	11,530	221	817	10,492	15,344	22,419	1,133	4,438	8,866	18,622	9,756
	1904	223	8,838	266	620	7,952	.....	14,292	634	3,039	6,480	13,333	6,853
	1899	241	.....	.....	348	6,851	.....	8,794	416	2,346	5,400	10,560	5,100
All other cities <sup>3</sup> .....	1909	99	20,296	78	1,935	18,283	165,503	100,264	2,445	12,977	77,962	103,289	25,327

<sup>1</sup> 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.

<sup>2</sup> Figures not available.

<sup>3</sup> Includes Coatesville, Duquesne, Monessen, North Braddock, Old Forge, South Sharon, and Steelton.

MANUFACTURES—PENNSYLVANIA.

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, supts. and managers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.		Under 16.				
					Male.	Female.		Number.			Male.	Female.	Male.	Female.			
								Maximum month.	Minimum month.								
1 All industries.....	27,563	1,002,171	29,743	24,953	55,703	14,229	877,543	De 960,666	Ja 819,927	(1)	(1)	(1)	(1)	(1)	2,021,547		
2 Agricultural implements.....	36	2,671	37	51	149	33	2,401	Ap 2,445	Oc 2,337	2,374	2,355	4	15	.....	3,842		
3 Artificial flowers and feathers and plumes.....	30	917	35	17	40	20	805	Ja 985	Je 560	949	101	748	6	94	75		
4 Artificial stone.....	127	671	159	30	11	5	466	Jy 573	Fe 291	605	604	.....	.....	.....	602		
5 Automobiles, including bodies and parts.....	44	3,566	20	113	175	56	3,199	De 3,953	Ja 2,349	3,938	3,907	18	13	.....	2,746		
6 Babbitt metal and solder.....	17	275	10	24	50	10	181	Oc 230	Ja 137	223	205	16	2	.....	271		
7 Bags, paper.....	19	329	20	13	26	9	261	Ja 283	Jy 248	257	124	117	5	11	220		
8 Baking powders and yeast.....	5	27	4	1	7	1	14	Ja 15	Jy 12	15	11	4	.....	.....	9		
9 Baskets, and rattan and willow ware.....	44	246	44	3	4	7	188	Se 205	Ja 141	197	144	38	15	.....	119		
10 Belting and hose, leather.....	17	243	16	16	46	9	156	Oc 163	Fe 149	157	157	.....	.....	.....	363		
11 Belting and hose, woven and rubber.....	3	393	1	14	46	11	321	Ap 419	Se 282	304	246	56	2	.....	927		
12 Bicycles, motorcycles, and parts.....	11	385	10	7	20	7	341	Je 428	Ja 186	355	352	.....	3	.....	295		
13 Billiard tables and materials.....	5	41	5	2	6	1	27	Ap 29	Se 24	29	28	.....	1	.....	12		
14 Blacking and cleansing and polishing preparations.....	44	304	43	27	55	21	158	Je 165	De 150	156	76	78	2	.....	388		
15 Bluing.....	12	94	12	5	1	4	42	My 47	No 38	46	20	24	1	1	34		
16 Boots and shoes, including cut stock and findings.....	140	11,829	167	232	435	173	10,822	De 11,093	Ap 10,669	11,281	6,598	3,877	451	355	4,337		
17 Boxes, cigar.....	77	1,970	96	37	21	15	1,801	De 1,908	Mh 1,750	1,911	850	927	60	74	1,818		
18 Boxes, fancy and paper.....	118	5,050	133	139	103	71	4,604	De 5,043	Jy 4,382	5,084	1,394	3,632	124	534	2,121		
19 Brass and bronze products.....	104	2,524	94	120	176	54	2,080	De 2,470	Ja 1,703	2,479	2,379	62	30	8	4,096		
20 Bread and other bakery products.....	3,185	17,838	3,375	235	1,499	508	12,221	Oe 12,465	Fe 11,020	12,643	10,314	1,851	231	247	10,806		
21 Brick and tile.....	326	8,943	349	322	165	49	8,658	Jy 9,927	Fe 4,658	9,271	9,105	21	145	.....	38,247		
22 Brooms.....	84	598	103	19	26	6	444	De 478	Au 408	510	477	21	12	.....	451		
23 Brushes.....	55	541	50	16	38	12	416	De 424	Jy 405	420	325	76	11	8	360		
24 Butter, cheese, and condensed milk.....	536	2,093	635	158	82	41	1,177	Jy 1,336	Fe 1,024	1,234	1,354	71	8	1	7,613		
25 Buttons.....	24	1,219	25	30	27	14	1,123	De 1,256	Ja 864	1,265	601	518	57	80	858		
26 Canning and preserving.....	83	4,379	97	96	1,200	233	2,753	Se 4,092	Ja 1,847	3,329	1,717	1,499	60	62	3,474		
27 Carpets and rugs, other than rag.....	93	12,078	108	151	246	63	11,510	Fe 11,875	Oc 11,189	12,454	7,461	4,354	342	297	13,073		
28 Carpets, rag.....	67	499	91	7	17	5	349	De 359	Ja 324	394	307	71	10	6	290		
29 Carriages and wagons and materials.....	655	8,757	781	193	226	50	7,498	Je 7,932	Ja 7,188	7,455	7,337	33	84	.....	11,544		
