

MANUFACTURES : PENNSYLVANIA

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 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,¹ 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

¹ Statistics of Railways in the United States, Interstate Commerce Commission, 1909.

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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	1,412,790,000	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	958,301,000	38.5	19.3
Miscellaneous.....	206,301,000	167,287,000	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

¹ Figures not available.

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

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

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. ¹			
		Average number.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.	Value of products.		Value added by manufacture.	
								1904-1909	1899-1904	1904-1909	1899-1904
All industries.....	27,563	877,543	100.0	\$2,626,742,000	100.0	\$1,044,182,000	100.0	34.3	18.5	28.5	17.5
Iron and steel, steel works and rolling mills.....	189	120,911	14.5	500,344,000	19.0	171,331,000	16.4	37.5	9.3	36.1	10.0
Foundry and machine-shop products.....	1,095	80,821	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	6.4	26,504,000	2.5	56.9	5.8	25.4	-43.0
Leather, tanned, curried, and finished.....	163	14,068	1.6	77,926,000	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	77,347,000	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.....	2,401	24,096	2.8	70,584,000	2.7	47,831,000	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	26,895,000	2.6	57.8	26.6	78.5	34.7
Lumber and timber products.....	2,697	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	2,900	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	7,008,000	0.7	56.6	29.6	47.2	27.6
Coke.....	146	15,331	1.7	51,816,000	2.0	18,064,000	1.7	79.1	29.8	29.5	31.5
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	10.5	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	60.0	31.0	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	30.3	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	15,160,000	1.4	20.0	3.3	26.0	2.4
Clothing, women's.....	401	15,701	1.8	32,887,000	1.3	14,681,000	1.4	117.7	20.0	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	31,351,000	1.2	17,816,000	1.7	19.4	37.4	19.6	92.4
Cars, steam-railroad, not including operations of railroad companies.....	13	7,760	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

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

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INDUSTRY.	Number of establishments.	WAGE EARNERS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.		PER CENT OF INCREASE. ¹			
		Average number.	Per cent distribution.	Amount.	Per cent distribution.	Amount.	Per cent distribution.	Value of products.		Value added by manufacture.	
								1904-1909	1899-1904	1904-1909	1899-1904
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	16.1
Paper and wood pulp.....	62	6,056	0.8	19,873,000	0.8	8,475,000	0.8	20.0	25.6	22.8	37.1
Furniture and refrigerators.....	304	9,924	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	4,200,000	0.4	90.1	-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	0.6	5,778,000	0.6	35.7	.....	28.1	.....
Gas, illuminating and heating.....	99	3,119	0.4	15,840,000	0.6	11,741,000	1.1	46.5	37.3	63.2	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	1,992	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	5,339,000	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	8,993,000	0.9	21.5	32.4	14.2	38.3
Hats, fur-felt.....	38	7,223	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	0.2
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	12,059,000	0.5	6,728,000	0.6	77.7	-3.6	64.7	5.7
Marble and stone work.....	596	9,264	1.1	11,570,000	0.4	7,850,000	0.7	72.4	-21.9	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	29.6
Brick and tile.....	326	8,058	0.9	9,225,000	0.4	6,772,000	0.6	26.7	22.3	10.2	18.0
Soap.....	59	1,197	0.1	9,124,000	0.3	3,177,000	0.3	31.1	92.6	9.4	91.1
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	67.0
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.....	165	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	1,690,000	0.2	59.8	12.4	60.3	13.0
Automobiles, including bodies and parts.....	44	3,199	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	59.2	54.6	53.0	30.7
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.....	150	2,524	0.3	5,824,000	0.2	2,671,000	0.3	13.0	28.9	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	29.8	29.2
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	1,606	0.2	4,821,000	0.2	3,598,000	0.3	64.3	44.0	61.7	35.1
Chocolate and cocoa products.....	6	863	0.1	4,811,000	0.2	1,850,000	0.2	125.4	105.4	140.6	340.2
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	50.9	-7.4	40.6
Cooperage and wooden goods, not elsewhere specified.....	133	1,630	0.2	4,630,000	0.2	1,611,000	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	33.9	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	3,695,000	0.1	1,380,000	0.1	22.2	4.5	11.2	19.1
Smelting and refining, not from the ore.....	24	206	(²)	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	32.6	.....	31.6	.....
Cork, cutting.....	10	1,727	0.2	2,965,000	0.1	1,293,000	0.1	-6.6	45.2	-5.7	28.7
Gas and electric fixtures and lamps and reflectors.....	75	1,482	0.2	2,962,000	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	2,960,000	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	1,143	0.1	2,757,000	0.1	1,182,000	0.1	38.6	63.8	20.1	56.4
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	10.6
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	35.6	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.....	136	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	-1.2	21.9
Shoddy.....	20	450	(²)	2,051,000	0.1	588,000	0.1	-6.9	52.1	19.8	29.6
Buttons.....	24	1,123	0.1	1,565,000	0.1	810,000	0.1	73.9	-9.9	51.7	-9.4
Files.....	7	1,217	0.1	1,540,000	0.1	1,113,000	0.1	36.6	-8.8	52.0	-5.9
Fancy articles, not elsewhere specified.....	52	828	0.1	1,385,000	0.1	793,000	0.1	54.9	0.9	50.2	11.9
Bolting and hose, leather.....	17	156	(²)	1,379,000	0.1	368,000	(²)	59.4	29.9	13.6	65.3
Safes and vaults.....	7	695	0.1	1,338,000	0.1	695,000	0.1	6.4	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	(²)	1,275,000	0.1	678,000	0.1	22.6	50.1	21.7	26.6
Fur goods.....	58	227	(²)	1,217,000	(²)	673,000	0.1	99.5	-8.5	65.1	-17.3
Photo-engraving.....	31	489	0.1	1,132,000	(²)	901,000	0.1	41.1	111.6	33.7	110.6
Hats and caps, other than felt, straw, and wool.....	53	744	0.1	1,097,000	(²)	554,000	0.1	3.2	.....	3.2	.....
Optical goods.....	24	579	0.1	1,063,000	(²)	602,000	0.1	125.7	-8.0	60.5	-0.3
Ink, printing.....	8	165	(²)	1,050,000	(²)	427,000	(²)	53.5	67.6	62.0	37.7
Typewriters and supplies.....	8	555	0.1	1,017,000	(²)	828,000	0.1	403.5	-54.4	483.1	-61.4
Crucibles.....	5	106	(²)	728,000	(²)	298,000	(²)	-7.1	-31.6	16.2	2.0
All other industries.....	2,893	56,433	6.4	211,025,000	8.0	75,276,000	7.2	.....	.....	.....	.....

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

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.¹ 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.

¹ 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.¹ 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

¹ 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	52,051	1,745
Proprietors and firm members.....	20,743	28,550	1,103
Salaried officers of corporations.....	8,410	8,286	124
Superintendents and managers.....	16,543	16,115	428
Clerks.....	60,932	55,703	14,229
Wage earners (average number).....	877,543	603,894	133,649
16 years of age and over.....	848,436	670,831	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).
All Industries	1,002,171	5.5	7.0	87.6
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.....	50,545	3.8	3.9	92.3
Cars, steam-railroad, not including operations of railroad companies.....	8,790	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.....	26,405	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	0.6	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	5.9	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.....	9,067	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. ¹	Per cent of total.		
		16 years of age and over.		Under 16 years of age.
Male.	Female.			
All Industries	877,543	77.5	19.2	3.3
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	99.8	0.2	0.1
Cars, steam-railroad, not including operations of railroad companies.....	7,766	99.9	0.1	0.1
Cement.....	8,080	99.6	(2)	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	(2)	(2)
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	99.0	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	10.3	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.....	14,098	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	3.6
Silk and silk goods, including throwsters.....	36,469	26.2	60.0	13.8
Slaughtering and meat packing.....	3,950	99.1	0.7	0.2
Tin plate and terneplate.....	2,346	89.0	10.1	0.9
Tobacco manufactures.....	33,188	45.0	52.4	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

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

For all industries combined, 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, 1904-1909.
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	1,002,171	100.0	855,392	100.0	17.2
Proprietors and firm members.....	20,743	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	95.6	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.....	819,927	85.3	July.....	860,435	80.0
February.....	825,082	85.9	August.....	873,308	80.9
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.....	960,600	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 60.8 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.
All industries.....	877,543	61,857	46,263	109,820	301,635	258,287	45,703	27,203	20,790
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.....	150	.....	2	16	110	28	.....	.....	.....
Boots and shoes, including cut stock and findings.....	10,822	21	462	514	8,568	1,140	117	.....	.....
Boxes, cigar.....	1,801	25	230	114	1,074	349	.....	.....	.....
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	3,686	2,752	19	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
Chocolates 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	680	6,631	3,430	4,491	451	.....	.....	.....
Coffins, burial cases, and undertakers' goods.....	1,103	22	14	108	353	606	.....	.....	.....
Coke.....	15,331	1,568	.....	7,307	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	40	111	.....	1,110	849	.....	.....	.....
Cork, cutting.....	1,727	.....	.....	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	.....	.....	.....	1,210	.....	.....	.....	.....
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.....	9,924	175	560	563	3,742	4,884	.....	.....	.....
Gas and electric fixtures and lamps and reflectors.....	1,482	43	98	151	1,125	65	.....	.....	.....
Gas, illuminating and heating.....	3,110	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.....	1,006	38	.....	69	19	220	138	271	842
Ink, printing.....	165	11	.....	0	148	.....	.....	.....	.....
Iron and steel, blast furnaces.....	14,521	.....	.....	.....	117	601	160	467	13,170
Iron and steel, steel works and rolling mills.....	126,911	12,245	3,237	11,014	12,292	45,527	17,021	21,840	2,820
Iron and steel pipe, wrought.....	3,873	0	.....	.....	3,777	90	.....	.....	.....
Jewelry.....	466	20	110	170	89	67	.....	.....	.....
Leather goods.....	2,524	22	199	302	1,123	780	8	.....	.....
Leather, tanned, curried, and finished.....	14,008	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	336	1,118	203	109	4
Lumber and timber products.....	26,873	790	995	4,105	3,984	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	2,057	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	7,599	.....	.....	.....
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	3,534,854	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	\$2,628,742,034	\$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	377,795,616	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	1,203,697	Mount Carmel.....	17,532	13,179
Pittsburgh.....	533,905	451,512	Carbondale.....	17,040	13,536
Reading.....	129,807	102,026	Plymouth.....	10,998	13,649
Wilkes-Barre.....	96,071	78,061	Pittston.....	10,267	12,550
Erie.....	67,105	51,721	Mahanoy City.....	15,936	13,594
Harrisburg.....	66,525	52,733	Duquesne.....	15,727	9,036
Johnstown.....	64,186	50,107	Oil City.....	15,657	13,264
Altoona.....	55,482	35,936	Pottstown.....	15,590	13,696
Allentown.....	52,127	38,973	Sharon.....	15,270	8,016
Lancaster.....	51,913	35,416	McKees Rocks.....	14,702	6,352
York.....	47,227	41,459	Bradford.....	14,544	15,029
McKeesport.....	44,720	33,708	Steelton.....	14,246	12,086
Chester.....	42,694	34,227	Sunbury.....	13,770	9,810
New Castle.....	38,557	33,988	Uniontown.....	13,444	7,344
Williamsport.....	36,280	28,339	Greensburg.....	13,012	6,508
Easton.....	31,860	28,757	Cornellsville.....	12,845	7,160
Norristown.....	28,523	25,238	Bethlehem.....	12,837	10,758
Shenandoah.....	27,875	22,205	Meadville.....	12,870	10,291
Hazleton.....	25,774	20,321	DuBois.....	12,623	9,375
Butler.....	25,452	14,230	Beaver Falls.....	12,191	10,054
Pottsville.....	20,728	10,853	North Braddock.....	11,824	6,535
South Bethlehem.....	20,236	15,710	Chambersburg.....	11,800	8,864
Shamokin.....	19,973	13,241	Monessen.....	11,775	2,197
Lebanon.....	19,588	18,202	West Chester.....	11,767	9,524
Scranton.....	19,357	15,654	Columbia.....	11,454	12,316
Wilkesburg.....	19,240	17,028	Old Forge.....	11,424	5,630
Nanticoke.....	18,924	11,886	Cotatesville.....	11,080	5,721
Washington.....	18,877	12,116	Warren.....	11,084	8,043
Homestead.....	18,778	7,670	Phoenixville.....	10,743	9,196
Dunmore.....	18,713	12,554	Carlisle.....	10,303	9,023
Homestead.....	17,615	12,583	South Sharon.....	10,190	(¹)
			Carnegie.....	10,009	7,330

¹ Includes population of Allegheny, which was annexed in 1907.
² Includes population of West Bethlehem, which was annexed in 1904.
³ 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	228,890	214,775	\$746,075,050	\$591,388,078	\$519,981,812
Pittsburgh.....	67,474	71,618	71,704	243,453,093	211,250,153	218,198,005
Reading.....	24,145	18,053	16,892	61,134,967	30,490,042	32,682,061
Johnstown.....	10,574	0,914	5,600	48,105,775	28,801,806	21,364,745
McKeesport.....	8,246	8,848	7,213	42,494,567	23,054,412	36,058,447
New Castle.....	5,339	5,433	4,529	38,037,522	28,023,234	20,015,798
South Bethlehem.....	7,985	5,751	4,045	26,417,103	15,275,411	9,904,054
Scranton.....	12,351	10,912	11,139	26,384,755	20,453,285	24,741,837
Allentown.....	11,481	8,081	7,355	26,263,327	16,841,043	14,990,437
Erie.....	9,796	8,415	8,032	24,225,633	18,639,161	16,492,886
Harrisburg.....	9,743	7,955	6,439	22,725,328	16,570,715	14,905,827
Chester.....	6,980	7,061	6,072	19,373,314	16,044,842	14,940,165
York.....	10,492	7,952	6,851	18,022,400	13,333,359	10,559,780
Altoona.....	8,400	9,540	6,573	16,762,738	14,349,993	11,273,287
Lancaster.....	7,957	8,693	7,504	15,978,666	14,047,681	12,750,429
Wilkes-Barre.....	7,553	5,920	4,749	13,525,957	10,900,754	8,616,705
Williamsport.....	5,641	5,296	4,717	13,347,943	11,366,590	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	11,429,003	6,978,458	7,658,206
Butler.....	2,823	2,003	792	11,058,353	6,832,007	1,403,026
Sharon.....	3,316	1,812	1,827	9,880,072	5,070,924	3,764,983
McKees Rocks.....	3,591	(²)	(²)	9,785,828	(²)	(²)
Pottsville.....	2,872	1,004	1,000	9,138,122	5,805,788	4,820,806
Norristown.....	3,818	3,517	2,944	7,413,211	5,925,243	4,106,834
Easton.....	3,388	2,720	3,202	6,015,345	5,059,094	5,424,068
Beaver Falls.....	2,180	2,232	2,174	6,400,338	4,349,530	6,228,800
Phoenixville.....	2,590	2,888	2,240	5,870,154	5,490,801	3,321,590
Warren.....	1,480	1,174	1,050	5,744,321	4,665,594	3,681,254
Bradford.....	1,040	1,225	815	5,094,382	4,125,470	4,000,748
Washington.....	2,123	(²)	(²)	4,837,055	(²)	(²)
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.....	2,059	1,457	908	4,450,150	2,592,829	1,868,157
Oil City.....	1,338	1,657	1,683	4,121,892	3,082,208	5,164,050
Bradford.....	1,318	1,400	1,200	3,886,538	3,191,894	3,125,007
Bethlehem.....	1,583	(²)	(²)	3,711,602	(²)	(²)
Meadville.....	2,048	1,300	1,201	3,558,925	2,074,000	1,667,954
Shamokin.....	1,623	807	702	3,544,095	1,443,915	1,147,450
Carnegie.....	422	(²)	(²)	3,099,445	(²)	(²)
Carbondale.....	1,503	1,475	1,023	2,523,337	2,315,005	1,146,181
Carlisle.....	1,334	1,340	1,121	2,495,710	1,985,743	1,708,000
Chambersburg.....	1,304	843	612	2,450,035	1,085,185	814,856
West Chester.....	916	849	407	2,145,843	2,121,185	869,424
Cornellsville.....	1,035	(²)	(²)	1,970,936	(²)	(²)
Pittston.....	792	830	357	1,909,452	1,474,928	997,789
DuBois.....	1,015	900	817	1,890,168	1,709,360	1,707,690
Dunmore.....	1,308	1,133	614	1,850,664	1,400,445	1,132,322
Uniontown.....	335	(²)	(²)	1,348,865	(²)	(²)
Plymouth.....	908	827	750	1,178,006	850,542	532,835
Shenandoah.....	242	170	107	887,503	594,637	301,646
Mahanoy City.....	500	238	301	867,576	431,526	401,103
Mount Carmel.....	600	197	109	785,391	620,396	393,373
Greensburg.....	310	(²)	(²)	726,298	(²)	(²)
Homestead.....	171	307	164	659,196	712,830	265,654
Wilkesburg.....	185	184	100	538,217	471,969	246,148
Nanticoke.....	348	229	140	423,093	358,091	309,900
All other boroughs.....	18,283			103,287,937		

¹ Includes statistics for Allegheny, annexed in 1907.
² 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.
³ Figures not available.
⁴ 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 DuBois. 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, 34¹ 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

¹ 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.	Oleoth 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 terneplate.
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 terne-plate, 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.

