

CHAPTER XV.

DESCRIPTION OF INDIVIDUAL INDUSTRIES WITH PRINCIPAL STATISTICS FOR EACH.

INTRODUCTION.

This chapter contains a general description of each of the 264 industries covered by the census statistics of manufactures and also of the various branches into which certain of the industries are subdivided. The principal products are enumerated for each and the quantities and values of the leading individual products are shown where figures are available.

For convenience and in order to bring together allied industries the industries are assembled according to the 14 groups described in Chapter III. The discussion of the industries in each group is prefaced by a table summarizing the general statistics for 1909 for each industry included in the group.

So far as they are available, comparative data for a number of census years are given in tables in connection with the discussion of the several industries. For some industries these statistics go back much further than for others. In a good many cases the figures presented in these tables are not closely comparable from census to census on account of changes in the scope of the census of manufactures and in the method of classifying establishments, as well as on account of changes in the actual conditions under which different classes of products are manufactured. Attention has been called in the comments concerning the various tables to such cases of incomparability in

the statistics, so far as information bearing on the subject is available. Some of the earlier census reports do not state clearly the exact scope of the various industry classifications or the exact line of demarcation between different classifications. It is probable that in some cases there is a certain degree of incomparability between the statistics for different census years of which no mention has been made in the text. In the case of most of the industries, however, the tables show in a rough way the general progress from census to census.

It should be borne in mind that the statistics for 1909, 1904, and 1899 relate only to establishments operating under the "factory system," as defined by the Census Bureau, while at prior censuses establishments not operating under this system were to some extent included. This difference affects seriously the comparability of the statistics for a limited number of industries, but most of the industries covered by the census of manufactures have at all times been carried on either wholly or in large part as factory industries.

For 29 of the industries diagrams are given, showing the relative importance of the leading states in the industry.

FOOD AND KINDRED PRODUCTS.

THE GROUP AS A WHOLE.

This group of industries includes the manufacture of all kinds of food products, except liquors and beverages. Measured by the value of products, it is the most important of the 14 groups of industries. It may be subdivided into two subordinate groups, the first covering the output of animal products, and the second that of vegetable products. Table 1 gives, for the industries of each subgroup, the principal items of information as reported at the census of 1909. It should be borne in mind that the total value of products for each of the subgroups involves duplication, due to the use of the products of one industry as materials for another industry in the subgroup. The duplication is greatest in the subgroup "vegetable products."

The main products of the six industries covered by the first division of this table are food products obtained directly or indirectly from animals, using the word "animal" in a broad sense. There were 10,561 establishments, with products valued at \$1,700,128,745, reported for this group of industries in 1909, as compared with 10,584 establishments, with products valued at \$1,131,821,396 in 1904. In 1909 the value of products of these industries formed 43.2 per cent of the total for the group designated "food and kindred products," as compared with 39.8 per cent in 1904.

Of the industries given in Table 1, 16 depend primarily upon vegetable products for their material. This group comprised 44,803 establishments, with products valued at \$2,237,489,146, in 1909, as compared with 35,273 establishments and products to the value of \$1,713,734,376 in 1904.

Table 1	INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
	Total	55,364	411,575	\$208,663,293	\$3,937,617,691	\$749,814,811
	Animal products	10,561	119,385	67,069,584	1,700,128,745	220,721,336
	Butter, cheese, and condensed milk.....	8,479	18,431	11,081,308	274,557,718	39,011,654
	Butter, reworking.....	24	295	185,672	8,200,533	776,875
	Canning and preserving, fish and oysters ¹	398	9,226	3,665,034	28,328,293	10,846,253
	Lard, refined, not made in slaughtering and meat-packing establishments.....	7	399	179,660	10,326,471	695,240
	Oleomargarine.....	12	606	413,284	8,147,629	1,650,997
	Slaughtering and meat packing.....	1,641	89,728	51,644,720	1,370,568,101	147,740,317
	Vegetable products	44,803	292,190	141,593,709	2,237,489,146	529,093,475
	Beet sugar.....	58	7,204	4,808,446	48,122,383	20,857,213
	Bread and other bakery products.....	23,926	100,216	59,351,380	396,804,844	168,631,181
	Canning and preserving, fruits and vegetables ¹	3,869	50,042	15,510,809	123,772,908	44,431,889
	Chocolate and cocoa products.....	27	2,826	1,268,613	22,390,222	6,867,102
	Coffee and spice, roasting and grinding.....	607	7,490	3,676,316	110,532,787	27,327,689
	Confectionery.....	1,944	44,638	16,616,388	134,795,913	53,045,140
	Cordials and syrups.....	117	1,005	503,455	9,662,170	4,320,908
	Flavoring extracts.....	420	1,229	557,730	8,828,034	4,399,806
	Flour-mill and gristmill products.....	11,691	39,453	21,464,386	883,584,405	116,007,926
	Food preparations.....	1,213	14,908	7,042,689	125,331,181	41,380,032
	Glucose and starch.....	118	4,778	2,666,483	48,799,311	11,900,640
	Peanuts, grading, roasting, cleaning, and shelling.....	46	1,949	351,254	6,736,551	1,124,487
	Rice, cleaning and polishing.....	71	1,239	563,538	23,371,457	2,870,377
	Sugar and molasses.....	214	4,127	1,862,751	30,620,738	9,325,894
	Sugar, refining, not including beet sugar.....	19	9,399	6,620,071	248,628,659	22,340,669
	Vinegar and cider.....	963	1,543	723,488	8,447,577	3,483,639

¹ In most tables of this report the two branches of the canning and preserving industry are combined.

BUTTER, CHEESE, AND CONDENSED MILK.

This classification covers the manufacture in factories of all grades of butter and cheese, the different varieties of condensed milk, and dried casein and whey, but does not include the operations of cream separating stations, unless the station was operated as a part of a butter and cheese factory.

There are three main branches of this industry, corresponding to the products named in its designation, but since some establishments are engaged in two, or all three branches, only combined totals are shown in most tables. An approximate idea of the relative importance of the several branches may, however, be gained by assigning each of the establishments making two or more of the main products to a given class according to the product of chief value. The principal data for 1909 for the establishments classified upon this basis are as follows:

Table 2	ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
	Total	8,479	18,431	\$11,081,308	\$235,546,064	\$274,557,718	\$39,011,654
	Butter.....	4,783	11,563	7,241,253	169,646,441	194,999,198	25,352,757
	Cheese.....	3,500	2,704	1,609,362	39,021,766	44,283,177	5,241,411
	Condensed milk.....	136	4,164	2,170,193	26,877,857	35,295,343	8,417,486

¹ The next table shows the quantity and value of the products in 1909.

Ice, sugar of milk, canned goods, food preparations, and other products not ordinarily associated with the manufacture of dairy products, to the value of \$2,322,433 for 1909, were reported as subsidiary products by some of the establishments, and are included with the total of \$274,557,718 representing the product of the industry.

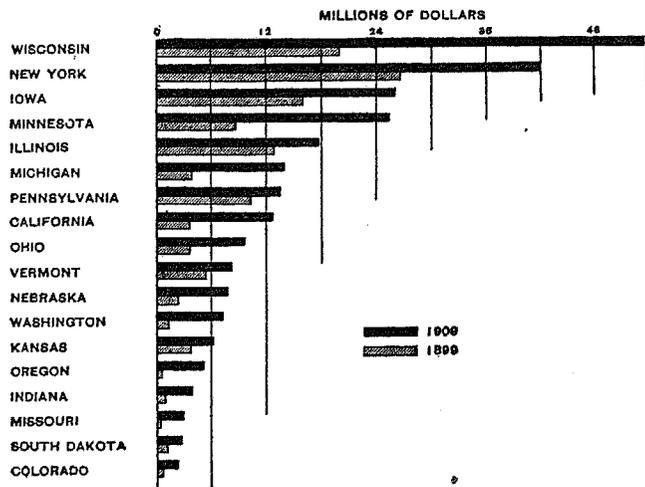
Table 3	KIND.	Quantity (pounds). ¹	Value. ¹
	Total		\$274,557,718
	Butter.....	624,764,653	179,510,619
	Packed solid.....	410,692,616	115,098,056
	Prints and rolls.....	214,072,037	64,412,563
	Cheese.....	311,126,317	43,239,024
	Full-cream.....	287,110,383	40,817,073
	Part-cream.....	10,803,892	1,198,000
	Skimmed.....	7,770,812	420,519
	Other kinds.....	5,441,730	805,332
	Condensed milk.....	494,796,544	33,563,129
	Sweetened.....	214,518,310	17,345,278
	Unsweetened.....	280,278,234	16,217,851
	Cream sold.....	81,211,374	9,828,072
	Skimmed milk sold.....	352,594,574	629,135
	Casein dried from skimmed milk.....	13,018,268	795,544
	All other products.....		6,990,395

¹ In addition, 2,381,212 pounds of butter, to the value of \$664,171, and part-cream cheese, condensed milk, and other dairy products to the value of \$55,211, were produced by establishments engaged primarily in the manufacture of bread and other bakery products, confectionery, ice, and mineral and soda waters, and the reworking of butter.

At the census of 1849 eight cheese factories, with 55 wage earners and products valued at \$67,210, were reported; at the census of 1859 there were reported two cheese factories, with 7 wage earners and products valued at \$13,400, and one condensed milk factory, with 10 wage earners and products valued at \$48,000; and for 1869 there were reported 1,313 cheese factories, with 4,607 wage earners and products valued at \$16,771,665, but no condensed milk factories. At every succeeding census, however, butter factories and condensed milk factories have been reported, as well as cheese factories; and in 1879 the statistics for the three classes of establishments were combined and presented under the common heading "cheese and butter (factory)." The corresponding designation at the census of 1889 was "cheese, butter, and condensed milk, factory product," but statistics were also secured at this census for "cheese and butter, urban dairy products." Data as to the production of butter and cheese in urban dairies were collected in 1899 also, and included in the report for the factory industry, but as such establishments were not canvassed at later censuses, these figures are omitted from the statistics for

1899 here presented. In 1899 and 1904 the industry was designated "cheese, butter, and condensed milk," but the wording was changed to "butter, cheese, and condensed milk" in 1909, in order to give first place to butter as the product of chief value.

BUTTER, CHEESE, AND CONDENSED MILK—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



General statistics for the industry from 1879 to 1909, which are given in Table 4, reveal its rapid growth, which is attributable partly to the gradual transfer of butter and cheese making from farms to factories.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	8,479	18,431	\$11,081,308	\$235,546,064	\$274,557,718	\$39,011,654
1904.....	8,926	15,557	8,412,937	142,920,277	168,182,789	25,262,512
1899.....	9,242	12,799	6,145,561	108,841,200	130,783,349	21,942,149
1889.....	4,552	12,219	4,248,854	49,819,301	60,635,705	10,816,404
1879.....	3,932	7,903	1,546,495	18,363,579	25,742,510	7,378,931

Butter and cheese made on farms and in factories.—The manufacture of butter and cheese is closely allied to agricultural pursuits and it is often difficult to make a satisfactory distinction between the operations of the farm and the factory. Some of the dairies on farms use power, and the magnitude of their operations would entitle them to be classed as factories, but to avoid confusion and the possibility of duplication it was decided that in the census reports all butter and cheese made upon farms should be reported as an agricultural product.

The following statement shows the quantity of butter and cheese reported as made on farms and in factories (those assigned to the butter, cheese, and condensed milk industry only), respectively, at the censuses of 1909 and 1899. Some butter and cheese are also made in places not included as factories or farms, but there are no data as to this product.

	BUTTER (POUNDS).		CHEESE (POUNDS).	
	1909	1899	1909	1899
Total.....	1,619,415,263	1,491,752,602	320,532,181	298,344,642
Made in factories.....	624,764,653	420,126,546	311,126,317	281,972,324
Made on farms.....	994,650,610	1,071,626,056	9,405,864	16,372,318

BUTTER, REWORKING.

The statistics shown for this industry cover establishments engaged in reworking or renovating inferior or deteriorated butter, the product being known as "process butter." The Federal Government taxes renovated or "process" butter one-fourth of 1 cent per pound and requires an annual license fee of \$50 from each manufacturer. Statistics for the industry were not shown separately prior to 1899.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	24	295	\$185,572	\$7,423,658	\$8,200,533	\$776,875
1904.....	35	404	252,139	6,247,029	7,271,086	1,024,057
1899.....	10	148	67,747	1,345,418	2,114,935	769,517

The "renovated" or "process" butter made in 1909 by establishments engaged primarily in the manufacture of creamery butter and of refined lard, was valued at \$3,846,712. The value of products for the industry includes a small amount of subsidiary products, such as ice and creamery butter.

CANNING AND PRESERVING, FISH AND OYSTERS.

In the general tables the statistics for the canning and preserving of these products in 1909 are combined with those for the canning and preserving of fruits and vegetables and the manufacture of pickles, preserves, and sauces under the broad classification of "canning and preserving," for the reason that many establishments have products that fall under more than one of these headings. The branches have, however, also been segregated by assigning each establishment according to its product of chief value.

Separate totals for the two subdivisions of the fish and oyster branch of the canning and preserving industry are given for 1909 in the following statement:

ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	398	9,926	\$3,565,034	\$17,462,040	\$28,328,293	\$10,846,253
Canning and curing fish ..	328	7,260	3,090,953	15,911,335	25,514,436	9,603,101
Canning oysters.	70	2,666	474,081	1,570,705	2,813,857	1,243,152

The figures for value of products for these two classes of establishments do not represent the exact

value of the respective products that were canned and preserved in the establishments under consideration, because the products of the establishments classified as canning oysters included fish, canned or salted, to the value of \$512,267, and the products of the establishments classified as canning and preserving fish included canned oysters and clams to the value of \$83,977.

At the census of 1909 canned and preserved fish and oysters and other sea foods to the value of \$760,620 were reported as subsidiary products by establishments canning fruits and vegetables, and such products to the value of \$202,030 were reported by establishments engaged primarily in the manufacture of other products.

If the value of these products is added to the value of products for 1909 of the establishments engaged primarily in canning and preserving fish and oysters, and the value of the subsidiary products of the latter group of establishments deducted, the result, which is about \$27,000,000, represents the total value of sea foods canned and preserved, as nearly as can be determined by census figures. This amount is 23.6 per cent greater than the corresponding figure for 1904, approximately \$22,000,000.

Table 8 shows the quantity and value of fish and oyster products of the canning and preserving industry. The items include the production of establishments assigned to other branches of the industry as well as those assigned to the branch "fish and oysters."

Table 8	KIND.	Quantity (pounds). ¹	Value. ¹
Canned fish and oysters.			
	Salmon.....	235,418,713	\$17,573,311
	Sardines.....	99,831,523	8,723,565
	Oysters.....	90,094,284	4,931,831
	All other.....	28,192,392	2,443,101
		16,700,509	1,474,814
Smoked fish.			
	Herring.....	39,814,989	2,900,417
	Salmon.....	21,369,856	931,611
	Finnan haddie.....	6,836,099	850,540
	All other.....	4,513,222	304,620
		7,095,812	713,646
Salted fish.			
	Cod.....	128,539,299	7,174,561
	Mackerel.....	49,494,333	3,077,612
	Herring.....	9,045,469	740,513
	Haddock.....	21,718,467	461,287
	All other.....	7,873,156	319,248
		40,407,869	2,575,901

¹ In addition, 531,054 pounds of canned fish, valued at \$19,649; 924,785 pounds of smoked fish, valued at \$38,841, and 4,630,322 pounds of salted fish, valued at \$143,540, were reported by establishments engaged primarily in the manufacture of fertilizers, food preparations, and oil, "not elsewhere specified," and in slaughtering and meat packing.

The value of the products of the fish canneries and salting stations in Alaska, amounting to \$9,189,982 in 1909, is not included in these figures, which are for continental United States only.

For the censuses prior to 1889 the statistics for this branch of the canning and preserving industry were not shown, or were so combined with figures relative to the catching of fish not intended for canning or curing that satisfactory totals can not be obtained. Data for later censuses are shown in Table 9.

Table 9	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	398	9,926	\$3,565,034	\$17,482,040	\$28,328,203	\$10,846,263
1904.....	379	8,445	2,839,568	14,930,018	22,627,667	7,697,649
1899.....	333	12,598	3,215,197	13,409,943	19,430,016	7,020,968
1889.....	126	8,473	1,770,753	6,799,576	10,233,034	3,433,458

LARD, REFINED, NOT MADE IN SLAUGHTERING AND MEAT-PACKING ESTABLISHMENTS.

This industry is closely allied to slaughtering and meat packing, as a large proportion of the material used is obtained from the wholesale and retail slaughterhouses. The principal materials are rough lard and leaf lard, which are rendered, refined, and put in shape for the consumer. The refining of lard is now carried on almost wholly in slaughtering and meat-packing establishments (see Table 14), but seven separate establishments, with products valued at \$10,326,471, were reported for 1909. Comparative statistics for the several censuses have no great significance because of changes in the relation of the business to the slaughtering and meat-packing industry.

Table 10	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	7	399	\$179,066	\$9,631,231	\$10,326,471	\$695,240
1904.....	9	441	219,387	5,640,178	6,128,601	488,423
1899.....	19	499	237,930	7,496,845	8,630,001	1,134,056
1889.....	17	888	460,102	12,654,300	15,474,848	2,820,488
1879.....	26	1,181	546,258	21,948,326	23,195,702	1,246,870

The decrease in the manufacture of refined lard since 1879 in establishments assigned to this classification is due in large part to the taking over of that industry by the slaughtering and meat-packing industry, to which it is so closely allied, and also to the remarkable growth in the use of lard compounds and lard substitutes which are included under the classification "food preparations."

The value of products for the industry in 1909 (\$10,326,471) included renovated butter and butterine to a large value, which can not be stated without disclosing the business of an individual establishment.

OLEOMARGARINE.

The manufacture of this product is allied to the slaughtering and the creamery industries, as the materials consist principally of oleo oil, neutral lard, creamery butter, cream, milk, cottonseed oil, and stearin.

Table 11	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	12	606	\$413,284	\$6,496,632	\$8,147,629	\$1,650,697
1904.....	14	522	315,736	4,307,538	5,573,725	1,176,187
1899.....	24	1,054	534,444	7,639,501	12,499,812	4,860,311
1889.....	12	264	154,138	2,175,264	2,988,525	813,261
1879.....	15	599	212,952	5,486,141	6,892,939	1,406,798

As a rule, the establishments classed under the heading "oleomargarine" were engaged exclusively in the manufacture of oleomargarine or butterine, only a few reporting grease or other subsidiary products. The value of products of the establishments classified under this industry in 1909 was \$8,147,629. In addition, oleomargarine, valued at \$5,963,981 was manufactured in slaughtering and meat-packing establishments.

The decrease in the industry between 1879 and 1889 was caused primarily by the enforcement of laws in New York state restricting its production. The value of the product of oleomargarine factories in that state in 1879 amounted to \$5,338,753, but no factories were reported in 1899. The decided decrease between 1899 and 1909 was due largely to the imposition by the Federal Government of a tax of one-fourth of 1 cent a pound on uncolored oleomargarine and of 10 cents a pound on oleomargarine colored in imitation of butter.