30 Cars and general shop construction and repairs by steam-railroad companies.....	132	50,545	.....	1,942	1,915	43	46,645	De 50,665	Ap 43,721	50,660	50,530	93	28	.....	56,774		
31 Cars and general shop construction and repairs by street-railroad companies.....	65	2,568	.....	67	54	5	2,442	Se 2,520	Mh 2,357	2,499	2,476	20	3	.....	4,370		
32 Cars, steam-railroad, not including operations of railroad companies.....	13	8,799	.....	238	734	61	7,766	De 12,632	Fe 4,582	12,632	12,614	9	9	.....	31,732		
33 Cement.....	27	8,002	.....	103	645	74	8,050	No 9,721	Ja 6,421	9,370	9,330	4	30	.....	102,904		
34 Chemicals.....	37	3,573	19	83	242	41	3,185	Je 3,311	Mh 3,072	3,286	3,174	119	.....	2	9,771		
35 Chocolate and cocoa products.....	6	1,033	.....	23	127	20	893	No 983	Tr 684	966	470	400	79	11	2,885		
36 Clocks and watches, including cases and materials.....	8	1,587	3	34	71	84	1,395	No 1,470	Mh 1,330	1,390	360	494	22	14	1,033		
37 Cloth, sponging and refinishing.....	8	136	9	3	2	3	119	Se 126	Ja 113	121	119	.....	2	.....	161		
38 Clothing, men's, including shirts.....	606	26,405	1,099	321	1,055	307	23,623	De 24,997	Au 22,724	25,805	8,548	16,130	230	888	5,288		
39 Clothing, women's.....	401	18,080	646	271	1,028	434	15,701	De 16,727	Jy 13,971	16,046	5,112	11,590	31	262	2,514		
40 Collars, burial cases, and undertakers' goods.....	36	1,309	36	60	92	18	1,103	De 1,128	Jy 1,083	1,129	875	240	5	3	1,447		
41 Coke.....	146	16,210	83	364	406	35	15,331	De 17,521	Ap 13,296	17,562	17,558	3	1	.....	26,091		
42 Confectionery.....	251	6,436	255	158	429	186	5,408	No 6,683	Jy 4,758	6,631	2,274	3,839	118	400	3,869		
43 Cooperage and wooden goods, not elsewhere specified.....	133	1,903	155	55	38	25	1,630	Je 1,677	Fe 1,560	1,752	1,608	52	92	.....	3,081		
44 Copper, tin, and sheet-iron products.....	330	7,992	332	240	428	127	6,815	No 7,522	Fe 6,052	7,481	6,713	535	177	50	8,245		
45 Cordage and twine and jute and linen goods.....	18	2,228	12	37	52	8	2,119	No 2,196	My 2,000	2,193	1,048	906	134	105	4,630		
46 Cork, cutting.....	10	1,789	9	14	27	12	1,727	Se 1,859	Ja 1,541	1,788	831	796	105	56	2,045		
47 Corsets.....	6	623	4	15	52	122	433	Je 486	Ja 384	416	67	347	.....	2	85		
48 Cotton goods, including cotton small wares.....	175	17,386	156	348	449	140	16,293	No 16,700	Fe 15,817	16,806	7,405	8,318	424	719	24,589		
49 Crucibles.....	5	135	4	12	11	2	109	De 119	Ap 84	110	119	.....	.....	.....	336		
50 Cutlery and tools, not elsewhere specified.....	129	4,832	114	193	229	76	4,250	De 4,561	Jy 3,985	4,625	4,411	141	66	7	11,311		
51 Dairymen's, poultryers', and apiarists' supplies.....	13	789	5	20	69	45	650	Mh 730	Se 539	649	635	12	2	.....	405		
52 Dentists' materials.....	23	1,218	27	33	60	26	1,072	De 1,124	Au 1,036	1,124	686	372	4	62	427		
53 Dyeing and finishing textiles.....	135	6,688	155	156	216	75	6,086	De 6,376	Jy 5,954	6,222	5,230	753	202	87	13,560		
54 Electrical machinery, apparatus, and supplies.....	84	14,641	42	520	2,530	524	11,025	De 13,940	Fe 9,692	14,145	12,006	2,055	70	14	38,829		
55 Electroplating.....	35	211	40	7	5	4	146	De 159	Jy 136	161	146	5	10	.....	309		
56 Emery and other abrasive wheels.....	6	117	2	12	17	2	84	De 96	Ja 75	96	98	.....	.....	.....	452		
57 Enamelling and japanning.....	14	300	10	16	27	6	242	No 310	Ja 293	318	237	71	10	.....	493		
58 Explosives.....	27	1,225	20	59	97	16	1,033	Se 1,159	Mh 996	1,111	1,002	101	8	.....	4,504		
59 Fancy articles, not elsewhere specified.....	52	951	55	16	30	22	823	De 928	Ja 707	922	451	426	28	17	498		
60 Fertilizers.....	48	1,517	52	60	147	34	1,224	Ap 1,473	Je 1,109	1,162	1,159	.....	3	.....	5,174		
61 Files.....	7	1,298	4	18	44	17	1,217	De 1,239	Oc 1,200	1,239	900	237	88	14	1,313		
62 Firearms and ammunition.....	14	406	14	16	8	4	365	Oc 436	Jy 262	470	173	270	16	12	82		