Lancaster 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 first among the cities of the United States. The second industry in importance is tobacco manufactures, employing 1,453 wage earners and reported to have produced products valued at \$1,970,000 in 1909. Foundries and machine shops is another industry which reported to have produced 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 is the manufacture of silk goods, the figures are shown separately for Wilkes-Barre in Table I, page 57, is the manufacture of 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 amounted to less than \$2,000,000. The manufacture of silk and silk goods was the most important 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 the value of products in excess of three-quarters of a million

is manufactured 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.
ALL INDUSTRIES:					Hosiery and knit goods, 1909				
1909	27,563	877,543	\$2,026,742,034	\$1,044,182,046	Individual	464	38,206	\$49,057,506	\$22,430,555
1904	23,495	763,282	1,955,551,332	812,608,625	Firm	185	9,363	12,160,619	5,050,341
Individual:					Corporation	130	7,714	10,952,157	4,888,638
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	Leather, tanned, curried, and finished, 1909				
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	13,992,835	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	Liquors, malt, 1909				
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	3,561,347
Firm:					Corporation	154	5,612	38,150,649	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	21.0	11.2	9.7	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	Lumber and timber products, 1909				
Other:					Individual	2,607	26,873	\$57,453,583	\$30,139,347
1909	0.8	0.1	0.2	0.2	Individual	1,640	9,445	17,547,215	9,849,170
1904	0.8	0.1	0.2	0.1	Firm	757	6,020	13,718,016	7,275,119
Bread and other bakery products, 1909					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	7,070,939	Corporation	10.1	40.2	45.6	43.2
Per cent of total	100.0	100.0	100.0	100.0	Printing and publishing, 1909				
Individual	91.3	57.2	54.8	54.7	Individual	2,461	24,686	\$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
Clothing, men's, including shirts, 1909					Corporation	471	14,257	45,791,442	29,879,644
Individual	696	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	1,939,922	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	67.8	66.0	62.4	Silk and silk goods, including throwsters, 1909				
Corporation	4.0	10.3	10.7	0.8	Individual	226	36,469	\$62,661,302	\$26,895,731
Clothing, women's, 1909					Individual	32	3,087	5,766,036	2,940,572
Individual	401	15,701	\$32,837,424	\$14,661,191	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	10.0	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	Slaughtering and meat packing, 1909				
Corporation	6.2	12.1	11.9	11.4	Individual	180	3,050	\$51,850,936	\$7,005,889
Cotton goods, including cotton small wares, 1909					Individual	92	185	9,406,946	1,079,000
Individual	175	16,293	\$33,917,033	\$15,180,008	Firm	44	388	6,985,578	979,826
Individual	43	2,424	5,355,654	2,609,366	Corporation	44	1,969	35,458,412	4,946,967
Firm	43	3,540	6,602,563	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	Tobacco manufactures, 1909				
Corporation	48.0	63.4	64.7	65.2	Individual	2,432	33,188	\$50,161,387	\$26,447,904
Flour-mill and gristmill products, 1909					Individual	2,091	10,010	14,018,961	8,404,675
Individual	1,450	2,432	\$44,782,558	\$6,612,430	Firm	253	10,332	16,172,150	6,116,810
Individual	1,034	1,254	19,789,007	3,156,422	Corporation	88	12,846	10,970,270	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	Woolen, worsted, and felt goods, and wool hats, 1909				
Corporation	4.0	20.2	27.4	22.3	Individual	217	27,400	\$77,446,006	\$28,812,911
Foundry and machine-shop products, 1909					Individual	59	4,340	12,195,424	5,570,306
Individual	1,695	86,821	\$210,746,257	\$109,735,517	Firm	73	7,942	22,867,665	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					
Corporation	44.7	88.5	90.4	89.4					

¹ 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.
ALL INDUSTRIES:									
1909.....	27,563	877,543	\$2,626,742,034	\$1,044,182,046	Cotton goods, including cotton small wares, 1909—Continued.				
1904.....	23,495	703,282	1,955,551,332	812,008,625	Par cent of total.....	100.0	\$100.0	\$100.0	\$100.0
Less than \$5,000:					Less than \$5,000.....	2.9	(?)	(?)	(?)
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.....	7,547	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	62.0
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.....	7,870	46,076	80,441,200	43,384,120	Average per establishment.....		93	\$193,812	\$86,929
\$20,000 and less than \$100,000:					Flour-mill and gristmill products, 1909.....	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	580	7,657,933	1,358,659
\$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	412,461,925	\$100,000 and less than \$1,000,000.....	61	469	10,303,200	1,412,363
1904.....	2,584	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.....	400	317,180	1,331,111,312	440,977,015	Less than \$5,000.....	16.1	3.0	1.6	2.0
1904.....	284	253,204	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	10.3	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	Foundry and machine-shop products, 1909.....	1,695	86,821	\$210,746,257	\$109,735,517
1904.....	32.2	1.5	1.0	1.4	Less than \$5,000.....	307	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	11,790	22,363,155	12,503,704
1904.....	33.5	6.0	4.1	5.3	\$100,000 and less than \$1,000,000.....	344	40,441	107,048,955	56,358,289
\$20,000 and less than \$100,000:					\$1,000,000 and over.....	30	25,417	74,962,846	37,038,797
1909.....	21.0	14.9	9.9	12.3	Per cent of total.....	100.0	100.0	\$100.0	\$100.0
1904.....	21.0	16.7	11.8	14.7	Less than \$5,000.....	23.4	0.6	0.5	0.6
\$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	40.2	\$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	20.3	35.6	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	Hosiery and knit goods, 1909.....	464	33,206	\$40,657,500	\$22,430,555
Average per establishment:					Less than \$5,000.....	35	102	82,031	42,893
1909.....	32	305,300	\$37,883	\$37,883	\$5,000 and less than \$20,000.....	84	1,175	1,030,114	539,428
1904.....	32	83,233	83,233	34,586	\$20,000 and less than \$100,000.....	204	8,981	9,991,390	4,640,244
Bread and other bakery products, 1909.....	3,185	12,221	\$45,850,070	\$18,520,454	\$100,000 and less than \$1,000,000.....	141	27,948	38,553,371	17,216,900
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	14,599,504	6,003,773	Less than \$5,000.....	41.0	7.9	8.5	8.7
\$20,000 and less than \$100,000.....	258	2,660	9,127,700	3,543,456	\$5,000 and less than \$20,000.....	40.5	33.9	31.8	32.4
\$100,000 and less than \$1,000,000.....	40	2,576	9,307,437	3,443,676	\$20,000 and less than \$100,000.....	8.1	21.8	19.9	19.1
\$1,000,000 and over.....	5	1,878	8,857,885	3,900,173	\$100,000 and less than \$1,000,000.....	1.3	21.1	20.5	18.6
Per cent of total.....	100.0	100.0	100.0	100.0	\$1,000,000 and over.....	0.2	15.4	19.2	21.1
Less than \$5,000.....	41.0	7.9	8.5	8.7	Average per establishment.....		0.4	\$14,396	\$5,815
\$5,000 and less than \$20,000.....	40.5	33.9	31.8	32.4	Clothing, men's, including shirts, 1909.....	696	23,623	\$39,681,760	\$19,818,026
\$20,000 and less than \$100,000.....	8.1	21.8	19.9	19.1	Less than \$5,000.....	155	722	401,328	354,214
\$100,000 and less than \$1,000,000.....	1.3	21.1	20.5	18.6	\$5,000 and less than \$20,000.....	244	4,486	2,633,941	2,134,782
\$1,000,000 and over.....	0.2	15.4	19.2	21.1	\$20,000 and less than \$100,000.....	210	8,112	9,428,375	5,403,446
Average per establishment.....					\$100,000 and less than \$1,000,000.....	75	8,790	20,783,386	8,920,569
1909.....	32	305,300	\$37,883	\$37,883	\$1,000,000 and over.....	3	1,504	6,234,730	2,999,615
1904.....	32	83,233	83,233	34,586	Per cent of total.....	100.0	100.0	\$100.0	\$100.0
Leather, tanned, curried, and finished, 1909.....	163	14,008	\$77,926,321	\$18,813,197	Less than \$5,000.....	22.3	3.1	1.0	1.8
Less than \$5,000.....	10	3	25,205	7,357	\$5,000 and less than \$20,000.....	35.1	19.0	6.0	10.8
\$5,000 and less than \$20,000.....	18	72	190,080	83,096	\$20,000 and less than \$100,000.....	31.5	34.3	24.3	27.3
\$20,000 and less than \$100,000.....	21	196	1,005,393	273,414	\$100,000 and less than \$1,000,000.....	10.8	37.2	52.4	45.0
\$100,000 and less than \$1,000,000.....	91	6,505	37,931,745	8,657,290	\$1,000,000 and over.....	0.4	6.4	15.7	15.1
\$1,000,000 and over.....	23	7,232	38,767,889	9,791,140	Average per establishment.....		34	\$57,014	\$28,475
Per cent of total.....	100.0	100.0	\$100.0	\$100.0	Clothing, women's, 1909.....	401	15,701	\$32,837,424	\$14,681,191
Less than \$5,000.....	6.1	(?)	(?)	(?)	Less than \$5,000.....	30	108	102,155	66,343
\$5,000 and less than \$20,000.....	11.0	0.5	0.3	0.4	\$5,000 and less than \$20,000.....	102	1,067	1,106,493	715,037
\$20,000 and less than \$100,000.....	12.9	1.4	1.3	1.5	\$20,000 and less than \$100,000.....	161	4,402	8,130,603	3,802,263
\$100,000 and less than \$1,000,000.....	55.8	46.4	48.7	46.0	\$100,000 and less than \$1,000,000.....	90	10,064	23,498,273	10,097,568
\$1,000,000 and over.....	14.1	51.6	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.....	9.7	0.7	0.3	0.5
Liquors, malt, 1909.....	237	7,234	\$47,712,570	\$35,102,473	\$5,000 and less than \$20,000.....	25.4	6.8	3.4	4.9
\$5,000 and less than \$20,000.....	15	61	175,422	105,462	\$20,000 and less than \$100,000.....	40.1	28.4	24.8	25.9
\$20,000 and less than \$100,000.....	68	835	3,711,359	2,488,432	\$100,000 and less than \$1,000,000.....	24.7	64.1	71.6	68.8
\$100,000 and less than \$1,000,000.....	146	5,030	33,119,290	24,476,615	Average per establishment.....		39	\$81,889	\$36,611
\$1,000,000 and over.....	8	1,308	10,706,499	8,031,964	Cotton goods, including cotton small wares, 1909.....	175	16,203	\$33,917,033	\$15,160,008
Per cent of total.....	100.0	100.0	\$100.0	\$100.0	Less than \$5,000.....	5	8	14,434	6,891
Less than \$5,000.....	6.3	0.8	0.4	0.3	\$5,000 and less than \$20,000.....	22	183	264,388	147,059
\$5,000 and less than \$20,000.....	28.7	11.5	7.8	7.1	\$20,000 and less than \$100,000.....	64	1,925	3,732,505	1,567,490
\$20,000 and less than \$100,000.....	61.6	69.5	69.4	69.7	\$100,000 and less than \$1,000,000.....	78	10,790	21,001,149	9,550,979
\$100,000 and less than \$1,000,000.....	3.4	18.1	22.4	22.9	\$1,000,000 and over.....	6	3,378	8,004,557	3,887,589
\$1,000,000 and over.....		31	\$201,319	\$148,112	Per cent of total.....	100.0	100.0	\$100.0	\$100.0
Average per establishment.....					Less than \$5,000.....	17.8	1.4	1.3	1.5
Lumber and timber products, 1909.....	2,667	26,873	\$57,453,583	\$30,139,347	\$5,000 and less than \$20,000.....	11.0	0.5	0.3	0.4
Less than \$5,000.....	1,281	2,427	2,961,331	1,983,415	\$20,000 and less than \$100,000.....	12.9	1.4	1.3	1.5
\$5,000 and less than \$20,000.....	350	5,288	8,580,234	5,113,976	\$100,000 and less than \$1,000,000.....	55.8	46.4	48.7	46.0
\$20,000 and less than \$100,000.....	438	8,368	18,480,505	9,156,893	\$1,000,000 and over.....	14.1	51.6	49.7	52.0
\$100,000 and less than \$1,000,000.....	93	8,491	21,876,012	10,541,809	Average per establishment.....				
\$1,000,000 and over.....	5	2,299	5,555,401	3,343,254					

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

² 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.
Lumber and timber products, 1909—Continued.					Slaughtering and meat packing, 1909—Continued.				
Per cent of total.....	100.0	100.0	\$100.0	\$100.0	Per cent of total.....	100.0	100.0	\$100.0	\$100.0
Less than \$5,000.....	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		\$21,542	\$11,301	Average per establishment.....	17		\$288,061	\$38,922
Printing and publishing, 1909	2,461	24,696	\$70,584,179	\$47,831,430	Tobacco manufactures, 1909	2,432	33,188	\$50,161,387	\$29,447,964
Less than \$5,000.....	1,171	1,466	2,804,836	2,192,369	Less than \$5,000.....	1,650	1,511	2,846,418	1,827,835
\$5,000 and less than \$20,000.....	829	4,286	8,140,507	6,128,908	\$5,000 and less than \$20,000.....	471	3,753	4,629,579	2,935,571
\$20,000 and less than \$100,000.....	353	6,806	14,394,899	10,438,220	\$20,000 and less than \$100,000.....	212	7,122	9,081,905	5,260,243
\$100,000 and less than \$1,000,000.....	101	9,975	28,944,970	19,080,654	\$100,000 and less than \$1,000,000.....	96	18,930	28,679,959	10,277,457
\$1,000,000 and over.....	7	2,163	10,232,967	9,991,870	\$1,000,000 and over.....	3	1,872	4,923,526	3,146,858
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.....	47.6	5.9	4.1	4.6	Less than \$5,000.....	67.8	4.6	5.7	6.2
\$5,000 and less than \$20,000.....	33.7	17.4	11.5	12.8	\$5,000 and less than \$20,000.....	19.4	11.3	9.2	10.0
\$20,000 and less than \$100,000.....	14.3	27.6	20.4	21.8	\$20,000 and less than \$100,000.....	8.7	21.5	18.1	17.9
\$100,000 and less than \$1,000,000.....	4.1	40.4	41.0	39.9	\$100,000 and less than \$1,000,000.....	3.9	57.0	57.2	55.3
\$1,000,000 and over.....	0.3	8.8	23.0	20.9	\$1,000,000 and over.....	0.1	5.6	9.8	10.7
Average per establishment.....	10		\$28,681	\$19,436	Average per establishment.....	14		\$20,626	\$12,109
Silk and silk goods, including throwsters, 1909	286	36,469	\$62,061,302	\$26,895,731	Woolen, worsted, and felt goods, and wool hats, 1909	217	27,409	\$77,446,996	\$22,812,911
Less than \$5,000.....	9	96	22,456	1,500	Less than \$5,000.....	14	19	26,604	11,954
\$5,000 and less than \$20,000.....	23	378	271,109	174,328	\$5,000 and less than \$20,000.....	16	188	187,268	121,387
\$20,000 and less than \$100,000.....	84	6,941	4,518,202	3,040,315	\$20,000 and less than \$100,000.....	60	3,323	3,323,855	1,408,391
\$100,000 and less than \$1,000,000.....	67	18,250	33,362,541	15,191,962	\$100,000 and less than \$1,000,000.....	109	13,172	36,911,874	11,867,947
\$1,000,000 and over.....	13	10,804	23,886,994	8,478,626	\$1,000,000 and over.....	18	11,938	36,997,395	9,343,232
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.....	4.0	0.3	(¹)	(¹)	Less than \$5,000.....	6.5	0.1	(¹)	0.1
\$5,000 and less than \$20,000.....	10.2	1.0	0.4	0.6	\$5,000 and less than \$20,000.....	7.4	0.7	0.2	0.5
\$20,000 and less than \$100,000.....	37.2	19.0	7.3	11.3	\$20,000 and less than \$100,000.....	27.6	7.6	4.3	6.4
\$100,000 and less than \$1,000,000.....	42.9	50.0	53.8	56.5	\$100,000 and less than \$1,000,000.....	50.2	48.1	47.7	52.0
\$1,000,000 and over.....	5.8	20.6	38.5	31.5	\$1,000,000 and over.....	8.3	43.6	47.8	41.0
Average per establishment.....	161		\$274,698	\$119,008	Average per establishment.....	126		\$356,899	\$105,129
Slaughtering and meat packing, 1909	180	3,050	\$51,850,936	\$7,005,889					
Less than \$5,000.....	10	8	27,407	12,777					
\$5,000 and less than \$20,000.....	30	53	374,709	77,318					
\$20,000 and less than \$100,000.....	60	240	2,996,606	463,074					
\$100,000 and less than \$1,000,000.....	68	1,190	20,932,480	3,144,826					
\$1,000,000 and over.....	12	1,659	27,489,674	3,317,894					

¹ 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.
All industries	27,563	3,539	13,040	5,313	2,410	1,356	1,051	387	178	89
Boots and shoes, including cut stock and findings.....	140	1	23	33	28	24	21	8	2	.....
Bread and other bakery products.....	3,185	542	2,290	279	40	15	6	3	1	.....
Butter, cheese, and condensed milk.....	336	79	425	25	5	2	.....	.....	.....	.....
Carpets and rugs, other than rag.....	93	6	4	18	23	19	12	6	3	2
Carriages and wagons and materials.....	655	56	343	203	31	14	6	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	.....	3	.....
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	26	25	9	.....	1
Confectionery.....	251	30	118	57	17	11	16	2	.....	.....
Copper, tin, and sheet-iron products.....	339	13	178	93	31	10	9	3	2	.....
Cotton goods, including cotton small wares.....	175	1	15	35	48	26	30	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	.....	.....	.....	.....
Foundry and machine-shop products.....	1,095	83	617	392	253	148	130	43	19	10
Furniture and refrigerators.....	304	14	101	79	58	25	21	6	.....	.....
Gas, illuminating and heating.....	90	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	30	90	137	95	62	25	8	1
Iron and steel, blast furnaces.....	40	.....	1	5	6	15	22	11	5	1
Iron and steel, steel works and rolling mills.....	180	.....	1	5	12	25	34	40	42	30
Iron and steel pipe, wrought.....	11	.....	1	2	1	2	2	1	.....	2
Leather, tanned, curried, and finished.....	193	7	25	22	24	50	22	10	3	.....
Liquors, distilled.....	88	.....	55	17	7	1	.....	.....	.....	.....
Liquors, malt.....	237	1	18	100	88	21	8	1	.....	.....
Lumber and timber products.....	2,607	129	1,612	681	104	51	23	3	4	.....
Marble and stone work.....	596	29	333	119	75	29	9	1	1	.....
Paint and varnish.....	114	8	64	31	9	9	13	5	2	.....
Paper and wood pulp.....	62	.....	9	15	10	8	2	5	2	.....
Patent medicines and compounds and druggists' preparations.....	307	121	190	42	7	3	2	1	.....	.....
Petroleum, refining.....	41	.....	3	13	1	2	1	.....	.....	1
Pottery, terra-cotta, and fire-clay products.....	130	4	10	25	33	29	25	6	.....	.....
Printing and publishing.....	2,461	548	1,211	474	137	48	36	4	1	.....
Silk and silk goods, including throwsters.....	220	.....	11	25	45	44	57	31	10	3
Slaughtering and meat packing.....	180	15	88	41	20	10	5	1	.....	.....
Tin plate and terneplate.....	17	.....	2	1	5	5	4	.....	.....	.....
Tobacco manufactures.....	2,432	832	900	352	121	63	49	18	6	1
Woolen, worsted, and felt goods, and wool hats.....	217	3	10	31	48	49	10	10	3	3
All other industries.....	6,083	600	2,812	1,434	686	207	165	59	21	9

AVERAGE NUMBER OF WAGE EARNERS.

All industries	877,543	29,230	59,872	86,704	97,069	165,379	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 rag.....	11,510	10	247	793	1,49	1,735	2,088	1,708	3,510
Carriages and wagons and materials.....	7,498	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	1,156	4,800	4,394	11,595	23,795
Cars, steam-railroad, not including operations of railroad companies.....	7,760	.....	14	57	236	521	286	.....	6,652
Cement.....	8,080	.....	20	64	62	1,951	2,334	1,097	2,513
Chemicals.....	3,185	28	137	374	128	496	2,022	.....	.....
Clothing, men's, including shirts.....	23,623	400	2,613	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	762	.....
Coke.....	15,331	89	556	607	1,709	3,709	3,297	.....	5,214
Confectionery.....	5,408	284	635	510	750	2,516	707	.....	.....
Copper, tin, and sheet-iron products.....	6,815	457	1,030	1,019	621	1,591	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	1,294	637	537	7,083
Flour-mill and gristmill products.....	2,432	1,709	470	168	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	238	455	243	310	.....	688	1,001
Glass.....	23,710	3	62	442	1,938	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	6,796	9,584	9,209	4,798	1,792
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	4	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.....	14,008	57	281	849	3,565	3,119	3,574	2,593	.....
Liquors, distilled.....	724	83	211	226	86	118	.....	.....	.....
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	660	.....
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	522	247	62	384	663	541	.....
Petroleum, refining.....	2,900	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.....	24,096	3,066	5,012	4,411	3,467	5,663	2,256	821	.....
Silk and silk goods, including throwsters.....	36,469	37	334	1,049	3,395	9,688	10,515	6,861	3,990
Slaughtering and meat packing.....	3,050	232	443	585	678	766	356	.....	.....
Tin plate and terneplate.....	2,346	.....	24	50	391	602	1,219	.....	.....
Tobacco manufactures.....	33,188	2,093	3,813	3,872	4,466	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	22,508	21,258	25,146	20,002	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.
		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	9.6	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	.....	63.5	.....
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	32.0	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	20.7	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	3.6	.....	.....	.....	.....
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	6.9	.....	22.1	34.0
Glass.....	100.0	(1)	0.3	1.9	8.2	24.5	32.9	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	10.3	.....	.....	.....
Liquors, malt.....	100.0	1.0	19.9	38.7	19.7	10.5	4.2	.....	.....
Lumber and timber products.....	100.0	14.1	20.9	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	13.9	24.0	19.6	.....
Petroleum, refining.....	100.0	0.4	6.3	19.9	4.0	19.3	10.9	.....	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	.....	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 ternplate.....	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	20.6	12.2
All other industries.....	100.0	4.6	11.3	15.7	14.0	17.6	14.4	9.3	12.3

¹ 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.

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.

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	56.2	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	7.8
Cotton goods, including cotton small wares.....	5.4	23.5	62.7	8.4
Dyeing and finishing textiles.....	5.9	29.6	52.0	11.5
Electrical machinery, apparatus, and supplies.....	14.0	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	46.6	10.6
Hats, fur-felt.....	4.3	37.7	50.7	7.3
Hosiery and knit goods.....	3.8	26.8	62.0	7.4
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

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 ¹	1909	1904	1899 ¹	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	19,911	2,541,117	2,088,773	1,687,706	87.0	90.7	92.5
Gas.....	4,415	2,890	1,920	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	(²)	1,432	400	(²)	(²)	(²)	(²)
Other.....				7,073	35,729	9,632	0.3	1.6	0.6
Rented.....	16,991	(²)	(²)	163,755	59,067	38,209	5.6	2.0	2.2
Electric.....	16,991	(²)	(²)	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	(²)	(²)	145,621	35,701	22,362	16.8	10.3	20.8

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

² Not reported.