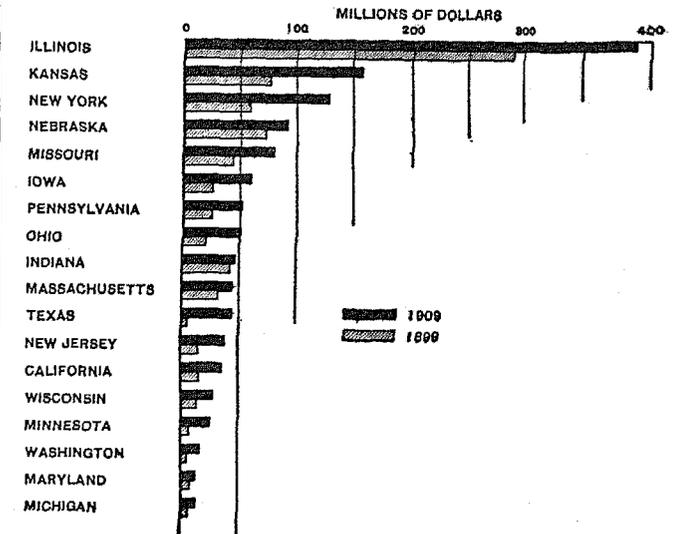
SLAUGHTERING AND MEAT PACKING.

Measured by the value of products this industry is the most important included in the group. Under this heading are given statistics for wholesale slaughtering and meat-packing establishments and public abattoirs, and for establishments that made a specialty of manufacturing sausage, but retail butchering establishments are not intended to be covered.

It is impossible, however, to draw a hard and fast line between wholesale and retail business. The operations of butchers whose main business was slaughtering for the retail trade, but who also disposed of considerable quantities of meat at wholesale, were intended to be included, and the reports for such establishments ordinarily covered both their retail and their wholesale business. Establishments properly included in the wholesale industry at one census might, on account of changes in the character of their business, properly be

omitted at another census, although still in operation, and even at the same census establishments of identical characteristics may have been treated differently by the special agents in different sections of the country. The statistics for the industry, however, may be accepted as representing practically all important establishments engaged wholly, or chiefly, in slaughtering for wholesale trade.

SLAUGHTERING AND MEAT PACKING—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



The statistics for slaughtering and meat packing include figures for four classes of establishments: (1) Those that did both slaughtering and meat packing; (2) those engaged exclusively in slaughtering; (3) those engaged exclusively in meat packing; and (4) those that manufactured sausage only. Data for each class of establishments are given for 1909 in the following statement:

Table 12 ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	1,641	89,728	\$51,844,720	\$1,202,827,784	\$1,370,568,101	\$167,740,317
Slaughtering and meat packing.....	497	76,637	42,915,312	1,014,141,284	1,148,035,605	133,894,321
Slaughtering.....	565	6,418	4,664,918	132,201,355	151,235,853	19,093,399
Meat packing.....	159	4,738	2,824,224	45,094,837	56,212,973	11,118,136
Sausage making.....	420	1,915	1,240,266	11,339,708	15,023,670	3,633,962

The general scope of the slaughtering and meat-packing industry may best be seen from the following

statement of the quantity and value of each class of products in 1909:

Table 13 KIND.	Quantity.	Value.	KIND.	Quantity.	Value.
Total		\$1,370,568,101	Tallow, or oleo stock.....	202,544,139 pounds.....	\$13,499,659
Beef.....	4,335,674,330 pounds.....	339,742,608	Oleo oil.....	19,692,172 gallons.....	16,475,726
Fresh.....	4,209,196,668 pounds.....	327,583,456	Other oils.....	11,343,186 gallons.....	6,350,745
Salted or cured.....	126,477,662 pounds.....	12,159,152	Oleomargarine.....	42,912,466 pounds.....	5,963,981
Veal, fresh.....	252,997,078 pounds.....	25,058,586	Stearin.....	54,957,997 pounds.....	6,371,935
Mutton, fresh.....	495,457,894 pounds.....	50,735,116	Glue and gelatine.....	27,936,035 pounds.....	1,944,338
Pork.....	4,377,127,187 pounds.....	458,845,161	Fertilizers and fertilizer materials.....	362,136 tons (2,000 lbs.)	8,726,318
Fresh.....	1,547,494,184 pounds.....	158,714,862	Hides.....	9,560,138 number	68,401,515
Salted.....	952,130,557 pounds.....	95,959,048	Sheep pelts.....	504,563,930 pounds.....	11,404,556
Hams.....	789,861,744 pounds.....	101,089,390	Goat and kid skins.....	11,691,308 number.....	20,679
Shoulders.....	346,294,769 pounds.....	33,225,458	Wool.....	23,359 number.....	8,327,095
Bacon and sides.....	741,345,933 pounds.....	97,856,403	Amount received for custom or contract work.....	21,858,926 pounds.....	1,329,730
Sausage, fresh or cured.....	59,564,582	59,564,582	All other products.....		93,170,064
All other fresh meat.....	257,809,083 pounds.....	16,392,788			
Canned goods.....	121,376,837 pounds.....	15,345,543			
Lard.....	1,243,567,604 pounds.....	134,396,587			

Many concerns in the slaughtering and meat-packing industry make large quantities of subsidiary products similar to those which form the chief products of other industries distinguished by the census. In the case of some large concerns the branches or departments making such subsidiary products, especially those making fertilizers and soap, are sharply segregated and have complete accounts of their own. In such cases these departments have been treated as separate establishments and classified according to their principal product. In other cases, however, it was impossible to segregate the capital, wages, cost of materials, and other items relating to the manufacture of the subsidiary products. The extent to which in 1909 the establishments classified under the slaughtering and meat-packing industry turned out such subsidiary products is shown in the following statement, in which the values of similar products made by establishments assigned to other classifications are also shown.

CLASS.	Value of all products of establishments engaged primarily in making the product specified. ¹	Value of specified products reported by establishments in the slaughtering and meat-packing industry.
Fertilizers.....	\$103,900,213	\$8,726,818
Gluc.....	13,717,820	1,944,338
Lard.....	10,326,471	134,396,587
Oleomargarine.....	8,147,629	5,963,981
Soap.....	111,357,777	200,765

¹ Includes, in some cases, subsidiary products not indicated by the designation specified.

Comparison with earlier censuses.—At the census of 1849 the industry was called “pork and beef packing,” and in 1859 it was included under the designation of “provisions,” while in 1869 the statistics were collected under four headings, namely, “meat cured and packed, not specified,” “meat packed, beef,” “meat packed, pork,” and “butchering,” while the designation used in 1879 was “slaughtering and meat packing, not including retail butchering.” In 1889, 1899, and 1904 separate figures were secured for “slaughtering and meat packing, wholesale,” “slaughtering, wholesale, not including meat packing,” and the manufacture of “sausage, not made in slaughtering and meat-packing establishments.” In 1909 the designation was “slaughtering and meat packing,” but this covers the three classes of establishments for which separate statistics were published in 1904 and at the two censuses preceding.

From the designations applied to the industry it is evident that the same classes of establishments were not included at every census, although for the censuses from 1889 to 1909, inclusive the totals are fairly comparable. Figures for each census from 1869 to 1909, however, are given in the following statement, as they show in a general way the development of the industry. The totals for the earlier censuses represent the combined figures for the several branches above specified.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,041	89,728	\$51,644,720	\$1,202,827,784	\$1,370,568,101	\$167,740,317
1904.....	1,221	75,399	41,066,796	811,425,562	922,037,528	110,611,966
1899.....	1,080	69,264	33,845,673	685,310,099	788,367,647	103,057,548
1889.....	1,367	44,812	24,668,202	482,897,381	564,667,035	81,769,654
1879.....	872	27,297	10,508,530	267,738,902	303,562,413	35,823,511
1869.....	768	8,366	2,553,447	61,674,024	75,826,500	14,152,476

Animals slaughtered for food.—The number of animals killed in wholesale slaughtering and meat-packing establishments does not represent the total number of animals slaughtered for food. In order to comply with a special amendment to the Thirteenth Census act calling for that total, it was necessary to make special inquiries from retail slaughterhouses, and to include also figures covering animals slaughtered on farms and ranges secured through the census of agriculture. The following statement shows the total number as reported for 1909:

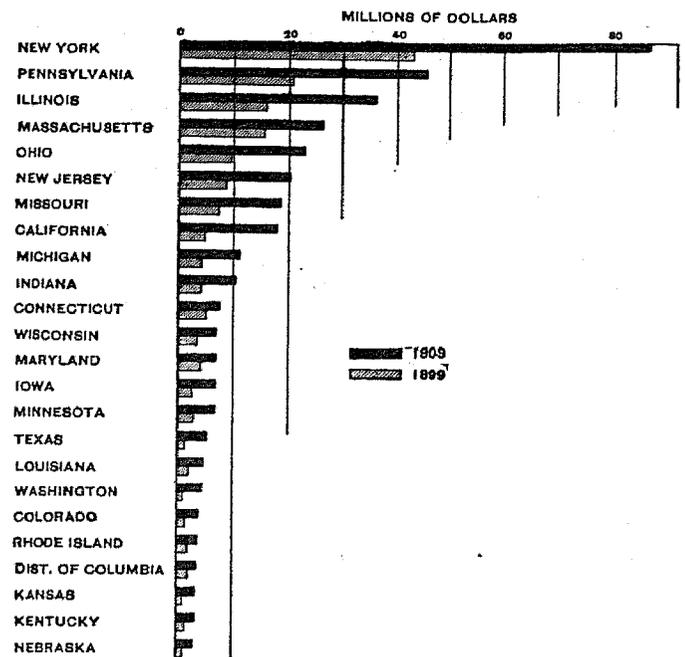
KIND.	Total.	In slaughterhouses.	On farms and ranges.
Total.....	88,358,815	69,791,543	18,567,272
Beeves.....	13,611,422	12,202,782	1,408,640
Calves.....	6,515,976	5,384,376	1,131,600
Sheep and lambs.....	14,724,699	14,195,173	529,526
Hogs.....	53,219,568	37,841,051	15,378,517
Goats and kids.....	285,553	166,564	118,989
All other animals.....	1,597	1,597

¹ The inquiry concerning the animals slaughtered on farms listed “sheep” and “goats” without expressly stating that lambs and kids were to be included. Inasmuch as it did distinguish between “calves” and “cattle, other than calves,” and listed “hogs and pigs” together, it is possible that the number of sheep reported may not include all the lambs, or the number of goats, all the kids. The omissions, if any, were probably few.

BREAD AND OTHER BAKERY PRODUCTS.

This classification covers the baking of bread, crackers, pies, cakes, pastry, pretzels, etc.

BREAD AND OTHER BAKERY PRODUCTS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



The small neighborhood bakeries, as well as the large factories, were included at the census of 1909, provided their product exceeded \$500 in value during the census year. The statistics, however, do not cover the making of bread or other bakery products in hotels, restaurants, or boarding houses, nor in private houses. Data as to the quantities of specific products were not called for by the schedule.

While the wording of the class designation has changed slightly at different censuses, it was evidently intended to cover practically the same class of establishments at each census since 1849. The rapid growth of the industry indicates the gradual transfer of a large part of the baking from homes to factories.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	23,926	100,216	\$59,351,386	\$238,033,663	\$396,864,844	\$158,831,181
1904.....	18,226	81,278	43,172,262	155,988,868	269,582,811	113,593,943
1899.....	14,836	60,192	27,864,024	95,051,952	175,368,682	80,316,730
1889.....	10,484	38,841	19,120,259	72,507,579	128,421,635	55,913,956
1879.....	6,396	22,488	9,411,328	42,612,027	65,824,806	23,212,869
1869.....	3,550	14,126	5,353,184	22,211,856	36,907,704	14,695,848
1859.....	1,930	6,514	2,086,148	10,634,199	16,080,012	6,345,813
1849.....	2,027	6,727	1,960,416	3,367,370	13,294,229	4,926,659

CANNING AND PRESERVING, FRUITS AND VEGETABLES.

The statistics presented in this section cover (1) the canning and preserving of fruits and vegetables, and (2) the manufacture of pickles, preserves, jellies, sauces, etc. The first-named branch of the industry includes the packing of dried fruits by packing houses which make a specialty of such business, but not the drying and packing of fruits by the grower on the farm. As already stated, the data for the canning and preserving of fish and oysters are combined with those for fruits and vegetables in the general tables of this report under the comprehensive heading "canning and preserving," this being the more desirable because of the frequent overlapping of different branches in a single establishment. The relative importance of the two branches of the business which handle chiefly fruits and vegetables can be shown approximately by classifying each establishment as a whole according to its product of chief value. This is done in Table 18 for 1909. Data for the canning of oysters and fish are presented in Table 7.

Table 19 shows the principal fruit and vegetable products of the canning and preserving industry, other than pickles, preserves, and sauces, which were not reported in detail for 1909. The statistics cover the products made by all establishments in the industry, to whatever branch assigned.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	3,369	50,042	\$15,516,809	\$84,341,612	\$128,772,908	\$44,431,689
Canned and dried fruits and vegetables ¹	2,789	40,492	11,771,698	62,543,622	91,439,161	28,886,539
Pickles, preserves, and sauces ²	580	9,550	3,745,111	21,797,990	37,333,747	15,545,150

¹ The value of additional products made in 1909 by establishments engaged primarily in the manufacture of other products are given in a footnote to Table 19.
² In addition pickles, preserves, and sauces were made in 1909 to the value of \$3,376,137 by establishments engaged in other industries, such as the manufacture of baking powders and yeast; bluing; bread and other bakery products; chocolate and cocoa products; confectionery; cordials and sirups; flavoring extracts; food preparations; vinous liquors; mineral and soda waters; essential oil; and sugar and molasses; the roasting and grinding of coffee and spice; slaughtering and meat packing; and the refining of sugar.

The case, which is used as the unit of measure for the canned goods, consists of 24 standard-size cans—No. 2 (also called 2-pound cans) for beans, corn, peas, berries, cherries, and plums, and No. 3 (also called 3-pound cans) for all other fruits and vegetables. Where the output was reported in other forms by the canneries, the quantities so reported have been reduced to equivalent standard cases.

KIND.	Quantity. ¹	Value. ¹
Canned vegetables.....	Cases.	
Tomatoes.....	22,752,469	\$51,568,914
Corn.....	12,709,986	15,747,941
Peas.....	7,451,265	19,332,156
Beans.....	5,991,703	19,247,993
Asparagus.....	2,392,694	6,613,696
Pumpkin.....	228,539	1,973,775
Sweet potatoes.....	440,805	576,043
All other.....	347,286	591,661
	2,060,503	3,144,907
Canned fruits.....	5,561,464	12,928,474
Peaches.....	1,467,213	3,753,636
Apples.....	1,205,742	1,688,720
Apricots.....	630,156	1,825,311
Pears.....	637,782	1,833,214
Berries.....	315,851	1,754,627
Cherries.....	290,351	1,619,613
All other.....	354,280	853,591
Dried fruits.....	Pounds.	
Raisins.....	400,325,767	19,840,395
Prunes.....	111,774,767	4,837,933
Apples.....	138,498,490	5,130,412
Peaches.....	44,568,244	3,068,095
Apricots.....	46,843,391	2,423,663
All other.....	29,205,569	2,277,177
	29,438,366	2,673,695

¹ In addition, 769,017 cases of canned vegetables, valued at \$1,714,909; 27,474 cases of canned fruits, valued at \$76,964; and 1,007,033 pounds of dried fruits, valued at \$33,159, were reported by establishments engaged primarily in other industries, such as the manufacture of chocolate and cocoa products, cordials and sirups, flour-mill and gristmill products, liquors (vinous), sugar and molasses, and vinegar and cider, and the slaughtering and meat-packing industry.

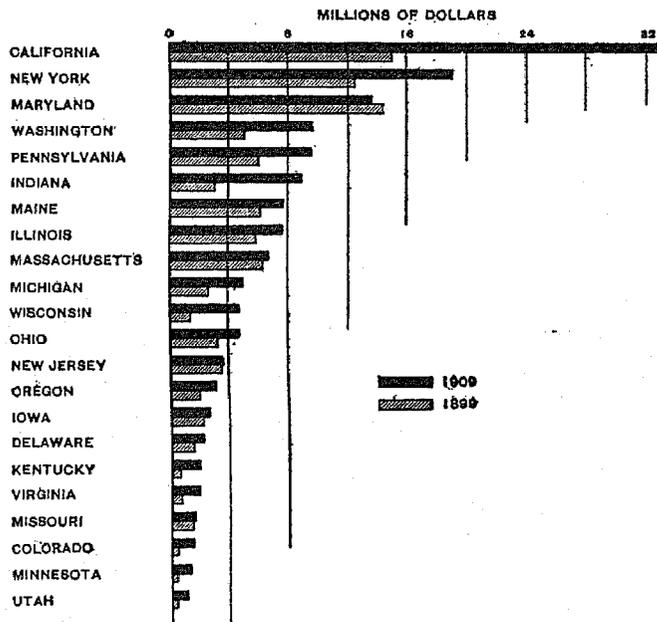
Canned vegetables constituted the most important class, as measured by value of the products of the establishments engaged primarily in canning and drying fruits and vegetables. Dried fruits, among which prunes predominated, ranked second in value among the groups of products, while canned fruits were the least important of the three groups. Peaches were the principal fruit canned.

The combined data for "canning and preserving, fruits and vegetables," and "pickles, preserves, and sauces," for the censuses from 1869 to 1909, are given in the next table. The figures show that rapid growth has taken place in these branches of the industry, partly by reason of the transfer to factories of a considerable part of the canning, preserving, etc., formerly done in private houses.

	Number of establishments.	Wages earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	3,369	50,042	\$15,516,809	\$84,341,019	\$128,772,908	\$44,431,889
1904.....	2,789	48,499	13,496,784	68,217,318	107,838,309	39,620,991
1899.....	2,237	44,414	10,489,908	51,257,620	79,904,548	28,646,928
1889.....	1,202	53,339	5,810,209	23,993,704	39,653,271	15,659,567
1879.....	520	32,835	2,939,414	13,523,932	20,006,918	6,482,986
1869.....	127	6,204	885,070	3,939,616	6,668,513	2,728,897

The following diagram covers the canning and preserving of fish and oysters as well as that of fruits and vegetables and the manufacture of pickles, preserves, and sauces.

CANNING AND PRESERVING—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



CHOCOLATE AND COCOA PRODUCTS.

Under this classification is included the manufacture of practically all of the products of the nut of the cocoa tree, such as chocolate, cocoa, cocoa butter, and broma. It does not cover establishments making primarily chocolate confectionery, although some of the establishments included under this classification reported such confectionery as a subsidiary product.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	27	2,826	\$1,268,613	\$15,523,060	\$22,390,222	\$6,867,162
1904.....	25	2,090	821,851	9,722,555	14,389,699	4,667,144
1899.....	24	1,314	525,875	6,876,682	9,668,192	2,789,510
1889.....	11	893	456,047	2,892,219	4,221,675	1,329,456
1879.....	7	223	82,268	812,403	1,302,153	489,750
1869.....	9	199	78,700	655,149	946,259	291,110

Substantially all the value of products shown in the table is that of chocolate and cocoa products proper, the total value of the subsidiary products made by these establishments being only \$650,109 in 1909. In that year three establishments, assigned, respectively, to the industries "bread and other bakery products," "confectionery," and "patent medicines and compounds and druggists' preparations," reported chocolate and cocoa products to the value of \$327,008.

COFFEE AND SPICE, ROASTING AND GRINDING, AND PEANUTS, GRADING, ROASTING, AND SHELLING.