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

MANUFACTURES—PENNSYLVANIA.

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	\$2,749,005,975	\$2,355,385,300	\$51,307,848	\$59,589,394	\$455,626,700	\$137,332,102	\$1,445,227,796	\$11,186,157	\$30,365,929	\$14,582,289	\$150,166,995	\$2,026,742,034	\$1,044,182,046
2	0,491,212	4,019,921	108,611	148,402	1,222,697	70,027	2,012,195	454	21,208	220	435,907	4,804,521	2,722,299
3	943,344	1,121,466	33,912	38,257	262,487	6,310	669,049	20,583	1,418	7,010	82,434	1,318,651	643,286
4	838,641	557,889	20,624	0,670	212,485	7,062	251,182	7,043	2,550	358	37,915	784,248	526,004
5	6,971,377	6,821,504	210,540	173,918	1,807,892	71,286	3,979,567	45,107	10,157	.....	523,217	6,631,733	2,480,880
6	965,839	2,006,491	47,906	44,556	107,409	18,112	1,698,852	6,063	3,114	.....	80,389	2,117,445	400,481
7	589,697	787,319	16,538	16,081	88,510	6,861	605,331	9,841	524	.....	43,033	937,101	324,909
8	72,531	66,309	1,820	0,030	10,594	220	38,243	2,581	.....	.....	6,821	70,024	40,561
9	197,359	271,505	5,453	4,087	75,845	1,463	168,007	8,134	650	.....	17,260	317,556	158,086
10	973,101	1,250,818	20,300	44,006	104,898	10,330	1,000,824	10,258	2,960	.....	47,582	1,378,720	307,566
11	919,940	1,018,741	38,107	50,019	147,793	14,268	676,486	850	1,349	.....	89,800	1,074,843	384,089
12	635,429	629,594	16,830	17,560	193,353	0,003	332,873	986	975	.....	61,014	597,071	268,195
13	106,184	72,622	3,900	1,498	10,778	678	33,307	1,518	288	2,700	11,865	61,650	61,650
14	695,441	666,260	46,607	59,460	68,018	8,977	378,716	12,710	2,443	3,745	80,986	754,966	368,174
15	67,170	106,110	6,694	2,514	13,641	893	64,975	2,635	208	92	14,458	122,209	56,431
16	11,660,633	18,432,282	619,589	541,891	4,200,300	77,151	11,986,631	70,581	14,419	5,955	840,705	20,218,784	8,165,002
17	1,625,734	2,004,469	45,389	21,803	570,850	21,930	1,230,473	9,122	4,692	826	90,384	2,327,739	1,075,336
18	3,421,711	4,461,560	198,441	109,582	1,471,772	56,487	2,233,281	120,452	6,931	1,194	263,420	5,183,847	2,804,079
19	8,392,044	7,727,766	247,663	207,911	1,233,701	120,473	5,475,302	30,044	28,011	11,323	363,408	8,454,620	2,849,845
20	30,887,986	38,917,608	438,629	1,368,053	6,528,296	865,464	26,464,162	520,038	215,648	19,998	2,490,730	45,860,070	18,520,454
21	20,150,106	8,029,554	406,631	139,210	3,881,208	1,020,288	826,751	80,447	68,210	18,317	973,408	9,225,204	6,772,105
22	720,005	1,037,940	11,226	22,985	214,235	6,295	730,504	7,997	984	2,043	41,581	1,261,302	524,413
23	823,070	863,798	30,560	32,489	195,471	6,712	511,043	28,456	586	18,000	40,481	1,042,312	524,557
24	4,290,786	12,695,937	88,896	66,578	550,305	166,008	11,508,202	19,935	15,952	3,738	270,083	13,544,065	1,869,075
25	977,125	1,320,767	63,210	32,035	493,717	15,513	730,617	14,400	4,728	.....	56,547	1,565,397	810,267
26	8,866,817	8,588,518	252,268	1,265,804	947,171	59,570	4,604,963	21,501	42,785	3,626	1,390,830	9,484,026	4,819,493
27	24,720,702	22,032,265	450,043	312,227	5,169,275	276,388	14,371,910	95,528	38,627	125,712	1,792,555	24,879,232	10,230,934
28	374,875	470,631	6,554	11,219	135,439	5,491	285,902	6,409	1,360	310	16,348	559,565	268,202
29	14,364,549	10,889,903	283,212	217,105	3,801,396	181,068	5,529,017	88,121	53,045	14,957	665,102	12,748,393	7,041,358
30	45,341,024	75,941,781	1,490,150	1,492,623	30,150,602	1,205,787	40,135,638	10,665	120,053	2,674	1,261,589	70,035,180	34,033,755
31	2,463,070	2,747,597	67,178	43,283	1,477,337	37,208	1,056,965	1,035	21,683	2,594	40,314	2,747,498	1,653,295
32	31,281,576	26,995,527	559,345	685,759	4,819,137	484,480	18,617,739	0,000	100,134	.....	1,810,027	27,509,748	8,597,523
33	50,855,869	17,495,226	359,569	687,498	3,875,262	3,000,170	9,297,815	70,860	140,611	42,615	2,210,817	18,855,237	8,747,252
34	23,534,639	13,603,136	304,829	254,228	1,692,313	500,580	9,690,341	10,990	42,142	269	798,444	15,978,162	5,778,241
35	3,483,691	3,822,728	70,370	215,992	323,901	67,757	2,897,445	12,500	9,858	.....	234,905	4,810,901	1,855,750
36	4,651,284	2,395,602	103,271	79,673	728,027	15,409	1,150,094	3,168	3,035	.....	306,325	2,873,435	1,701,332
37	70,785	116,406	8,080	2,576	73,599	4,433	9,070	7,163	225	6,131	5,129	142,054	128,551
38	20,790,240	35,319,054	601,113	1,190,994	8,991,735	232,925	10,630,290	451,691	9,022	2,501,394	1,810,091	30,081,700	10,818,626
39	12,254,847	28,660,819	437,701	1,229,567	7,140,306	142,051	18,013,282	422,110	10,403	239,467	1,030,942	32,837,424	14,681,191
40	2,876,673	2,484,156	85,248	1,004,876	514,407	22,615	1,551,593	19,813	7,763	.....	181,491	2,757,301	1,182,793
41	68,023,289	44,512,169	594,358	348,150	8,435,604	32,455,287	1,277,166	105,353	310,705	17,929	937,017	51,816,440	18,053,996
42	8,204,256	11,882,054	325,864	487,243	1,700,220	152,306	8,050,129	154,673	41,215	23,413	886,901	13,541,769	5,339,234
43	3,630,759	4,072,998	93,500	88,763	755,001	25,214	2,004,170	32,439	9,974	500	152,787	4,629,893	1,040,509
44	17,683,445	14,270,538	469,048	420,285	3,443,550	173,170	8,077,060	116,373	40,055	10,823	913,574	17,197,057	8,946,227
45	5,161,695	3,997,428	110,600	65,801	685,170	41,932	2,959,484	1,950	8,860	200	115,281	4,804,775	1,803,359
46	3,362,489	2,532,629	71,000	32,091	535,220	30,847	1,638,560	2,940	10,603	.....	210,708	2,965,453	1,200,046
47	351,077	646,757	31,213	95,618	135,793	1,892	275,308	3,746	53	9,400	92,704	724,173	447,003
48	33,692,380	29,927,595	637,604	674,348	7,034,497	450,989	18,306,030	243,647	71,857	220,998	1,987,749	33,917,033	15,100,008
49	910,401	611,118	45,202	14,280	59,691	11,411	410,067	.....	3,698	.....	57,774	727,593	297,115
50	12,465,867	6,888,607	301,549	247,131	2,279,780	199,817	3,231,524	30,498	27,572	1,613	569,123	8,022,402	4,591,061
51	1,994,237	1,737,503	32,709	128,760	344,736	10,580	428,970	1,520	3,022	.....	787,197	1,712,290	1,272,740
52	2,799,175	2,226,770	163,800	89,712	404,301	26,101	1,209,376	56,157	5,700	272	121,261	2,745,223	1,419,746
53	13,241,764	10,079,920	359,531	241,874	2,988,406	650,393	4,680,294	70,035	51,199	2,741	1,038,867	12,059,297	6,728,610
54	59,973,875	27,802,389	1,289,971	2,770,794	6,237,016	253,046	13,280,952	98,742	151,533	10,005	3,705,797	31,351,312	17,810,414
55	135,145	191,065	10,150	5,593	90,942	7,982	54,836	13,735	121	100	7,696	256,270	193,452
56	512,793	209,819	20,900	10,662	51,292	0,188	74,572	530	632	1,500	37,537	273,362	192,602
57	893,762	588,420	22,270	19,728	96,063	6,829	402,212	4,048	748	.....	36,522	652,059	243,048
58	6,313,397	5,479,440	119,973	111,357	629,643	84,786	4,002,780	2,485	21,008	127	507,281	6,387,860	2,300,303
59	989,683	1,106,062	20,589	30,265	322,240	17,530	574,129	22,046	1,601	15,583	95,179	1,385,052	793,303
60	6,531,843	5,956,189	140,531	152,512	675,959	128,781	4,484,089	40,523	25,051	.....	409,603	6,542,844	1,929,974
61	2,686,218	1,157,012	51,543	39,902	527,845	49,240	383,605	8,937	4,022	.....	97,918	1,539,566	1,112,721
62	680,013	423,167	31,230	11,555	127,091	7,054	202,533	1,158	1,367	50	41,099	615,204	305,617