³ Less than one-tenth of 1 per cent.

Fuel.—Closely related to the question of kind of power employed is that of the fuel consumed in generating this power, or otherwise used as material in the

manufacturing processes. The 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	662	870,758
Butter, cheese, and condensed milk.....	15,364	31,957		4,914	248	12,870
Carpets and rugs, other than rag.....	34,760	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.....	255,400	643,881	6,962	7,576	75,081	134,868
Cars, steam-railroad, not including operations of railroad companies.....	34,516	139,366	9,763		47,960	458,862
Cement.....	155,886	1,660,750	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	131,776
Clothing, women's.....	3,135	1,592			26	18,125
Coke.....		36,886,592	13,668	50		348,958
Confectionery.....	16,412	11,618	312	123	6	92,360
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		5,756
Electrical machinery, apparatus, and supplies.....	3,876	116,955	946		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	23,952
Gas, illuminating and heating.....	99,297	348,241	79,675	4	948,620	44,268
Glass.....	6,788	453,613	4,093	2,079	34,060	22,665,773
Hats, fur-felt.....	27,526	13,608			85	7,624
Hosiery and knit goods.....	72,667	49,824		41	433	3,521
Iron and steel, blast furnaces.....	267,478	445,716	13,248,651	2,000	14	940,558
Iron and steel, steel works and rolling mills.....	659,587	9,447,159	238,459	25,204	520,004	189,133,915
Iron and steel pipe, wrought.....	64,974	155,065	4,995	75		129,960
Leather, tanned, curried, and finished.....	26,069	279,191	187	6,733	26	303,031
Liquors, distilled.....	5,281	56,430	95	453	1	176,589
Liquors, malt.....	104,562	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.....	15,466	105,316	39	26	1,386	28,355
Paint and varnish.....	9,821	70,635	1,948	667	447	181,024
Paper and wood pulp.....	98,456	733,072		15,855	2,188	65,259
Patent medicines and compounds and druggists' preparations.....	8,104	4,111	7	96	90	29,276
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	1,026	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	2,388,764	145,580	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
Materials used, total cost	\$329, 013, 421	\$237, 875, 025	\$219, 047, 508
Iron and steel:			
For furnaces and hot rolls:			
Pig iron and ferroalloys—			
Tons.....	9, 317, 903	6, 559, 417	5, 915, 321
Cost.....	\$147, 135, 383	\$94, 007, 504	\$87, 720, 436
Pig iron—			
Tons.....	9, 158, 260	(2)	(2)
Cost.....	\$139, 208, 875	(2)	(2)
Ferroalloys, spiegel-eisen, ferromanganese, etc.—			
Tons.....	150, 043	(2)	(2)
Cost.....	\$7, 926, 508	(2)	(2)
Scrap, including old rails not intended for re-rolling—			
Tons.....	2, 660, 773	2, 871, 819	2, 157, 468
Cost.....	\$41, 572, 010	\$38, 574, 391	\$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, 979
Cost.....	\$68, 274, 443	\$60, 353, 171	\$59, 421, 973
Rolled forms for further manufacture:			
Skelp—			
Tons.....	110, 365	249, 278	(2)
Cost.....	\$3, 959, 018	\$7, 005, 688	(2)
Wire rods—			
Tons.....	43, 709	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	\$970, 028
All other materials	\$63, 658, 204	\$34, 250, 700	\$36, 734, 422
Products, total value	\$500, 343, 995	\$303, 773, 577	\$332, 869, 713
Rails:			
Tons.....	848, 924	812, 601	1, 218, 280
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	706, 995
Value.....	\$49, 512, 301	\$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, 750
Value.....	\$59, 717, 882		\$43, 453, 494
Bars for reinforced concrete:			
Tons.....	30, 886	\$40, 425, 460	
Value.....	\$1, 084, 652		
Wire rods:			
Tons.....	861, 261	500, 802	276, 395
Value.....	\$23, 190, 920	\$16, 926, 005	\$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, 592		\$28, 050
Value.....	\$34, 273, 085	1, 259, 049	\$35, 398, 558
Hoops, bands, and cotton ties:			
Tons.....	279, 172		
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.....	67, 333	73, 388	81, 383
Value.....	\$3, 603, 095	\$2, 415, 220	\$3, 569, 888
Armor plates, gun forgings, and ordnance:			
Tons.....	22, 558	22, 648	15, 302
Value.....	\$8, 833, 335	\$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, 069, 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, 594	\$58, 206, 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	107, 165
Value.....	\$3, 508, 235	\$2, 791, 435	\$4, 901, 446

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

² Not reported separately.

³ 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
Products—Continued.			
Rail fastenings, splice bars, tie-plates, fishplates, etc.:			
Tons.....	124,049		
Value.....	\$4,060,802	900,220	356,761
All other rolled steel or iron:		\$22,156,436	\$11,201,980
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	\$2,459,603
Direct steel castings:			
Tons.....	107,405	114,411	69,711
Value.....	\$14,087,422	\$8,041,419	\$5,708,302
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.....	12,189,953	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	3,638,936	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
Equipment:			
<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	106
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	(²)
Daily capacity, tons of steel, double turn.....	72	63	(²)
Metal mixers—			
Number.....	26	(²)	(²)
Capacity, tons.....	5,660	(²)	(²)
<i>Rolling mills:</i>			
Daily capacity of rolled steel and iron, double turn, tons.....	72,977	52,466	48,304

¹ 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.

² 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
Materials used, total cost.....	\$142,074,028	\$86,321,875	\$64,095,277
Iron ore:			
Tons.....	19,008,096	12,019,590	11,050,833
Cost.....	\$90,171,795	\$54,381,825	\$35,042,178
Domestic—			
Tons.....	18,421,398	12,537,891	10,641,035
Cost.....	\$82,790,018	\$51,503,986	\$32,294,561
Foreign—			
Tons.....	1,277,598	381,099	415,798
Cost.....	\$7,381,777	\$2,817,839	\$2,747,617
Mill cinder, scrap, etc.:			
Tons.....	1,123,027	1,161,063	1,108,007
Cost.....	\$3,332,335	\$2,169,422	\$2,686,743
Flux:			
Tons.....	5,819,912	3,842,184	3,371,405
Cost.....	\$5,208,591	\$3,356,725	\$2,264,666
Fuel¹:			
Coke—			
Tons (2,000 pounds).....	13,245,622	8,713,116	6,254,301
Cost.....	\$38,550,786	\$22,728,319	\$15,576,340
Anthracite coal—			
Tons.....	204,481	498,731	765,707
Cost.....	\$900,007	\$1,599,655	\$1,913,385
Charcoal—			
Bushels.....	476,790	410,610	787,006
Cost.....	\$48,000	\$27,225	\$47,256
Bituminous coal—			
Tons.....		300,043	257,104
Cost.....		\$400,806	\$255,313
All other materials.....	\$3,765,245	\$1,501,898	\$6,309,396
Products, total value.....	\$168,878,413	\$107,455,267	\$101,575,487
Pig iron:			
Tons.....	10,911,076	7,729,278	6,778,584
Value.....	\$167,588,407	\$107,395,757	\$101,555,787
All other products.....	\$900,006	\$59,510	\$19,700
Pig iron, classified according to fuel used:			
Coke—			
Tons.....	10,259,155		
Value.....	\$156,834,660		
All other—			
Tons.....	652,521	7,729,278	6,778,584
Value.....	\$10,753,747	\$107,395,757	\$101,555,787
Pig iron, classified according to disposition:			
Produced for consumption in works of company producing—			
Tons.....	7,628,653	5,573,808	(²)
Value.....	\$115,422,575	\$77,087,637	(²)
Produced for sale—			
Tons.....	3,283,023	2,155,380	(²)
Value.....	\$52,165,832	\$30,308,220	(²)
Pig iron, classified by grades (tons):			
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).....	137,521	139,763	
Basic.....	4,815,840	1,827,121	606,589
Pfoundry.....	1,542,722	790,740	856,472
Forge or mill.....	366,808	313,301	446,328
Malleable Bessemer.....	37,042	12,497	(²)
White, mottled, and miscellaneous.....	51,916	12,121	50,077
Direct castings.....	4,563	2,941	4,350
Spiegeleisen, ferromanganese, and ferrosilicon, including Bessemer ferrosilicon (7 per cent and over in silicon).....	178,936	167,181	130,790
Pig iron, classified by method of delivery or casting (tons):			
Delivered in molten condition.....	5,887,507	3,579,501	(²)
Machine cast.....	2,837,576	2,376,870	(²)
Sand cast.....	1,907,514	1,490,312	(²)
Chill cast.....	274,516	270,654	(²)
Direct castings.....	4,563	2,941	(²)
Equipment:			
Furnaces in active establishments:			
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	(²)	(²)
In course of construction at end of year—			
Number.....	5	11	5
Daily capacity, tons.....	2,200	1,950	2,700
Pig casting machines, number.....	56	(²)	(²)
Granulated slag pits:			
Number.....	39	15	(²)
Annual capacity, tons.....	2,703,000	(²)	(²)
Gas engines operated with blast-furnace gas:			
Number.....	13	(²)	(²)
Horsepower.....	32,100	(²)	(²)

¹ In 1909 includes fuel for smelting only; in 1904 and 1899 includes coal for steam raising.

² 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 1889 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
Materials used, total cost.....	\$22,898,352	\$17,590,077	\$10,364,084
Black plates or sheets:			
Pounds.....	705,748,494	566,744,792	323,085,402
Cost.....	\$15,801,207	\$12,031,377	\$7,881,339
Coating metals:			
Pounds.....	20,269,205	16,800,196	12,158,400
Cost.....	\$5,305,175	\$3,033,001	\$2,025,532
Tin, including tin contents of terne mixture purchased, lbs.....	17,348,711	13,796,949	8,154,060
Lead, including lead contents of terne mixture purchased, lbs.....	2,920,494	3,012,247	4,003,431
In condition purchased:			
Pig tin—			
Pounds.....	16,858,292		
Cost.....	\$5,032,023		
Pig lead—			
Pounds.....	1,421,219	(¹)	(¹)
Cost.....	\$62,338		
Terne mixture—			
Pounds.....	1,989,694		
Cost.....	\$210,814		
All other materials.....	\$1,791,880	\$722,609	\$457,213
Products, total value.....	\$25,234,066	\$19,341,961	\$12,530,991
Tin plate and terneplate:			
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	524,905,022	256,870,332
Value.....	\$21,687,492	\$16,547,120	\$9,137,483
Terneplate—			
Pounds.....	46,875,154	58,693,218	77,139,648
Value.....	\$2,063,258	\$2,381,277	\$3,263,769
Other sheet iron or sheet steel, tinned or terneplated, taggers' tin, etc.:			
Pounds.....	18,067,667	6,555,855	200,473
Value.....	\$484,211	\$217,476	\$6,402
All other products.....	\$990,105	\$196,088	\$123,247

¹ Figures not available.

² 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
Total	\$267,840,570	\$194,214,389	\$163,286,038
Woolen, worsted, and felt goods, and wool hats	77,446,906	55,034,250	48,765,445
Silk and silk goods, including throwsters	62,061,302	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	26,209,853	25,447,697
Carpets and rugs, other than rag	24,879,232	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	1,448,880

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	1,017,092	33,648	252,671	25,166
	1904	1,707,116	590,916	785,113	25,122	266,347	39,618
	1899	1,532,521	521,726	638,851	30,024	306,637	34,683
Looms	1909	63,038	11,420	26,249	.....	19,404	5,965
	1904	53,165	9,848	19,336	.....	17,250	6,731
	1899	47,838	10,681	12,949	133	17,499	6,576
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 \$54,634,085, 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. Worsteds 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 worsteds yarn purchased indicate not only a growth in the manufacture of worsteds 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
Total cost	\$54,634,085	\$37,246,755	\$31,363,861
Wool:			
Foreign (in condition purchased)—			
Pounds.....	44,576,257	37,637,001	28,994,005
Cost.....	\$11,627,708	\$8,180,738	\$5,770,205
Domestic (in condition purchased)—			
Pounds.....	56,681,045	52,543,138	32,599,985
Cost.....	\$15,634,908	\$12,086,241	\$9,817,011
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.....	4,045,405	5,070,444	6,136,770
Cost.....	\$499,133	\$705,280	\$704,050
Waste and noils:			
Pounds.....	5,710,904	4,360,585	5,721,017
Cost.....	\$1,448,961	\$669,210	\$1,180,286
Tops:			
Pounds.....	2,445,813	1,163,030	547,353
Cost.....	\$1,530,890	\$560,501	\$293,014
Animal hair:			
Pounds.....	18,770,578	20,329,507	19,098,317
Cost.....	\$900,431	\$1,529,873	\$1,108,649
Cotton:			
Pounds.....	5,017,601	5,659,285	12,322,020
Cost.....	\$590,292	\$925,062	\$860,452
Yarns, purchased:			
Woolen—			
Pounds.....	143,884	1,303,215	2,289,016
Cost.....	\$100,540	\$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.....	1,668,124	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	\$1,514,349	\$2,273,305
Silk and spun silk—			
Pounds.....	50,693	50,132	49,074
Cost.....	\$278,289	\$208,495	\$215,609
All other—			
Pounds.....	998,600	335,186	1,055,824
Cost.....	\$20,729	\$6,615	\$51,100
Chemicals and dyestuffs	\$868,053	\$723,397	\$815,047
Fuel and rent of power	\$78,043	\$600,263	\$482,380
All other materials	\$5,970,332	\$2,547,350	\$1,024,333

¹ 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
Total value	\$77,446,996	\$55,934,250	\$48,765,445
All-wool woven goods:			
Square yards.....	33,149,873	26,622,510	19,498,412
Value.....	\$22,653,317	\$16,162,796	\$10,776,645
Woolen suitings and overcoatings—			
Square yards.....	1,735,118	2,341,754	3,064,746
Value.....	\$1,266,236	\$2,058,438	\$2,363,841
Worsted suitings and overcoatings—			
Square yards.....	9,101,981	7,804,728	5,092,363
Value.....	\$7,692,570	\$5,652,400	\$3,346,842
Worsted dress goods—			
Square yards.....	18,492,858	11,602,226	5,812,516
Value.....	\$11,247,377	\$6,305,829	\$2,745,199
Flannels for underwear—			
Square yards.....	796,097	436,723	633,091
Value.....	\$430,876	\$120,696	\$238,201
Blankets—			
Square yards.....	1,424,062	1,395,707	1,463,544
Value.....	\$1,153,948	\$566,009	\$554,913
All other—			
Square yards.....	1,509,757	2,921,372	3,432,212
Value.....	\$863,210	\$1,368,814	\$1,527,649
Cotton-mixed woven goods:			
Square yards.....	5,104,428	14,026,477	17,389,245
Value.....	\$2,070,669	\$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	5,340,188
Value.....	\$814,755	\$3,014,436	\$2,019,862
Cotton-warp woven goods:			
Square yards.....	30,735,963	19,452,881	31,460,590
Value.....	\$10,570,357	\$4,658,927	\$7,921,126
Wool-filling cassimeres, tweeds, suitings, etc.—			
Square yards.....	10,080,033	4,843,757	8,162,477
Value.....	\$3,562,568	\$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.....	3,368,778	2,993,200	6,665,894
Value.....	\$633,948	\$369,682	\$991,634
All other—			
Square yards.....	8,999,790	7,786,026	16,001,178
Value.....	\$2,377,883	\$2,228,591	\$1,313,105
Felt cloths, endless belts, hair felting, and other felts:			
Value.....	\$611,688	\$367,198	\$160,633
Hats, wool-felt:			
Dozens.....	303,398	158,585	270,738
Value.....	\$1,431,342	\$647,064	\$1,003,565
Partly manufactured products for sale:			
Woolen yarn—			
Pounds.....	25,211,815	37,044,638	29,101,075
Value.....	\$5,965,431	\$7,102,019	\$5,270,265
Worsted yarn—			
Pounds.....	28,656,142	23,371,803	16,813,647
Value.....	\$23,978,942	\$16,228,170	\$11,881,113
Merino yarn—			
Pounds.....	11,710,956	5,063,160	12,204,674
Value.....	\$4,180,974	\$1,202,628	\$2,001,468
Worsted tops and slubbing—			
Pounds.....	2,252,927	550,525	(1)
Value.....	\$1,401,562	\$330,798	(1)
Noils—			
Pounds.....	6,006,239	3,888,620	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	\$366,808	\$465,175
All other products	\$1,347,825	\$1,224,116	\$1,797,320

¹ 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. Broadsilks, 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
Materials used, total cost.....	\$35,165,571	\$24,267,122	\$19,884,809
Silk:			
Raw—			
Pounds.....	5,532,073	3,070,044	3,238,285
Cost.....	\$21,206,072	\$15,419,221	\$13,534,387
Spun—			
Pounds.....	695,007	454,074	477,543
Cost.....	\$1,506,014	\$876,485	\$979,500
Artificial—			
Pounds.....	127,486	127,192	520
Cost.....	\$273,646	\$394,126	\$3,115
Organzine and tram—			
Pounds.....	1,719,962	1,292,805	871,235
Cost.....	\$7,531,045	\$5,390,466	\$3,701,840
Yarns other than silk:			
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	\$198,025	\$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.....	\$157,214	\$74,292	\$59,742
Chemicals and dyestuffs.....	\$53,080	\$20,363	(¹)
Fuel and rent of power.....	\$495,850	\$317,231	\$174,388
All other materials.....	\$2,481,315	\$887,029	\$937,215
Products, total value.....	\$62,061,302	\$39,333,520	\$31,072,026
Organzine and tram for sale:			
Pounds.....	1,042,004	1,396,424	1,723,791
Value.....	\$7,475,327	\$9,124,717	\$8,011,155
Machine twist, sewing, embroidery, and wash silks, and fringe and floss:			
Pounds.....	174,468	183,776	246,213
Value.....	\$824,643	\$837,466	\$1,279,218
Broad silks (all silk and silk mixed):			
Plain and fancies—			
Yards.....	43,389,969	26,465,296	18,556,855
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.....	20,160,052	15,786,680	7,397,352
Value.....	\$8,280,870	\$4,427,795	\$2,140,806
Ribbons.....	\$16,008,146	\$5,573,700	\$4,308,399
Laces, embroideries, fringes, and braids..	\$780,047	\$773,847	\$293,068
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
Silk thrown on commission, total pounds.....	7,733,016	4,116,209	2,269,673
Into organzine, pounds.....	4,150,688	2,288,171	1,332,758
Into tram, pounds.....	3,582,328	1,828,125	926,915