The roasting of coffee and the grinding of spice are frequently carried on in connection with the wholesale grocery business. For many establishments it is impossible to separate the statistics of these manufacturing processes from those of the mercantile transactions, and it is probable that a larger proportion of the totals shown for the industry represent purely mercantile business than is the case with any other branch of manufacture. A number of establishments included under the classification "coffee and spice, roasting and grinding," manufactured baking powder, bicarbonate of soda, bluing, household ammonia, mustard, cream of tartar, flavoring extracts, and similar commodities as subsidiary products.

Up to 1904, when the grading, roasting, cleaning, and shelling of peanuts was shown as a separate industry, it was included with "coffee and spice, roasting and grinding." The statistics for this industry cover the various operations connected with the preparation of peanuts for the market. As a rule, the establishments are located in the states where the peanuts are grown and are engaged exclusively in handling peanuts, no other products being reported. Some peanuts are, however, handled by coffee and spice concerns.

Separate statistics for "peanuts, grading, roasting, cleaning, and shelling," and for "coffee and spice, roasting and grinding," for 1909 and 1904, are given in the following table. In addition to the value of products shown for the first-named industry in 1909, peanuts to the value of \$306,731 were reported by establishments classified under other industries, namely, "coffee and spice, roasting and grinding,"

"confectionery," "food preparations," "flavoring extracts," and "mineral and soda waters."

Table 22

ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Grading, roasting, cleaning, and shelling peanuts:						
1909.....	46	1,949	\$351,254	\$8,612,064	\$9,736,551	\$1,124,487
1904.....	30	1,356	205,281	6,324,357	7,260,810	936,453
Roasting and grinding coffee and spice:						
1909.....	607	7,490	3,676,316	83,205,098	110,532,787	27,327,689
1904.....	421	5,953	2,830,243	65,847,335	84,188,301	15,341,056

The combined statistics for "coffee and spice, roasting and grinding," and "peanuts, grading, roasting, cleaning, and shelling," are shown for the censuses from 1849 to 1909 in the following table:

Table 23

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	653	9,439	\$4,027,570	\$31,817,162	\$120,269,338	\$28,452,176
1904.....	451	7,315	3,035,524	72,171,692	91,449,201	19,277,509
1899.....	458	6,387	2,486,759	55,112,303	69,527,108	14,414,805
1889.....	358	3,766	1,815,634	65,961,465	75,042,010	9,080,545
1879.....	300	2,716	1,370,699	18,201,302	22,924,894	4,723,592
1869.....	156	1,220	670,983	8,171,837	11,260,423	3,094,586
1859.....	102	630	223,136	3,307,985	4,271,478	963,493
1849.....	48	317	99,900	843,254	1,240,614	397,360

In most cases the roasting and grinding of coffee and spice are done by wholesale grocers, and it is difficult to separate the data relating to these processes from those relating to the mercantile transactions. More care was probably exercised in this regard at the census of 1899 than at the census of 1889, and this is probably the reason for the decrease in value of products for the decade.

CONFECTIONERY.

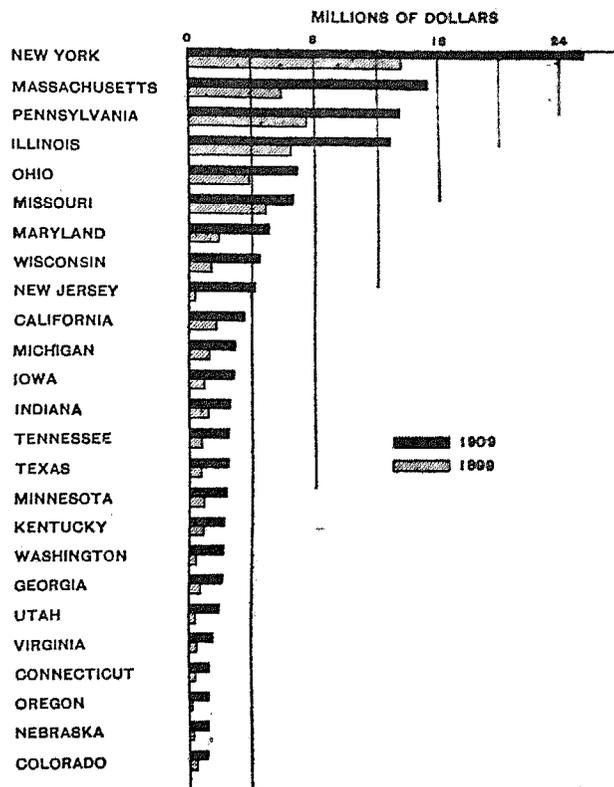
This classification covers the manufacture of all kinds of candy and confections, cake ornaments, popcorn balls or cake, chewing gum, salted nuts, stuffed dates, etc. It does not cover the operations of establishments making primarily chocolate, cocoa, and similar products, which are classified under the designation of "chocolate and cocoa products."

Table 24

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,944	44,638	\$15,615,388	\$81,150,773	\$134,795,913	\$53,645,140
1904.....	1,348	36,236	11,699,257	48,810,342	87,087,253	38,276,911
1899.....	962	26,866	8,020,453	35,354,208	60,643,946	25,289,738
1889.....	2,621	21,724	7,783,007	31,116,629	55,997,101	24,880,472
1879.....	1,450	9,801	3,242,852	17,125,775	25,637,033	8,511,258
1869.....	949	5,525	2,091,826	8,703,560	15,922,643	7,219,083
1859.....	541	2,340	688,423	2,990,186	5,361,100	2,370,914
1849.....	383	1,733	458,904	1,691,824	3,040,671	1,348,847

Prior to 1899 the statistics for the industry included the returns of the numerous small retail makers of confectionery, which accounts for the great decrease in the number of establishments between 1889 and 1899 which is shown in Table 24.

CONFECTIONERY—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



Establishments engaged primarily in the making of confectionery in many cases have subsidiary products of another character. In 1909 confectionery valued at \$5,296,094 was reported by establishments whose chief products placed them under other classifications, notably "bread and other bakery products," "coffee and spice, roasting and grinding," and "chocolate and cocoa products."

CORDIALS AND SIRUPS.

This industry includes the manufacture of cordials and bitters and sirups for flavoring and for medicinal purposes, and is closely allied with the manufacture of flavoring extracts, the products of the two industries overlapping to a considerable extent.

Table 25

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	117	1,095	\$503,455	\$5,341,268	\$9,662,176	\$4,320,908
1904.....	63	660	235,299	2,148,548	3,599,758	1,361,216
1899.....	39	362	116,917	1,565,096	2,107,132	604,636
1889.....	40	281	111,114	1,231,141	1,903,290	672,659
1879.....	16	81	42,928	219,506	331,253	129,727
1869.....	33	258	118,847	505,398	955,271	439,873

As the classification "flavoring extracts" first appeared at the census of 1879, it is probable that in 1869 many of the establishments making flavoring extracts were included with those making cordials and sirups, which would explain the decreases shown between 1869 and 1879.

In 1909 eight establishments engaged primarily in the manufacture of chocolate and cocoa products, confectionery, mineral and soda waters, and other products, reported cordials and sirups to the value of \$400,325.

FLAVORING EXTRACTS.

This industry is, as already stated, closely allied with the making of cordials and sirups. The classification covers the manufacture of extracts for flavoring soda water, ice cream, and other food products, of colors for bakers and confectioners, and of fruit juices. Some of the establishments reported subsidiary products, including not only cordials and sirups, but also cosmetics, baking powder, household ammonia, roasted coffee, and ground spice.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	420	1,229	\$557,736	\$4,458,228	\$3,828,034	\$4,369,806
1904.....	377	1,543	653,366	3,935,960	7,772,070	3,836,110
1899.....	350	1,251	477,950	3,290,600	6,308,162	3,017,562
1889.....	148	507	208,715	1,430,120	2,614,514	1,184,394
1879.....	58	374	129,343	790,049	1,195,637	395,558

In 1909, 397 establishments assigned to other industries, principally those designated "coffee and spice, roasting and grinding," and "patent medicines and compounds and druggists' preparations," reported as subsidiary products flavoring extracts to the value of \$4,695,724, not covered by the above table. The value of products other than flavoring extracts made by the establishments placed under this classification amounted to \$1,127,746.

FLOUR-MILL AND GRISTMILL PRODUCTS.

Scope of the classification.—Measured by value of products, this is the most important industry included in the subgroup comprising industries manufacturing vegetable food products. It furnishes the major portion of the materials used in making bread and other bakery products, and part of the materials for a number of other industries included in this subgroup. The value of flour-mill and gristmill products, therefore, is largely duplicated in the total value of products for the subgroup.

The classification covers mills that grind cereals of every variety, but not establishments that manufacture primarily special cereal food preparations or breakfast foods, such as rolled oats, puffed rice, corn flakes, etc., these being classed under "food preparations." Data for mills which ground exclusively for toll—"custom mills"—are not included in the statistics for the industry proper for 1909 or 1904. These mills were reported at the census of 1899, but have been excluded from the tables presenting statistics for

that year in comparison with those for subsequent censuses.

The following table shows the principal data for 1909 for the merchant mills and for the custom mills:

CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	23,852	46,467	\$22,603,098	\$813,891,347	\$938,699,958	\$124,808,611
Merchant mills.....	11,691	39,453	21,464,386	767,576,479	883,584,405	116,007,926
Custom mills.....	11,961	7,014	1,138,712	46,314,868	55,115,553	8,800,685

The combined products of the merchant mills and the mills engaged exclusively in custom grinding were as follows in 1909:

KIND.	PRODUCTS OF MERCHANT AND CUSTOM MILLS.	
	Quantity.	Value.
Total.....		\$938,699,958
Wheat flour.....	107,108,461 barrels	557,814,979
Rye flour.....	1,591,726 barrels	6,044,659
Buckwheat flour.....	200,959,917 pounds	5,384,616
Barley meal.....	33,649,182 pounds	580,654
Corn meal and corn flour.....	27,188,352 barrels	87,088,530
Hominy and grits.....	837,333,466 pounds	12,689,762
Feed.....	6,001,357 tons (2,000 lbs.)	164,734,722
Offal.....	4,175,173 tons (2,000 lbs.)	91,406,717
All other products.....		12,355,119

It is probable that in many instances the quantities ground for toll were estimated by the miller, and the value of the products made on the custom basis was necessarily estimated.

Comparison with earlier censuses.—The following table gives statistics for all flour mills and gristmills, both merchant and custom, for the decennial censuses from 1849 to 1909. Custom mills were not canvassed in 1904, while for censuses prior to that of 1899 it is impossible to segregate the statistics for merchant mills from those for custom mills.

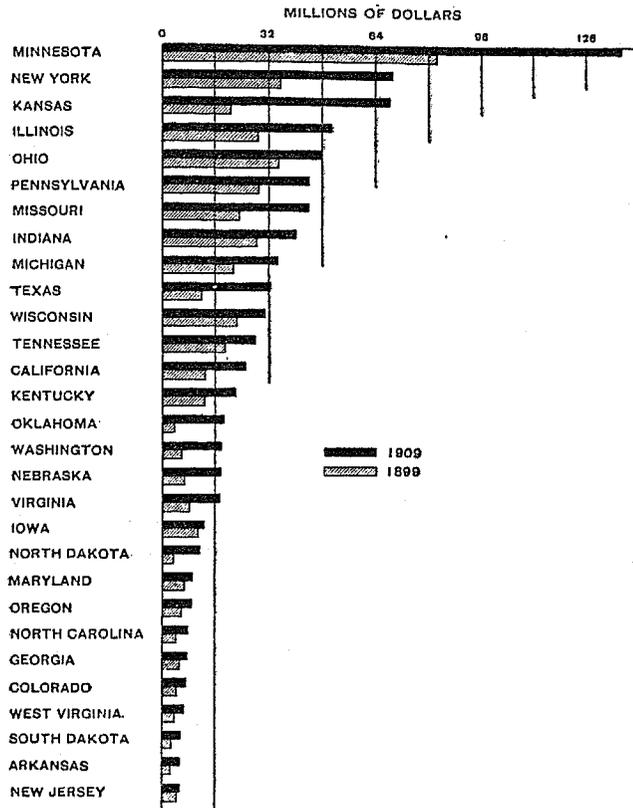
	MERCHANT AND CUSTOM MILLS.					
	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	23,852	46,467	\$22,603,098	\$813,891,347	\$938,699,958	\$124,808,611
1899.....	25,258	37,073	17,703,418	475,826,345	560,719,063	84,892,718
1889.....	18,470	47,403	18,138,402	434,152,290	513,971,474	79,819,184
1879.....	24,338	58,407	17,422,316	441,545,225	505,185,712	63,640,487
1869.....	22,573	58,448	14,577,533	367,392,122	444,985,143	97,593,021
1859.....	13,868	27,682	8,721,391	208,497,309	245,580,365	40,083,056
1849.....	11,891	23,310	5,680,164	113,036,698	136,056,736	23,020,038

Merchant mills.—Some of the merchant mills manufacture feed for live stock as their chief, and in some instances their only, products. The principal data for 1909 for these mills and for the mills which made chiefly products intended for human consumption are given in the next statement.

Table 30

ESTABLISHMENTS MANUFACTURING PRIMARILY—	MERCHANT MILLS: 1909					
	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	11,691	39,453	\$21,464,386	\$767,576,479	\$883,584,405	\$116,007,926
Products for human consumption.....	9,162	36,445	20,041,350	724,294,494	832,790,364	108,495,870
Feed for livestock.....	2,529	3,008	1,423,036	43,281,985	50,794,041	7,512,056

FLOUR MILLS AND GRISTMILLS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



The quantity and value of each class of products of the merchant mills in 1909 are shown in the following table:

Table 31

KIND.	PRODUCTS OF MERCHANT MILLS: 1909	
	Quantity. ¹	Value. ¹
Total.....		\$883,584,405
Wheat flour.....	105,756,645 barrels.....	550,116,254
White.....	105,321,969 barrels.....	548,017,654
Graham.....	434,676 barrels.....	2,088,600
Rye flour.....	1,532,139 barrels.....	6,383,538
Buckwheat flour.....	176,081,891 pounds.....	4,653,561
Barley meal.....	28,550,952 pounds.....	486,009
Corn meal and corn flour.....	21,552,737 barrels.....	66,941,095
Hominy and grits.....	827,987,702 pounds.....	12,509,493
Feed.....	5,132,369 tons (2,000 lbs.).....	140,541,915
Offal.....	4,104,042 tons (2,000 lbs.).....	89,814,427
All other cereal products, including "breakfast foods," oatmeal, rolled oats, etc.....		4,720,106
All other products.....		7,408,016

¹ In addition, merchant-ground products (other than "breakfast foods"), valued at \$1,637,228, were made by establishments engaged primarily in the manufacture of butter, cheese, and condensed milk; coffins, burial cases, and undertakers' goods; fertilizers; food preparations; lumber and timber products; malt; and vinegar and cider; in canning and preserving, and in the grinding of coffee and spice. The items covered by this amount were wheat flour, 105,477 barrels, valued at \$614,952; corn meal, 32,804 barrels, valued at \$87,507; rye flour, 2,620 barrels, valued at \$12,380; feed, 33,765 tons, valued at \$907,165; and offal, 627 tons, valued at \$15,274.

Statistics for the merchant mills at the three censuses from 1899 to 1909 are summarized in the following statement:

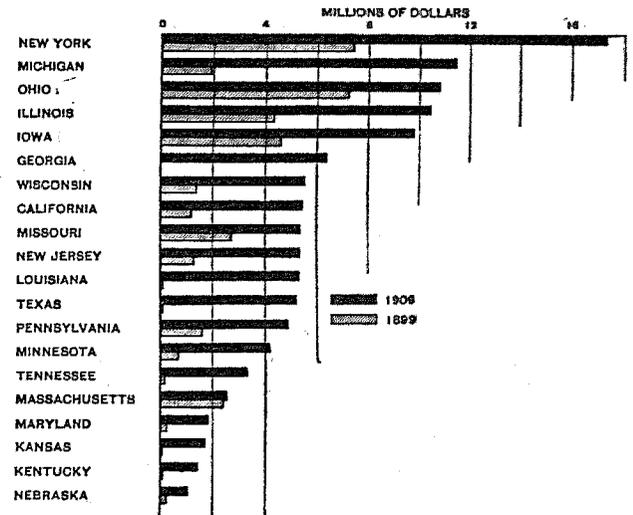
Table 32

	MERCHANT MILLS.					
	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	11,691	39,453	\$21,464,386	\$767,576,479	\$883,584,405	\$116,007,926
1904.....	10,051	39,110	19,822,196	619,971,161	713,633,365	93,062,234
1899.....	9,476	32,220	16,285,163	428,116,737	501,366,304	73,279,547

FOOD PREPARATIONS.

This classification covers the manufacture of food products not included under some more specific heading. Most of the establishments were engaged principally in the manufacture of "cereal" or "breakfast food" preparations, although malted milk, lard substitutes, peanut butter and peanut oil, blended and refined sirup made from maple and other sugar, and ice cream cones are among the products. Establishments that made a specialty of poultry and animal feed are also included under this industry.

FOOD PREPARATIONS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



The following table gives for 1909 separate totals for the establishments engaged primarily in the manufacture of food for human consumption and of feed for animals and poultry, respectively:

Table 33

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	1,213	14,968	\$7,042,689	\$83,942,149	\$125,331,181	\$41,389,632
Foods for human consumption.....	1,021	13,168	6,085,825	67,618,571	104,243,795	36,625,224
Feed for poultry and animals.....	192	1,800	956,864	16,323,578	21,087,386	4,763,808

In 1909 flour mills and gristmills reported the production of breakfast foods, including oatmeal, rolled

oats, etc., to the value of \$4,720,106, and "food preparations" to the value of \$10,754,445 were reported by 315 establishments assigned to other classes of industry. These products are not covered by these tables.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,213	14,968	\$7,042,689	\$83,942,149	\$125,331,181	\$41,389,032
1904.....	760	11,333	4,898,848	37,687,862	61,180,416	23,512,554
1899.....	645	8,214	3,059,343	24,776,625	39,836,882	15,060,257
1889.....	302	3,478	1,222,913	8,129,925	14,108,485	5,878,560
1879.....	109	1,333	318,253	1,604,660	2,493,224	888,564
1869.....	124	1,178	470,599	2,338,717	3,622,404	1,283,747

A separate presentation was made at the census of 1869 for establishments in the food-products industry manufacturing commodities intended to be fed to animals, while no such presentation was made at the census of 1879. It seems probable, therefore, that products of this character were included to a less extent in 1879. Such a change in the scope of the industry would explain in part the decrease in the value of products between 1869 and 1879, though this was also due in large measure to the higher nominal values shown in the depreciated currency of 1869.

The inclusion of the blending and refining of sirups in 1909 accounts in part for the large increases between 1904 and 1909 (see Sugar, pp. 387 and 388).

GLUCOSE AND STARCH.

In most of the tables of this report the statistics relating to the manufacture of glucose and of starch are shown together, but separate totals for the two branches of the industry are here given for 1909, each establishment which made both glucose and starch being classified according to its product of chief value.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total...	118	4,773	\$2,666,483	\$38,898,771	\$48,799,311	\$11,900,540
Glucose.....	8	2,848	1,637,324	25,271,792	32,930,918	7,659,126
Starch.....	110	1,925	1,029,159	11,626,979	15,868,393	4,241,414

The amount of starch made from substances other than corn was relatively small, as appears from Table 36, which gives the products of both branches of the industry in 1909.