\* Same number reported for one or more months.

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, 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 Fire extinguishers, chemical.....	4	25	2	2	5	1	15	Ja <sup>1</sup>	16	Mh <sup>1</sup>	13	15	15				20
2 Fireworks.....	4	32	3	4		1	24	Je	33	Jy <sup>1</sup>	4	33	8	15	5	5	7
3 Flags, banners, regalia, society badges and emblems.	33	286	41	5	13	6	221	Se	257	Ja	184	227	84	133	9	1	55
4 Flour-mill and gristmill products.....	1,450	4,696	1,896	133	159	70	2,432	No	2,544	Jy	2,305	2,544	2,532	3	9		69,212
5 Foundry and machine-shop products.....	1,695	100,505	1,389	3,176	7,748	1,371	86,821	De	100,444	Ja	79,132	101,530	99,412	1,086	894	138	162,414
6 Fur goods.....	58	349	72	7	15	28	227	De	341	Ap	125	339	156	180	3		14
7 Furnishing goods, men's.....	72	1,023	91	41	219	85	1,487	No	1,621	Ja	1,417	1,577	325	1,199	16	37	254
8 Furniture and refrigerators.....	304	11,338	376	364	539	135	9,924	De	10,558	Ja	9,220	10,644	10,224	222	195	3	17,211
9 Gas and electric fixtures and lamps and reflectors.	75	1,876	73	117	160	44	1,482	No <sup>1</sup>	1,780	Jy	1,337	1,788	1,492	233	58	5	1,249
10 Gas, illuminating and heating.....	99	4,584	13	208	1,140	98	3,110	Jy	3,406	Fe	2,784	3,139	3,125	11			9,374
11 Glass.....	112	24,924	34	424	543	213	23,710	De	26,711	Jy	16,242	27,857	24,571	1,485	1,516	285	55,182
12 Gloves and mittens, leather.....	3	50	3		4	1	42	Ja <sup>1</sup>	47	No	37	44	15	29			7
13 Gold and silver, leaf and foil.....	0	318	7	3	5	6	297	No	308	Ja	289	307	134	159	6	8	55
14 Gold and silver, reducing and refining, not from the ore.	5	18	5	4	2		7	Ja <sup>1</sup>	8	My	2	8	7		1		25
15 Graphite and graphite refining.....	4	71	2	6	6		57	No	70	Ja	35	59	59				420
16 Haircloth.....	9	406	10	11	31	14	340	Au	358	Ja	302	344	138	108	4	4	551
17 Hand stamps and stenoids and brands.	35	250	33	15	32	13	163	De	182	Je	145	183	148	27	8		74
18 Hats and caps, other than felt, straw, and wool.	53	877	71	18	31	13	744	No	785	Jy	709	774	424	342	7	1	163
19 Hats, fur-felt.....	38	7,537	46	67	183	21	7,220	De	7,599	Fe	6,936	7,643	5,313	1,934	203	1	5,335
20 Hats, straw.....	9	531	7	20	30	14	460	Ap	605	Au	280	533	137	302	1	3	85
21 Hosiery and knit goods.....	404	40,248	509	651	583	209	38,206	No	39,911	Fe	36,957	40,326	7,760	28,045	1,124	3,391	21,707
22 Ice, manufactured.....	170	2,080	116	190	120	45	1,600	Jy	2,197	Ja	1,044	1,492	1,489	1	2		35,800
23 Ink, printing.....	8	246	6	18	50	7	165	Au	175	Mh <sup>1</sup>	160	162	162				483
24 Ink, writing.....	6	28	7	1	2		17	Se <sup>1</sup>	19	No	15	19	8	5	0		21
25 Iron and steel, blast furnaces.....	68	10,215	34	359	1,182	119	14,521	De	17,407	Mh	12,559	17,659	17,532		24		476,680
26 Iron and steel, steel works and rolling mills.	189	137,433	34	1,969	7,540	973	126,911	De	148,591	Mh	111,954	148,550	146,985	372	1,120	73	896,440
27 Iron and steel pipe, wrought.....	11	4,143	5	87	104	14	3,873	Oc	4,651	Mh	3,209	4,601	4,591		10		12,472
28 Jewelry.....	75	624	99	16	26	30	456	De	473	Je	441	404	385	52	22	5	160
29 Kaolin and ground earths.....	16	670	7	27	17	7	612	Jy	651	Mh <sup>1</sup>	543	641	641				2,310
30 Lapidary work.....	3	10	3		1		6	Ja <sup>2</sup>	6	Jy <sup>2</sup>	6	6	5		1		1
31 Lasts.....	4	82	6		1		73	De	76	Je <sup>1</sup>	71	76	75		1		91
32 Lead, bar, pipe, and sheet.....	4	72	4	7	11	4	46	No	58	Mh	39	49	49				320
33 Leather goods.....	150	3,124	210	85	239	66	2,624	Oc	2,655	Ja	2,292	2,671	1,763	585	72	151	1,107
34 Leather, tanned, curried, and finished.	163	14,970	151	343	388	80	14,008	De	14,890	My	13,587	14,973	14,070	682	151	61	37,440
35 Lime.....	348	3,791	393	72	56	12	3,258	No	3,489	Fe	2,844	3,665	3,562		3		8,682
36 Liquors, distilled.....	88	1,144	148	104	130	29	724	De	890	Se	535	968	743	225			7,578
37 Liquors, malt.....	237	9,007	131	511	1,079	52	7,234	Jy	7,581	Fe	6,988	7,239	7,215	18	6		54,390
38 Liquors, vinous.....	3	7	4		1		2	Je <sup>1</sup>	6	Ja <sup>2</sup>	0	7	6		1		15
39 Lumber and timber products.....	2,667	32,073	3,473	777	722	228	26,873	De	28,690	Ja	24,194	32,015	32,420	123	350	7	113,412
40 Marble and stone work.....	596	10,639	764	318	234	59	9,204	Jy	10,060	Ja	7,052	9,917	9,830	11	67		29,037
41 Matches.....	4	180	5	6	11	3	155	De	209	Se	126	200	134	73		2	300
42 Mattresses and spring beds.....	83	961	84	36	66	30	745	No	810	Ja	661	808	605	183	20		1,162
43 Millinery and lace goods.....	105	4,697	141	63	158	100	4,235	Mh	4,744	Jy	3,825	4,294	617	3,369	53	295	841
44 Mirrors.....	13	272	14	6	11	9	232	Oc	256	Fe	214	258	234	15	9		302
45 Models and patterns, not including paper patterns.	86	797	112	33	10	7	635	De	815	Jy	519	821	816	2	3		1,114
46 Musical instruments and materials, not specified.	19	87	18	6	4	5	54	Oc	61	Ja	34	57	55		2		43
47 Musical instruments, pianos and organs and materials.	30	1,331	21	53	59	16	1,182	De	1,264	Jy	1,080	1,262	1,206	16	40		1,260
48 Oil, essential.....	5	97	3	2	2	1	89	Oc	164	Jy <sup>1</sup>	20	40	40				102
49 Optical goods.....	24	744	24	20	79	42	570	Jy	587	Au	570	580	293	227	20	40	292
50 Paint and varnish.....	114	2,747	105	176	362	112	1,992	De	2,072	Ja	1,888	2,089	2,012	65	10	2	9,862
51 Paper and wood pulp.....	62	7,196	32	167	250	91	6,656	No	6,916	Fe	6,481	6,842	6,094	744	17	17	64,010
52 Paper goods, not elsewhere specified.....	34	1,700	32	51	184	76	1,357	Oc <sup>1</sup>	1,438	Je	1,287	1,416	673	670	30	43	1,348
53 Patent medicines and compounds and druggists' preparations.	367	4,299	334	209	675	320	2,761	No	2,983	Je	2,527	2,902	1,275	1,560	31	36	2,610
54 Petroleum, refining.....	41	3,423	36	123	323	41	2,600	Oc	3,381	Mh	2,535	3,310	3,278	13	10		35,212
55 Phonographs and graphophones.....	3	96	1	4	3	7	81	Fe <sup>1</sup>	203	Jy	7	113	113				72
56 Photographic apparatus and materials.	7	192	6	5	17	17	147	De	163	Ja	120	163	110	39	8		114
57 Photo-engraving.....	31	682	33	40	88	32	489	Fe	498	Mh	479	493	471	17	5		197
58 Pottery, terra-cotta, and fire-clay products.	139	9,784	99	301	304	77	9,003	De	9,038	Ja	8,090	10,290	9,387	599	267	37	23,142
59 Printing and publishing.....	2,461	36,783	2,557	1,781	5,132	2,617	24,696	De	25,938	Au	23,855	26,236	10,329	5,972	747	194	25,830
60 Pumps, not including steam pumps.....	5	269	5	3	35	5	221	De	228	Ap	127	328	327		1		1,190
61 Rubber goods, not elsewhere specified.	13	1,407	3	68	106	25	1,205	My	1,314	Au	1,103	1,310	1,052	213	33	12	5,300
62 Safes and vaults.....	7	777	1	41	38	2	695	Ap	721	Ja	673	723	721		2		1,163
63 Sand and emery paper and cloth.....	3	305	3	6	12	2	282	Ja <sup>1</sup>	370	Se	223	316	308	3	2	3	2,210
64 Saws.....	15	2,087	18	19	161	13	1,876	No	1,882	Au	1,869	1,875	1,669	69	122	15	3,399
65 Scales and balances.....	5	308	4	16	42	8	238	No	255	Ja <sup>1</sup>	231	251	251				320
66 Screws, machine.....	5	73	7	5	3		58	No	66	Ja <sup>1</sup>	51	65	62		3		74
67 Shipbuilding, including boat building.	31	3,833	34	59	178	4	3,558	No	4,148	Fe	3,144	4,097	4,036	7	54		7,771
68 Shoddy.....	20	518	32	14	15	7	456	De	462	Ja	432	466	353	113			2,170
69 Show cases.....	5	55	4	4	3	1	43	Ap <sup>1</sup>	44	Ja <sup>1</sup>	42	43	43				76
70 Signs and advertising novelties.....	26	621	28	22	63	21	487	De	648	Ja	418	647	435	196	14	2	608

<sup>1</sup> Same number reported throughout the year.

MANUFACTURES—PENNSYLVANIA.

STATE, BY INDUSTRIES: 1909—Continued.