¹ 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
Materials used, total cost.....	\$27,217,051	\$16,037,698	\$10,935,763
Cotton:			
Pounds.....	2,506,120	1,874,685	2,218,426
Cost.....	\$202,702	\$226,907	\$189,401
Wool (in condition purchased):			
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
Shoddy and wool waste and noils:			
Pounds.....	960,029	777,995	593,985
Cost.....	\$303,217	\$232,754	\$163,309
Yarns, purchased:			
Cotton—			
Pounds.....	59,035,958	46,895,164	38,323,301
Cost.....	\$16,283,401	\$10,305,172	\$7,183,052
Woolen—			
Pounds.....	618,809	661,645	469,163
Cost.....	\$399,134	\$360,533	\$219,025
Worsted—			
Pounds.....	1,684,786	1,584,717	1,115,863
Cost.....	\$1,616,975	\$1,350,070	\$861,068
Merino—			
Pounds.....	389,296	178,619	350,611
Cost.....	\$202,453	\$104,827	\$92,478
Silk and spun silk—			
Pounds.....	250,467	73,606	30,397
Cost.....	\$978,071	\$204,872	\$103,160
Linon, jute, and other vegetable fiber—			
Pounds.....	15,975	6,827	500
Cost.....	\$17,507	\$6,259	\$100
Chemicals and dyestuffs.....	\$804,020	\$431,492	\$271,062
Fuel and rent of power.....	\$421,700	\$284,194	\$177,388
All other materials.....	\$5,683,362	\$2,097,943	\$1,200,761
Products, total value.....	\$49,057,506	\$30,812,211	\$21,929,426
Hose and half hose:			
Total dozen pairs.....	27,832,001	20,327,710	15,232,324
Total value.....	\$30,847,344	\$19,182,697	\$13,189,964
Cotton—			
Dozen pairs.....	27,130,582	19,707,227	14,858,506
Value.....	\$28,697,548	\$17,704,113	\$12,466,182
Hose—			
Dozen pairs.....	13,876,803	11,769,534	7,863,561
Value.....	\$16,058,169	\$11,317,892	\$7,655,369
Half hose.....			
Dozen pairs.....	13,262,080	7,937,693	6,994,945
Value.....	\$12,639,379	\$6,470,311	\$4,810,822
Woolen or worsted and merino—			
Dozen pairs.....	547,522	509,448	367,818
Value.....	\$950,391	\$1,100,325	\$633,782
Hose—			
Dozen pairs.....	295,023	354,240	187,871
Value.....	\$501,105	\$648,933	\$379,075
Half hose.....			
Dozen pairs.....	252,499	245,208	179,947
Value.....	\$458,286	\$457,392	\$254,707
Silk—			
Dozen pairs.....	145,497	21,035	6,000
Value.....	\$1,190,405	\$282,259	\$90,000
Shirts and drawers:			
Cotton—			
Dozens.....	6,552,364	3,852,513	2,670,341
Value.....	\$8,833,761	\$4,950,879	\$3,456,695
Merino—			
Dozens.....	161,883	150,519	114,183
Value.....	\$921,319	\$710,547	\$647,285
All other—			
Dozens.....	7,322	26,456	60,913
Value.....	\$59,974	\$279,142	\$443,201
Combination suits:			
Cotton—			
Dozens.....	412,567	271,069	374,057
Value.....	\$1,155,327	\$657,824	\$702,523
Merino—			
Dozens.....	23,293	9,858	29,360
Value.....	\$234,855	\$76,211	\$208,844
All other—			
Dozens.....	440	(1)	1,115
Value.....	\$4,100	(1)	\$15,120
Gloves and mittens:			
Dozen pairs.....	284,031	152,714	82,163
Value.....	\$1,037,894	\$442,552	\$167,545
Hoods, scarfs, nubias, etc.:			
Dozens.....	138,427	70,400	42,760
Value.....	\$581,208	\$202,450	\$127,785
Cardigan jackets, sweaters, etc.:			
Dozens.....	221,700	145,503	86,191
Value.....	\$2,986,061	\$1,859,152	\$630,707
All other products.....	\$2,995,663	\$2,445,727	\$2,433,757

¹ 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 82.7 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
Materials used, total cost.....	\$18,757,025	\$14,321,577	\$13,176,718
Cotton:			
Domestic—			
Pounds.....	23,607,952	24,810,154	35,083,214
Cost.....	\$2,540,885	\$2,743,500	\$2,521,768
Foreign—			
Pounds.....	2,080,045	1,063,566	1,466,310
Cost.....	\$336,765	\$175,574	\$168,704
Cotton yarn:			
Pounds.....	46,787,005	41,262,481	39,937,206
Cost.....	\$10,852,298	\$8,780,109	\$7,337,382
Silk and spun silk yarn:			
Pounds.....	144,128	143,471	230,634
Cost.....	\$469,370	\$420,457	\$637,681
Other yarns:			
Pounds.....	1,709,440	1,632,762	1,715,626
Cost.....	\$965,106	\$359,136	\$604,219
Cotton waste:			
Pounds.....	1,310,239	2,140,344	2,266,614
Cost.....	\$80,421	\$122,785	\$108,042
Starch.....	\$52,359	\$80,072	\$43,184
Chemicals.....	\$480,337	\$417,171	\$455,106
Fuel and rent of power.....	\$450,030	\$175,112	\$308,308
All other materials.....	\$2,528,405	\$861,655	\$41,274
Products, total value.....	\$33,917,033	\$26,299,853	\$25,447,697
Fancy woven fabrics:			
Square yards.....	32,806,629	30,398,352	30,081,363
Value.....	\$5,119,822	\$3,983,355	\$3,000,347
Coltonades:			
Square yards.....	4,530,280	8,127,907	7,004,759
Value.....	\$1,150,291	\$1,471,202	\$1,134,039
Corduroy, cotton velvet, and plush:			
Square yards.....	3,038,945	2,944,944	3,045,504
Value.....	\$1,515,405	\$1,182,671	\$1,419,574
Upholstery goods:			
Tapestries (piece goods and cur- tains)—			
Square yards.....	8,783,807	8,691,354	9,586,600
Value.....	\$4,163,683	\$4,070,948	\$4,048,784
Lace and lace curtains—			
Square yards.....	66,867,709	41,374,250	30,925,198
Value.....	\$7,238,321	\$5,500,180	\$3,028,615
All other, including covers—			
Square yards.....	2,502,062	1,448,741	2,400,425
Value.....	\$1,072,348	\$601,133	\$527,302
Cotton towels and toweling:			
Square yards.....	10,501,557	5,408,582	(1)
Value.....	\$1,749,813	\$1,100,601	(1)
All other woven goods:			
Square yards.....	31,671,270	23,511,283	41,221,811
Value.....	\$3,347,791	\$2,344,249	\$3,323,550
Tape and webbing.....	\$2,141,821	\$1,742,185	\$984,516
Yarns manufactured for sale:			
Pounds.....	11,448,343	14,303,093	18,718,490
Value.....	\$2,591,458	\$2,812,445	\$2,811,123
Cotton waste not used for further manu- facture:			
Pounds.....	3,038,771	2,277,242	5,664,523
Value.....	\$95,340	\$79,970	\$115,247
All other products.....	\$3,720,940	\$1,341,824	\$3,848,594

¹ 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
Materials used, total cost.....	\$14,648,298	\$16,706,431	\$13,773,788
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.....	4,300,413	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.....	1,207,642	2,645,628	737,580
Cost.....	\$71,050	\$213,130	\$43,145
Yarns, purchased:			
Woolen—			
Pounds.....	22,320,073	26,077,669	28,029,987
Cost.....	\$4,306,006	\$5,144,231	\$4,212,605
Worsted—			
Pounds.....	5,360,220	6,202,815	6,504,583
Cost.....	\$2,592,410	\$2,945,055	\$2,481,729
Cotton—			
Pounds.....	14,385,050	17,296,402	13,215,760
Cost.....	\$2,674,819	\$2,937,387	\$1,939,047
Linen—			
Pounds.....	1,483,096	1,232,433	1,099,108
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	\$1,101,607
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	\$648,001	\$516,620
Products, total value.....	\$24,879,232	\$27,120,311	\$23,113,058
Carpets and rugs of all kinds:			
Square yards.....	36,222,080	45,703,852	43,046,207
Value.....	\$21,576,318	\$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	504,095	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	2,140,966
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	\$5,360,905	\$3,231,007
Wilton—			
Square yards.....	490,800	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	\$3,934,017

¹ 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
Materials used, total cost	\$5,012,770	\$2,728,895	\$1,866,306
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
Products, total value	\$13,022,617	\$7,350,311	\$4,243,352
Fur-felt hats:			
Dozens.....	668,696	413,506	280,880
Value.....	\$12,943,334	\$7,270,067	\$4,203,169
All other products.....	\$79,283	\$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
Materials used, total cost	\$59,113,124	\$55,411,927	\$42,403,503
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	\$394,981
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	\$1,573,689	\$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	\$229,412
All other materials.....	\$11,912,114	\$10,708,990	\$7,051,267
Products, total value	\$77,928,321	\$69,427,852	\$55,615,000
Leather.....	\$73,255,418	\$66,292,074	\$53,857,074
Sole.....	\$39,994,180	\$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	\$13,855,381	\$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	\$15,796,782
Black—			
Number.....	22,415,255	20,623,993	19,828,129
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
Products—Continued.			
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.....	\$1,698,576	\$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
Total	1,520	1,474	1,386	19,674,336	17,867,706	11,280,367
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. ¹	
	Num-ber.	Aggregate circulation per issue.	Num-ber.	Aggregate circulation per issue.	Num-ber.	Aggregate circulation per issue.
Total.....	1,520	19,674,336	1,424	19,265,581	96	408,755
Daily.....	223	2,924,306	215	2,848,057	8	76,249
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

¹ 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
Materials used, total cost.....	\$47,440,316	\$38,921,010	\$27,513,735
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
Products, total value.....	\$53,088,109	\$47,459,502	\$34,977,706
Illuminating oil:			
Barrels of 50 gallons.....	8,659,488	8,328,883	7,276,712
Value.....	\$24,319,743	\$25,840,501	\$20,390,606
Fuel oils (including gas oils):			
Barrels of 50 gallons.....	2,712,073	1,648,535	1,161,435
Value.....	\$3,207,308	\$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.....	326,309	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	\$1,639,906	\$1,079,149
Equipment:			
Stills, number.....	579	516	528
Heated by steam—			
Number.....	102	112	106
Capacity (barrels, 42 gallons).....	170,966	(¹)	(¹)
Heated by superheated steam—			
Number.....	6	4	8
Capacity (barrels, 42 gallons).....	1,750	(¹)	(¹)
Heated by fire—			
Number.....	471	400	414
Capacity (barrels, 42 gallons).....	571,234	(¹)	(¹)
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	42,683,056	(¹)
For refined petroleum—			
Number.....	2,138	1,191	1,198
Capacity, gallons.....	224,531,444	110,111,758	(¹)
Cooper shops, number.....	20	30	25
Tin shops, number.....	3	3	2

¹ 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
Materials used, total cost	\$44,845,047	\$28,339,983	\$21,805,858
Beef, slaughtered:			
Number.....	252,897	107,581	130,073
Cost.....	\$14,997,080	\$10,068,306	\$6,497,257
Calves slaughtered:			
Number.....	152,851	112,867	51,510
Cost.....	\$1,764,473	\$1,025,377	\$445,811
Sheep slaughtered:			
Number.....	445,471	369,494	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.....	\$4,898,467	\$3,369,703	\$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
Products, total value	\$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	\$9,436,606	\$7,059,710
Beef, salted or cured:			
Pounds.....	2,765,072	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	\$465,386
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.....	\$6,072,517	\$3,205,575	\$3,488,370
Pork, salted or cured:			
Pounds.....	78,559,883	78,670,062	93,425,184
Value.....	\$11,110,844	\$7,679,349	\$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.....	\$493,490	\$939,079	\$128,603
Lard:			
Pounds.....	36,121,632	34,123,478	26,811,272
Value.....	\$4,522,249	\$2,534,618	\$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	206,250	181,533
Pounds.....	19,170,659	14,019,934	8,303,760
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	\$1,947,997	\$1,238,416

¹ 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
Materials used, total cost	\$33,762,453	\$14,978,581	\$11,678,079
Coal charged into ovens, tons	36,983,568	23,083,044	19,490,030
Run of mine.....			
Unwashed.....	31,712,482	20,595,557	(1)
Washed.....	2,278,927	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	\$10,899,832
All other materials.....	\$1,696,731	\$555,533	\$778,247
Products, total value	\$51,816,449	\$28,924,229	\$22,282,358
Coke:			
Tons.....	21,905,525	16,273,046	13,245,594
Value.....	\$60,377,035	\$28,593,136	\$22,039,151
Made in beehive ovens—			
Tons.....	22,906,105	15,767,652	(1)
Value.....	\$45,315,189	\$27,542,495	(1)
Made in retort or by-product ovens—			
Tons.....	1,639,420	505,394	(1)
Value.....	\$5,001,840	\$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.....	\$16,083	\$11,560	\$32,660
Tar—			
Gallons.....	14,248,161	3,815,240	3,594,428
Value.....	\$209,000	\$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	\$190,164	\$61,073
All other.....	\$290,899	\$5,815	\$0,037
Equipment:			
Ovens, number at end of year.....	54,506	37,205	26,020
Beehive ovens.....	53,210	36,675	26,565
Retort or by-product ovens.....	1,296	530	355

¹ 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
Total value.....	\$44,782,558	\$38,518,702	\$29,570,943
Wheat flour:			
White—			
Barrels.....	3,738,812	3,952,446	
Value.....	\$20,094,935	\$19,764,264	4,450,832
Graham—			
Barrels.....	11,030	16,783	\$15,935,705
Value.....	\$56,043	\$79,805	
Corn meal and corn flour:			
Barrels.....	767,462	1,087,993	864,007
Value.....	\$2,369,701	\$2,691,670	\$1,684,721
Rye flour:			
Barrels.....	154,679	128,506	124,878
Value.....	\$628,999	\$536,576	\$385,834
Buckwheat flour:			
Pounds.....	50,760,006	45,117,852	46,144,362
Value.....	\$1,289,949	\$1,075,989	\$988,470
Barley meal:			
Pounds.....	196,800	331,000	42,240
Value.....	\$2,776	\$4,106	\$1,018
Hominy and grits:			
Pounds.....	52,106,637	33,938,974	16,308,420
Value.....	\$796,433	\$411,579	\$167,793
Feed:			
Tons.....	458,007	413,246	426,431
Value.....	\$13,206,931	\$9,090,426	\$7,985,943
Offal:			
Tons.....	191,629	185,642	162,548
Value.....	\$4,774,378	\$3,774,327	\$2,399,062
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
Materials used, total cost.....	\$12,633,913	\$9,325,184	\$6,435,463
Glass sand, tons.....	341,319	219,058	101,850
Soda ash, tons.....	85,607	56,742	46,398
Salt cake, tons.....	40,444	28,740	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	596,074
Carbon, tons.....	2,701	1,598	1,920
Manganese, pounds.....	706,621	648,926	467,581
Litharge and red lead, pounds.....	4,709,539	4,030,785	3,143,727
Potash and pearlsh, pounds.....	2,176,837	1,921,380	1,938,334
Grinding sand, tons.....	485,303	273,428	182,117
Rouge, pounds.....	955,525	717,071	532,524
Products, total value.....	\$32,817,936	\$27,671,693	\$22,011,130
Building glass.....	\$14,958,649	\$12,160,013	\$9,213,545
Window glass:			
50-foot boxes.....	3,635,449	2,410,400	2,008,340
Value.....	\$5,780,591	\$5,963,874	\$5,301,131
Plate glass:			
Sold rough—			
Square feet.....	151,009	8,652	579,905
Value.....	\$26,717	\$2,045	68,032
Polished—			
Square feet.....	31,841,174	17,080,604	10,877,250
Value.....	\$8,219,104	\$5,138,599	\$3,441,734
Skylight glass:			
Square feet.....	10,792,914	7,745,340	3,036,536
Value.....	\$543,019	\$357,587	\$161,203
All other.....	\$383,218	\$700,098	\$241,445
Pressed and blown glass.....	\$9,847,228	\$9,400,183	\$8,453,550
Bottles and jars.....	\$7,778,787	\$5,951,144	\$4,162,990
All other products.....	\$233,272	\$145,363	\$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	10,978,307
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	275,000
All other kinds.....	4,792,028	3,009,090	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. ¹
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	(²)	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	(²)
All other kinds.....	4,792,028	579,602	3,801,268	222,783	128,375

¹ Includes "wooden-pegged" and "wire-screw or metal-fastened."
² 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
Materials used, total cost	\$11,398,311	\$8,509,546	\$6,374,315
Pulp wood.....	\$2,111,025	\$1,222,491	\$711,450
Wood pulp, purchased:			
Tons.....	41,062	30,945	30,303
Cost.....	\$1,773,494	\$1,181,511	\$629,066
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	46,697
Cost.....	\$1,208,765	\$719,574	\$466,872
Manila stock, including jute bagging, rope, waste, and thread:			
Tons.....	9,544	11,971	7,851
Cost.....	\$327,212	\$299,469	\$270,466
Fuel and rent of power.....	\$1,544,116	\$1,196,885	\$627,366
All other materials.....	\$3,206,721	\$3,023,000	\$2,743,390
Products, total value	\$19,872,717	\$15,411,032	\$12,267,900
Book and cover paper:			
Tons.....	80,439	66,256	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.....	63,995	58,192	36,110
Value.....	\$3,954,578	\$3,154,038	\$2,024,486
Manila (rope, jute, tag, etc.)—			
Tons.....	5,702	5,964	6,930
Value.....	\$670,071	\$582,976	\$585,224
Heavy (mill wrappers, etc.)—			
Tons.....	36,619	31,043	5,921
Value.....	\$1,777,450	\$1,366,455	\$265,034
Bogus or wood manila—			
Tons.....	6,167	1,571	11,457
Value.....	\$278,093	\$72,808	\$567,003
All other—			
Tons.....	15,507	19,614	11,802
Value.....	\$1,225,064	\$1,131,709	\$617,225
Boards:			
Tons.....	53,963	26,398	20,486
Value.....	\$1,406,309	\$688,358	\$695,414
Building, roofing, asbestos, and sheathing paper:			
Tons.....	60,168	67,797	45,923
Value.....	\$1,637,000	\$1,847,762	\$1,313,436
All other products.....	\$2,624,720	\$2,493,379	\$1,855,132
Wood pulp produced (including that used in mills where manufactured), total tons	136,850	83,114	85,433
Ground, tons.....	2,760	19,000	4,505
Soda fiber, tons.....	80,776	53,682	61,662
Sulphite fiber, tons.....	53,314	10,432	19,266
Machinery:			
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	60	63
Capacity per 24 hours, tons.....	706	543	(1)
Pulp equipment:			
Grinders, number.....	5	5	20
Digesters, number.....	105	80	76
Soda fiber.....	83	73	(1)
Sulphite fiber.....	22	16	(1)
Capacity, yearly, tons of pulp.....	109,961	130,547	94,525
Ground, tons.....	16,908	4,400	(1)
Soda, tons.....	87,903	73,873	(1)
Sulphite, tons.....	65,150	52,274	(1)

¹ 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
Total value	\$15,978,162	\$11,773,719
Acids:		
Muriatic—		
Pounds.....	16,753,080	.....
Value.....	\$176,318	(1)
Citric, oxalic, lactic, and hydrofluoric.....	\$322,503	(1)
All other.....	\$1,427,442	\$1,086,023
Sodas:		
Tons.....	25,090	(2)
Value.....	\$614,985	\$1,066,134
Alums:		
Pounds.....	84,273,500	100,832,827
Value.....	\$1,139,000	\$1,249,856
Coal-tar distillery products.....	\$318,046	\$15,120
Cyanides:		
Pounds.....	2,806,326	3,137,776
Value.....	\$337,567	\$435,770
Bleaching materials.....	\$8,830	\$35,644
Electrochemicals.....	\$903,196	(2)
Compressed or liquefied gases.....	\$930,873	\$382,330
Fine chemicals:		
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 ether.....	\$4,004,389	\$2,842,634
Copperas:		
Pounds.....	21,531,000	6,932,050
Value.....	\$48,062	\$18,200
Epsom salts, tin salts, and zinc salts.....	\$499,756	\$416,350
All other general chemicals.....	\$4,795,557	\$1,870,840
All other products.....	\$115,685	\$1,168,727

¹ Included in other acids.

² 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
Total value	\$14,019,744	\$11,637,038	\$11,299,465
Pigments:			
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.....	21,496,303	19,602,384	27,893,478
Value.....	\$1,183,596	\$1,030,468	\$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.....	6,158,396	3,343,280	594,379
Value.....	\$200,206	\$47,772	\$12,842
Paints in oil:			
White lead in oil—			
Pounds.....	32,401,207	35,780,225	(2)
Value.....	\$1,095,179	\$1,898,758	(2)
Paste—			
Pounds.....	29,741,101	22,061,202	\$50,071,523
Value.....	\$1,009,481	\$1,308,355	\$3,050,976
Already mixed for use—			
Gallons.....	3,083,523	2,100,072	2,163,250
Value.....	\$2,708,202	\$1,846,900	\$1,505,049
Varnishes and japans:			
Oleoresinous varnishes—			
Gallons.....	397,010		
Value.....	\$350,105		
Damar and similar turpentine and benzine varnishes—			
Gallons.....	502,057	1,174,352	1,408,656
Value.....	\$309,029	\$1,082,384	\$1,236,672
Spirit varnishes, not turpentine—			
Gallons.....	72,567	83,536	45,130
Value.....	\$93,945	\$136,980	\$77,653
Pyroxylin varnishes—			
Gallons.....	50,808	30,073	.....
Value.....	\$85,260	\$10,585	.....
Dryers, japans, and lacquers—			
Gallons.....	2,100,056	(4)	(4)
Value.....	\$800,082	\$257,502	\$458,036
All other.....	\$170,121	\$374,489	\$92,455
Fillers, putty, and water paints	\$408,517	\$300,439	(2)
All other products.....	\$2,338,073	\$1,775,012	\$1,076,377

¹ Includes "White lead in oil."
² Included in "White lead, dry."