KIND.	Quantity.	Value.
Total.....		\$48,799,311
Starch.....	677,535,647 pounds.....	17,514,823
Corn.....	638,825,366 pounds.....	15,962,016
Wheat and arrowroot.....	12,127,686 pounds.....	626,337
Potato.....	26,582,595 pounds.....	925,570
Glucose, including all sirups.....	769,680,210 pounds.....	17,622,514
Grape sugar.....	159,080,478 pounds.....	3,020,816
Corn oil.....	8,164,175 gallons.....	3,802,768
Stock feed.....		6,018,968
All other products.....		924,422

Glucose.—The principal products of glucose factories are glucose and glucose sirups, but they often make also starch, feed for live stock, grape sugar, and corn oil.

Notwithstanding the fact that glucose and starch are manufactured to some extent in the same establishments, separate statistics have been presented for prior censuses.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	8	2,848	\$1,637,324	\$25,271,792	\$32,930,918	\$7,659,126
1904.....	9	2,876	1,774,580	20,258,022	24,568,932	4,308,910
1899.....	8	3,288	1,755,179	15,773,233	21,693,656	5,920,423
1889.....	7	1,724	902,086	5,029,131	7,750,686	2,727,555
1879.....	7	1,192	605,802	3,044,450	4,551,212	1,506,762

Starch.—The principal business of the establishments included under this subclassification is the extraction from corn, wheat, potatoes, and arrow root of the carbohydrate known as starch. The product is used for food; for laundering and sizing; for finishing calico; for thickening colors, and for many other purposes.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	110	1,925	\$1,029,159	\$11,626,979	\$15,868,393	\$4,241,414
1904.....	131	1,803	866,479	5,260,854	8,082,904	2,822,050
1899.....	124	2,655	1,099,696	5,806,422	9,232,984	3,426,562
1889.....	80	2,903	959,108	5,153,677	8,934,517	3,780,840
1879.....	139	3,119	919,197	4,911,060	7,477,742	2,566,682
1869.....	195	2,072	900,719	3,884,909	5,994,422	2,109,513
1859.....	167	1,073	298,526	1,380,000	2,823,258	1,443,258
1849.....	146	694	193,224	799,459	1,261,468	482,009

The decrease in the production of starch from 1899 to 1904 is probably to be attributed to the lack of foreign demand due to large increases in the manufacture of potato starch in Germany and Russia.

RICE, CLEANING AND POLISHING.

The statistics for establishments engaged primarily in milling rice, domestic or foreign, are included under this classification. The processes involve the production, from rough rice, of cleaned and polished rice, rice bran, polish, and hulls.

The principal statistics for the industry as reported at each census from 1879 to 1909, inclusive, are shown in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	71	1,239	\$563,538	\$19,501,080	\$22,371,457	\$2,870,377
1904.....	74	1,492	640,632	13,315,065	16,296,916	2,981,851
1899.....	80	651	265,585	7,575,522	8,723,726	1,148,204
1889.....	32	647	223,433	5,601,206	6,693,196	1,091,990
1879.....	22	516	110,467	2,666,497	3,133,324	466,827

Quantities and values of the products are given for 1909 in the next table.

Table 40

KIND.	Quantity (pounds). ¹	Value. ¹
Total		\$22,371,457
Clean rice		20,685,982
Whole	626,089,489	
Broken	477,589,004	17,398,736
Polish	148,500,485	3,287,246
Bran	29,821,813	362,052
Hulls and waste	91,208,529	726,215
All other products		166,147
		421,061

¹ In addition, 48,150 pounds of clean rice, valued at \$1,449, were reported by establishments engaged primarily in the manufacture of flour-mill and gristmill products.

SUGAR.

The statistics relative to the manufacture of sugar are presented in all of the tables showing statistics for 1909 only under three classifications. The beet-sugar industry includes the making of sugar, mainly refined or granulated, from beets; the industry designated "sugar and molasses" includes the manufacture of sugar, sirup, and molasses from sugar cane; and the industry designated "sugar, refining, not including beet sugar," covers the refining of raw cane sugar—the greater part of the material being imported sugar. The census of 1909 was the first at which statistics relating to the manufacture of sugar and molasses direct from the cane were separated from those for the refining of the purchased raw sugar. Most of the establishments in the sugar and molasses industry reported sugar as their principal product, though there were a few (22 out of a total of 214) that reported sirup as their chief product.

The following table summarizes the general statistics for the three sugar industries as reported at the census of 1909. The total value of products and the total cost of materials for the three combined include considerable duplication, on account of the use of domestic raw sugar as material for the refineries.

Table 41

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	291	20,730	\$12,292,168	\$274,847,974	\$327,371,780	\$52,523,806
Beet-sugar	58	7,204	4,808,446	27,265,170	48,122,383	20,857,213
Sugar and molasses	214	4,127	1,862,751	21,294,844	30,620,738	9,325,894
Sugar refining, not including beet sugar	19	9,399	5,620,971	226,287,960	248,628,659	22,340,699

The products made in 1909 and shown in the next table are those of beet-sugar factories and of mills which made cane sugar direct from the cane, the output of establishments engaged primarily in the refining of purchased sugar not being included.

The cane sugar and sirup produced by small mills on farms are not included in these statistics, because the data as to capital, expenses, etc., for such mills could not be distinguished from those for agricultural operations. In 1909 these small plantation mills made 125,647 pounds of cane sugar, 21,633,579 gallons of cane sirup, and 16,532,000 gallons of sorghum.

Some of the larger mills covered by the census of manufactures are operated in conjunction with plantations, but separate reports were obtained for the manufacturing operations.

Table 42

KIND.	Quantity. ¹	Value.
Total		\$78,743,121
Beet-sugar industry		48,122,383
Granulated sugar	496,507 tons (2,000 lbs.)	45,645,810
Raw sugar	4,875 tons (2,000 lbs.)	291,819
Molasses or sirup	20,812,747 gallons	1,129,905
Pulp		795,900
All other products		259,949
Sugar and molasses industry (cane sugar)		30,620,738
Vacuum pan sugar	323,150 tons (2,000 lbs.)	25,794,287
Brown (open-kettle process) sugar	3,673 tons (2,000 lbs.)	301,986
Molasses	24,887,581 gallons	2,845,559
Sirup	1,449,890 gallons	365,632
All other products ²		1,319,874

¹ In addition, 7,281 tons of raw cane sugar and 693,302 gallons of molasses were made by establishments connected with two penal institutions and two establishments engaged chiefly in the refining of sugar.

² The value of sirup produced by establishments which manufactured no sugar is included under "all other products."

The beet-sugar industry was first shown separately at the census of 1879, when there were four establishments, reporting 350 wage earners and products to the value of \$282,572. In 1889 only two establishments were reported and these were included with "all other industries." At the census of 1869, however, two establishments, with 116 wage earners and products valued at \$119,720, were reported under "sugar and molasses, beet and grape," the greater part of the product doubtless being beet sugar.

The statistics for the beet-sugar industry in 1909, 1904, and 1899 are given in the following table:

Table 43

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	58	7,204	\$4,808,446	\$27,265,170	\$48,122,383	\$20,857,213
1904	51	3,963	2,486,702	14,486,878	24,393,794	9,906,918
1899	30	1,970	1,092,207	4,803,796	7,323,857	2,520,061

The data for sugar and molasses (cane sugar) and the sugar refining industries combined, are given for the last three censuses only, in the following table:

Table 44

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	233	13,526	\$7,483,722	\$247,582,504	\$279,249,397	\$31,666,593
1904	344	13,549	7,575,650	244,752,802	277,285,449	32,532,647
1899	657	14,129	6,917,829	221,384,769	239,711,011	18,326,242

The industry was reported at censuses prior to 1899, but on such different bases that the figures are not comparable with those for the last three censuses, and for that reason they are excluded from the table. In 1849, under "sugar refiners," 23 establishments were reported, having 1,656 wage earners and products valued at \$9,898,800; in 1859, 39, with 3,484 wage earners and products valued at \$42,143,234; in 1869,

59, with 4,597 wage earners and products valued at \$108,941,911; in 1879, 49, with 5,857 wage earners and products valued at \$155,484,915; and in 1889, 393, with 7,043 wage earners and products valued at \$123,118,259. In addition, in 1859 there were two establishments classified under the heading of "sugar and molasses," and two under the heading of "sugar evaporators," the former having 5 wage earners and products valued at \$2,280, and the latter, 27 wage earners and products valued at \$31,000. In 1869, 713 establishments were reported under the heading of "sugar and molasses, raw cane," employing 21,299 wage earners and having products valued at \$10,383,368. There were no classifications of this nature at succeeding censuses except at the census of 1909.

The figures for 1909 are not strictly comparable with those for previous censuses, because at the earlier censuses some important establishments which made table sirups by compounding maple, cane, or beet sugar with other materials were included under the heading of "sugar and molasses, refining," while at the census of 1909 such establishments were classed with those which manufactured "food preparations." At the census of 1904 the statistics for "sugar and molasses, refining," included data for 38 establishments of this character, which employed an average of 679 wage earners and paid out \$295,442 in wages. The cost of materials reported by these establishments was \$5,570,320 and the value of products, \$6,801,034. Information of this nature is not available for prior censuses.

The reduction in number of establishments in the cane-sugar industry may be accounted for, in part, by the fact that the small mills located on farms were not included in the census of manufactures for 1909, although at previous censuses many of these were so included, and by the further fact that in some states, especially in Louisiana, large mills have been

constructed to crush the cane grown on many plantations, each of which previously had its own mill.

VINEGAR AND CIDER.

The manufacture of vinegar and cider is frequently conducted on farms, and the factory industry itself is closely allied to agriculture. Although the instructions to special agents in 1909 were to exclude cider mills on farms from the census of manufactures, it is probable that some were included. As a rule, the cider-making establishments included in the census of manufactures reported motive power and were of considerable importance. Many of these establishments were also engaged in sawing logs, grinding grain, etc., but made cider as their product of greatest value.

The value of such subsidiary products reported by establishments assigned to the vinegar and cider industry in 1909 was \$746,280.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	963	1,542	\$723,488	\$4,964,045	\$8,447,577	\$3,483,532
1904.....	563	1,528	725,148	3,852,233	7,265,469	3,413,236
1899.....	613	1,557	652,077	3,134,513	5,931,692	2,797,379
1889.....	694	2,637	720,681	3,268,455	6,649,300	3,380,845
1879.....	306	1,257	413,451	1,888,173	3,418,033	1,529,865
1869.....	728	2,041	319,033	2,109,514	3,472,056	1,362,542
1859.....	213	503	142,398	501,235	1,089,855	588,020

Vinegar and cider to the value of \$2,552,604 were reported in 1909 as subsidiary products by 269 establishments, which were assigned to other industries, including "canning and preserving," "baking powders and yeast," and "liquors, distilled."

The decrease in the value of products of the vinegar and cider industry from 1899 to 1909 is probably to be attributed to the increased use of factory-made pickles. The pickle factories made practically all of their own vinegar, but did not report it as vinegar made for sale.

TEXTILES.

THE GROUP AS A WHOLE.

This group of industries may be broadly divided into three divisions, namely, those which are engaged in one or more of the processes involved in the manufacture of the fabric, those which convert the fabric into articles for personal wear, and those making other textile products. Industries of the second and third divisions largely use as materials the products of industries of the first division. Moreover, even within a single

industry there is often duplication in value of products due to the same cause. The textile group, as a whole, ranks third among the 14 groups of industries in value of products, being exceeded in this respect by "food and kindred products" and "iron and steel and their products." However, if the comparison be based on the average number of wage earners, the textile group ranks first, giving employment in 1909 to 1,437,258 persons, or 21.7 per cent of the total number of wage earners in manufacturing industries.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total	21,695	1,437,258	\$591,778,365	\$3,654,768,064	\$1,812,720,689
Textile fabrics and materials	5,683	908,036	350,495,832	1,738,487,723	719,671,210
Carpets and rugs, other than rag.....	139	33,307	15,536,050	71,188,152	31,625,148
Cordage and twine and jute and linen goods.....	164	25,820	9,132,999	61,019,986	29,193,176
Cotton goods, including cotton small wares.....	1,324	378,860	132,859,145	628,391,813	257,382,343
Dyeing and finishing textiles.....	426	44,046	21,226,924	83,556,432	48,256,131
Flax and hemp, dressed.....	16	164	64,067	467,546	131,046
Haircloth.....	14	538	252,279	2,230,033	616,452
Hats, fur-felt.....	273	25,064	14,223,192	47,864,630	25,755,399
Hosiery and knit goods.....	1,374	129,275	44,740,223	290,143,527	89,902,474
Shoddy.....	88	2,041	906,691	7,446,364	2,445,658
Silk and silk goods, including throwsters.....	852	99,037	38,570,085	196,911,667	89,144,751
Wool scouring.....	28	1,142	557,715	3,289,215	1,167,113
Woolen, worsted, and felt goods, and wool hats.....	985	168,722	72,426,619	435,978,558	153,190,519
Articles from textile fabrics for personal wear	14,226	498,692	227,171,622	1,175,763,230	552,713,793
Cloth, sponging and refinishing.....	57	975	651,263	1,543,872	1,456,669
Clothing, men's, buttonholes.....	146	830	389,032	789,720	676,143
Clothing, men's, including shirts.....	6,354	239,696	106,277,319	568,976,655	270,561,189
Clothing, women's.....	4,558	153,743	78,568,261	384,751,649	175,963,422
Corsets.....	138	17,564	6,464,144	33,257,157	17,616,772
Furnishing goods, men's.....	900	38,482	15,092,988	87,710,197	38,583,554
Hats and caps, other than felt, straw, and wool.....	494	6,201	3,421,055	13,689,335	6,998,886
Millinery and lace goods.....	1,579	39,201	16,307,560	85,893,632	40,853,357
Other industries	1,786	32,530	14,110,811	146,517,131	49,335,686
Awnings, tents, and sails.....	621	4,242	2,187,651	14,499,020	6,122,299
Bags, other than paper.....	109	7,968	2,942,399	54,881,622	8,517,154
Carpets, rag.....	428	1,982	860,460	2,567,999	1,878,948
Clothing, horse.....	33	1,648	491,598	4,134,864	1,361,476
Flags, banners, regalia, society badges, and emblems.....	211	3,572	1,488,620	8,113,969	4,364,249
Hammocks.....	15	272	95,242	578,505	287,269
Mats and mattings.....	12	937	385,434	2,431,615	1,305,649
Oakum.....	6	113	42,183	338,497	196,505
Oilcloth and linoleum.....	31	5,201	2,825,545	23,339,622	7,788,921
Upholstering materials.....	230	4,067	1,659,191	13,653,561	4,994,867
Waste.....	53	1,897	715,693	11,398,011	2,561,422
Wool pulling.....	37	631	386,915	5,180,556	1,077,696

CARPETS AND RUGS, OTHER THAN RAG.

The manufacture of all kinds of woven carpets and rugs, except those made of jute, rags, and grass fiber, is included in this classification. The principal material used is wool, but cotton, linen, and silk are also used. The manufacture of jute carpets and rugs is conducted by establishments assigned to the jute industry. The progress of the carpet industry from 1849 to 1909, inclusive, is shown in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	139	33,307	\$15,536,050	\$39,563,004	\$71,188,152	\$31,625,148
1904.....	139	33,221	13,724,233	37,947,954	61,586,433	28,638,479
1899.....	133	28,411	11,121,383	27,228,719	48,192,351	20,963,632
1889.....	173	28,736	11,122,259	28,644,905	47,770,193	19,125,288
1879.....	195	20,371	6,835,218	13,984,877	31,792,802	12,807,625
1869.....	215	12,098	4,681,718	13,577,993	21,761,578	8,183,580
1859.....	213	6,681	1,545,692	4,417,986	7,857,636	3,439,650
1849.....	116	6,186	1,246,560	3,075,592	5,402,634	2,327,042

The principal classes of products made in 1909, by quantity and value, are shown in Table 48.

KIND.	Quantity (square yards). ¹	Value. ¹
Total value		\$71,188,152
Carpets		
Axminster and Moquette.....	57,176,729	48,475,869
Wilton.....	12,507,261	13,680,806
Brussels.....	4,576,368	8,737,768
Tapestry velvet.....	3,960,426	5,216,607
Tapestry Brussels.....	6,927,198	5,514,130
Ingrain.....	11,405,514	8,578,906
Other.....	17,799,762	6,749,672
Rugs woven whole		
Axminster and Moquette.....	24,042,152	18,490,449
Wilton.....	3,184,067	3,691,900
Brussels.....	767,248	1,381,562
Tapestry velvet.....	475,831	333,582
Tapestry Brussels.....	3,733,972	3,513,063
Ingrain art squares.....	5,672,962	4,422,427
Smyrna.....	6,131,862	2,408,960
Other.....	1,400,233	1,660,322
Other.....	2,676,947	1,078,633
All other products		4,221,814

¹ In addition, carpets and rugs to the value of \$479,161 were made by establishments engaged primarily in the manufacture of cotton goods, including cotton small wares, and woolen, worsted, and felt goods, and wool hats. Jute carpets and rugs, comprising 2,206,114 square yards, valued at \$549,221, were made by manufacturers of cordage and twine and jute and linen goods, as shown in the table of products for that industry.

CORDAGE AND TWINE AND JUTE AND LINEN GOODS.

This classification includes four branches—the manufacture of cordage and twine, of jute goods, of linen

goods, and of nets and seines—but these branches so overlap one another that only combined totals are shown in the general tables. The principal materials are jute, flax, sisal, hemp, and similar fibers. The general statistics for 1909 for each of the four branches are given in the following statement, each establishment being classified according to its product of chief value.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	164	25,820	\$9,132,999	\$40,914,810	\$61,019,986	\$20,105,176
Cordage and twine.....	112	14,629	5,304,390	29,315,402	41,941,541	12,626,139
Jute goods.....	24	6,664	2,325,641	6,254,918	10,795,230	4,540,312
Linen goods.....	15	3,573	1,213,211	3,966,572	6,385,218	2,418,646
Nets and seines.....	13	854	289,757	1,377,918	1,897,997	520,079

The principal classes of products made by establishments in the industry in 1909 are shown in Table 50. Sisal and manila rope and binder twine were the most important products.

KIND.	Quantity.	Value. ¹
Total value.....	Pounds.	\$61,019,986
Rope and binder twine.....	428,204,044	33,930,306
Sisal.....	225,756,526	15,950,280
Manila.....	150,199,682	12,892,347
Cotton rope.....	16,760,763	3,011,613
Jute rope.....	27,749,512	1,566,160
All other.....	7,767,561	499,906
Twine, not including binder.....	75,816,653	8,934,352
Cotton.....	20,412,631	3,513,036
Jute.....	35,516,217	2,557,744
Hemp.....	8,013,349	1,091,291
Flax.....	2,967,053	530,969
Flax or hemp mixed with jute.....	8,907,403	936,312
Yarns, for sale.....	68,731,258	5,434,037
Jute.....	62,512,247	4,361,550
Flax and hemp.....	5,456,891	982,742
Other.....	732,120	89,745
Linen thread.....	6,530,503	3,407,008
Gunny bagging.....	Square yards.	3,507,452
Jute carpets and rugs.....	69,311,283	549,221
All other products.....	2,206,114	5,257,580

¹ In addition, cordage and twine and jute and linen goods, to the value of \$890,629, were made by establishments engaged primarily in the manufacture of bags, other than paper; carpets, rag; cotton goods, including cotton small wares; house-furnishing goods, "not elsewhere specified;" and leather goods.