	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	\$71,200	\$32,555	\$3,700	\$3,324	\$8,252	\$342	\$0,790	\$1,120	\$72	.....	\$5,955	\$38,800	\$28,668	
2	37,185	31,237	3,160	300	5,217	300	17,829	720	22	.....	3,599	39,081	21,465	
3	375,613	384,258	4,716	10,750	90,064	3,544	247,002	7,941	1,033	\$1,401	17,717	489,623	238,987	
4	21,276,534	40,096,279	200,187	102,873	1,187,505	278,706	37,891,422	119,408	85,734	21,913	739,531	44,782,558	6,612,430	
5	283,656,032	184,759,599	7,068,012	7,065,981	51,366,002	3,750,802	07,259,822	787,821	761,788	210,992	15,588,263	210,740,257	109,735,517	
6	1,086,035	854,254	11,616	25,438	159,569	4,748	539,090	52,187	3,082	1,141	57,377	1,217,221	673,377	
7	1,717,253	4,050,048	93,388	300,952	555,972	13,902	2,860,445	45,773	609	705	187,302	4,566,314	1,090,997	
8	18,542,143	16,789,969	681,104	550,403	4,828,154	190,309	8,848,398	149,536	45,840	19,838	1,476,237	18,951,784	9,913,077	
9	2,863,094	2,702,552	189,630	143,297	704,623	34,418	1,204,155	65,047	5,975	1,676	353,731	2,961,770	1,723,197	
10	61,850,500	9,188,766	294,796	974,689	1,500,850	2,997,543	1,101,051	1,287,042	62,836	3,270	990,083	15,839,612	11,741,018	
11	58,032,212	31,102,894	1,029,465	700,491	13,436,405	2,898,532	9,735,381	19,833	144,455	11,207	3,127,065	32,817,936	20,184,023	
12	28,064	48,064	.....	2,536	11,744	210	32,700	330	58	.....	1,326	54,041	21,131	
13	332,741	387,854	2,700	9,020	125,594	2,163	241,491	766	1,994	.....	4,130	418,421	174,767	
14	39,558	215,609	8,392	1,560	6,274	657	189,047	3,096	118	.....	5,265	224,891	24,587	
15	230,914	208,428	4,701	4,500	31,602	2,243	158,318	325	841	.....	6,308	221,854	61,293	
16	1,385,080	1,354,740	20,318	31,618	172,111	11,285	1,031,830	26,797	604	3,500	56,677	1,444,605	401,580	
17	298,896	271,727	26,654	21,906	90,680	3,847	101,401	12,887	372	515	13,459	329,865	224,617	
18	662,304	653,800	37,431	32,590	273,201	8,115	635,270	21,860	833	10	44,624	1,096,823	553,432	
19	14,433,611	9,877,996	204,902	217,814	3,724,699	150,930	4,861,840	18,233	30,492	15,753	653,333	13,022,617	8,009,847	
20	498,430	782,199	73,675	42,893	213,979	5,705	397,295	21,003	495	.....	27,154	872,135	460,135	
21	38,089,088	43,892,123	692,064	665,880	11,750,386	421,700	26,796,251	270,882	72,816	687,872	2,228,263	49,657,506	22,439,555	
22	14,404,140	3,362,417	115,075	115,075	1,022,959	743,951	481,369	41,117	87,930	.....	647,044	4,822,884	3,597,624	
23	742,447	993,366	49,812	44,550	104,581	14,925	607,057	6,752	968	18,023	146,098	1,050,113	427,531	
24	463,047	43,850	1,300	2,336	6,882	443	28,042	1,170	300	.....	3,287	55,980	27,495	
25	194,708,463	158,531,392	990,977	1,408,840	9,456,714	40,480,064	101,693,964	271,970	668,709	9,445	3,750,949	168,578,413	26,504,385	
26	522,897,623	451,828,019	5,355,442	8,038,366	85,113,237	23,615,580	305,397,835	243,740	1,566,867	10,558	22,478,342	500,343,995	171,330,574	
27	15,325,007	16,024,921	190,680	137,475	2,170,686	460,544	13,561,322	1,200	44,150	.....	343,852	18,291,167	4,269,301	
28	411,591	1,039,767	29,740	32,931	291,769	11,012	585,819	34,295	860	6,880	55,461	1,274,875	678,044	
29	2,512,897	633,081	43,066	19,026	208,494	55,478	231,779	4,105	5,043	350	65,740	759,113	471,850	
30	5,900	10,513	.....	720	5,700	176	2,480	875	7	.....	555	14,000	11,344	
31	104,228	99,215	3,120	650	42,310	3,063	24,754	1,200	641	.....	23,477	114,254	80,437	
32	682,546	787,553	14,939	11,955	30,859	6,139	700,059	200	3,573	.....	19,829	845,108	138,970	
33	4,627,491	5,075,239	153,723	316,221	1,136,737	33,888	3,110,349	80,017	8,052	7,823	212,529	5,823,548	2,670,311	
34	80,988,961	73,594,120	927,267	415,640	6,801,370	726,432	58,380,092	157,324	193,283	25,030	6,990,422	77,926,321	18,813,197	
35	6,630,395	2,593,048	91,641	45,348	1,259,171	609,260	428,490	24,887	18,653	.....	19,879	3,342,048	2,304,308	