³ Includes paste fillers.
⁴ 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
Total value	\$13,544,065	\$11,581,115	\$10,290,006
Butter:			
Packed solid—			
Pounds.....	9,283,220	10,660,820	13,458,287
Value.....	\$2,741,957	\$2,278,140	\$2,767,190
Prints or rolls—			
Pounds.....	21,200,997	25,004,021	23,678,874
Value.....	\$6,871,342	\$6,413,222	\$5,536,722
Cheese:			
Full cream—			
Pounds.....	9,423,849		
Value.....	\$1,314,704		
Part cream—			
Pounds.....	490,685	11,453,424	10,267,443
Value.....	\$42,921	\$1,007,815	\$888,783
Other kinds—			
Pounds.....	1,319,593		
Value.....	\$57,265		
Condensed milk:			
Sweetened—			
Pounds.....	10,777,613	10,160,432	
Value.....	\$738,399	\$1,177,969	
Unsweetened—			
Pounds.....	15,683,771	1,204,268	2,862,000
Value.....	\$743,014	\$51,633	\$255,835
Cream sold:			
Pounds.....	4,754,954	1,778,703	680,316
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
Total value.....	\$22,297,310	\$18,039,187	\$14,081,844
Brick and tile, terra-cotta, and fire-clay products.....	\$19,463,479	\$16,516,697	\$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	\$4,993,194	\$4,519,324
Fire—			
Thousands.....	1,417,830	356,666	558,016
Value.....	\$8,107,807	\$6,289,231	\$4,021,339
Vitrified paving, etc.—			
Thousands.....	116,735	91,646	89,017
Value.....	\$1,329,317	\$941,588	\$702,782
Front, including fancy colored—			
Thousands.....	194,005	121,798	88,784
Value.....	\$2,111,550	\$1,281,558	\$959,000
Fancy or ornamental	\$27,003	\$134,854	\$54,000
Sand lime—			
Thousands.....	10,091	7,792	.....
Value.....	\$62,255	\$69,544	.....
Drain tile.....	\$14,668	\$14,090	\$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.....	\$324,800	\$198,437	\$110,210
Stove lining.....	\$97,270	(²)	\$106,851
All other.....	\$464,034	\$1,228,053	\$1,112,607
Pottery.....	\$1,624,335	\$1,325,581	\$1,164,517
White ware, including C. G. ware, white granite, semiporcelain ware, and semivitreous porcelain ware.....	\$812,338	\$547,798	\$200,757
Sanitary ware.....	\$252,951	\$86,058	\$41,727
Stoneware and yellow and Rockingham ware.....	\$297,029	\$386,423	\$174,450
China, bone china, delft, and bell-glaze ware.....	\$91,757	\$30,000	.....
Red earthenware.....	\$159,796	\$136,532	\$90,786
All other.....	\$10,464	\$138,770	\$647,797
All other products.....	\$1,209,406	\$196,909	.....

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

² 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
Total value.....	\$12,748,383	\$11,493,128	\$10,455,016
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.....	\$2,996,485	\$2,830,372	\$2,161,435
Business—			
Number.....	21,414	21,722	(¹)
Value.....	\$2,143,007	(¹)	(¹)
Farm—			
Number.....	11,964	13,321	(¹)
Value.....	\$766,490	(¹)	(¹)
Government, municipal, etc.—			
Number.....	256	352	(¹)
Value.....	\$80,979	(¹)	(¹)
Public conveyances:			
Number.....	432	333	141
Value.....	\$133,811	\$117,093	\$27,645
Sleighs and sleds:			
Number.....	3,210	5,551	5,509
Value.....	\$90,610	\$150,461	\$118,449
All other products, including parts and repair work.....	\$7,789,343	\$6,031,159	\$5,330,707

¹ 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-

dolphia, 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.....	0,331	04.7	July.....	0,756	09.1
February.....	0,357	05.0	August.....	0,716	08.0
March.....	0,380	05.2	September.....	0,820	09.7
April.....	0,474	06.1	October.....	0,849	10.0
May.....	0,630	07.8	November.....	0,802	09.5
June.....	0,771	09.2	December.....	0,782	09.3

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	549
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	539
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

¹ 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).							
Expressed in thousands.													
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	\$1,582,500	\$2,026,742	\$1,044,182
	1904	23,495	855,392	26,029	66,081	763,282	2,302,398	1,995,837	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	2,071	37	233	2,401	3,842	6,491	257	1,223	2,082	4,805	2,723
	1904	43	2,608	54	220	2,394	3,230	5,460	227	1,103	2,075	5,017	2,942
	1899	50	1,825	64	197	1,564	2,240	4,102	184	688	1,232	3,108	1,956
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	3,506	29	338	3,199	2,746	6,071	384	1,808	4,051	6,532	2,481
	1904	6	631	.....	65	566	423	1,453	70	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	165	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	660	196
Boots and shoes, including out stock findings.	1909	140	11,820	107	840	10,822	4,337	11,661	1,161	4,266	12,064	20,210	8,155
	1904	133	9,085	195	500	8,900	3,221	7,394	485	3,263	8,907	14,884	5,977
	1899	169	10,162	241	674	9,247	.....	7,051	588	3,148	8,682	13,830	5,148
Boxes, cigar	1909	77	1,970	96	73	1,801	1,818	1,626	67	580	1,252	2,328	1,070
	1904	88	1,770	115	79	1,585	1,754	1,194	48	428	1,023	1,870	856
	1899	101	1,334	128	36	1,170	.....	993	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	2,804
	1904	98	4,516	118	219	4,170	1,560	2,388	199	1,213	1,676	3,906	2,280
	1899	87	3,670	101	126	3,443	.....	1,978	110	878	1,260	2,980	1,725
Brass and bronze products	1909	104	2,524	94	350	2,080	4,096	8,392	456	1,234	5,605	8,455	2,850
	1904	98	2,029	100	234	1,095	5,261	5,261	273	949	3,271	5,443	2,172
	1899	85	2,106	92	233	1,781	.....	4,348	251	830	3,920	5,980	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	10,964	6,044	19,100	861	5,392	19,300	33,370	14,070
	1899	2,443	10,981	2,552	1,031	7,308	.....	10,986	721	3,255	11,055	20,784	9,729
Brick and tile	1909	326	8,943	349	536	8,058	38,247	20,150	546	3,881	2,453	9,225	6,722
	1904	370	8,430	445	424	7,561	31,235	13,887	355	3,213	1,509	7,280	5,681
	1899	385	7,500	507	269	6,733	20,921	10,507	248	2,626	1,138	5,954	4,810
Brooms and brushes	1909	130	1,130	162	117	800	811	1,552	97	410	1,255	2,304	1,049
	1904	152	1,100	173	88	848	467	961	83	395	813	1,708	895
	1899	167	1,210	206	88	925	.....	1,026	62	348	941	1,769	828
Butter, cheese, and condensed milk	1909	536	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	3,640	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	1,210	25	71	1,123	858	977	95	404	746	1,565	819
	1904	21	1,087	20	58	1,009	796	710	54	305	300	900	540
	1899	21	1,212	30	42	1,140	471	557	30	321	403	909	506
Canning and preserving	1909	83	4,379	97	1,529	2,753	3,474	8,867	1,518	947	4,065	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	.....	3,499	730	637	2,927	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	16,700	27,120	10,414
	1899	93	13,358	103	330	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	8,080	825	403	7,461	9,107	12,368	397	3,647	4,902	11,493	6,591
	1899	797	.....	.....	318	6,399	.....	10,684	296	3,070	4,246	10,455	6,209
Cars and general shop construction and repairs by steam-railroad companies.	1909	132	50,545	.....	3,900	46,645	50,774	45,341	2,980	30,157	41,401	76,035	34,634
	1904	128	44,109	.....	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	12,886	19,182	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	687	483	1,260	776
	1899	10	1,027	.....	22	1,005	.....	766	13	574	506	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	6,290	6	414	5,840	4,426	33,829	426	3,112	12,189	10,261	7,072
Cement	1909	27	8,092	.....	822	8,080	102,904	50,856	1,047	3,875	10,108	18,855	8,747
	1904	22	6,891	3	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	15,078	5,778
	1904	41	3,692	20	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	53	351	865	1,124	83	121	1,390	2,134	744
	1899	3	174	3	48	123	.....	800	35	40	870	1,039	169
Clocks and watches, including cases and materials.	1909	8	1,587	3	189	1,395	1,033	4,651	183	728	1,172	2,873	1,701
	1904	6	906	5	103	798	596	2,774	107	373	814	1,549	735
	1899	6	.....	.....	74	1,180	.....	3,387	75	549	801	1,751	950

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

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

³ Not reported separately.

⁴ 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.													
STATE—Continued													
Clothing, men's, including shirts.....	1909	606	26,405	1,099	1,683	23,423	5,288	\$20,700	\$1,092	\$8,092	\$10,863	\$30,682	\$19,810
	1904	451	19,570	706	1,230	17,574	4,198	16,044	1,015	6,853	10,617	31,714	15,097
	1899	621	.....	.....	1,166	17,108	.....	13,443	1,007	6,088	15,405	30,055	14,050
Clothing, women's.....	1909	401	18,080	646	1,733	15,701	2,514	12,255	1,667	7,140	18,156	32,837	14,681
	1904	223	9,879	330	859	8,600	1,585	6,116	616	3,427	7,903	15,086	7,183
	1899	230	9,233	346	596	8,311	862	5,197	525	2,606	6,270	11,096	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	1,905	1,980	984
	1899	22	767	27	74	606	.....	2,017	71	281	685	1,214	629
Coke.....	1909	146	16,219	83	805	15,331	26,091	08,023	943	8,436	33,762	51,816	18,054
	1904	110	10,975	72	749	10,154	44,478	56,839	734	5,173	14,972	28,924	13,945
	1899	89	9,841	40	518	9,283	24,525	20,213	481	4,517	11,078	22,282	10,004
Confectionery.....	1909	251	6,436	255	773	5,408	3,869	8,204	813	1,760	8,203	13,542	5,330
	1904	150	5,543	162	652	4,729	3,603	6,079	536	1,400	5,881	10,073	4,192
	1899	135	.....	.....	616	4,249	.....	4,367	490	1,101	4,204	7,483	3,186
Cooperage and wooden goods, not elsewhere specified.	1909	133	1,903	155	118	1,630	3,681	3,631	122	756	2,089	4,030	1,041
	1904	129	1,745	139	110	1,496	2,070	2,583	108	720	2,419	3,073	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	17,683	880	3,444	8,851	17,197	8,346
	1904	205	5,731	260	450	5,021	2,535	9,192	475	2,523	4,940	9,087	4,785
	1899	179	.....	.....	349	3,077	.....	5,501	324	1,652	3,643	7,087	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	120	2,328	16	80	2,232	4,344	4,798	156	666	3,048	5,138	1,490
	1899	121	2,798	25	90	2,683	.....	6,103	104	762	5,448	7,257	1,800
Cork, cutting.....	1909	10	1,789	0	53	1,727	2,045	3,362	104	535	1,060	2,065	1,290
	1904	13	2,097	10	61	2,026	1,989	3,114	116	620	1,802	3,170	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	33,602	1,612	7,034	18,757	33,917	15,160
	1904	105	16,099	209	627	15,263	22,611	27,174	918	5,943	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
Cruetibles.....	1909	5	135	4	25	106	336	910	59	60	430	728	298
	1904	5	124	1	34	89	360	950	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	120	4,832	114	468	4,250	11,311	12,406	540	2,280	3,431	8,022	4,591
	1904	102	4,096	90	265	3,735	13,416	8,311	307	1,735	2,994	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	2,799	254	464	1,325	2,745	1,420
	1904	20	1,010	21	102	887	339	2,070	108	368	1,410	2,437	927
	1899	18	720	20	70	680	.....	1,288	79	327	981	1,820	848
Dyeing and finishing textiles.....	1909	135	6,088	155	447	6,086	13,560	13,242	598	2,088	5,331	12,059	6,728
	1904	123	5,070	161	324	4,585	9,712	9,023	445	2,070	2,701	6,780	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	31,951	17,816
	1904	80	12,206	56	2,746	9,404	29,278	58,393	3,090	5,300	11,305	26,258	14,863
	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	19	163	897	5,699	5,320	233	527	2,516	4,013	1,497
	1899	36	748	17	102	629	3,673	2,810	130	320	1,500	2,595	1,085
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	894	528
	1899	48	823	64	47	712	.....	470	25	210	414	886	472
Fertilizers.....	1909	48	1,517	52	241	1,224	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	1,060
Files.....	1909	7	1,298	4	77	1,217	1,313	2,686	91	528	427	1,540	1,113
	1904	8	993	8	32	953	1,082	1,368	53	360	365	1,127	732
	1899	14	1,205	17	39	1,149	.....	1,050	58	445	458	1,226	778
Flour-mill and gristmill products.....	1909	1,450	4,696	1,890	368	2,432	69,212	21,277	372	1,188	38,170	44,783	6,613
	1904	1,195	4,496	1,558	306	2,432	61,538	18,766	237	1,247	33,205	38,519	5,314
	1899	1,073	.....	.....	265	1,906	.....	14,080	202	946	24,865	29,571	4,706
Foundry and machine-shop products...	1909	1,695	100,595	1,889	12,295	89,821	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	69,030	153,393	84,357
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fur goods.....	1909	58	340	72	50	227	14	1,086	37	160	544	1,217	673
	1904	27	255	36	29	190	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	9,924	17,211	18,542	1,232	4,820	9,039	18,952	9,013
	1904	220	8,044	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	483	2,827	4,524	10,060	5,545
Gas and electric fixtures and lamps and reflectors.	1909	75	1,876	73	321	1,482	1,249	2,320	333	765	1,230	2,962	1,723
	1904	60	1,628	56	224	1,348	873	2,130	255	703	835	2,543	1,708
	1899	48	1,562	53	157	1,352	.....	2,261	181	677	1,055	2,512	1,457