Cordage and twine.—In this branch of the industry are included those establishments whose principal business is the manufacture of twine, binder twine, cordage, rope, and cables, from vegetable or other fibers. Cotton is used to some extent, but the harder vegetable fibers are used more generally. The comparative statistics for this branch of the industry from 1859 to 1909, inclusive, are given in the next table.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	112	14,629	\$5,304,390	\$29,315,402	\$41,941,541	\$12,626,139
1904.....	102	14,614	5,338,178	26,095,747	48,017,139	11,921,392
1899.....	105	13,114	4,113,112	26,632,006	37,849,651	11,217,645
1889.....	150	12,385	3,976,232	24,051,686	33,312,559	9,260,893
1879.....	165	5,435	1,558,676	5,330,261	12,492,171	3,161,910
1869.....	201	3,698	1,234,272	5,739,608	8,979,382	3,239,774
1859 ¹	190	3,478	966,216	5,665,320	7,843,339	2,178,019

¹ "Cordage."

At the census of 1849 under "twine" five establishments were reported with 38 wage earners, to whom \$9,228 were paid in wages. The cost of materials was \$14,331, and the value of products was \$27,275.

In addition to the twine and cordage and rope included under this classification, large quantities are made in establishments otherwise classified and also in penal institutions, the operations of which are not included in the census statistics. Rope is also manufactured extensively in mills classified under "jute and jute goods."

Cotton mills engaged principally in the manufacture of yarn produced 13,715,771 pounds of twine in 1909, valued at \$2,417,391, and 7,603,907 pounds of cordage and rope, valued at \$1,164,526, as shown in Table 56, but little of this product was made of flax, hemp, or jute.

Jute goods.—The principal products manufactured in establishments included under this designation are gunny bagging, burlap, jute carpets and rugs, rope, twine, and yarns, the value of yarns alone in 1909 amounting to \$5,100,008. Jute yarns, which are used extensively in the carpet and rug industry, are manufactured almost exclusively in jute mills. Several penal institutions also operate jute mills, but the statistics for these are not included.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	24	6,664	\$2,325,641	\$6,254,918	\$10,795,230	\$4,540,312
1904.....	16	6,083	1,917,986	5,054,130	9,065,802	4,011,672
1899.....	7	4,606	1,181,790	3,015,362	5,383,797	2,368,435
1889.....	17	1,194	368,585	501,909	1,120,121	618,212
1879.....	4	625	141,979	447,094	696,982	249,888

Linen goods.—The principal products embraced under this branch of the industry are thread, towels and toweling, twines, and yarns, thread alone representing 53.3 per cent of the total value of products. The statistics from 1859 to 1909 are given in the next table.

Table 53

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	15	3,573	\$1,213,211	\$3,966,572	\$6,385,218	\$2,418,646
1904.....	15	3,811	1,324,621	3,740,669	5,856,388	2,115,719
1899.....	18	3,283	1,036,839	2,550,517	4,368,159	1,817,642
1889.....	5	1,940	527,572	1,594,769	2,880,341	1,285,572
1879.....	6	1,414	384,046	1,131,875	1,802,451	670,576
1869.....	10	1,746	424,496	1,121,467	2,178,775	1,057,308
1859.....	11	689	134,468	387,770	839,570	451,800

Nets and seines.—The statistics which appear in Table 54 cover the manufacture of fish netting, seines, and crab scrape bags. The establishments usually buy the twine, thread, or rope which they use as materials, and to that extent the total value of products for the combined industry "cordage and twine and jute and linen goods" involves duplication.

Table 54

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	13	954	\$289,757	\$1,377,918	\$1,897,997	\$520,079
1904.....	12	824	243,551	1,140,510	1,724,912	584,396
1899.....	19	748	222,146	865,908	1,476,022	610,114
1889.....	22	618	190,121	634,634	1,002,196	367,562
1879.....	13	210	54,112	180,215	291,765	111,550
1869.....	9	80	20,648	105,108	157,057	51,949
1859 ¹	8	64	10,440	23,057	52,640	29,583

¹ "Fishing lines, nets, and tackle," and "nets."

COTTON GOODS, INCLUDING COTTON SMALL WARES.

Under this classification are included "cotton goods," which include mills engaged in the spinning of cotton, and the weaving of piece goods, either or both, and "cotton small wares," which were shown as separate industries at the censuses of 1899 and 1904. In the general tables for 1909, however, they were combined, for the reason that some factories classed under "cotton goods" also manufacture large quantities of cotton small wares—that is, such articles as shoe and corset lacings, lamp and stove wicks, tape and webbing, and lace edgings—and in such cases it is impossible to separate the statistics for the two branches of the industry. In the following statement relating to 1909, however, each establishment has been assigned to one branch or the other, according to its product of chief value:

Table 55

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	1,324	378,880	\$132,859,145	\$371,009,470	\$628,391,813	\$257,382,343
Cotton goods.....	1,208	371,182	129,789,717	364,013,504	615,217,702	251,204,198
Cotton small wares.....	116	7,698	3,069,428	6,995,966	13,174,111	6,178,145

The quantity and value of the principal classes of products manufactured are shown in the next table. Plain cloths for printing or converting were the prin-

cipal kinds of goods made in 1909, although yarns made for sale reached nearly the same value.

Table 56

KIND.	Quantity. ¹	Value. ¹
Total value.....		\$628,391,813
		<i>Square yards.</i>
Woven goods.....	6,348,568,593	456,089,401
Plain cloths for printing or converting.....	2,224,677,848	111,097,889
Brown or bleached sheetings and shirtings.....	1,454,353,529	88,802,985
Twills and satens.....	388,314,961	34,274,107
Fancy woven fabrics.....	426,710,359	47,498,713
Ginghams.....	537,430,463	37,939,040
Duck.....	162,476,322	27,485,892
Drills.....	238,869,407	17,750,151
Ticks, denims, and stripes.....	264,870,508	27,350,162
Cottonades.....	25,676,286	3,343,533
Napped fabrics.....	305,655,864	25,695,367
Corduroy, cotton, velvet, and plush.....	19,706,438	6,965,634
Mosquito and other netting.....	59,100,819	2,103,560
Upholstering goods.....	94,840,051	14,882,842
Tapestries (piece goods and curtains).....	10,657,385	4,723,907
Lace and lace curtains.....	81,007,314	8,922,082
Other.....	3,175,352	1,236,853
Bags and bagging.....	63,107,568	4,862,451
Cotton towels and toweling.....	52,778,170	6,037,075
		<i>Pounds.</i>
Tape and webbing.....	9,663,482	5,531,674
Yarns, made for sale.....	470,370,995	109,314,953
Thread.....	23,700,957	20,516,269
Twine.....	13,715,771	2,417,391
Cordage and rope.....	7,603,907	1,164,526
Cotton waste, for sale.....	310,513,348	10,874,386
All other products.....		22,483,213

¹ In addition, cotton goods to the value of \$2,224,096 were made by establishments engaged primarily in the manufacture of carpets and rugs, other than rag; clothing, men's, including shirts; cordage and twine and jute and linen goods; furnishing goods, men's; gas and electric fixtures, including lamps and reflectors; haircloth, castor oil; patent medicines and compounds and druggists' preparations; rubber goods, "not elsewhere specified;" upholstering materials; and woolen, worsted, and felt goods, and wool hats. Also, 7,457,412 pounds of cotton yarns, valued at \$1,568,417, were made for sale by manufacturers of hosiery and knit goods, as shown in the table of products for that industry.

The following table gives comparative statistics for the cotton-goods industry, as a whole, from 1859 to 1909, inclusive:

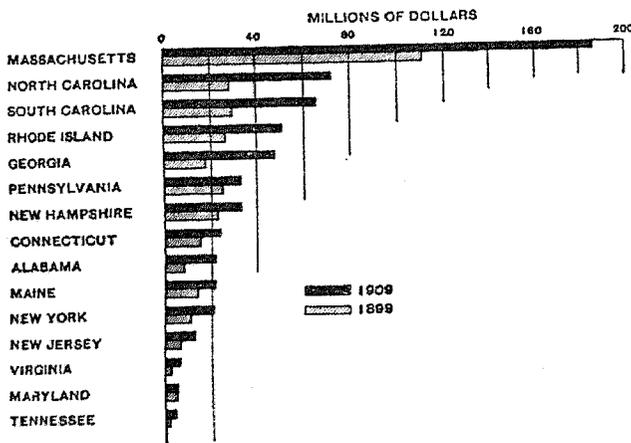
Table 57

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,324	378,880	\$132,859,145	\$371,009,470	\$628,391,813	\$257,382,343
1904.....	1,154	315,874	96,205,796	286,255,303	450,467,704	164,212,401
1899.....	1,055	302,861	88,689,752	176,551,527	339,200,320	162,648,793
1889.....	905	218,876	66,024,538	154,912,979	267,981,724	113,068,745
1879.....	756	172,544	42,040,510	102,206,347	192,090,110	89,883,743
1869.....	856	185,369	39,044,132	111,736,936	177,489,739	65,752,803
1859.....	1,091	122,028	23,940,108	57,285,534	115,681,774	58,396,240

¹ Does not include 249 mills classed as "special mills" making hosiery, braiding, tapes, and fancy fabrics, and mixed goods or other fabrics not sold as specific manufactures of wool or cotton. In these establishments there were 12,928 employees, receiving \$3,573,909 in wages. The cotton consumed cost \$2,338,335, and the value of the products was \$18,860,273.

While the table shows the magnitude of the industry in which raw cotton is the principal material, large quantities of cotton fiber are consumed in other branches of textile manufacture, and some establishments assigned to those branches make, as subsidiary products, cotton goods similar to those made in the industry now under discussion. Conversely, the manufacture of hosiery and knit goods, of silk and silk goods, and of carpets and rugs, and the dyeing and finishing of textiles for other establishments are carried on in a few of the establishments engaged primarily in the manufacture of cotton goods. Some cotton goods are also manufactured in establishments assigned to nontextile industries, as shown in the footnote to Table 56.

COTTON GOODS, INCLUDING COTTON SMALL WARES—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



DYEING AND FINISHING TEXTILES.

The statistics for this classification cover establishments engaged in the bleaching, dyeing, and mercerizing of fibers and yarns, principally of cotton, silk, and wool; the bleaching, dyeing, mercerizing, and printing of cotton goods; the dyeing and printing of silk goods; and the dyeing of woolen and worsted goods. The classification also covers the work of establishments engaged in beaming and winding yarns and spooling thread. They do not cover operations of this character when carried on in establishments manufacturing the fabric, and, as a considerable proportion of the dyeing and finishing is done in such establishments, the statistics do not fully represent the amount of this kind of work done. The value of products is, as a rule, the amount received for work done on materials furnished by others, and does not represent the value of the goods turned out. The materials for which the cost is shown consist chiefly of dyestuffs, chemicals, and similar substances used in the processes.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	426	44,046	\$21,226,924	\$35,261,301	\$53,556,432	\$48,295,131
1904.....	360	35,565	15,499,295	19,621,253	50,849,545	31,228,292
1899.....	298	29,775	12,726,316	17,958,137	44,963,331	27,005,194
1889.....	248	19,601	8,911,720	12,365,220	28,900,560	16,515,340
1879.....	191	16,698	6,474,364	13,664,265	32,297,420	18,633,125
1869.....	42	8,894	3,438,089	146,378,358	154,446,044	8,072,686
1859.....	29	4,005	1,068,296	3,884,815	7,971,064	4,086,249
1849.....	42	4,080	1,068,904	110,462,044	113,660,805	3,218,761

¹ Includes the value of the cloth treated.

FLAX AND HEMP, DRESSED.

The establishments included in this classification are such as buy the rough hemp and flax, ret it, and dress the fiber by mechanical processes into line and tow. It does not include these operations when carried on, as is often the case, in establishments which use the fibers in further manufacture. In 1859 the

industry was shown under two headings as "flax dressing" and "hemp dressing." From 1869 to 1899 it was called "flax, dressed," but presumably covered hemp also; while in 1904 and 1909 it was designated as "flax and hemp, dressed." The statistics from 1859 to 1909 are presented in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	16	164	\$64,007	\$336,300	\$467,346	\$131,046
1904.....	17	214	59,977	233,132	346,963	113,831
1899.....	4	211	46,000	91,032	158,650	67,618
1889.....	6	497	198,723	638,285	981,283	342,698
1879.....	79	1,019	268,420	818,243	1,310,231	491,988
1869.....	90	765	209,943	382,534	815,010	432,476
1859.....	33	125	32,239	117,488	225,404	107,916

At the census of 1849 under "flax breakers" four establishments were reported, with 63 wage earners receiving \$15,084 in wages. The cost of materials was \$25,500, and the value of products \$50,000. At the same census four establishments were reported under "flax dressers and spinners," with 262 wage earners, \$61,728 paid in wages, and \$186,000 expended for materials. The value of products was \$301,808.

While formerly large quantities of flax grown in the United States were used in the manufacture of twine and cloth, the production of flax for textile purposes in this country has greatly decreased, almost all of the flax crop being now raised for the seed, from which linseed oil is made. The production of hemp in this country has also decreased.

HAIRCLOTH.

Haircloth was formerly used most extensively in upholstering, and its manufacture was included under "upholstering materials." Large quantities of it are now used in the manufacture of clothing, and for this reason it has been given a separate classification. This textile is made by using a warp of cotton yarn and a weft of horsehair. In 1909 there were 14 establishments whose chief product was haircloth. These employed 538 wage earners and paid \$252,279 in wages. The cost of materials used was \$1,613,581, and the value of products, \$2,230,033, showing a value added by manufacture of \$616,452. The manufacture is very largely within Pennsylvania, that state reporting nearly two-thirds of the total value of products.

HATS, FUR-FELT.

The manufacture of stiff and soft hats for men, women, and children of fur felt is presented under this heading. The fur of the rabbit, the hare, and the nutria (a South American aquatic rodent) is the chief material. In some instances it is removed from the skin in the larger hat shops, but to what extent can not be determined from the returns. Much of the fur is bought from establishments doing nothing but cutting hatters'

fur; they are classed under "hat and cap materials." A considerable quantity of cut fur is imported. While many concerns classed under "hats, fur-felt" make the hat from start to finish, others make nothing but the hat bodies, some of them doing work under contract on materials furnished by other manufacturers, and still others do finishing only. There is thus some duplication in the value of products.

Separate statistics were first shown at the census of 1899. In 1879 and in 1889 fur-felt hats were included with "hats and caps, not including wool hats," and in 1869 with "hats and caps." The statistics of the hat industry for the last three censuses are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	273	25,064	\$14,223,192	\$22,109,231	\$47,864,630	\$25,755,399
1904.....	216	22,047	11,282,237	15,975,206	36,629,353	20,654,147
1899.....	171	18,890	9,119,264	13,513,668	27,811,187	14,297,519

The principal products of the fur-felt hat industry in 1909 were as follows:

KIND.	Quantity (dozens).	Value. ¹
Total value.....		\$47,864,630
Fur-felt hats.....	2,989,252	43,442,466
Fur-felt hat bodies and hats in the rough.....	366,370	2,703,738
All other products.....		1,164,872
Work on materials for others.....		553,554

¹ In addition, fur-felt hats to the value of \$806,601 were made by establishments engaged primarily in the manufacture of men's clothing; straw hats; millinery and lace goods; and woolen, worsted, and felt goods, and wool hats.

HOSIERY AND KNIT GOODS.

This classification includes the operations of establishments engaged in the manufacture of knitted goods, irrespective of the materials used. Formerly two classifications were used, one covering establishments employing power, while the other covered the establishments whose machines were operated by hand and designated hand-knit goods. The use of power-driven machines is becoming more general, and establishments classed under "hand-knit goods" at one census frequently pass into the other class at a subsequent census; the distinction between the two classes of establishments has therefore lost much of its significance. Separate data for the two branches may, however, be of some interest and they are presented in the following table for 1909:

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	1,374	129,275	\$44,740,223	\$110,241,053	\$200,143,527	\$89,902,474
Hosiery and knit goods.....	1,264	123,708	44,526,655	109,416,062	198,571,558	89,155,526
Hand-knit goods..	110	567	213,568	824,991	1,571,969	746,948

The next table shows the leading products of the industry in 1909.

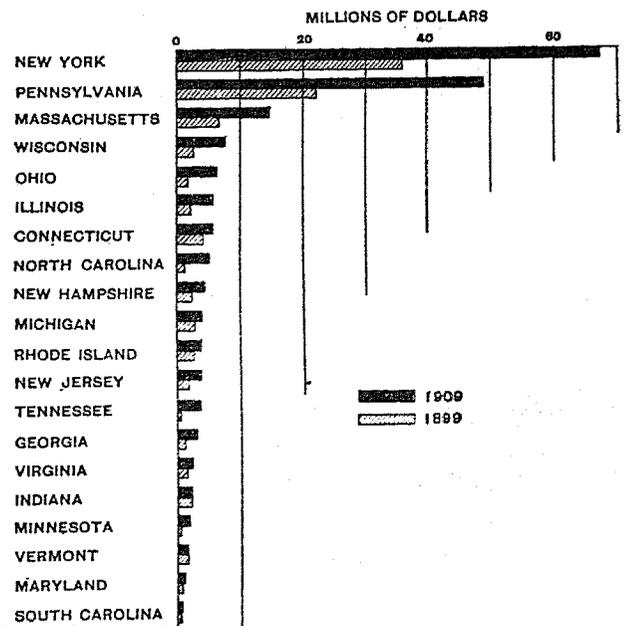
KIND.	Quantity.	Value. ¹
Total value.....		\$200,143,527
Hosiery.....	62,825,069 dozen pairs.....	68,721,825
Cotton, merino, and woolen—		
Hose.....	34,499,562 dozen pairs.....	37,903,011
Cotton.....	32,499,104 dozen pairs.....	34,078,622
Merino or mixed.....	834,029 dozen pairs.....	1,466,283
Woolen or worsted.....	1,106,429 dozen pairs.....	2,358,108
Half hose.....	27,891,093 dozen pairs.....	27,218,398
Cotton.....	24,605,917 dozen pairs.....	21,831,365
Merino or mixed.....	2,023,641 dozen pairs.....	3,299,912
Woolen or worsted.....	1,061,535 dozen pairs.....	2,087,121
Silk.....	434,414 dozen pairs.....	3,600,416
Shirts and drawers.....	25,337,779 dozens.....	69,592,817
All-cotton.....	22,567,121 dozens.....	50,007,598
Merino or mixed.....	2,536,473 dozens.....	17,055,624
All-wool.....	178,163 dozens.....	1,820,521
Silk and silk-mixed.....	56,022 dozens.....	709,074
Combination suits.....	2,473,103 dozens.....	14,853,536
All-cotton.....	2,047,637 dozens.....	9,713,597
Merino or mixed.....	364,387 dozens.....	4,217,432
All-wool.....	50,102 dozens.....	683,289
Silk or silk-mixed.....	10,977 dozens.....	239,218
Sweaters, cardigan jackets, etc.....	2,221,410 dozens.....	22,430,817
Gloves and mittens.....	2,527,889 dozen pairs.....	7,296,887
Hoods, scarfs, nubias, etc.....	888,223 dozens.....	3,217,965
Shawls.....	218,923 dozens.....	916,294
Boot and shoe linings.....	9,726,770 square yards.....	1,209,464
Yarns, for sale.....	7,945,724 pounds.....	1,785,531
Cotton.....	7,457,412 pounds.....	1,568,417
Woolen, worsted, and merino.....	488,322 pounds.....	217,114
All other products.....		10,118,871

¹ In addition, hosiery and knit goods to the value of \$2,975,749 were made by establishments engaged primarily in the manufacture of boots and shoes, rubber, clothing, men's, including shirts; clothing, women's; cotton goods, including cotton small wares; gloves and mittens, leather; hats and caps, other than felt, straw, and wool; millinery and lace goods; silk and silk goods, including throwsters; and woolen, worsted, and felt goods, and wool hats.