36	16,216,804	13,395,847	176,532	182,996	410,569	134,129	2,078,114	57,668	9,097,973	12,538	435,328	14,306,527	11,254,284	
37	94,134,562	37,734,091	1,949,657	1,311,355	5,452,794	1,016,793	11,693,394	203,172	8,097,683	63,754	8,045,492	47,712,570	35,102,473	
38	80,294	18,305	.....	720	935	373	14,672	.....	341	.....	1,324	23,055	8,010	
39	54,638,461	48,102,628	1,085,846	671,864	13,557,761	329,010	20,984,026	146,313	257,572	2,422,655	2,646,981	57,453,883	30,139,347	
40	13,963,755	9,943,592	392,568	102,771	4,859,971	206,201	3,423,553	75,443	44,900	67,507	691,698	11,500,603	7,849,849	
41	343,265	303,624	4,010	38,837	39,966	3,122	179,463	.....	743	.....	37,483	323,337	140,752	
42	1,655,480	1,094,583	58,465	59,754	360,639	17,205	1,310,042	40,758	7,260	.....	134,400	2,223,197	889,050	
43	3,552,020	5,812,977	103,611	184,072	1,327,299	30,958	3,723,447	110,021	2,528	34,083	6,790,378	3,015,118	8,010	
44	501,422	560,374	13,840	15,391	104,309	5,535	365,632	5,015	2,173	2,000	35,479	630,994	269,927	
45	1,679,535	1,920,481	55,348	10,183	410,987	27,728	1,329,054	22,766	3,130	3,076	97,210	2,085,290	728,448	
46	201,057	92,861	8,616	3,689	32,464	1,922	24,086	5,742	394	2,790	13,158	115,118	89,110	
47	3,157,965	2,117,165	104,161	61,240	505,343	21,104	1,227,241	17,827	3,293	1,151	175,799	2,381,849	1,133,504	
48	46,000	85,919	2,356	1,220	28,002	674	45,579	15	821	.....	7,252	111,065	64,812	
49	920,029	908,328	47,184	69,876	218,898	8,578	452,791	23,307	3,212	250	84,232	1,062,906	601,536	
50	14,833,792	12,598,754	416,052	531,026	1,101,069	262,923	8,948,071	59,740	43,359	2,000	1,243,554	14,019,744	4,818,760	
51	27,746,888	17,494,422	538,035	282,227	3,303,034	1,544,116	9,854,195	2,485	59,591	130	1,910,699	19,872,717	8,474,406	
52	3,304,119	3,476,025	145,406	174,449	538,305	25,817	2,199,129	57,513	6,927	8,434	320,294	3,718,956	1,494,019	
53	12,409,187	10,759,254	486,962	855,222	1,144,982	69,050	5,243,530	113,168	25,407	2,783	2,821,150	12,650,086	7,346,506	
54	38,089,633	51,476,176	418,130	350,226	1,861,405	1,803,713	45,036,903	12,323	55,520	5,767	1,332,489	53,088,199	5,647,883	
55	180,005	133,873	7,560	4,051	46,003	2,610	3,969	3,995	5	259	36,099	134,650	99,358	
56	456,259	624,143	21,622	24,969	104,137	7,878	408,245	14,890	498	.....	42,404	672,908	256,785	
57	660,499	1,093,032	98,475	79,329	449,387	13,211	217,415	30,036	498	13,665	107,013	1,132,189	601,563	
58	27,225,268	10,811,423	535,732	320,614	4,357,336	1,149,042	2,960,326	39,406	84,016	15,897	1,348,154	13,072,106	8,962,738	
59	71,452,879	58,379,844	3,658,525	5,177,839	14,335,047	657,657	22,005,092	1,161,589	172,017	2,280,491	8,841,596	70,584,179	47,831,499	
60	851,780	365,817	10,660	20,265	136,678	17,960	155,369	129	192	.....	18,584	398,021	224,692	
61	5,426,636	4,623,380	141,266	157,459	565,965	71,800	3,160,932	2,230	8,203	.....	509,495	4,686,330	1,444,698	
62	1,820,039	1,244,298	53,040	42,780	391,292	23,997	618,682	840	5,594	7,329	100,234	1,338,305	695,716	
63	2,622,639	1,736,361	20,590	21,687	172,862	27,466	1,261,512	3,500	2,944	.....	225,890	2,136,805	847,827	
64	5,961,431	3,025,045	60,060	138,844	1,158,261	70,735	1,834,010	3,318	4,701	.....	248,126	3,793,806	2,388,161	
65	1,081,125	675,564	35,200	59,344	139,596	3,942	371,122	288	2,764	.....	66,308	732,135	357,071	
66	141,100	73,576	8,615	3,400	30,264	2,120	22,477	3,579	160	.....	2,955	84,788	60,191	
67	15,293,299	6,091,185	291,688	183,114	2,120,424	108,622	2,690,632	59,520	32,594	24,150	649,141	6,178,145	3,465,591	
68	1,627,066	1,770,058	26,099	20,413	185,740	30,633	1,432,685	6,863	0,086	2,912	58,195	2,051,118	687,900	
69	80,190	90,900	5,120	3,768	27,794	3,219	44,159	2,899	151	.....	3,880	90,355	42,977	
70	1,238,789	1,348,417	30,040	123,889	201,175	15,897	766,279	22,398	53,875	5,737	122,557	1,525,122	742,946	