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

² 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.													
STATE—Continued.													
Gas, illuminating and heating.....	1909	99	4,584	13	1,452	3,119	9,374	\$61,857	\$1,230	\$1,501	\$4,090	\$15,840	\$11,741
	1904	90	3,953	3	1,068	2,882	6,582	57,064	846	1,473	3,143	10,809	7,066
	1899	89	3,721	.....	577	3,144	3,091	47,313	457	1,500	3,151	8,809	4,720
Glass.....	1909	112	24,924	34	1,180	23,710	55,182	58,632	1,730	13,496	12,634	32,818	20,154
	1904	122	21,993	32	1,167	20,794	47,750	40,612	1,597	12,518	6,325	27,672	18,347
	1899	119	20,343	81	842	19,420	29,595	28,287	1,110	10,287	6,435	22,011	15,570
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	140	453	43	204	526	1,063	537
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hats, fur-felt.....	1909	38	7,537	46	271	7,220	5,935	14,430	423	3,725	5,013	13,023	8,010
	1904	25	4,931	29	283	4,610	2,745	8,778	346	2,122	2,729	7,350	4,021
	1899	20	3,092	22	180	2,890	1,737	6,726	270	1,187	1,897	4,243	2,376
Hosiery and knit goods.....	1909	464	40,248	599	1,533	38,200	21,797	38,089	1,658	11,750	27,218	49,658	22,440
	1904	377	30,654	506	1,377	28,171	14,740	23,033	1,607	7,961	16,038	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	116	304	1,606	35,800	14,404	338	1,023	1,225	4,823	3,598
	1904	109	1,577	57	284	1,236	23,570	6,712	262	732	711	2,030	2,225
	1899	73	1,227	51	246	930	16,640	8,200	170	538	392	2,039	1,047
Ink, printing.....	1909	8	240	6	75	165	483	742	94	105	623	1,050	427
	1904	8	178	6	73	99	443	500	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	476,050	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	80,322	107,455	21,133
	1899	77	16,712	28	600	16,075	217,820	72,513	787	8,038	64,095	101,575	37,450
Iron and steel, steel works and rolling mills.	1909	180	137,433	34	10,488	120,911	896,440	522,898	13,394	85,113	329,013	500,344	171,331
	1904	186	110,082	49	8,120	110,004	820,823	355,592	10,658	65,300	237,875	363,774	125,890
	1899	214	99,350	102	4,459	94,789	575,030	237,210	5,398	53,870	210,048	332,870	113,227
Iron and steel pipe, wrought.....	1909	11	4,143	5	265	3,873	12,472	15,325	337	2,177	14,022	18,291	4,209
	1904	11	3,201	3	150	3,048	8,277	8,506	219	1,340	7,172	6,621	2,449
	1899	10	3,797	1	121	3,675	.....	11,698	151	1,079	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	200	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	2,671
	1904	134	3,012	170	320	2,522	900	3,553	286	1,001	2,643	5,153	2,510
	1899	134	.....	.....	202	2,396	.....	2,464	182	852	1,878	3,098	2,120
Leather, tanned, curried, and finished..	1909	163	14,970	151	811	14,008	37,440	80,989	1,344	6,801	59,113	77,020	18,813
	1904	205	15,383	216	754	14,413	31,075	72,972	927	6,418	55,412	69,428	14,016
	1899	254	14,162	260	506	13,396	29,760	57,320	644	5,458	42,404	55,015	13,211
Lime.....	1909	348	3,791	303	140	3,258	8,082	6,930	137	1,259	1,638	3,342	2,304
	1904	124	2,601	143	92	2,306	4,996	3,979	96	892	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	5,985	8,748	231	294	2,288	4,902	2,614
	1899	73	667	99	97	471	3,409	5,840	123	250	1,599	5,368	3,789
Liquors, malt.....	1909	237	9,097	131	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	46,519	68,884	2,253	4,072	9,277	34,864	25,587
	1899	208	5,492	171	816	4,505	29,472	63,084	1,474	2,884	6,010	26,163	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	13,529	24,280	56,713	32,427
	1899	2,273	.....	.....	1,190	31,008	.....	43,852	979	13,017	24,904	53,886	28,922
Marble and stone work.....	1909	590	10,699	764	611	9,264	29,937	13,964	585	4,800	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	.....	.....	102	3,241	.....	4,612	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	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	2,059	1,135	1,272	100	645	1,483	2,759	1,276
	1899	41	1,071	50	75	946	.....	670	57	305	792	1,564	772
Musical instruments, pianos and organs and materials.	1909	30	1,331	21	128	1,182	1,260	3,158	165	505	1,248	2,382	1,134
	1904	28	1,110	20	82	1,008	877	2,286	104	525	646	1,757	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	629	55	120	155	471	310
	1899	17	.....	.....	54	424	.....	467	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	4,810
	1904	98	2,432	96	517	1,819	7,714	12,319	613	923	8,005	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	7,196	32	608	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	21,469	518	2,839	8,510	15,411	6,001
	1899	73	5,105	74	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).							
STATE—Continued.													
Paper goods, not elsewhere specified . . .	1909	34	1,700	32	311	1,357	1,348	\$3,304	\$320	\$538	\$2,225	\$3,710	\$1,494
	1904	28	771	39	105	627	549	790	119	240	985	1,062	677
	1899	20	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	12,056	7,346
	1904	243	3,420	235	800	2,325	1,402	7,809	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	2,900	35,212	38,900	768	1,861	47,440	53,088	5,648
	1904	43	4,657	22	408	4,227	11,900	32,847	557	2,371	33,922	47,400	8,538
	1899	38	3,616	40	277	3,209	13,328	20,581	403	1,682	27,614	34,978	7,464
Photo-engraving.....	1909	31	682	33	160	489	197	060	175	440	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	130	0,784	99	682	0,003	23,142	27,225	556	4,357	4,100	13,072	8,903
	1904	158	9,375	87	610	8,669	23,475	25,707	738	3,079	2,000	10,739	7,850
	1899	143	9,512	172	408	8,872	16,037	11,300	451	3,007	2,452	8,127	5,075
Printing and publishing.....	1909	2,461	36,783	2,557	0,520	24,006	25,839	71,453	8,836	14,335	22,753	70,584	47,831
	1904	2,162	31,079	2,354	0,397	22,328	20,020	61,094	6,218	12,093	16,074	55,003	38,089
	1899	1,909	26,464	2,271	4,292	19,001	-----	41,772	3,090	0,785	11,100	40,354	29,158
Safes and vaults.....	1909	7	777	1	81	695	1,163	1,827	06	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	161	290	721	401
Saws.....	1909	15	2,087	18	193	1,870	3,399	5,961	205	1,158	1,400	3,794	2,388
	1904	10	1,900	11	61	1,837	2,574	4,747	117	1,025	1,067	3,323	1,956
	1899	12	1,513	15	87	1,411	-----	4,602	93	735	900	2,500	1,504
Shipbuilding, including boat building..	1909	31	3,833	34	241	3,568	7,771	15,203	415	2,120	2,710	6,178	3,468
	1904	33	6,800	28	321	6,511	8,583	18,067	482	3,473	5,180	10,327	5,147
	1899	38	7,279	41	161	7,077	19,306	14,141	254	3,645	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	390	1,900	1,216	43	142	1,713	2,204	491
	1899	26	421	19	34	368	1,632	672	25	148	1,070	1,440	379
Silk and silk goods, including throwsters	1909	226	38,178	143	1,566	30,400	41,062	49,679	2,132	11,443	35,166	62,061	26,895
	1904	168	28,240	133	1,102	20,915	28,390	31,312	1,300	6,073	24,267	39,334	15,067
	1899	121	21,004	131	745	21,028	23,210	20,894	719	4,030	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	7,300	8,338	367	1,618	23,340	33,101	4,701
	1899	131	2,283	183	377	1,723	-----	6,636	318	945	21,866	25,837	3,731
Smelting and refining, not from the ore..	1909	24	278	17	55	206	566	1,605	80	143	2,078	3,577	590
	1904	18	307	17	60	240	410	1,161	77	150	2,380	2,755	475
	1899	16	303	18	72	213	-----	804	50	110	2,064	2,620	456
Soap.....	1909	59	1,740	74	475	1,197	2,598	5,428	344	556	5,047	9,124	3,177
	1904	60	1,460	71	205	1,184	2,152	4,411	253	499	4,054	6,950	2,505
	1899	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Steam packing.....	1909	31	2,231	18	536	1,677	5,817	7,022	471	814	2,081	4,987	2,006
	1904	24	1,383	11	175	1,197	4,794	4,689	252	533	1,680	4,050	2,370
	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	3,053	10,884	487	2,723	2,302	7,006	5,394
	1899	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Tin plate and terneplate.....	1909	17	2,548	3	199	2,346	1,565	5,520	275	1,339	22,898	25,234	2,336
	1904	19	2,613	1	101	2,421	5,895	4,692	210	1,207	17,690	19,342	1,752
	1899	25	1,778	11	189	1,578	1,420	3,027	147	814	10,364	12,531	2,167
Tobacco manufactures.....	1909	2,432	37,580	2,069	1,093	33,188	2,638	27,604	1,785	11,620	20,713	50,161	29,448
	1904	2,898	35,265	3,139	1,378	30,748	1,714	23,371	1,117	10,438	15,037	40,897	24,060
	1899	2,084	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	329	260	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	170	75	443	368
Umbrellas and canes.....	1909	45	2,551	44	102	2,315	1,570	5,110	325	906	3,148	5,060	1,012
	1904	37	2,883	37	110	2,736	1,501	6,081	131	842	3,310	5,133	1,814
	1899	44	-----	-----	184	2,830	-----	1,898	109	834	3,444	5,870	2,426
Wall paper.....	1909	11	1,196	-----	140	1,056	1,371	3,511	249	520	2,300	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	1,084	2,060	1,276
	1904	63	1,426	42	135	1,249	2,297	5,000	111	598	1,700	3,003	1,384
	1899	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Woolen, worsted, and felt goods, and wool hats.	1909	217	28,092	245	1,038	27,400	60,405	75,170	1,746	10,947	54,634	77,447	22,813
	1904	232	25,367	201	825	24,251	39,082	45,103	1,151	8,791	37,247	55,934	18,687
	1899	260	25,490	301	564	24,631	-----	39,739	692	8,715	31,364	48,765	17,401
All other industries.....	1909	2,893	68,062	3,129	8,500	56,433	125,775	195,602	10,259	28,745	135,749	211,025	75,276
	1904	2,313	64,665	2,674	4,900	57,001	107,376	146,717	5,691	27,700	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.	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.														
ALLENTOWN—All industries..	1909	274	12,628	314	833	11,481	19,101	\$21,569	\$874	\$5,061	\$15,581	\$26,263	\$10,682	
	1904	257	9,859	312	593	8,984		13,455	524	3,312	9,873	16,841	6,968	
	1899	216				359	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	36	724	365	669	40	207	762	1,302	540	
	1904	10	778	16	46	716		569	39	251	691	1,126	435	
	1899	29	715	14	38	663		649	25	210	586	901	315	
Bread and other bakery products.....	1909	32	183	31	6	146	82	295	4	77	276	475	199	
	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	0	141	335	260	6	56	37	175	138	
	1904	5	111	3	0	102		228	5	37	21	101	80	
	1899	5	106	9	2	95		118	1	29	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	5	40	9		31		75		18	14	52	38	
	1899	5				24		51		12	13	42	29	
Clothing, men's, including shirts.....	1909	5	188	8	6	169	14	275	6	64	130	252	122	
	1904	6	242	13	2	227		168	3	85	247	429	182	
	1899	26	239	12	20	207		204	10	78	270	456	186	
Copper, tin, and sheet-iron products.....	1909	3	58	6	1	46	23	53	1	25	40	83	43	
	1904	3	78	8	6	65		96	3	27	59	118	59	
	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	26	900	32	63	805		1,163	55	356	451	1,202	751	
	1899	18	607	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	29	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	29	4		25		129		13	24	63	39	
	1899													
Liquors, malt.....	1909	4	129	8	18	103	501	1,632	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	310	162	
	1904	7	133	13	6	114		258	4	50	107	211	104	
	1899	7	118	12	4	102		157	2	46	92	189	97	
Marble and stone work.....	1909	4	23	6	1	17	18	22	(*)	10	13	32	10	
	1904	3	15	4		11		13		7	6	19	13	
	1899													
Printing and publishing.....	1909	28	255	31	34	190	147	496	26	93	101	339	238	
	1904	26	190	34	23	139		380	10	62	61	230	169	
	1899	17	140	24	5	111		317	3	52	44	174	130	
Silk and silk goods, including throwsters.	1909	15	3,937	9	150	3,778	2,808	6,405	171	1,484	4,290	7,456	3,157	
	1904	9	2,806	3	92	2,711		3,142	108	826	2,230	3,091	1,071	
	1899	7	2,449	4	65	2,380		2,149	68	607	2,008	3,468	1,460	
Tobacco manufactures.....	1909	47	1,190	47	39	1,104	152	439	34	439	682	1,446	764	
	1904	56	1,122	58	72	962		328	54	305	593	1,290	697	
	1899	48	375	47	20	308		196	15	90	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	52	2,233	49	174	2,010		4,941	162	871	4,624	6,349	1,725	
	1899	58			92	1,992		5,266	80	866	4,507	6,613	2,106	
ALTOONA—All industries.....	1909	44	8,100	41	650	8,499	9,158	\$16,094	\$649	\$5,750	\$9,134	\$16,793	\$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	26	42	238	520	258	
	1904	3	394	5	6	59		762	7	45	87	323	236	
	1899	3	42	5	0	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	5	214	7	20	187		172	16	102	298	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		180	20	51	40	159	113	
	1899	6	155	7	12	130		133	11	68	33	144	111	
All other industries.....	1909	17	8,605	18	566	8,026	8,010	14,222	572	5,555	8,634	15,605	6,971	
	1904	41	9,270	45	392	9,163		10,088	315	5,349	6,750	13,277	6,527	
	1899	30			274	6,268		5,781	189	3,573	6,605	10,611	4,006	

1 Figures do not agree with those published in 1904, because it was necessary to revise the totals in order to include data only for those establishments located within the corporate limits of the city.
 2 Excluding statistics for one establishment, to avoid disclosure of individual operations.
 3 Less than \$500.
 4 Excluding statistics for two establishments, to avoid disclosure of individual operations.
 * 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 employees.	Wage earners (average number).							
Expressed in thousands.													
ERIE—All industries.....	1909	391	11,142	364	982	9,796	22,038	\$30,020	\$1,289	\$5,101	\$12,064	\$24,226	\$12,162
	1904	261	9,337	233	689	8,415	22,963	22,963	819	4,363	9,427	18,639	9,212
	1899	260			617	8,032	19,063	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	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	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	103	216	8	65	111	216	105
	1904	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
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	1,350	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	5,199
	1904	43	4,320	15	290	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	11	348	19	32	297		727	31	121	430	769	339
Marble and stone work.....	1909	6	22	9		13	24	51		12	55	99	44
	1904	5	27	7		20		31		16	34	65	31
	1899	6	40	7	5	28		66	2	27	56	110	51
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	409	610	1,247	90	182	250	829	570
	1904	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
Stoves and furnaces, including gas and oil stoves.	1909	8	575	3	41	531	408	1,013	63	324	249	843	594
	1904	6	502	3	42	457		844	58	264	270	774	504
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	110	3,438	129	285	3,024	9,467	8,887	394	1,355	4,632	8,090	3,464
	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	3,260	5,518	2,258
HARRISBURG—All industries.....	1909	199	11,024	190	1,091	9,743	22,355	\$22,925	\$1,068	\$4,541	\$14,083	\$22,725	\$8,642
	1904	175	8,501	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	30	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	20	37	92	55
	1904	5	60	4	2	54		104	2	29	23	75	52
	1899	7			5	43		81	5	21	23	59	36

¹ Figures do not agree with those published in 1904, because it was necessary to revise the totals in order to include data only for those establishments located within the corporate limits of the city.
² Excluding statistics for two establishments, to avoid disclosure of individual operations.
³ Figures can not be shown without disclosing individual operations.
⁴ Excluding statistics for one establishment, to avoid disclosure of individual operations.
⁵ 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.													
HARRISBURG—Continued.													
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	04	233	310	954	638
	1899	6	625	4	42	579	.....	1,271	56	201	374	841	467
Iron and steel, steel works and rolling mills.	1909	5	2,214	.....	78	2,136	15,937	7,660	147	904	6,157	7,621	1,464
	1904	4	2,122	.....	73	2,049	.....	5,777	128	871	3,562	4,529	907
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liquors, malt.....	1909	3	67	2	8	57	347	308	18	37	105	361	256
	1904	3	51	4	6	41	.....	356	7	25	64	218	181
	1899	3	30	3	4	32	.....	261	2	21	42	186	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	11
	1899	5	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	119	437	.....	888	86	229	152	846	694
	1899	10	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	3,639	.....	6,048	168	1,809	5,188	7,834	2,676
	1899	62	.....	.....	274	4,671	.....	5,432	272	1,833	7,975	12,531	4,556
JOHNSTOWN—All industries..													
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	6,914	.....	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	39
Liquors, malt.....	1909	4	176	5	32	139	1,020	1,670	42	91	186	608	622
	1904	3	125	3	22	100	.....	734	30	64	110	508	398
	1899	4	64	3	12	60	.....	525	12	42	88	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	.....	108	81	50	45	188	143
	1899	10	87	12	1	74	.....	146	1	30	17	94	77
All other industries.....	1909	58	11,009	80	870	10,110	117,683	44,727	807	6,014	31,780	46,465	14,679
	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	2,870	13,763	20,797	7,034
PHILADELPHIA—All industries.													
Artificial flowers and feathers and plumes.	1909	29	915	35	76	804	70	934	72	262	675	1,314	639
	1904	19	627	27	47	553	.....	409	38	170	367	722	375
	1899	24	949	34	42	873	.....	544	53	209	467	949	482
Belting and hose, leather.....	1909	13	183	13	50	119	286	637	63	81	809	1,104	295
	1904	10	135	10	29	96	.....	495	27	63	424	642	218
	1899	5	83	8	15	60	.....	340	9	35	299	428	129
Boots and shoes, including cut stock and findings.	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	2,943	5,386	2,443
	1899	80	4,170	118	224	3,828	.....	2,804	224	1,595	3,700	6,395	2,635
Boxes, cigar.....	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
Boxes, fancy and paper.....	1909	65	3,682	67	236	3,379	1,382	2,457	238	1,113	1,631	3,522	2,191
	1904	54	3,435	65	170	3,200	.....	1,790	165	959	1,298	3,037	1,769
	1899	50	2,874	55	110	2,709	.....	1,598	99	709	1,006	2,413	1,407
Brass and bronze 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	43	1,414	63	142	1,209	.....	2,551	157	537	2,186	3,515	1,329
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.													
PHILADELPHIA—Continued.													
Brick and tile.....	1909	31	1,468	51	48	1,360	2,715	\$3,038	\$50	\$786	\$456	\$1,885	\$1,420
	1904	31	1,443	45	39	1,350	.....	2,196	45	697	847	1,506	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	602	51	223	614	1,132	518
	1904	65	501	72	40	389	.....	396	36	184	403	782	370
	1899	69	597	80	45	472	.....	466	40	200	477	938	461
Buttons.....	1909	21	740	23	40	608	393	551	67	285	586	1,159	573
	1904	15	530	18	33	470	.....	288	32	158	212	481	269
	1899	17	677	26	25	626	.....	377	27	216	331	729	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	22,893	684	4,722	13,375	22,629	9,254
	1904	91	13,202	126	468	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	21,086	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	89	1,426	.....	1,988	87	832	775	2,183	1,408
	1899	113	.....	.....	68	1,411	.....	2,301	78	754	602	2,035	1,343
Cars and general shop construction and repairs by steam-railroad companies.	1909	10	3,063	.....	294	3,060	2,259	4,471	232	2,527	2,416	5,318	2,902
	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	1,069	1,040	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	.....	14,635	329	1,100	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	1,065	987
	1904	3	847	2	162	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	14,075	716	1,144	12,215	2,472	14,871	1,256	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	22,699	11,157
Clothing, women's.....	1909	351	15,627	576	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	191	7,026	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	2,975
	1904	76	3,140	88	383	2,669	.....	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	1,501	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	2,930	2,074	6,511	414	1,559	4,331	7,493	3,102
	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	1,682	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	567	4,734	6,162	1,428
Cork, cutting.....	1909	6	75	8	7	60	49	74	8	24	49	106	57
	1904	8	106	10	11	85	.....	178	13	33	79	173	94
	1899	6	178	8	9	161	.....	161	11	35	103	196	93
Cotton goods, including cotton small wares.	1909	130	10,527	135	668	9,734	14,160	20,898	1,185	4,411	12,327	22,538	10,211
	1904	120	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	8,508
Cutlery and tools, not elsewhere specified.	1909	33	1,036	39	114	883	2,086	2,619	137	536	605	1,086	1,081
	1904	30	852	36	72	744	.....	1,367	78	376	495	1,361	806
	1899	25	434	29	39	366	.....	608	43	195	331	840	509
Dyeing and finishing textiles.....	1909	104	3,991	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	.....	5,008	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	1,759	2,093	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	.....	3,063	196	491	2,198	4,231	2,038
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	279	1,972	2,697	625
	1899	6	542	3	96	443	.....	2,331	137	210	1,755	2,376	621
Files.....	1909	7	1,298	4	77	1,217	1,313	2,686	61	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

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

² 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.													
PHILADELPHIA—Continued.													
Foundry and machine-shop products...	1909	545	20,641	508	2,902	17,141	23,029	\$56,029	\$3,672	\$10,135	\$10,245	\$38,085	\$22,440
	1904	440	19,060	459	2,291	16,310	.....	50,840	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	380
Furniture and refrigerators.....	1909	147	4,042	165	484	3,393	3,870	7,451	604	1,940	3,731	8,052	4,321
	1904	89	3,288	110	268	2,910	.....	4,352	271	1,577	2,187	5,452	3,265
	1899	80	2,715	106	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	802	2,023	1,131
Glass.....	1909	4	1,185	1	72	1,112	419	1,252	80	559	498	1,367	869
	1904	5	1,370	1	92	1,313	.....	1,250	79	650	352	1,294	942
	1899	8	1,603	8	60	1,520	.....	1,258	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	.....	240	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	3,903
	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	195	833	15,090	7,962	18,782	888	5,753	12,870	23,071	11,101
	1904	151	14,203	213	764	13,286	.....	12,585	615	4,291	7,817	15,825	8,008
	1899	150	12,532	180	364	11,988	.....	10,040	388	3,575	6,182	13,074	6,592
Ice, manufactured.....	1909	31	645	12	98	535	11,703	5,258	88	375	524	1,663	1,139
	1904	32	495	11	77	407	.....	3,635	66	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	11,780	6,201
	1904	6	4,000	6	308	3,740	.....	6,452	429	2,003	3,742	7,095	3,553
	1899	8	3,034	6	213	2,815	.....	6,070	209	1,807	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	308	854	450
	1899	19	485	25	58	402	.....	679	37	183	244	648	404
Leather goods.....	1909	84	2,092	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	631	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	23,520	6,380
	1904	43	6,555	56	391	6,168	.....	13,078	411	2,800	17,732	23,003	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	2,200	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	.....	28,628	887	1,351	3,441	12,315	8,874
	1899	59	2,144	50	303	1,791	.....	27,636	652	1,229	2,877	12,607	9,730
Lumber and timber products.....	1909	98	3,609	103	258	3,248	7,872	5,972	319	1,812	4,453	7,703	3,250
	1904	75	2,694	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	2,053	5,155	2,202
Marble and stone work.....	1909	98	1,860	127	123	1,610	2,662	2,991	142	1,089	1,432	3,464	2,032
	1904	71	1,409	97	84	1,228	.....	3,264	110	852	880	2,476	1,596
	1899	70			55	1,029	.....	2,235	55	630	874	2,057	1,183
Mattresses and spring beds.....	1909	38	408	37	62	300	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	90	3,164	124	270	2,770	370	2,205	222	966	2,773	5,052	2,279
	1904	42	1,614	66	97	1,451	.....	858	60	491	1,134	2,132	998
	1899	37	859	48	52	759	.....	607	45	275	743	1,446	703
Musical instruments, pianos and organs and materials.	1909	14	501	13	30	458	361	563	42	155	400	775	375
	1904	10	342	11	18	313	.....	384	23	100	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	210	.....	243	23	75	90	249	150
	1899	11			18	255	.....	148	14	79	82	269	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	356	1,200	.....	6,058	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	1,188	3	66	1,089	.....	3,856	115	500	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	976	1,661	675
	1899	19	488	24	46	418	.....	744	44	153	640	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.													
PHILADELPHIA—Continued.													
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	555	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
Pottory, terra-cotta, and fire-clay products.	1909	13	640	0	46	585	803	1,244	60	345	233	823	500
	1904	14	622	11	34	577	.....	1,079	50	304	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	15,202	817	3,068	11,377	.....	25,545	2,006	5,760	7,702	26,749	19,047
Safes and vaults.....	1909	3	278	.....	33	245	418	506	33	160	288	493	205
	1904	3	335	2	23	310	.....	425	29	180	193	401	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	1,502	2,002	440
	1899	21	368	12	32	324	.....	823	23	132	906	1,285	310
Silk and silk goods, including throwsters.	1909	32	3,348	29	263	3,050	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	2,500	.....	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	.....	2,634	90	510	11,205	12,922	1,627
	1899	60	870	90	142	638	.....	1,914	113	383	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	912	1,092	180
Soap.....	1909	32	1,059	40	220	799	1,520	3,651	199	388	5,071	7,319	2,248
	1904	31	997	35	149	813	.....	2,619	195	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	326	20	68	238	.....	387	79	96	386	769	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	496	7,034	528	561	6,545	891	7,820	686	2,650	5,300	13,429	8,039
	1904	617	6,710	662	402	5,646	.....	7,726	366	2,296	3,279	8,655	5,376
	1899	556	6,960	607	273	6,080	.....	4,896	320	2,693	3,424	8,991	5,507
Umbrellas and canes.....	1909	31	1,297	31	100	1,166	1,842	3,413	102	595	1,060	2,075	1,015
	1904	24	1,484	23	67	1,394	.....	4,615	86	495	1,321	2,288	967
	1899	34	.....	.....	135	1,626	.....	1,244	158	550	1,879	3,143	1,264
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	693	.....	1,472	103	316	1,424	2,062	638
Woolen, worsted, and felt goods, and wool hats.	1909	131	20,073	160	746	19,177	39,428	54,914	1,311	7,096	37,890	54,922	17,063
	1904	130	17,581	173	580	16,822	.....	30,357	836	6,160	25,574	39,258	13,684
	1899	129	17,348	149	354	16,845	.....	26,954	454	6,052	22,270	34,582	12,312
All other industries.....	1909	1,331	48,009	1,420	6,497	40,992	97,447	183,308	7,705	22,293	125,313	183,906	58,593
	1904	1,089	51,669	1,268	4,070	46,331	.....	144,639	4,695	24,020	110,424	167,728	57,304
	1899	1,782	.....	.....	4,894	57,953	.....	173,664	5,498	20,060	115,220	179,875	64,655
PITTSBURGH—All industries.													
	1909	1,659	79,625	1,553	10,598	67,474	307,066	\$283,139	\$12,683	\$39,973	\$148,527	\$243,454	\$94,927
	1904	1,562	81,407	1,516	8,273	71,618	.....	280,765	9,753	39,805	124,581	211,259	86,678
	1899	1,301	.....	.....	5,850	71,794	.....	211,774	6,351	37,685	128,458	218,168	89,740
Boxes, fancy and paper.....	1909	7	237	7	16	214	105	109	16	62	80	215	129
	1904	5	181	6	6	109	.....	69	5	46	68	140	72
	1899	4	144	0	1	137	.....	49	(*)	32	46	102	50
Brass and bronze products.....	1909	12	740	14	97	629	2,750	4,026	136	379	2,373	3,188	815
	1904	15	625	7	91	527	.....	2,965	112	257	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	3,552
	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	20	109	.....	255	30	58	143	374	231
	1899	8	199	14	5	180	.....	321	5	57	221	348	127