The general statistics for the industry as a whole from 1849 to 1909 are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,374	129,275	\$44,740,223	\$110,241,053	\$200,143,527	\$89,902,474
1904.....	1,144	104,092	31,614,607	76,789,348	137,076,454	60,287,165
1899.....	1,006	83,691	24,434,497	51,135,330	95,836,692	44,638,362
1889.....	824	59,774	16,613,670	35,949,865	67,446,788	31,493,623
1879.....	393	30,699	6,839,195	15,449,991	29,613,581	14,163,560
1869.....	248	14,788	4,429,085	9,835,823	18,411,564	8,575,741
1859.....	197	9,103	1,661,972	3,202,317	7,280,606	4,078,269
1849.....	85	2,325	360,336	415,113	1,028,102	612,959

HOSIERY AND KNIT GOODS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



SHODDY.

The materials used by the mills engaged in this industry consist almost entirely of woolen, worsted, and cotton-mixed rags, wool waste and noils, tailors' clippings, and old carpets. The principal products are shoddy and mungo, which are made by passing the rags or other material through "pickers," which reduce them to a fibrous form, so that they can be mixed with new wool and spun into yarn. Shoddy is made from waste yarn and from soft woolen fabrics, while mungo is made from hard-spun fabrics. Other products are wool extract, which is the wool fiber recovered from cotton-mixed rags by carbonizing the cotton fiber with chemicals; and flocks, which consist of short refuse wool, the shearings of woolen goods or wool dust, and is utilized to weight certain kinds of woolen cloth and to coat waterproof garments and paper.

The statistics in Table 65 cover the operations of establishments engaged primarily in the manufacture of shoddy. They do not include its manufacture in woolen mills which use it as material in further manufacturing processes, more than one-third of the total shoddy used being manufactured and consumed in such establishments. For this reason the statistics in the table do not correctly show the increasing use of shoddy, some establishments which formerly were primarily engaged in the manufacture of shoddy having since installed additional machinery and carried the product to a further state of completion.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	88	2,041	\$906,691	\$5,000,706	\$7,446,364	\$2,445,658
1904.....	97	2,089	834,822	6,055,731	8,406,425	2,350,694
1899.....	105	1,926	745,948	4,875,192	6,730,974	1,855,782
1889.....	94	2,155	707,090	6,003,035	7,887,000	1,883,965
1879.....	73	1,282	400,326	3,366,650	4,989,615	1,022,965
1869.....	56	632	198,372	1,098,603	1,768,592	669,989
1859.....	30	290	54,124	227,925	402,590	174,665

The principal products made in 1909 are shown in the following table:

KIND.	Quantity (pounds).	Value. ¹
Total value.....		\$7,446,364
Shoddy and mungo.....	48,375,724	5,699,260
Wool extract.....	5,637,514	865,528
Waste.....	2,237,748	275,545
Flocks.....	1,638,013	107,697
All other products.....		268,708
Work on materials for others.....		229,626

¹ In addition, shoddy to the value of \$367,278 was made for sale by establishments engaged primarily in the manufacture of cotton goods, including cotton small wares; house-furnishing goods, "not elsewhere specified;" waste; and woolen, worsted, and felt goods, and wool hats.

SILK AND SILK GOODS, INCLUDING THROWSTERS.

This classification covers the manufacture of broad silks, velvets, plushes, upholstery and tapestry goods; ribbons, laces, veilings, and embroideries; braids and bindings, trimmings, and fringes and gimps; machine

twist; and sewing, embroidery, wash, fringe, and floss silks. In all instances silk is the material of predominant value. Some establishments are engaged exclusively in the throwing of raw silk into organzine and tram, which constitute the warp and woof, respectively, of silk goods. The work is either done on commission, the material being furnished by others, or the raw silk is bought and the product sold by the throwster. In the former case only the amount received as commission is included in the value of products reported by the throwster. The throwing of silk in establishments other than those manufacturing the finished products has assumed large proportions, about two-thirds of the total quantity of silk thrown in the country being reported by such establishments. For this reason there is some duplication in the total value of products for the industry.

Statistics for 1909 are given in Table 67 for plants reporting as engaged exclusively in throwing and winding, and for mills manufacturing the finished products, respectively.

CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	852	99,037	\$38,570,085	\$107,766,916	\$196,911,667	\$89,144,751
Mills making finished products.....	637	81,391	34,023,194	99,679,000	179,765,675	80,088,675
Mills doing throwing, winding, etc.	215	17,646	4,546,891	8,087,916	17,145,992	9,056,076

The chief products of the silk-goods industry in 1909 are shown in the following table:

KIND.	Quantity.	Value. ¹
	Yards, single width.	
Total value.....		\$196,911,667
Broad silks.....	185,707,316	107,881,146
Plain and fancy—		
All-silk.....	81,934,158	53,282,704
Silk-mixed.....	24,742,556	14,207,861
Jacquard.....	13,249,090	9,835,345
All-silk.....	6,043,686	3,473,799
Silk-mixed.....		
Piece-dyed—		
All-silk.....	19,693,393	11,353,242
Silk-mixed.....	40,044,433	15,728,195
Velvets.....	10,093,583	4,767,990
Plushes.....	2,759,411	2,104,768
Tapestries and upholstery.....	228,717	382,820
Ribbons.....		32,744,873
Laces, nets, veils, veiling, etc.....		1,350,850
Embroideries.....		485,322
Fringes and gimps.....		824,527
Braids and bindings.....		4,483,243
Trimmings.....		3,850,443
	Pounds.	
Machine twist.....	1,088,730	6,341,719
Sewing, embroidery, wash, fringe, and floss silks.....	747,246	4,179,355
Organzine and tram, for sale.....	2,740,319	12,550,510
Spun silk, for sale.....	779,462	2,104,066
All other products.....		4,495,675
Work done on materials for others.....		8,364,350

¹ In addition, silk and silk goods to the value of \$1,218,101 were made by establishments engaged primarily in the manufacture of clothing, men's, including shirts; corsets; cotton goods, including cotton small wares; fancy articles, "not elsewhere specified;" and furnishing goods, men's.

Statistics for the entire silk industry are given for each census from 1849 to 1909, inclusive, in the next table.

Table 69

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	852	99,037	\$38,570,085	\$107,766,916	\$196,911,667	\$89,144,751
1904.....	624	79,601	26,767,943	75,861,188	133,288,072	57,426,884
1899.....	483	65,416	20,982,194	62,406,665	107,256,258	44,849,593
1889.....	472	49,382	17,762,441	51,004,425	87,298,454	36,294,029
1879.....	382	31,337	9,146,705	22,467,701	41,033,045	18,565,344
1869.....	86	6,649	1,942,286	7,817,559	12,210,662	4,393,103
1859.....	139	5,435	1,050,224	3,901,777	6,607,771	2,705,994
1849.....	67	1,743	297,416	1,093,860	1,809,476	715,616

The figures for 1849 to 1889, inclusive, include establishments that reported silk hose and silk knit goods as the product of chief value. Since 1889 the reports for such establishments have been included under the classification of "hosiery and knit goods" (see Table 63).

WOOL SCOURING.

Wool scouring was formerly carried on to a large extent in establishments which treated the wool furnished by others on a contract basis. With the advent of larger establishments, particularly in the worsted industry, there has been a change in this respect, the larger part of the wool scouring being done in establishments which also manufacture yarn or cloth. There are still, however, a number of establishments engaged chiefly in the scouring, sorting, and carbonizing of wool and a few in the preparation of tops. The statistics for such establishments can not be shown, except for the last three censuses, no segregation having been made prior to 1899.

Table 70

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	28	1,142	\$557,718	\$2,122,102	\$3,289,215	\$1,167,113
1904.....	27	779	397,811	214,624	1,052,909	838,285
1899.....	25	720	338,606	193,826	889,809	695,983

The value of products in some instances represents the amount received for work on materials furnished. In others, however, the wool scoured is owned by the establishment and its cost is included in the value of products. This was especially true of several establishments in 1909, the returns differing greatly from those for previous censuses in cost of materials and value of products.

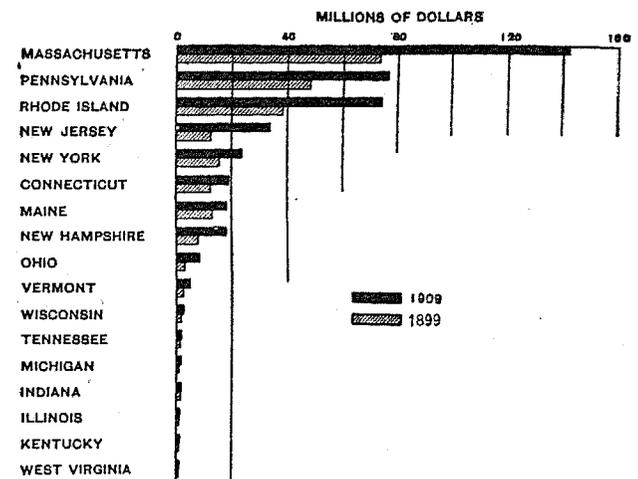
WOOLEN, WORSTED, AND FELT GOODS, AND WOOL HATS.

The industry as a whole.—The statistics for the manufacture of woolen, worsted, and felt goods, and wool hats are shown under this classification. The industry has four branches, as indicated by its title, but there is so much overlapping between them that only data for all combined are shown in the general tables. Separate data are presented in this section,

however, each establishment being classified according to its product of chief value.

This industry and that of "carpets and rugs, other than rag," are the principal consumers of wool, but some wool is used also in the hosiery and knit-goods industry. "Shoddy" and "wool scouring" are affiliated industries, the operations of establishments in them representing processes in the manufacture of wool products. There is some overlapping between these various related industries. Moreover, there is considerable duplication in value of products within the industry "woolen, worsted, and felt goods, and wool hats," due to the use of the products of one establishment—especially yarn—as material for another establishment.

WOOLEN, WORSTED, AND FELT GOODS, AND WOOL HATS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



General statistics for each subclass are given below for 1909.

Table 71

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	985	168,722	\$72,426,619	\$282,278,039	\$435,978,558	\$153,100,519
Worsted goods.....	324	111,012	47,151,871	207,780,936	312,624,663	104,837,727
Woolen goods.....	587	52,180	22,575,175	65,651,634	107,118,858	41,467,224
Felt goods.....	43	3,544	1,711,880	6,967,206	11,852,628	4,835,420
Wool-felt hats.....	31	1,986	987,693	2,472,263	4,382,411	1,910,148

Woolen and worsted goods.—Woolen goods are made from carded wool and worsted goods from combed wool. Some woolen mills also make worsted goods, and some worsted mills also make woolen goods, while many establishments which formerly manufactured woolen goods have made a change in their machinery and now manufacture worsted goods. This overlapping makes separate statistics for the two branches somewhat misleading. The statistics for 1859 to 1909, inclusive, are shown for the two branches combined in the next table.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	911	163,192	\$69,727,046	\$273,438,570	\$419,743,521	\$146,304,951
1904.....	1,018	141,998	55,097,343	197,489,306	307,941,710	110,452,404
1899.....	1,221	125,901	44,849,744	148,087,178	238,744,502	90,657,324
1889.....	1,454	119,893	41,084,100	132,977,104	212,772,629	79,795,525
1879.....	2,006	105,307	31,519,419	122,859,239	194,156,663	71,297,424
1869.....	2,993	92,973	31,246,432	110,740,789	177,495,689	63,754,890
1859.....	1,263	43,738	10,153,938	39,029,062	65,596,364	29,567,302

Some of the establishments assigned to these branches of industry also make cotton goods, carpets, and other articles which properly belong under other classifications, the value of which is included in the above table.

The table following shows the kind, quantity, and value of woolen and worsted goods made in 1909:

KIND.	Quantity.	Value. ¹
Total value.....	Square yards.....	\$419,743,521
All-wool woven goods.....	322,944,365	219,853,767
Wool cloths, doeskins, cassimeres, chevots, etc.....	40,843,979	29,291,059
Worsted coatings, serges, and suitings.....	119,656,069	101,903,153
Woolen overcoatings, cloakings, kerseys, etc.....	14,697,770	11,230,856
Worsted overcoatings and cloakings.....	654,404	821,688
Wool dress goods, sackings, tricots, etc., and opera and similar flannels.....	20,099,956	16,385,498
Worsted dress goods, cashmeres, serges, bunting, etc.....	105,801,349	54,030,376
Carriage cloths.....	1,782,855	947,862
Flannels for underwear.....	3,856,353	1,257,271
Blankets.....	5,137,903	3,228,797
Horse blankets.....	247,395	185,430
Woven shawls.....	704,153	404,583
All other.....	463,179	167,194
Union, or cotton-mixed, woven goods.....	37,453,351	14,327,973
Unions, tweeds, chevots, cassimeres, etc.....	18,917,478	7,780,854
Overcoatings and cloakings.....	4,281,739	2,363,381
Sackings, tricots, dress goods, and opera and similar flannels.....	4,319,539	1,776,721
Flannels for underwear.....	7,063,573	1,308,369
Blankets.....	1,717,768	650,714
All other.....	1,153,265	447,934
Cotton-warp woven goods.....	210,346,081	62,265,854
Wool-filling cassimeres, doeskins, jeans, tweeds, coatings, etc.....	45,244,866	12,107,320
Worsted-filling cassimeres, doeskins, jeans, tweeds, coatings, etc.....	20,220,252	15,009,081
Wool-filling overcoats and cloakings.....	2,075,502	771,879
Satinets and linseys.....	5,102,460	912,182
Worsted-filling dress goods, cashmeres, serges, mohairs, etc.....	65,112,981	14,798,965
Wool-filling dress goods and repellants.....	12,916,060	2,741,816
Domest flannels and shirtings.....	4,871,765	911,967
Linings, Italian cloths, and lastings.....	28,028,148	9,008,799
Blankets.....	9,746,841	2,684,919
Horse blankets.....	4,210,098	1,676,942
Carriage robes.....	2,589,444	1,398,595
All other.....	327,664	245,389
Upholstering goods and sundries.....	1,176,542	1,986,330
Woolen and worsted.....	1,528,648	1,528,648
All other.....	457,682	457,682
Partially manufactured products for sale.....	Pounds.....	115,032,485
Yarns.....	196,909,513	
Woolen.....	28,520,493	7,505,412
Worsted.....	88,323,953	80,395,543
Woolen, union or merino.....	10,249,625	2,143,416
Worsted, union or merino.....	3,761,737	3,522,512
All other.....	3,195,553	974,570
Worsted tops and stubbing.....	11,321,279	8,027,231
Noils.....	27,479,203	8,933,589
Waste.....	24,057,580	3,524,912
All other products.....		3,250,557
Work on materials for others.....		3,026,255

¹ In addition, woolen and worsted goods to the value of \$2,957,697 were made by establishments engaged primarily in the manufacture of carriages and wagons and materials; clothing, men's, including shirts; cotton goods, including cotton small wares; dyeing and finishing textiles; flour-mill and gristmill products; hosiery and knit goods; silk and silk goods, including throwsters; and waste. Also, 488,322 pounds of woolen, worsted, and merino yarns, values at \$217,114, were made for sale by manufacturers of hosiery and knit goods, as shown in Table 63.

Worsted goods.—While it is not possible to compile exact statistics for the manufacture of worsted goods and of woolen goods, respectively, the following table gives data for establishments whose products of chief value were worsted goods:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	324	111,012	\$47,151,871	\$207,786,936	\$312,624,663	\$104,837,727
1904.....	226	69,251	26,269,787	109,658,481	165,745,052	56,086,571
1899.....	186	57,008	20,092,738	77,075,222	120,314,344	43,239,122
1889.....	143	42,978	14,944,966	50,706,769	79,194,652	28,457,883
1879.....	76	18,803	5,683,027	22,013,628	33,549,942	11,536,314
1869.....	102	12,920	4,368,857	14,308,108	22,090,331	7,782,133
1859.....	3	2,373	543,684	2,442,775	3,701,378	1,258,603

Woolen goods.—The favor in which worsted goods are held has resulted in a great increase in the manufacture of that class of goods and has apparently checked the growth of the manufacture of woolen goods. Statistics for establishments engaged principally in the manufacture of woolen goods are shown in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	537	52,180	\$22,575,175	\$65,651,634	\$107,118,858	\$41,467,224
1904.....	792	72,747	28,827,556	87,830,825	142,196,658	54,366,833
1899.....	1,035	68,893	24,757,006	71,011,956	118,430,158	47,418,202
1889.....	1,311	76,915	26,139,194	82,270,335	133,577,977	51,307,642
1879.....	1,990	86,504	25,836,392	100,845,611	160,606,721	59,761,110
1869.....	2,891	80,053	26,877,575	96,432,601	155,405,358	58,972,757
1859.....	1,260	41,360	9,610,254	36,586,287	61,894,986	25,308,699
1849.....	1,559	39,252	(¹)	25,755,991	43,207,545	17,461,554

¹ Not reported separately.

Felt goods.—The products included under this sub-classification are made without weaving, the hair, wool, etc., being matted together with the aid of moisture and heat, by rolling, beating, and pressure, utilizing the natural tendency of the fibers to interlace. A large variety of products is included, the output embracing felt cloth, trimming and lining felts, paper makers' felts, steamer rugs, sleeping bags, saddle felts, horse blankets, table and piano covers, etc. This branch of the woolen industry was first shown separately at the census of 1879. The statistics from 1879 to 1909, inclusive, are presented in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	43	3,544	\$1,711,850	\$6,967,206	\$11,852,626	\$4,885,420
1904.....	39	3,254	1,350,754	5,754,026	8,948,594	3,194,568
1899.....	36	2,688	1,024,835	3,801,028	6,461,691	2,660,663
1889.....	34	2,142	883,350	2,809,937	4,654,768	1,844,831
1879.....	26	1,524	439,700	2,530,710	3,619,652	1,088,942

The principal products of the felt-goods branch of the woolen industry are shown in the next table.