\* Same number reported for entire year.

\* None reported for one or more other months.

MANUFACTURES—PENNSYLVANIA.

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.	Pro- pri- etors and firm members.	Sala- ried offi- cers, supts. and man- agers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.		Under 16.		
					Male.	Fe- male.		Number.			Male.	Fe- male.			
								Maximum month.	Minimum month.						
1 Silk and silk goods, including throwsters.	226	38,178	143	498	817	251	36,460	Ap 37,031	Ja 35,775	37,290	9,772	22,378	1,578	3,562	41,062
2 Silverware and plated ware.	9	321	6	16	32	7	260	No 290	Jy 215	332	287	32	10	3	187
3 Slaughtering and meat packing.	180	3,957	108	141	484	84	3,050	De 3,184	Au 2,940	3,183	3,154	22	7	.....	12,139
4 Smelting and refining, not from the ore.	24	278	17	22	26	7	206	De 236	Fe 171	230	238	1	.....	.....	566
5 Soap.	59	1,740	74	27	252	196	1,197	Se 1,226	Ja 1,172	1,174	821	312	27	14	2,598
6 Steam packing.	31	2,281	18	88	325	123	1,677	De 2,018	Je 1,544	2,025	1,854	122	39	10	5,817
7 Stereotyping and electrotyping.	21	414	18	28	25	4	339	My 340	Ja 330	339	320	6	13	.....	339
8 Stoves and furnaces, including gas and oil stoves.	74	4,721	42	155	260	66	4,198	No 4,488	Ja 3,385	4,535	4,463	29	42	1	4,675
9 Sulphuric, nitric, and mixed acids.	6	172	.....	11	22	7	132	Ma 149	Au 121	155	151	1	3	.....	286
10 Tin plate and terneplate.	17	2,548	3	43	100	47	2,346	No 2,795	Mh 1,963	2,751	2,448	278	25	.....	1,565
11 Tobacco manufactures.	2,432	37,580	2,699	471	1,025	197	33,188	De 35,099	Ap 32,097	35,552	16,006	18,615	174	757	2,638
12 Type founding and printing materials.	8	402	6	17	61	25	293	Ja 310	Au 275	298	211	59	16	9	273
13 Typewriters and supplies.	8	872	5	15	252	45	555	De 610	Ja 491	610	595	14	.....	.....	264
14 Umbrellas and canes.	45	2,551	44	45	115	32	2,315	No 2,570	Jy 2,078	2,413	1,070	1,100	88	65	1,570
15 Wall paper.	11	1,146	.....	35	94	11	1,056	De 1,289	Au 777	1,324	1,010	169	90	40	1,371
16 Wall plaster.	23	306	15	28	22	9	232	Ap 303	Ja 194	232	230	2	.....	.....	1,413
17 Whips.	4	135	44	7	22	4	58	De 60	Ja 43	60	51	18	.....	.....	105
18 Wood distillation, not including turpentine and rosin.	50	1,093	30	85	28	11	933	Ja 1,058	Au 837	1,052	1,052	.....	.....	.....	1,740
19 Woolen, worsted, and felt goods, and wool hats.	217	28,602	245	422	475	141	27,400	No 28,383	Ja 25,796	28,226	12,494	13,053	1,187	1,492	50,405
20 All other industries <sup>1</sup> .	1,053	50,979	2,100	1,730	3,198	1,015	42,936	.....	.....	.....	.....	.....	.....	.....	101,808