1 Not reported separately.

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

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

4 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).							
Expressed in thousands.													
PITTSBURGH—Continued.													
Canning and preserving.....	1909	11	3,073	14	1,349	1,710	1,811	\$6,823	\$1,338	\$915	\$2,392	\$6,202	\$3,810
	1904	¹ 6	2,405	8	991	1,406	.....	4,678	1,050	496	2,882	6,217	3,335
	1899	² 5	2,119	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	² 37	499	40	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	4,370	391	3,052	4,967	8,556	3,589
	1904	8	4,880	.....	205	4,585	.....	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	1,262
Chemicals.....	1909	3	62	.....	14	48	260	446	25	32	392	531	139
	1904	³ 13	87	.....	2	27	.....	301	28	30	270	351	81
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	.....	993	64	291	859	1,428	569
	1899	16	.....	.....	73	856	.....	968	50	277	861	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	¹ 9	370	17	28	325	.....	1,011	35	133	388	601	303
Confectionery.....	1909	16	713	7	63	618	549	1,127	86	210	1,282	1,853	571
	1904	¹ 10	468	6	77	325	.....	554	52	118	661	1,048	447
	1899	11	.....	.....	144	517	.....	538	72	133	507	1,021	514
Cooperage and wooden goods, not elsewhere specified.	1909	12	262	13	21	168	144	430	23	94	340	567	218
	1904	¹ 15	201	17	12	172	.....	314	15	94	300	493	193
	1899	¹ 10	268	13	3	252	.....	214	3	131	424	606	182
Copper, tin, and sheet-iron products....	1909	48	668	51	86	471	349	1,002	91	297	495	1,121	626
	1904	35	839	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	² 10	439	13	24	402	.....	562	35	218	361	757	396
	1899	9	.....	.....	36	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	1,481
	1904	¹ 12	897	14	256	537	.....	3,105	235	261	1,074	1,797	723
	1899	¹ 7	.....	.....	34	379	.....	2,142	60	196	1,705	2,304	590
Foundry and machine-shop products....	1909	155	9,742	81	1,446	8,215	18,311	31,927	1,963	5,773	9,043	21,691	11,748
	1904	³ 151	11,024	109	1,182	9,733	.....	30,076	1,569	5,728	9,362	20,757	11,375
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	² 9	160	21	29	110	.....	92	8	64	105	244	139
Gas and electric fixtures and lamps and reflectors.	1909	16	392	16	53	233	212	435	48	95	262	467	205
	1904	¹ 4	120	2	11	107	.....	84	17	37	143	246	193
	1899	9	.....	.....	30	232	.....	495	41	110	150	443	293
Glass.....	1909	9	1,233	6	86	1,171	915	2,483	134	608	440	1,443	994
	1904	11	2,055	6	141	1,908	.....	3,134	204	687	748	2,131	1,383
	1899	² 16	2,216	5	107	2,104	.....	3,588	137	1,133	742	2,430	1,688
Ice, manufactured.....	1909	15	298	2	70	196	6,384	2,965	91	131	190	958	759
	1904	10	465	3	79	383	.....	2,283	97	227	140	815	669
	1899	¹ 4	83	5	8	70	.....	547	10	44	15	111	96
Iron and steel, blast furnaces.....	1909	6	1,740	.....	366	1,383	59,768	30,134	619	1,038	16,038	20,668	4,630
	1904	⁴ 4	1,593	.....	154	1,439	.....	12,960	182	830	12,581	15,500	2,919
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	50,067	77,440	20,773
Jewelry.....	1909	6	96	6	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	.....	129	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	.....	2,180	52	186	1,138	1,582	444
Liquors, malt.....	1909	12	694	.....	121	873	6,591	14,028	299	696	1,267	5,420	4,153
	1904	11	851	.....	100	742	.....	11,246	288	560	1,222	4,083	2,861
	1899	11	633	.....	100	538	.....	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	1,694	734
	1904	42	943	51	104	788	.....	2,108	108	543	1,165	2,231	1,066
	1899	29	.....	.....	55	633	.....	1,555	50	331	1,061	1,858	807

¹ Excluding statistics for two establishments, to avoid disclosure of individual operations.² Excluding statistics for one establishment, to avoid disclosure of individual operations.³ Comparable figures not available.⁴ 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.													
PITTSBURGH—Continued.													
Marble and stone work.....	1909	25	348	30	33	285	700	\$503	\$44	\$194	\$248	\$598	\$350
	1904	16	266	23	24	210		342	24	156	146	443	267
	1899	23			25	612		633	27	316	339	886	547
Mattresses and spring beds.....	1909	0	256	5	28	223	201	574	38	124	337	590	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	1,760	2,361	137	138	1,740	2,419	679
	1904	15	304	10	93	201		1,042	129	143	1,514	2,127	613
	1899	12	334	9	82	243		1,412	100	101	1,210	2,029	810
Patent medicines and compounds and druggists' preparations.	1909	31	214	25	75	114	263	685	96	51	313	898	585
	1904	31	209	25	48	136		402	49	63	475	1,019	544
	1899	14			80	131		270	51	40	343	804	401
Photo-engraving.....	1909	6	169	6	26	77	71	108	34	55	41	187	140
	1904	8	91	16	16	59		70	17	52	13	127	114
	1899	6	67	11	6	50		34	4	23	14	79	65
Pottery, terra-cotta and fire-clay products.	1909	3	337		17	320	850	1,173	26	155	105	507	312
	1904	5	398		44	354		3,454	66	132	218	568	350
	1899	7			78	662		1,550	77	262	462	1,046	584
Printing and publishing.....	1909	254	4,216	255	1,160	2,805	4,173	0,900	1,314	1,960	2,000	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	2,350		5,134	483	1,509	1,435	4,958	3,523
Shipbuilding, including boat building..	1909	4	169	4	21	144	580	533	42	96	107	263	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	11,466	13,107	1,041
	1904	21	1,036	22	128	886		2,784	145	575	8,345	9,095	1,660
	1899	13	706	19	99	588		2,284	101	327	5,118	6,051	633
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	527	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	10	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	3,456	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	2,009		1,048	50	617	530	2,448	1,909
All other industries.....	1909	271	9,903	262	1,279	8,362	25,628	34,950	1,598	4,444	21,075	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		157,064	3,481	27,841	103,370	166,568	63,192
READING—All industries.....													
	1909	482	26,407	517	1,745	24,145	43,193	\$41,035	\$1,810	\$11,011	\$20,848	\$51,135	\$21,287
	1904	402	19,763	441	1,269	18,053		27,123	1,098	7,265	16,709	30,491	13,732
	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		368	12	91	133	269	136
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	(c)	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		66	2	27	39	100	61
Brass and bronze products.....	1909	8	79	9	13	57	72	116	10	30	91	149	58
	1904	5	209	3	20	186		616	12	73	138	273	135
	1899	13	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	13	137	373	670	303
	1899	51	307	59	31	217		285	19	104	234	501	267
Brooms and brushes.....	1909	6	61	8	6	47	26	82	(c)	16	88	159	71
	1904	5	48	7	4	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	5	276	8	18	250		600	15	105	205	394	189
	1899	18			15	190		398	8	78	94	284	190
Cars and general shop construction and repairs by steam-railroad companies.	1909	6	2,765		137	2,628	5,752	3,985	82	1,681	3,767	5,661	1,894
	1904	5	2,648		76	2,572		3,264	66	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.													
READING—Continued.													
Clothing, men's, including shirts.....	1909	10	608	20	54	534	118	\$508	\$56	\$167	\$567	\$938	\$371
	1904	8	320	10	20	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	100	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	20
	1899	7	.....	.....	5	25	.....	89	2	12	43	70	36
Dyeing and finishing textiles.....	1909	4	298	1	25	272	625	290	21	84	134	294	160
	1904	2	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	36	2,994	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	830	87	559	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	1,164	2,540	1,376
	1899	21	1,741	24	50	1,667	.....	710	38	391	697	1,326	629
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	.....	3,835	120	1,981	3,437	4,818	1,381
Leather goods.....	1909	5	89	6	9	74	84	63	5	24	63	128	65
	1904	3	29	2	4	23	.....	20	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	1,368	901
	1899	5	.....	.....	18	109	.....	906	25	62	179	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	15	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	15	62	5	1	56	.....	90	1	38	40	103	63
	1899	10	.....	.....	5	83	.....	159	3	44	39	117	78
Optical goods.....	1909	3	288	2	13	273	170	392	18	86	139	339	200
	1904	3	107	3	20	135	.....	374	31	41	52	191	139
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
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	504	454
	1899	30	339	34	33	272	.....	540	22	127	92	435	343
Tobacco manufactures.....	1909	81	1,589	107	79	1,403	40	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	76	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	13	318	8	13	297	.....	372	13	110	362	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	11,912	470	2,189	10,157	14,916	4,759
	1904	75	2,893	81	243	2,569	.....	7,773	210	979	3,943	5,923	2,280
	1899	106	.....	.....	384	6,786	.....	14,360	385	2,598	9,701	16,208	5,507
SCRANTON—All industries.....													
	1909	293	14,242	270	1,121	12,851	20,564	\$22,494	\$1,337	\$5,146	\$14,302	\$20,385	\$12,083
	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	281
	1904	25	250	26	32	192	.....	204	29	88	331	572	210
	1899	27	190	30	28	132	.....	192	18	55	208	358	150
Brick and tile.....	1909	3	74	1	8	65	525	166	6	26	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	150	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 employees.	Wage earners (average number).							
Expressed in thousands.													
SCRANTON—Continued.													
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	68	169	101
	1899	3	332	4	6	322	.....	36	3	60	50	133	83
Copper, tin, and sheet-iron products	1909	8	60	8	4	48	5	40	2	22	31	75	44
	1904	3	35	4	.....	31	.....	18	.....	24	21	63	42
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Flour-mill and gristmill products	1909	4	35	5	11	19	268	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	305	462	67
Foundry and machine-shop products	1909	20	1,286	16	187	1,083	2,467	5,463	228	567	853	2,218	1,365
	1904	² 13	1,200	7	163	1,040	.....	5,759	180	540	704	1,002	1,198
	1899	² 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	.....	00	281	1,172	2,130	104	214	509	1,047	1,438
	1904	4	185	.....	36	149	.....	1,342	91	110	204	1,227	963
	1899	0	210	.....	29	181	.....	1,431	92	117	220	1,196	976
Lumber and timber products	1909	9	432	9	34	380	737	1,005	40	212	603	933	330
	1904	10	382	5	35	342	.....	683	35	199	490	860	370
	1899	11	.....	.....	21	277	.....	593	20	120	370	610	231
Patent medicines and compounds and druggists' preparations.	1909	10	96	8	28	60	1	72	18	17	37	197	160
	1904	² 9	24	8	1	15	.....	20	⁽¹⁾ 5	5	16	46	30
	1899	² 6	14	7	1	0	.....	4	⁽¹⁾ 2	2	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	202	1,098	806
	1899	³ 36	.....	.....	77	369	.....	994	53	179	196	882	686
Silk and silk goods, including throwsters.	1909	15	3,098	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	2,978	3,819	841
Tobacco manufactures	1909	28	339	32	43	264	135	549	40	88	288	638	350
	1904	³ 32	173	30	4	133	.....	64	2	52	64	178	114
	1899	27	271	34	27	210	.....	274	22	79	210	500	206
All other industries	1909	82	5,840	67	424	5,355	9,200	7,147	485	2,305	5,702	10,478	4,710
	1904	82	5,331	79	294	4,658	.....	6,681	338	2,272	4,784	8,643	3,859
	1899	94	.....	.....	230	5,502	.....	8,883	306	2,566	11,067	14,727	3,000
WILKES-BARRE—All industries.													
	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	162	423	5,020	.....	11,716	481	2,490	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	190	126	278	27	109	418	660	242
	1904	13	161	14	18	129	.....	197	13	67	287	440	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	62	255	503	248
	1899	3	667	7	24	630	.....	512	44	137	317	627	310
Flour-mill and gristmill products	1909	4	27	3	6	18	270	147	4	10	203	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	158	137	570	433
	1899	² 26	385	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	650
	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	40	.....	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	2,098	4,836	10,136	5,300
	1904	61	4,300	74	262	3,604	.....	9,639	346	1,990	3,620	7,937	4,337
	1899	74	.....	.....	207	3,663	.....	8,519	285	1,416	3,936	7,117	3,481

¹ Figures can not be shown without disclosing individual operations.
² Excluding statistics for one establishment, to avoid disclosure of individual operations.
³ Excluding statistics for two establishments, to avoid disclosure of individual operations.
⁴ Less than \$500.
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—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).							
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	4,608	2,666
	1899	47	.....	.....	142	2,174	.....	6,521	174	971	3,850	6,229	2,370
Bethlehem.....	1909	40	1,727	54	90	1,583	3,086	3,300	105	593	2,330	3,712	1,382
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Braddock.....	1909	41	1,218	36	142	1,040	7,332	5,369	169	785	3,347	5,094	1,747
	1904	38	1,365	34	106	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	.....	3,276	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	11,958	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	20	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	1,500	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	1,708	661
Carnegie.....	1909	19	509	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	1,086	519
	1899	44	.....	.....	34	612	.....	722	25	222	478	815	337
Chester.....	1909	128	7,807	102	779	6,986	17,131	23,028	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	480	3,131	8,571	14,940	6,369
Columbia.....	1909	47	2,044	45	126	2,773	6,589	3,500	130	1,107	2,671	4,807	2,136
	1904	44	3,187	38	115	3,034	.....	2,904	105	643	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	200	1,035	4,526	3,275	194	576	817	1,671	1,164
	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	450	661	1,709	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	490	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	.....	4,330	190	1,180	2,084	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	2,098	84	232	2,082	3,112	5,209	250	940	2,702	4,707	2,095
	1904	62	1,575	65	104	1,406	.....	2,575	107	434	1,130	2,186	1,050
	1899	45	.....	.....	72	822	.....	1,320	50	234	293	699	700
Homestead.....	1909	26	248	17	60	171	890	1,273	49	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	165
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	.....	12,305	415	3,080	7,598	14,648	7,060
	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	3,270	6,078	3,609
	1899	97	.....	.....	177	4,475	.....	5,675	175	1,770	4,745	7,658	2,913
McKees Rocks.....	1909	31	3,903	21	291	3,591	8,872	10,328	335	2,300	5,407	9,787	4,380
	1904	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
McKeesport.....	1909	68	9,093	58	789	8,240	49,935	43,433	801	6,031	27,296	42,495	15,199
	1904	75	9,618	74	690	8,848	.....	16,286	778	5,521	12,310	23,054	10,744
	1899	67	.....	.....	473	7,213	.....	15,088	445	4,147	21,835	30,058	14,223
Mahanoy City.....	1909	33	666	44	32	590	753	964	20	166	383	808	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	3,559	1,843
	1899	52	1,520	63	157	1,300	.....	1,761	115	602	964	2,075	1,111
	1904	46	.....	.....	95	1,201	.....	1,168	74	535	880	1,068	770

1 Figures not available.

2 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 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 319,927	(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	.....	1	.....	602
5 Automobiles, including bodies and parts.	44	3,566	29	113	175	50	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	Je 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	303	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	.....	205
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	70	78	2	.....	388	
15 Bluing.....	12	64	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 10,609	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	121	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	4,990		
20 Bread and other bakery products.....	3,185	17,838	3,375	235	1,499	508	12,221	Oc 12,465	Fe 11,920	12,643	10,314	1,851	231	247	10,806		
21 Brick and tile.....	326	8,943	349	322	165	49	8,058	Jy 9,927	Fe 9,028	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	59	16	38	12	416	Fe 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	1,151	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	2,763	Se 4,092	Ja 1,847	3,329	1,717	1,490	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	59	7,493	Je 7,932	Ja 7,188	7,455	7,338	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	2,503	.....	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	12,032	12,614	9	9	.....	31,732
33 Cement.....	27	8,902	.....	103	645	74	8,080	No 9,721	Ja 6,421	9,370	9,330	4	30	.....	102,904
34 Chemicals.....	37	3,573	19	83	242	44	3,185	Je 3,311	Mh 3,072	3,286	3,174	110	.....	2	9,771	
35 Chocolate and cocoa products.....	6	1,033	.....	23	127	20	863	No 983	Jy 694	966	476	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	860	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.....	696	26,405	1,009	321	1,655	307	23,623	De 24,997	Au 22,724	25,805	3,548	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	16,995	5,112	11,590	31	262	2,514		
40 Collins, burial cases, and undertakers' goods.	36	1,309	36	60	92	18	1,103	De 1,128	Jy 1,083	1,129	875	246	5	3	1,447		
41 Coke.....	146	10,219	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	5,498	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	382	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 1,869	Ja 1,541	1,788	831	796	105	56	2,045		
47 Corsets.....	6	626	4	15	52	122	433	Je 486	Ja 384	416	67	347	.....	2	85	
48 Cotton goods, including cotton small wares.	175	17,380	156	348	440	140	10,293	No 16,709	Fe 15,817	16,866	7,405	8,318	424	719	24,589		
49 Crucibles.....	5	135	4	12	11	2	106	De 119	Ap 84	119	119	.....	.....	.....	336
50 Cutlery and tools, not elsewhere specified.	120	4,832	114	163	229	76	4,250	De 4,561	Jy 3,985	4,625	4,411	141	66	7	11,311		
51 Dairymen's, poulterers', and apiarists' supplies.	13	789	5	20	69	45	650	Mh 730	Se 539	649	635	12	2	.....	465	
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	37	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	33,829		
55 Electroplating.....	35	211	49	7	5	6	146	De 159	Ja 136	161	146	5	10	.....	309	
56 Emery and other abrasive wheels.....	6	117	2	12	17	4	84	De 96	Ja 75	96	96	.....	.....	.....	452
57 Enameling and japanning.....	14	300	10	16	27	5	242	No 310	Ja 203	318	237	71	10	.....	492	
58 Explosives.....	27	1,225	20	59	97	16	1,033	Se 1,159	Mh 966	1,111	1,002	101	8	.....	4,594	
59 Fancy articles, not elsewhere specified.	52	951	55	16	30	22	828	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	1,169	.....	3	.....	5,174
61 Tiles.....	7	1,298	4	16	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	15	8	4	365	Oc 436	Jy 262	470	172	270	16	12	82		