KIND.	Quantity.	Value.
Total value.....		\$11,852,628
Felt cloths.....	3,784,468 square yards.....	1,381,854
Trimming and lining felts, felt shirts, etc.	5,953,410 square yards.....	1,329,686
Saddle felts.....	1,650,991 pounds.....	575,849
Endless belts.....	3,243,034 pounds.....	3,417,822
Boot and shoe linings.....	1,661,030 square yards.....	514,456
Hair felting.....	1,159,999 square yards.....	531,045
All other felts.....		3,549,878
All other products.....		552,038

Hats, wool-felt.—The materials used in this branch of the industry are principally wool and wool noils and the products are men's, women's, and children's wool-felt hats. The statistics from 1879, when the industry was first reported separately, to 1909, inclusive, are given in Table 78.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	31	1,986	\$987,693	\$2,472,263	\$4,382,411	\$1,910,148
1904.....	17	1,503	619,194	1,369,810	2,457,266	1,087,456
1899.....	24	2,108	937,855	2,042,202	3,591,940	1,549,738
1889.....	32	3,500	1,249,976	2,802,041	5,329,921	2,527,890
1879.....	43	5,470	1,893,215	4,785,774	8,516,569	3,730,795

The value of products of the industry involves some duplication, the hat bodies and hats in the rough reported as products being finished by other manufacturers and returned as complete hats.

KIND.	Quantity (dozens).	Value. ¹
Total value.....		\$4,382,411
Wool-felt hats.....	590,957	3,646,787
Wool-felt hat bodies and hats in the rough.....	53,896	309,492
All other products.....		426,132

¹ In addition, wool-felt hats to the value of \$904,643 were made by establishments engaged primarily in the manufacture of hats and caps, other than felt, straw, and wool; hats, fur-felt; hats, straw; and millinery and lace goods.

CLOTH, SPONGING AND REFINISHING.

The sponging and refinishing of woolen cloth is frequently done on commission by the establishments not owning the cloth on which they work, and such establishments are the ones covered by the present classification. Many establishments engaged in the manufacture of clothing do their own sponging and refinishing, but the operations of such establishments are of course not included in the statistics for this classification. The value of products here shown represents the amount received for work done.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	57	975	\$651,263	\$85,203	\$1,543,872	\$1,453,669
1904.....	55	795	503,935	38,852	1,052,939	1,014,087
1899.....	46	534	268,191	17,490	566,000	548,510
1889.....	23	354	200,630	34,132	399,814	365,682
1879.....	20	176	62,790	71,960	222,560	150,600

CLOTHING, MEN'S, BUTTONHOLES.

Closely allied to the industry classified as "clothing, men's," is "clothing, men's, buttonholes," covering establishments which make buttonholes in men's clothing owned by others. The value of products represents the amount received for work done. Inasmuch as buttonholes are usually made in establishments which manufacture the clothing, only a comparatively small portion of the total value of such work is shown under this heading. The statistics were first shown separately at the census of 1889.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	146	830	\$389,032	\$104,577	\$780,720	\$676,143
1904.....	141	903	350,468	94,857	700,153	605,301
1899.....	149	944	332,137	98,178	650,502	532,324
1889.....	200	1,165	392,822	84,167	784,055	699,888

Establishments in other industries, for the most part those manufacturing primarily men's clothing, reported the making of buttonholes in 1909 to the value of \$33,400.

CLOTHING, MEN'S, INCLUDING SHIRTS.

Under this designation are included establishments engaged chiefly in the manufacture of men's and boy's clothing, such as overcoats, suits, coats, trousers, raincoats, overalls, and smoking and other jackets; and also establishments making men's shirts, bath and night robes, pajamas, and underwear, except such of these articles as are made in knitting mills. Establishments making parts of clothing, such as shoulder pads, pockets, coat fronts, and padding, are also included. There is therefore some duplication in the value of products for the industry as a whole. The census returns for this industry, like those for other clothing industries, relate only to establishments manufacturing for the wholesale trade. Custom-tailor shops, whether large or small, were not included.

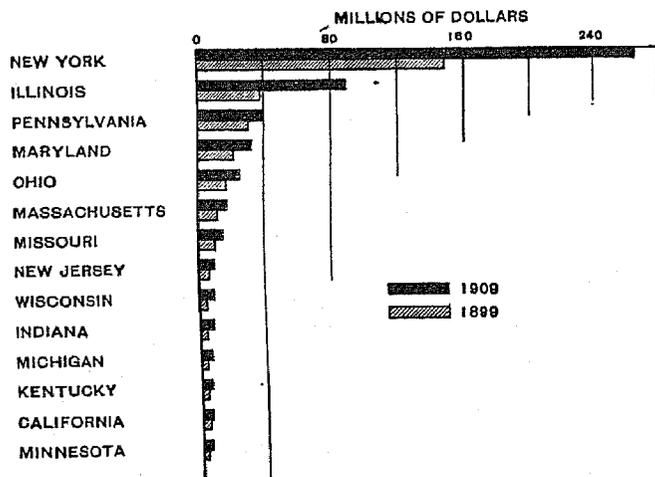
The shirt industry was formerly shown separately, but it was found impossible to make a satisfactory statistical separation, as shirts are frequently made in connection with the manufacture of other clothing for men. In the following table, however, are given the statistics for the two branches of the industry in 1909, each establishment being assigned according to its product of chief value.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	6,354	239,696	\$106,277,319	\$297,515,445	\$568,076,635	\$270,561,189
Men's clothing ..	5,584	191,183	89,644,921	252,522,567	486,677,493	233,154,926
Shirts.....	770	48,513	16,632,398	44,992,879	82,399,142	37,406,263

There is considerable overlapping between the men's clothing industry and some of the other clothing industries hereafter described, but it is impossible to show the full extent of such overlapping, as some establishments failed to distinguish the value of the different classes of products.

In 1909 establishments engaged primarily in the manufacture of other products made men's clothing and shirts to the value of \$7,096,043. The principal industries represented were "furnishing goods, men's;" "clothing, women's;" and "flags, banners, regalia, society badges, and emblems."

CLOTHING, MEN'S, INCLUDING SHIRTS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



Clothing, men's.—The value of products of this branch of the clothing industry represented in 1909 nearly one-half of the total value of products for all the clothing industries combined.

An important feature of this industry is that many establishments manufacture clothing on a contract basis from materials furnished by others. Many of these establishments are small and often much of the work is done by the contractor and his family. Other establishments working under contract, however, are of considerable size, employing large numbers of wage earners. In order to bring out the extent to which this practice obtains a segregation has been made of those establishments which manufactured clothing from their own materials and those which worked exclusively on materials furnished by others—in many cases by establishments of the class first mentioned. The following statement shows separate data for these two classes of establishments in 1909:

CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	5,584	191,183	\$89,644,921	\$252,522,567	\$485,677,493	\$233,154,926
Regular factories	2,367	126,190	56,360,952	249,090,745	439,860,250	190,169,511
Contract shops...	3,217	64,987	33,283,969	2,531,819	45,817,234	42,985,415

The figures for the men's clothing industry from 1849 to 1909, inclusive, are given in the next table.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	5,584	191,183	\$89,644,921	\$252,522,567	\$485,677,493	\$233,154,926
1904.....	4,504	137,190	57,225,506	185,793,436	355,796,571	170,003,135
1899.....	5,729	120,927	45,496,728	145,218,798	276,717,357	131,488,559
1889.....	4,867	144,926	51,075,837	128,846,857	261,019,609	122,172,752
1879.....	6,166	160,813	45,940,353	131,363,282	209,548,460	78,185,178
1869.....	7,858	108,128	30,746,679	86,794,706	148,600,253	61,865,547
1859.....	4,014	114,800	19,856,426	44,149,752	80,830,555	36,680,803
1849.....	4,278	96,551	15,032,340	25,730,268	48,311,709	22,581,451

Shirts.—This branch includes the manufacture of all kinds of shirts for men and boys, except those made in knitting mills, and also the manufacture of linen underwear. The making of shirt bosoms and other parts is included, together with stitching done under contract on materials owned by others. The classification does not fully cover the manufacture of this class of goods, as shirts to the value of \$6,801,460 were reported by establishments whose chief product was men's clothing; and shirts to the value of \$4,940,464 were reported by establishments assigned to other industries, principally "furnishing goods, men's." It is hardly probable that the full amount of overlapping is indicated by these figures. The table following shows the statistics for the manufacture of shirts from 1879 to 1909, inclusive:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	770	48,513	\$16,632,398	\$44,992,879	\$82,399,142	\$37,406,263
1904.....	641	36,499	11,233,392	25,639,402	50,971,105	25,331,703
1899.....	690	36,622	10,894,327	22,950,504	47,121,530	24,170,966
1889.....	869	31,207	9,193,495	15,704,343	33,638,593	17,934,250
1879.....	549	25,637	5,403,666	11,306,444	20,130,031	8,823,567

CLOTHING, WOMEN'S.

The manufacture for the wholesale trade of a great variety of clothing for women, girls, and children is covered by this classification, which includes the manufacture not only of complete suits, but also of dresses, skirts, petticoats, kimonos, dressing sacques, wrappers, jackets, cloaks, capes, underwear, infants' clothing, shirt waists, linings, dress stays, belts, dress shields, and similar articles. There is considerable duplication in the total value of products reported.

The extent to which women's clothing is manufactured in establishments engaged exclusively on contract work is shown by the following table, relating to 1909:

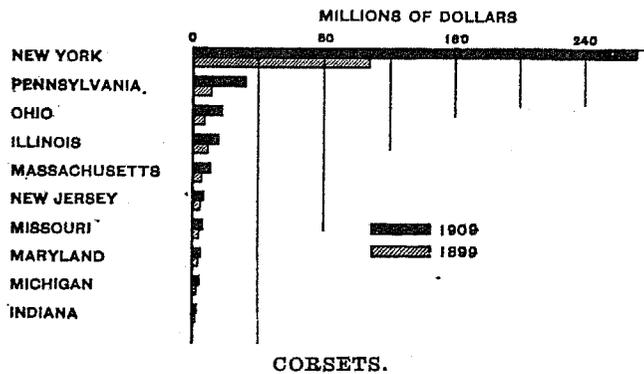
CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	4,558	153,743	\$78,568,261	\$208,788,226	\$384,751,649	\$175,963,423
Regular factories	3,709	139,721	71,578,317	207,890,779	374,332,945	166,442,166
Contract shops...	849	14,022	6,989,944	897,447	10,418,704	9,521,257

The general statistics for the entire industry from 1859 to 1909, inclusive, are as follows:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	4,558	153,743	\$78,568,261	\$208,788,226	\$384,751,649	\$175,963,423
1904.....	3,351	115,705	51,180,193	130,719,996	247,661,560	116,941,504
1899.....	2,701	83,739	32,536,101	84,704,592	159,339,539	74,034,947
1889.....	1,224	39,149	15,428,272	34,277,219	68,104,019	33,886,800
1879.....	502	25,192	6,661,005	19,559,227	32,004,794	12,445,567
1869.....	1,847	11,696	2,513,956	6,837,978	12,900,583	6,062,605
1859.....	188	5,739	1,193,032	3,323,335	7,181,039	3,857,704

The increases shown for this industry have been phenomenally large at each succeeding census, largely, no doubt, because of a gradual transfer of such work from the homes and the custom dressmaking establishments to the factories. Women's clothing to the value of \$3,876,661 was reported for 1909 by establishments otherwise classified, mostly by those manufacturing men's clothing. This figure probably fails to show the full extent, however, to which these products were made in establishments assigned to other industries.

CLOTHING, WOMEN'S—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



The establishments included under this classification manufacture corsets, corset waists, stays, and similar articles. The following table gives the statistics for the industry from 1879 to 1909, inclusive:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	133	17,564	\$6,464,144	\$15,640,415	\$33,257,187	\$17,616,772
1904.....	109	10,975	3,600,462	6,135,237	14,882,081	8,726,844
1899.....	138	12,297	3,644,593	6,357,189	14,451,198	8,094,009
1889.....	205	10,928	3,509,039	5,662,140	12,401,575	6,739,435
1879.....	113	8,802	1,745,969	3,686,821	6,494,705	2,807,884

Two establishments classed under "clothing, women's," made corsets in 1909 to a limited extent, but the value can not be given without the disclosure of individual operations.

FURNISHING GOODS, MEN'S.

Under this heading are included the manufacture of (1) collars and cuffs; (2) suspenders, garters, and elastic woven goods; and (3) other furnishing goods such as neckwear, belts, and handkerchiefs. For censuses prior to 1909 establishments making suspenders, garters, and elastic woven goods were included in part under "men's furnishings," in part under "millinery and lace goods," and in part under "rubber and elastic goods" (now "rubber goods, not elsewhere specified").

As woven elastic goods are used primarily in the manufacture of suspenders, garters, and similar articles, the statistics for all establishments engaged in producing them are now assembled under the classification of "furnishing goods, men's."

Statistics for the three subdivisions of the industry are shown in the following statement for 1909, each establishment being assigned according to its product of chief value.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	900	38,482	\$15,092,988	\$49,124,843	\$87,710,197	\$38,585,354
Miscellaneous furnishing goods.....	602	15,920	5,967,370	26,234,090	42,129,938	15,905,848
Suspenders, garters, and elastic woven goods.....	251	10,141	4,273,302	16,912,165	28,349,807	11,437,642
Collars and cuffs.....	47	12,421	4,912,316	6,988,588	17,230,452	11,241,864

In 1909 men's furnishing goods to the value of \$6,809,339 were made by establishments engaged primarily in the manufacture of other products, principally by establishments classed under "clothing, men's, including shirts;" "millinery and lace goods;" and "chemicals," the products reported by the latter consisting of celluloid collars and cuffs.

Comparative figures for the combined industry are given in the following table from 1879 to 1909, inclusive, but, as noted above, much of the manufacture of suspenders, garters, and elastic woven goods was not covered by this classification prior to 1909.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	900	38,482	\$15,092,988	\$49,124,843	\$87,710,197	\$38,585,354
1904.....	547	27,185	8,760,108	26,564,500	49,031,582	22,467,082
1899.....	457	30,322	9,730,066	23,669,929	44,346,482	20,676,553
1889.....	586	20,778	6,078,028	15,280,572	29,870,946	14,590,374
1879.....	161	11,174	2,644,155	6,503,164	11,506,557	5,003,663

¹ Adding the statistics of establishments manufacturing elastic goods, webbing, garters, and suspenders, classified under "rubber and elastic goods," the following totals for 1904 are obtained: Number of establishments, 599; wage earners (average number), 32,299; wages, \$10,692,781; cost of materials, \$31,435,430; value of products, \$57,618,735; value added by manufacture, \$26,183,306.

HATS AND CAPS, OTHER THAN FELT, STRAW, AND WOOL.

This classification first appeared in 1904 and represents part of a classification which in 1899 included straw hats and in previous years fur-felt hats also. The industry includes the manufacture of all kinds of hats and caps from cloth, of leather hats and caps, and of men's silk and opera hats. Some fur hats are reported, but such hats are made chiefly by establishments in the fur-goods industry. The statistics for 1909, 1904, and 1899 are as follows:

Table 91	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	494	6,201	\$3,421,055	\$6,690,452	\$13,689,338	\$6,998,886
1904.....	415	6,594	3,353,589	6,307,663	12,955,490	6,647,827
1899.....	644	12,544	5,025,096	10,906,917	21,393,310	10,486,393

1 Includes "hats, straw."

Establishments engaged primarily in the manufacture of fur goods, women's clothing, straw hats, and other products made in 1909 hats and caps other than felt, straw, and wool to the value of \$804,008.

MILLINERY AND LACE GOODS.

Establishments covered by this classification make a wide variety of articles for wholesale trade, including all kinds of hat frames and hats, trimmed and untrimmed, for women and girls; belts, collars, and neckwear; lace work, plaitings, ruchings, and veilings; dress, cloak, and millinery trimmings; embroideries; crocheted goods; and handmade curtains of muslin and lace. Custom millinery shops were not included. The machine production of cotton laces and lace curtains is included with the cotton goods industry rather than with the millinery and lace goods industry.

The production of untrimmed hats for women is in part covered by other classifications—"hats, wool-felt," "hats, fur-felt," and "hats, straw."

Table 92	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,579	39,201	\$16,307,560	\$45,040,275	\$85,893,632	\$40,853,357
1904.....	860	27,500	10,307,241	20,258,916	50,777,768	24,518,852
1899.....	591	16,871	5,817,855	15,654,295	29,469,406	13,815,111
1889.....	278	11,113	4,526,021	8,588,342	18,047,067	9,458,725
1879.....	247	6,555	1,861,044	6,142,091	9,577,840	3,435,749
1869.....	1,668	7,205	1,156,531	3,365,132	6,513,222	3,148,090

The value of millinery and lace goods made in 1909 by establishments engaged primarily in the manufacture of window shades and fixtures, men's furnishing goods, straw hats, women's clothing, and other products, was \$4,991,448.

AWNINGS, TENTS, AND SAILS.

The statistics for factories making all kinds of awnings, canopies, tents, sails, truck covers, and water-

proof and furniture coverings are included under this classification.

Table 93	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	621	4,242	\$2,187,651	\$8,376,781	\$14,499,020	\$6,122,239
1904.....	390	3,432	1,757,466	6,669,721	11,269,170	4,599,449
1899.....	340	3,335	1,568,503	5,227,503	9,143,604	3,916,101
1889.....	581	3,135	1,581,729	4,150,180	7,829,003	3,678,823
1879.....	151	1,268	334,463	1,230,558	1,968,942	738,384
1869.....	224	1,127	542,999	1,611,023	2,880,715	1,269,692
1859.....	150	737	298,217	868,573	1,442,046	573,673

Establishments manufacturing primarily bags, other than paper, sporting and athletic goods, window shades and fixtures, and other products also made awnings, tents, and sails in 1909 to the value of \$641,959.

BAGS, OTHER THAN PAPER.

All kinds of bags made from textile fabrics are included under this classification, except where the manufacture of these goods is carried on in establishments which manufacture the cloth or in establishments which use the bags as containers for products—such as flour, cement, or tobacco—which they manufacture as their principal business. Leather and paper bags are not included, unless manufactured as a subsidiary product by establishments making cloth bags.

Table 94	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	109	7,968	\$2,942,309	\$46,364,468	\$54,881,622	\$8,517,154
1904.....	79	5,722	1,828,526	30,758,040	37,399,087	6,641,047
1899.....	73	3,922	1,102,308	16,438,576	19,652,086	3,213,510
1889.....	80	6,633	2,049,839	15,178,265	20,207,805	5,029,540
1879.....	64	5,451	1,603,785	10,085,787	13,238,253	3,152,465
1869.....	39	1,097	452,517	3,827,678	8,261,679	4,434,001

In 1909 bags, other than paper, were also made to the value of \$1,230,359 by establishments engaged primarily in the manufacture of cotton goods, including cotton small wares; awnings, tents, and sails; paper bags; and other products.

At the census of 1859, under "bags," 19 establishments were reported, having wage earners numbering 112, with wages amounting to \$43,968, materials costing \$607,785, and a value of products amounting to \$749,578. While there were also establishments reported under "paper bags," thus showing that the above-named classification was for "bags, other than paper," the figures do not appear to be comparable.

CARPETS, RAG.

This industry is carried on largely by small establishments which use old carpets, rags, and other materials furnished by others and which report as value of products only the amount received for work done, so that the value of product reported does not represent the full value of rag carpets made. The statistics for the past six censuses are given in Table 95.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	428	1,982	\$860,400	\$688,621	\$2,567,569	\$1,878,948
1904.....	303	1,736	674,929	489,285	1,918,286	1,429,001
1899.....	805	1,818	443,880	622,185	1,765,256	1,133,071
1889.....	854	982	310,488	726,419	1,714,480	988,061
1879.....	396	724	190,792	424,943	861,710	436,767
1869.....	474	1,016	141,148	498,595	1,005,327	508,732

CLOTHING, HORSE.