<sup>1</sup> All other industries embrace—

Artists' materials.	7	Cordials and sirups.	6	Hair work.	11
Awnings, tents, and sails.	36	Drug grinding.	2	Hammocks.	3
Axle grease.	3	Dyestuffs and extracts.	14	Hat and cap materials.	6
Bags, other than paper.	4	Engravers' materials.	1	Hones and whetstones.	1
Bone, carbon, and lamp black.	5	Engraving and disinking.	27	Horseshoes, not made in steel works or rolling mills.	3
Boots and shoes, rubber.	1	Engraving, wood.	9	House-furnishing goods, not elsewhere specified.	24
Calcium lights.	1	Flavoring extracts.	37	Instruments, professional and scientific.	39
Card cutting and designing.	17	Food preparations.	128	Iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills.	22
Carriages and sleds, children's.	5	Foundry supplies.	10	Iron and steel, doors and shutters.	2
Cars, street-railroad, not including operations of railroad companies.	1	Fuel, manufactured.	1	Iron and steel forgings.	38
Cash registers and calculating machines.	3	Furs, dressed.	1	Iron and steel, nails and spikes, cut and wrought, including wire nails, not made in steel works or rolling mills.	7
Charcoal.	3	Galvanizing.	8	Jewelry and instrument cases.	11
China decorating.	2	Glass, cutting, staining, and ornamenting.	106	Labels and tags.	10
Clothing, horse.	12	Glycerine and starch.	2	Locomotives, not made by railroad companies.	7
Clothing, men's, buttonholes.	10	Gluo.	6		
Coffee and spice, roasting and grinding.	84	Grass and tallow.	51		
		Grindstones.	1		

INDUSTRIES: 1909—Continued.

EXPENSES.										Value of products.	Value added by manufac-ture.
Total.	Services.			Materials.		Miscellaneous.					
	Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
\$55,614,244	\$1,173,305	\$958,637	\$11,442,878	\$495,850	\$34,000,721	\$178,854	\$94,043	\$3,851,881	\$2,740,075	\$62,061,302	\$20,895,731
485,130	34,700	26,575	100,330	4,242	108,200	8,430	525	.....	22,128	601,831	309,380
49,153,605	348,881	513,279	1,086,065	239,663	44,605,384	112,672	63,602	29,005	1,254,154	51,850,030	7,005,889
3,325,573	64,732	24,570	143,182	37,534	2,940,698	3,497	3,363	5,000	102,091	3,577,433	599,201
8,307,048	55,088	287,566	555,829	64,977	5,881,820	13,858	14,266	.....	1,522,738	9,124,356	3,177,553
5,000,308	218,044	253,025	814,272	149,465	2,831,102	20,800	12,657	10,069	607,375	4,987,171	2,000,604
503,618	48,720	19,715	231,666	14,378	131,450	21,175	150	934	35,424	644,686	498,858
6,348,431	310,277	324,325	2,464,775	115,758	2,355,800	63,333	32,007	37,361	644,735	7,408,933	4,087,315
506,459	17,060	27,848	87,240	29,105	208,797	.....	5,353	.....	40,065	624,473	296,480
24,844,283	110,560	164,838	1,338,637	113,270	22,785,082	1,900	24,366	.....	305,630	25,234,066	2,335,714
44,054,733	730,523	1,054,946	11,619,512	119,516	20,593,907	364,344	6,079,825	140,989	3,351,171	50,161,337	29,447,904
573,696	33,840	58,210	159,308	10,887	194,466	19,006	1,677	.....	96,302	606,351	409,698
1,070,152	42,060	286,782	269,087	4,107	185,087	3,555	3,063	.....	282,431	1,016,543	827,399
4,078,745	93,680	231,028	906,020	28,439	3,110,614	33,180	5,903	39,731	222,150	5,059,846	1,011,793
3,402,482	114,921	133,816	519,070	45,383	2,263,305	38,502	4,784	.....	282,101	3,695,211	1,386,523
600,766	46,935	23,247	111,054	31,964	370,118	3,050	2,685	1,020	70,093	725,464	323,412
123,004	7,900	21,202	14,920	1,641	66,832	612	206	.....	10,282	161,647	63,174
2,400,001	112,517	20,515	521,643	1,463,326	220,623	790	22,948	2,200	125,529	2,960,162	1,270,213
71,177,842	1,001,736	654,062	10,047,225	789,043	53,845,042	255,773	99,804	802,120	2,092,077	77,446,090	22,812,011
154,832,334	3,696,503	3,678,170	22,317,217	3,033,791	110,598,867	650,590	373,469	233,581	10,340,146	171,703,451	58,160,793

Industries embrace—Continued.

and picture frames.....	55	Pens, steel.....	1	Tin foil.....	2
ing.....	3	Pipes, tobacco.....	4	Toys and games.....	23
in waters.....	485	Pulp, from fiber other than wood.....	2	Upholstering materials.....	23
.....	2	Roofing materials.....	17	Vault lights and ventilators.....	7
.....	17	Salt.....	1	Vinegar and cider.....	102
.....	17	Screws, wood.....	1	Washing machines and clothes wringers.....	10
and hooks and eyes.....	9	Sewing machines, cases, and attachments.....	2	Waste.....	23
.....	1	Smelting and refining, lead.....	1	Wheelbarrows.....	4
.....	1	Smelting and refining, zinc.....	2	Window shades and fixtures.....	15
more specified.....	37	Soda-water apparatus.....	4	Wire.....	8
.....	3	Sporting and athletic goods.....	15	Wirework, including wire rope and cable.....	64
accessories.....	1	Springs, steel, car and carriage.....	13	Wood carpet.....	2
als.....	5	Stationery goods, not elsewhere specified.....	12	Wood preserving.....	1
ng, roasting, cleaning, and shelling.....	5	Statuary and art goods.....	18	Wood, turned and carved.....	94
.....	2	Sugar refining, not including beet sugar.....	2	Wool pulling.....	9
.....	2	Surgical appliances and artificial limbs.....	46	Wool scouring.....	2