1 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	\$50,589,394	\$455,026,700	\$137,332,192	\$1,445,227,796	\$11,186,157	\$30,365,928	\$14,582,289	\$150,168,995	\$2,020,742,034	\$1,044,182,046
2 0,491,212	4,019,921	108,611	148,402	1,222,897	70,027	2,012,195	454	21,208	220	435,907	4,804,521	2,722,299
3 943,344	1,121,466	39,912	38,257	262,487	6,316	669,049	20,583	1,418	7,010	82,434	1,318,051	643,280
4 838,641	557,880	20,624	0,070	212,485	7,062	251,182	7,043	2,550	358	37,015	784,248	526,004
5 6,971,377	6,821,594	210,540	173,918	1,807,802	71,286	3,979,567	45,107	10,157	-----	523,217	0,631,733	2,480,880
6 965,839	2,000,491	47,996	44,556	107,409	18,112	1,698,852	6,063	3,114	-----	80,389	2,117,445	400,481
7 589,607	787,310	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	6,030	10,594	220	38,243	2,581	-----	-----	6,821	79,024	40,561
9 107,359	271,505	5,453	4,687	75,845	1,463	158,007	8,134	559	-----	17,260	317,556	158,086
10 973,101	1,250,818	29,300	44,605	104,898	10,330	1,000,824	10,258	2,060	-----	47,582	1,378,720	307,666
11 919,940	1,018,741	38,107	50,019	147,793	14,268	670,486	850	1,349	-----	80,809	1,074,843	384,089
12 635,429	629,594	16,830	17,569	193,353	6,003	332,873	986	975	-----	61,014	597,071	258,195
13 106,184	72,622	3,900	1,498	16,778	678	33,307	1,518	288	2,700	11,865	95,725	61,650
14 695,441	660,260	46,997	59,460	68,018	8,077	378,715	12,710	2,443	3,745	80,989	754,966	368,174
15 67,170	106,110	6,694	2,514	13,641	893	64,975	2,635	208	92	14,458	122,299	56,431
16 11,660,633	18,432,282	619,589	541,801	4,290,300	77,151	11,986,631	70,581	14,419	5,955	840,705	20,218,784	8,155,002
17 1,625,734	2,004,469	45,389	21,809	579,850	21,930	1,230,473	9,122	4,602	826	90,384	2,327,739	1,075,336
18 3,421,711	4,491,560	198,441	199,582	1,471,772	56,487	2,233,281	120,452	6,931	1,194	293,420	5,183,847	2,804,079
19 8,392,044	7,727,766	247,683	207,911	1,233,701	120,473	5,475,302	30,944	28,011	11,323	363,408	8,454,929	2,849,845
20 30,887,086	38,917,008	438,629	1,368,053	6,528,296	865,454	26,404,162	526,038	215,648	19,998	2,490,730	45,850,079	18,520,454
21 20,150,103	8,023,554	400,031	139,210	3,881,208	1,620,288	820,751	80,447	68,210	18,317	973,408	9,225,204	6,772,105
22 729,005	1,037,940	11,226	22,985	214,235	6,295	730,594	7,997	984	2,043	41,581	1,261,392	524,413
23 823,070	893,798	30,560	32,489	195,471	6,712	511,043	28,456	596	18,000	40,481	1,042,312	524,557
24 4,290,789	12,665,937	88,896	66,578	550,365	166,068	11,508,292	10,035	15,952	3,738	270,083	13,544,085	1,869,875
25 977,125	1,320,767	63,210	32,035	403,171	15,513	730,017	14,400	4,728	-----	56,547	1,565,397	101,267
26 8,866,817	8,588,518	252,208	1,265,804	947,171	59,570	4,604,963	21,591	42,785	3,026	1,300,890	9,484,026	4,819,493
27 24,720,792	22,632,295	450,043	312,227	5,199,275	276,388	14,371,910	95,528	38,627	125,712	1,702,555	24,879,232	10,230,634
28 374,875	470,031	5,554	11,219	135,439	5,401	285,992	6,499	1,850	319	19,348	559,565	268,202
29 14,304,549	10,889,903	283,212	217,105	3,801,396	181,008	5,520,017	88,121	53,045	14,957	605,102	12,748,933	7,041,358
30 45,341,024	75,941,781	1,490,150	1,492,023	30,150,002	1,205,787	40,135,638	10,605	120,053	2,074	1,261,589	76,035,180	34,033,755
31 2,463,970	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	1,653,205
32 31,281,576	26,995,527	556,345	685,759	4,819,137	484,480	18,517,739	6,000	100,134	-----	1,810,027	27,509,748	8,507,523
33 50,855,890	17,495,226	359,569	687,498	3,875,262	3,000,170	6,207,815	70,899	140,611	42,615	2,210,817	18,855,237	8,747,252
34 23,534,639	13,563,136	304,829	254,228	1,892,313	509,580	9,690,341	10,990	42,142	269	798,444	15,978,162	5,775,241
35 3,483,091	3,822,728	70,370	215,922	323,901	57,757	2,897,445	12,500	9,858	-----	234,905	4,810,901	1,855,750
36 4,081,284	2,395,692	103,271	70,673	728,027	15,409	1,156,694	3,168	3,035	-----	306,325	2,873,435	1,701,832
37 76,785	116,406	8,080	2,576	73,599	4,433	9,070	7,163	225	0,131	5,129	142,054	128,551
38 20,790,249	35,819,054	501,113	1,190,904	8,991,735	232,925	19,639,299	451,611	9,022	2,591,394	1,810,091	30,681,700	10,818,626
39 12,254,847	28,069,819	437,791	1,229,597	7,140,390	142,951	18,013,282	422,110	10,403	230,467	1,930,942	32,837,424	14,681,191
40 2,876,678	85,248	100,876	129,407	514,407	22,015	1,551,593	10,813	7,753	-----	181,491	2,757,801	1,182,793
41 98,023,289	44,512,169	594,358	348,150	8,435,604	32,485,287	1,277,166	105,353	310,705	17,929	937,017	51,816,440	18,053,996
42 8,204,256	11,882,054	325,894	487,243	1,700,220	152,366	8,050,129	154,678	41,215	29,413	889,901	13,541,769	5,339,234
43 3,630,769	4,072,998	93,500	38,763	755,001	25,214	2,964,170	32,439	9,074	500	152,787	4,629,893	1,640,609
44 17,083,445	14,270,538	469,048	420,285	3,443,550	173,170	8,677,660	116,373	40,655	16,823	913,574	17,197,057	8,346,227
45 5,161,995	3,997,428	119,060	65,801	685,170	41,932	2,959,484	1,050	8,850	200	115,281	4,804,775	1,803,359
46 3,362,489	2,532,029	71,000	32,691	535,220	30,847	1,638,560	2,940	10,663	-----	210,708	2,965,453	1,290,046
47 351,077	646,757	31,213	95,018	155,793	1,892	275,308	3,746	53	9,400	92,764	724,173	447,093
48 33,692,380	29,927,595	937,064	674,348	7,034,407	450,989	18,306,093	243,547	71,857	220,998	1,987,749	33,917,033	15,160,098
49 910,401	611,118	45,202	14,280	59,691	11,411	419,067	-----	3,693	-----	57,774	727,593	297,115
50 12,405,897	6,885,607	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	128,709	344,736	10,580	423,970	1,520	3,022	-----	787,197	1,712,200	1,272,740
52 2,799,175	2,226,770	163,800	89,712	464,301	26,101	1,299,376	50,157	5,790	272	121,261	2,745,223	1,419,746
53 13,241,764	10,079,929	356,631	241,374	2,988,496	659,393	4,680,294	70,035	51,199	2,741	1,038,857	12,059,297	6,728,610
54 59,973,875	27,892,389	1,289,971	2,770,794	6,237,040	253,946	13,280,952	98,742	151,533	16,005	3,705,797	31,351,312	17,816,414
55 135,145	191,065	10,150	5,593	90,942	7,982	54,836	13,735	121	190	7,696	256,270	193,452
56 512,793	209,819	29,900	10,462	51,202	6,188	74,572	536	932	1,500	37,537	273,362	192,002
57 898,797	588,420	22,270	19,728	96,063	6,829	402,212	4,048	748	-----	36,522	652,989	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	2,300,393
59 959,633	1,106,062	26,589	30,265	322,240	17,530	574,129	22,940	1,601	15,553	95,179	1,385,052	793,393
60 6,531,843	5,956,189	149,531	152,512	575,090	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	39,992	527,845	43,240	383,605	8,937	4,022	-----	97,918	1,539,560	1,112,721
62 590,013	423,197	31,230	11,585	127,091	7,054	292,833	1,158	1,367	50	41,099	515,204	305,617

* Same number reported for one or more other 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	6	1	15	Ja ¹	16	Mh ¹	13	15	15					20
2 Fireworks.....	4	32	3	4	1	1	24	Je	33	Jy ¹	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	150	76	2,432	No	2,544	Jy	2,305	2,544	2,532	3	9			60,212
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	90,412	1,086	894	138		162,414
6 Fur goods.....	58	349	72	7	15	28	227	De	341	Ap	125	339	150	180	3			14
7 Furnishing goods, men's.....	72	1,923	91	41	219	85	1,487	No	1,621	Ja	1,417	1,677	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	10,044	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	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	3,130	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	1	42	Ja	47	No	37	44	15	29				7
13 Gold and silver, leaf and foil.....	6	318	7	3	5	6	267	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	8	My	2	8	7		1			25
15 Graphite and graphite refining.....	4	71	2	0	6		57	No	70	Ja	35	50	59					420
16 Haircloth.....	9	406	10	11	31	14	340	Au	358	Ja	303	344	138	108	4	4		551
17 Hand stamps and stenols and brands.	35	256	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	193		5,335
20 Hats, straw.....	9	531	7	20	30	14	460	Ap	605	Au	280	533	137	392	1	3		85
21 Hosiery and knit goods.....	404	40,248	509	651	583	209	38,206	No	39,911	Fe	36,957	40,320	7,700	28,045	1,124	3,391		21,707
22 Ice, manufactured.....	170	2,086	116	190	120	45	1,900	Ja	2,197	Ja	1,044	1,492	1,480	1	2			35,890
23 Ink, printing.....	8	246	6	18	50	7	165	Au	175	Mh ¹	160	162	162					483
24 Ink, writing.....	6	28	7	1	2	1	17	Se	19	No	15	19	8	5	6			21
25 Iron and steel, blast furnaces.....	66	16,215	34	359	1,182	119	14,521	De	17,407	Mh	12,550	17,650	17,632		24			476,680
26 Iron and steel, steel works and rolling mills.	189	137,433	34	1,069	7,540	973	126,911	De	148,591	Mh	111,954	148,650	146,965	372	1,120	73		806,440
27 Iron and steel pipe, wrought.....	11	4,143	5	87	104	14	3,873	Oe	4,051	Mh	3,209	4,001	4,591		10			12,472
28 Jewelry.....	75	624	96	16	28	30	456	De	473	Je	441	404	385	52	22	5		100
29 Kaolin and ground earths.....	16	670	7	27	17	7	612	Jy	651	Mh ¹	543	641	641					2,310
30 Lapidary work.....	3	10	3		1		6	Ja	6	Jy ²	6	6	5		1			1
31 Lasts.....	4	82	6	2	1		73	De	76	Je ¹	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.....	156	3,124	210	85	239	66	2,624	Oe	2,655	Ja	2,202	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	882	151	61		37,440
35 Lime.....	348	3,791	393	72	56	12	3,258	No	3,489	Fe	2,844	3,565	3,562		3			8,682
36 Liquors, distilled.....	88	1,144	148	104	130	29	724	De	890	Se	535	968	743	235				7,578
37 Liquors, malt.....	237	9,007	131	511	1,079	52	7,234	Jy	7,581	Fe	6,988	7,230	7,215	18	6			54,300
38 Liquors, vinous.....	3	7	4		1		2	Je	6	Ja ³	0	7	6		1			16
39 Lumber and timber products.....	2,667	32,073	3,473	777	722	228	26,873	De	28,690	Ja	24,194	32,015	32,429	123	350	7		113,412
40 Marble and stone work.....	506	10,630	764	318	234	59	9,204	Jy	10,060	Ja	7,062	9,917	9,830	11	67			29,037
41 Matches.....	4	180	5	6	11	3	155	De	209	Se	126	209	134	73		2		300
42 Mattresses and spring beds.....	83	961	84	36	66	30	745	No	810	Ja	661	808	605	183	20			1,102
43 Millinery and lace goods.....	105	4,697	141	63	158	100	4,235	Mh	4,744	Jy	3,825	4,294	3,350	617	53	265		841
44 Mirrors.....	13	272	14	6	11	9	232	Oe	256	Fe	214	258	214	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	Oe	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	Oe	164	Jy ¹	20	40	40					102
49 Optical goods.....	24	744	24	20	79	42	579	Jy	587	Au	570	580	293	227	20	40		292
50 Paint and varnish.....	114	2,747	105	176	302	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	6,004	744	17	17		60,010
52 Paper goods, not elsewhere specified.....	34	1,700	32	51	184	76	1,357	Oe	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	1,500	31	36		2,610
54 Petroleum, refining.....	41	3,423	36	123	323	41	2,900	Oe	3,381	Mh	2,535	3,310	3,278	13	19			35,212
55 Phonographs and graphophones.....	3	96	1	4	3	7	81	Fe	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	9,638	Ja	8,000	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	Ap	23,855	20,236	19,323	5,072	747	194		25,839
60 Pumps, not including steam pumps.....	5	269	5	3	35	5	221	De	328	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		5,900
62 Saws and vaults.....	7	777	1	41	38	2	695	Ap	721	Ja	673	723	721		2			1,168
63 Sand and emery paper and cloth.....	3	305	3	6	12	2	282	No	370	Se	223	316	308	3	2	3		2,210
64 Saws.....	15	2,087	18	10	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	256	Ja	231	251	251					320
66 Screws, machine.....	5	73	7	5	3		58	No	66	Ja	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	4,035	7	54			7,771
68 Shoddy.....	20	618	32	14	15	7	450	De	462	Ja	432	466	353	113				2,170
69 Show cases.....	5	55	4	4	3	1	43	Ap	44	Ja	42	43	43					76
70 Signs and advertising novelties.....	26	621	28	22	63	21	487	De	648	Je	418	647	435	196	1			

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	3,000	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	07,259,848	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	48,004	.....	2,536	11,744	210	32,700	330	58	.....	1,320	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	8,302	1,560	6,274	657	189,047	3,096	118	.....	5,265	224,891	74,587
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	21,800	833	10	44,624	1,096,823	553,432	
19	14,433,611	9,877,996	204,902	217,814	3,724,690	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	42,803	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	3,287	.....	3,287	55,980	27,495
25	194,708,463	158,531,302	990,977	1,408,840	9,456,714	40,480,064	101,693,964	271,970	568,709	9,445	3,750,949	168,578,413	26,504,385	
26	522,897,623	451,828,019	5,355,442	8,038,306	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	1,039,707	29,740	32,931	291,769	11,012	565,819	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	927,227	415,640	6,801,370	726,432	58,380,992	157,324	193,283	25,030	6,900,422	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	18,053	.....	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	192,771	4,859,971	206,201	3,423,553	75,443	44,900	67,507	691,698	11,500,609	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	5,812,997	103,611	184,071	1,327,299	30,958	3,723,447	110,021	2,528	34,083	6,799,378	3,015,118	8,010	
44	501,422	560,374	13,840	15,391	104,309	5,535	366,632	5,015	2,173	2,000	35,479	630,991	268,927	
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	929,029	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	14,833,702	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	1,910,609	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	7,500	4,051	46,003	2,610	3,968	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	2,900,326	39,406	84,016	15,897	1,348,164	13,072,106	8,962,738	
59	71,452,879	58,379,844	3,658,525	5,177,830	14,335,047	657,657	22,005,092	1,161,589	172,017	2,280,491	8,841,596	70,584,179	47,831,490	
60	851,780	365,817	10,660	20,265	136,678	17,960	155,369	120	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	23,907	618,682	840	5,594	7,329	100,234	1,338,305	695,716	
63	2,622,639	1,736,361	20,500	21,687	172,862	27,466	1,261,512	3,500	2,944	.....	225,800	2,136,805	847,827
64	5,961,431	3,025,045	66,060	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	15,203,209	6,091,185	291,688	183,114	2,120,424	108,622	2,690,632	50,520	32,594	24,150	649,141	6,178,145	3,465,591	
68	1,627,068	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	90,000	5,120	3,768	27,704	3,219	44,159	2,809	151	.....	3,880	90,355	42,977
70	1,238,789	1,348,417	30,040	123,889	201,475	15,897	766,270	22,308	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.

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, superis. 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 Silk and silk goods, including throwsters.	226	38,178	143	498	817	251	36,469	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	3,057	198	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	1,746	74	27	252	196	1,677	Se 1,226	Ja 1,172	1,174	821	312	27	14	2,598	
6 Steam packing.	31	2,231	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	25	25	4	339	My 340	Ja 330	339	320	6	13	.....	330
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	Mh 149	Au 121	155	151	1	3	.....	286
10 Tin plate and tinnerplate.	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	35,582	16,066	18,615	174	757	2,638	
12 Type founding and printing materials.	8	402	6	17	61	25	293	Ja 310	Au 275	298	214	59	16	9	273	
13 Typewriters and supplies.	8	872	5	15	252	45	555	De 610	Ja 491	610	566	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	1,190	88	65	1,570	
15 Wall paper.	11	1,116	.....	35	94	11	1,056	De 1,289	Au 777	1,324	1,016	169	99	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	28,692	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 ¹ .	1,953	50,979	2,100	1,730	3,198	1,015	42,936	.....	.....	.....	.....	.....	.....	.....	101,898

¹ All other industries embrace—

Artists' materials.	7	Cordials and sirups.	6	Hair work.	11
Awnings, tents, and sails.	30	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 desinking.	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	Glucose and starch.	2	Locomotives, not made by railroad companies.	7
Clothing, men's, buttonholes.	10	Glue.	6		
Coffee and spice, roasting and grinding.	84	Grease 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	390,380
40,153,605	348,881	513,279	1,086,065	239,663	44,005,384	112,672	63,602	29,005	1,254,154	51,850,030	7,005,880
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	590,201
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	12,057	10,000	607,375	4,987,171	2,000,604
503,618	48,720	19,715	231,666	14,378	131,450	21,175	150	.....	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	4,987,315
506,459	17,060	27,848	87,240	29,106	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	20,503,907	364,344	6,079,825	140,989	3,351,171	50,161,337	29,447,004
573,696	33,840	58,210	159,308	10,887	194,466	19,006	1,677	.....	96,302	606,351	400,998
1,070,152	42,060	286,782	269,087	4,107	185,067	3,555	3,063	.....	282,431	1,016,543	827,390
4,078,745	93,680	231,028	906,020	28,439	3,110,614	33,180	5,003	38,731	222,150	5,059,846	1,011,703
3,402,482	114,921	133,816	519,070	45,383	2,243,305	38,502	4,784	.....	282,101	3,695,211	1,386,523
600,766	46,935	23,247	111,054	31,904	370,118	3,050	2,085	1,020	70,093	725,494	323,412
123,004	7,900	21,202	14,929	1,641	66,832	612	206	.....	10,282	131,647	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	2,602,077	77,440,090	22,812,011
154,832,334	3,606,503	3,678,170	22,317,217	3,033,791	110,508,867	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
and hooks and eyes.....	0	Screws, wood.....	1	Washing machines and clothes wringers.....	10
.....	1	Sewing machines, cases, and attachments.....	2	Waste.....	23
.....	37	Smelting and refining, lead.....	1	Wheelbarrows.....	4
.....	3	Smelting and refining, zinc.....	2	Window shades and fixtures.....	15
.....	1	Soda-water apparatus.....	4	Wire.....	8
.....	5	Sporting and athletic goods.....	15	Wirework, including wire rope and cable.....	64
.....	5	Springs, steel, car and carriage.....	13	Wood carpet.....	2
.....	5	Stationery goods, not elsewhere specified.....	12	Wood preserving.....	1
.....	2	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