Factories manufacturing fly nets, horse blankets, pads, boots, and halters, automobile and carriage robes, etc., are included in this classification. These establishments, however, do not weave the textiles—cotton, jute, linen, and woolen—nor make the felt used for blankets and robes.

The statistics for this industry from 1879 to 1909, inclusive, are as follows:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	33	1,648	\$491,598	\$2,773,388	\$4,134,864	\$1,361,476
1904.....	29	1,063	341,655	1,329,435	2,139,496	810,061
1899.....	26	575	176,687	847,846	1,305,164	457,318
1889.....	31	881	239,074	777,570	1,572,265	794,695
1879.....	3	565	137,400	453,700	695,000	241,300

In 1909 the woolen and worsted mills wove 4,457,493 square yards of horse blankets, valued at \$1,862,372, and 2,889,444 square yards of carriage robes, valued at \$1,396,595, and establishments engaged primarily in the manufacture of bags, other than paper, shoddy, awnings, tents, and sails, and other products, made horse clothing to the value of \$580,794.

FLAGS, BANNERS, REGALIA, SOCIETY BADGES, AND EMBLEMS.

This classification covers the manufacture of flags, banners, and pennants, college and fraternal society emblems and novelties, decorating materials, church emblems and paraphernalia, and campaign buttons and badges. It includes two branches, "flags and banners" and "regalia and society badges and emblems," but there is so much overlapping between them that only combined totals are shown in the general tables. Statistics for the two branches for 1909 are given, however, in the following table:

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	211	3,572	\$1,488,620	\$3,808,749	\$8,113,989	\$4,304,240
Regalia and society badges and emblems.....	156	2,638	1,170,690	2,722,523	6,129,640	3,407,117
Flags and banners.....	55	934	317,930	1,087,226	1,984,349	897,123

There is also some overlapping between this industry and various others, as is shown by the subsidiary

products of other industries. In 1909 establishments engaged primarily in the industries, "signs and advertising novelties," "awnings, tents, and sails," "printing and publishing," "clothing, men's, including shirts," and of other industries also made flags, banners, regalia, society badges and emblems to the value of \$728,167.

Regalia and society badges and emblems.—The following table includes the establishments whose chief products were regalia and society badges and emblems for the census years from 1859 to 1909, inclusive:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	158	2,638	\$1,170,690	\$2,722,523	\$6,129,640	\$3,407,117
1904.....	140	2,498	1,012,768	2,019,067	4,753,268	2,734,199
1899.....	109	1,569	471,114	1,596,875	3,049,481	1,462,606
1889.....	137	2,080	737,853	1,246,906	3,203,890	1,956,984
1879.....	47	589	174,097	429,227	815,638	386,411
1869.....	29	410	114,702	307,296	626,476	319,180
1859.....	6	23	5,508	12,600	26,900	14,300

1 "Regalias, banners, and flags."

Flags and banners.—The figures for establishments engaged primarily in the manufacture of flags and banners are shown in Table 99 for the censuses from 1879 to 1909, inclusive.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	55	934	\$317,930	\$1,087,226	\$1,984,349	\$897,123
1904.....	21	374	115,487	456,872	854,692	367,820
1899.....	36	509	148,933	547,165	1,038,032	490,837
1889.....	29	821	96,189	195,587	456,549	290,263
1879.....	11	68	27,375	48,200	119,600	71,400

There were no statistics shown for 1869, but at the census of 1859 there were nine establishments, with 77 wage earners, to whom \$26,088 were paid in wages. The materials cost \$34,330, and the value of products was \$90,600.

HAMMOCKS.

This classification embraces the manufacture of hammocks of all descriptions, whether made from textile fabrics produced in other industries or woven or knitted directly from the yarn. The census of 1879 was the first for which statistics were presented separately.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	15	272	\$65,242	\$311,246	\$578,505	\$267,259
1904.....	14	271	91,379	189,780	446,815	257,035
1899.....	13	339	191,626	242,950	480,114	237,164
1889.....	6	80	14,604	26,535	60,234	33,719
1879.....	5	82	17,576	61,830	110,352	48,522

Hammocks to the value of \$672,817 were also made in 1909 by establishments engaged primarily in the

manufacture of cotton goods, including cotton small wares; horse clothing; awnings, tents, and sails; and other products.

MATS AND MATTING.

This classification includes establishments engaged in making doormats and floor mattings, art squares, rugs, and carpets, the principal materials being grass, and coir yarn (coir being the fiber prepared from the outer husk of the cocoanut). The products are woven with cotton warp, or plaited, and differ from the rugs and carpets made in carpet factories and in establishments engaged primarily in the manufacture of cordage and twine and jute and linen goods, in that their chief material is not wool, or cotton, or jute.

The separate statistics for the industry begin with 1879.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	12	937	\$385,434	\$1,066,566	\$2,431,615	\$1,365,049
1904.....	12	625	249,104	574,168	1,242,996	608,828
1899.....	9	1,197	237,282	516,137	1,165,330	649,153
1889.....	24	283	172,874	301,591	608,625	307,034
1879.....	12	285	125,129	233,707	439,370	205,663

At the census of 1869, 15 establishments, with products valued at \$257,981, were reported under "mats and rugs," and, at the census of 1859, 9, with products valued at \$107,036, under a like classification. It is probable that the rugs included were not of grass fiber and that the statistics are properly comparable with those under the present classification of "carpets and rugs, other than rag," but their value can not be segregated. In 1849, 3 establishments classified under "mats" reported products valued at \$5,500.

OAKUM.

Oakum is made by untwisting and picking into loose fiber old hemp ropes and gunny bagging, the product being used for calking seams and joints, especially those of vessels. The statistics for 1889 to 1909 are shown in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	6	113	\$42,153	\$231,992	\$338,497	\$106,505
1904.....	6	142	48,045	240,929	361,198	120,269
1899.....	7	171	51,343	263,862	440,237	150,375
1889.....	7	142	46,816	231,733	363,400	131,667

Two establishments in 1909, engaged primarily in the manufacture of paper and wood pulp and jute goods, also made oakum, but the value of the product can not be given without disclosing individual operations.

OILCLOTH AND LINOLEUM.

Under this heading are included two branches, "oilcloth and linoleum, floor," and "oilcloth, enameled." It covers the manufacture of all kinds of floor oilcloth and linoleum, cork carpet, enameled oilcloth for table coverings, and carriage cloth, but not that of artificial leather, which is included under "upholstering materials." Cotton cloth, burlap, paints, linseed oil, ground cork, and wood pulp are the principal materials used. The following statement shows the statistics for 1909 for the two branches of the industry, each establishment being classified according to its product of chief value, but there is so much overlapping that only combined totals are shown in the general tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	31	5,201	\$2,825,545	\$15,550,101	\$23,339,022	\$7,788,921
Oilcloth and linoleum, floor.....	19	4,225	2,309,404	10,145,316	15,813,331	5,668,015
Oilcloth, enameled.....	12	976	516,141	5,404,785	7,525,691	2,120,906

The manufacture of oilcloth and linoleum for floor covering is much the more important of the two branches of the industry. The following statement gives comparative statistics for the combined industry from 1849 to 1909, inclusive:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	31	5,201	\$2,825,545	\$15,550,101	\$23,339,022	\$7,788,921
1904.....	27	3,883	1,943,757	10,050,009	14,792,246	4,742,237
1899.....	27	3,230	1,628,113	7,549,672	11,402,620	3,832,948
1889.....	28	1,862	928,525	3,363,813	5,481,087	2,117,274
1879.....	29	1,993	849,862	3,982,908	5,814,587	1,831,679
1869.....	34	1,411	687,283	2,548,768	4,211,579	1,602,811
1859.....	49	1,538	517,296	2,375,975	3,602,216	1,226,241
1849.....	56	650	178,854	829,706	1,256,904	427,288

The principal classes of products are given for 1909, by kind, quantity, and value in the table following:

KIND.	Quantity (square yards).	Value. ¹
Total value.....		\$23,339,022
Oilcloth.....		11,681,012
Floor.....	18,354,851	3,776,660
Enameled.....	17,338,440	2,265,146
Table.....	61,168,777	5,639,206
Linoleum.....		10,844,928
Linoleum, including cork carpet.....	26,215,979	7,850,437
Inlaid linoleum.....	4,460,275	2,994,491
All other products.....		813,082

¹ In addition, products to the value of \$33,328 were reported by establishments engaged primarily in the manufacture of rubber goods.

Artificial leather made as a subsidiary product of establishments that manufacture oilcloth and linoleum is included in the item for "all other products." The

general statistics for this branch of the upholstering industry are given in Table 106. Combining the statistics for the two branches of establishments gives a total production of artificial leather amounting to 11,869,875 square yards, valued at \$3,448,617.

UPHOLSTERING MATERIALS.

This classification includes the manufacture of artificial leather, curled hair, excelsior, drapery bur-laps, upholstery buttons, and similar articles. Some of the products do not belong, strictly speaking, in the group of textiles; the only reason for including them is that they are used in connection with other products that are properly included.

The establishments which manufacture primarily upholstering materials may be separated into four classes. The statistics for each, in 1909, are shown separately in the following statement, but there is so much overlapping that only combined totals are shown in the general tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	230	4,067	\$1,689,191	\$3,063,694	\$13,053,561	\$4,984,887
Imitation leather, leatheroid, etc.....	12	443	216,528	2,033,201	3,128,298	1,095,097
Excelsior.....	109	1,003	396,527	816,104	1,665,081	848,977
Curled hair.....	29	1,372	570,168	3,498,170	5,129,892	1,631,722
All other products.	80	1,249	505,068	1,721,219	3,130,290	1,409,071

The statistics for upholstering materials are given in the following table for the census years from 1869 to 1909, inclusive:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	230	4,067	\$1,689,191	\$3,063,694	\$13,053,561	\$4,984,887
1904.....	236	4,712	1,867,082	7,977,193	12,677,510	4,700,317
1899.....	270	5,098	1,715,073	5,881,621	10,048,164	4,166,543
1889.....	152	3,231	1,221,914	3,013,253	5,733,039	2,719,786
1879.....	79	1,477	523,417	1,023,154	1,837,705	814,551
1869.....	47	575	233,575	1,031,929	1,544,612	512,683

No complete separate figures were given for upholstering materials at the censuses of 1859 and 1849. At the census of 1859 seven establishments were included under "curled hair," which is an upholstering material. There were 45 wage earners receiving \$12,744 in wages. The cost of materials was \$78,738 and the value of products, \$106,869. At the census of 1849 six establishments were shown under "curled hair." The wage earners numbered 247, the wages amounted to \$48,216, and the value of products was \$279,800.

In 1909 establishments engaged primarily in the manufacture of glue, house-furnishing goods, not elsewhere specified, mattresses and spring beds, and other products made upholstering materials as a subsidiary product to the value of \$916,586

Several industries reported for 1909, among their principal products, various kinds of materials used in upholstering, these being specifically requested by the Census Bureau.

Cotton mills reported "upholstering goods" to the value of \$14,882,842 (see Table 56).

Tanners, curriers, and finishers of leather reported carriage, automobile, and furniture leather to the value of \$14,266,742 (see Table 189). It is probable that the greater part of this was used for upholstering purposes.

Woolen and worsted mills reported "upholstering goods and sundries" to the value of \$1,986,330 (see Table 73). Doubtless products used for upholstering are included in the value of products of establishments classed under "buttons."

Among the by-products of slaughtering and meat-packing establishments are curled cattle-tail hair and hog hair sold to be used in upholstering.

WASTE.

The establishments included under this classification clean and otherwise prepare factory waste—principally cotton and carpet-wool waste—for use in wiping machinery, packing car-wheel journals and the journals of heavy machines, and for mop yarns. At censuses prior to 1909 the industry was designated as "cotton waste."

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	53	1,897	\$715,663	\$8,836,589	\$11,395,011	\$2,561,422
1904.....	41	1,559	494,565	6,825,261	8,343,323	1,518,067
1899.....	25	1,091	326,627	3,909,915	4,880,024	880,109
1889.....	31	279	103,041	1,592,041	1,906,622	314,581

The cotton waste reported as sold by cotton mills exceeded that purchased by such mills by approximately 220,000,000 pounds in quantity and approximately \$6,600,000 in value. The waste reported as the product of carpet and rug factories amounted to 1,620,675 pounds, valued at \$67,334. One hosiery and knitting mill reported waste. Much of the waste in this industry was probably included under "all other products."

WOOL PULLING.

Strictly speaking, this industry does not belong under "textiles," although it has to do with one of the fibers, but in prior censuses it has been placed under this group and the statistics are here given in order to preserve the comparability of the figures. The classification covers establishments pulling wool on contract from pelts owned by others, as well as those which buy pelts, pull the wool, and sell it and the skins in the open market. The principal statistics for the census years from 1899 to 1909, inclusive, are given in Table 109.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	37	631	\$336,915	\$4,103,250	\$5,180,856	\$1,077,606
1904.....	34	631	364,754	103,984	881,706	777,722
1899.....	34	475	247,950	53,975	531,287	477,312

The figures shown in the table for materials and products are not comparable, as at censuses prior to

1909 the schedules uniformly showed under value of products only the amount received for contract work done, while some of the establishments included in the census of 1909 purchased the skins, and in such cases the value of the skins and wool were included in the reported value of products. Large quantities of wool are pulled in slaughtering and meat-packing establishments, the amount reported in 1909 being valued at \$8,327,095.

IRON AND STEEL AND THEIR PRODUCTS.

THE GROUP AS A WHOLE.

This group is intended to cover the manufacture of crude iron and steel and its conversion into finished products. Some of the finished products included, such as rails, plates, pipe, and wire, are of a relatively simple character. Others are highly elaborated products, for which the mere cost of the iron and steel as such is but a small proportion of the total cost. Many of these highly elaborated products may be roughly grouped under the terms "machinery" and "tools." From the standpoint of the method of manufacture, most of them may be considered as the product, in whole or in part, of foundries and machine shops. The "foundry and machine-shop" industry, according to the census classification, however, by no means covers all establishments which are foundries or machine shops. In cases where there are a considerable number of establishments which make exclusively or chiefly some specific class of machinery or tools, or of other articles of iron or steel, and which together produce the larger part of the total output of that class, such establishments have been put in a special industry group.

There are a number of industries not classified by the Census Bureau under the group "iron and steel and their products," which nevertheless use iron and steel very largely as materials, and in which a considerable part of the process of manufacture consists of what would ordinarily be termed foundry and machine-shop work. These industries, however, use other materials extensively, in addition to iron and steel, and part of their processes of manufacture do not fall under the general designation of foundry and machine-shop work. Among such industries not included in the group "iron and steel and their products" may be mentioned the following: "Automobiles," included with the group "vehicles for land transportation;" "cars and general shop construction and repairs by steam-railroad companies," and "cars and general shop construction and repairs by street, railroad companies," which together constitute the group "railroad repair shops;" and "agricultural implements," "electrical machinery, apparatus, and supplies," "enameling and japanning," "firearms and ammunition," "instruments, professional and scientific," "shipbuilding," and "windmills," all of which are included in the group "miscellaneous industries."

Table 110 lists the industries included by the Census Bureau in the group "iron and steel and their products," and shows for each the number of establishments, average number of wage earners, amount of wages paid, value of products, and value added by manufacture, as reported at the census of 1909. The industries are divided into three sub-groups: (1) Industries making crude iron and steel and rolled products; (2) industries making other relatively simple products from iron and steel, most of which are products ready for direct consumption; and (3) industries making more highly elaborated products, principally machines and tools of various classes. The industries of the second and third sub-groups use largely materials produced by those of the first subgroup, so that in the total value of products for the group as a whole there is extensive duplication. In fact, a good deal of duplication appears within some of the individual industries.

The comparative statistics for different censuses for the steel works and rolling mills, as well as for several of the industries grouped in the table following under the subtitle "industries making other relatively simple products," from iron and steel are highly unsatisfactory. While for convenience the statistics for the different censuses are presented in the various subsequent tables, the changes in methods of classification and in the conditions under which these industries are conducted render the figures far from comparable.

At the censuses of 1909, 1904, and 1899 each establishment which rolled iron and steel was classed as an entirety under the heading "iron and steel, steel works and rolling mills," except that blast-furnace departments and tin-plate departments of such mills were uniformly segregated and treated as separate establishments. Establishments operating rolling mills in many cases manufacture large quantities of more advanced products in which rolled iron and steel are the principal materials, such as bolts, rivets, forgings, pipe, nails, and wire. In the reports for 1909, 1904, and 1899 the Census Bureau has classified under the several industries designated as those "making other relatively simple products from iron and steel" only establishments which have no rolling mills, but purchase the iron and steel, rolled or unrolled, which they use as material (an exception being made, as already noted, in the case of the tin-plate and terne-

plate industry). Consequently the statistics given under certain of these designations by no means indicate the full magnitude of the several branches of business; and, moreover, in certain cases changes

from census to census in the relative extent to which the products in question are made by rolling-mill establishments and by separate establishments greatly affect the comparability of the statistics.

Table 110	INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
	Total	17,289	1,025,044	\$633,602,871	\$3,163,126,293	\$1,361,020,467
	Industries making crude iron and steel and rolled products	654	278,505	187,807,288	1,377,151,817	399,013,072
	Iron and steel, blast furnaces.....	208	38,429	24,606,530	391,429,253	70,791,394
	Iron and steel, steel works and rolling mills.....	446	240,076	163,200,758	985,722,534	328,221,678
	Industries making other relatively simple products from iron and steel	500	54,425	30,783,268	220,332,661	66,303,030
	Horseshoes, not made in steel works or rolling mills.....	19	293	166,278	1,014,576	658,722
	Iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills.....	108	11,345	5,793,243	24,484,907	11,680,572
	Iron and steel, doors and shutters.....	29	1,601	874,340	3,005,685	1,722,780
	Iron and steel forgings.....	172	8,168	5,003,181	20,293,440	10,053,589
	Iron and steel, nails and spikes, cut and wrought, including wire nails, not made in steel works or rolling mills.....	57	2,765	1,352,555	8,191,620	4,219,208
	Iron and steel pipe, wrought.....	28	6,817	3,963,076	30,886,270	7,944,361
	Tin plate and ferroplate.....	31	5,352	3,314,874	47,969,045	6,080,211
	Wire.....	56	18,084	10,315,722	84,486,518	23,943,587
	Industries making more highly elaborated products	16,185	692,114	415,012,315	1,565,641,815	895,704,365
	Cash registers and calculating machines.....	50	7,465	5,311,890	23,708,326	20,155,800
	Cutlery and tools, not elsewhere specified.....	959	32,996	17,581,244	53,265,757	34,986,556
	Files.....	57	4,158	1,977,877	5,691,203	4,085,473
	Foundry and machine-shop products.....	13,253	531,011	321,520,917	1,228,476,148	658,404,009
	Locomotives, not made by railroad companies.....	16	14,909	8,914,266	31,582,302	16,522,319
	Pens, steel.....	5	699	230,030	576,096	451,436
	Pumps, not including steam pumps.....	102	2,136	1,258,224	5,582,962	3,096,340
	Safes and vaults.....	42	3,343	2,071,762	8,490,541	5,048,011
	Saws.....	96	4,832	2,856,291	11,535,631	6,623,865
	Scales and balances.....	87	3,559	2,186,230	8,755,642	6,081,645
	Screws, machine.....	43	1,607	970,088	3,014,112	1,833,634
	Screws, wood.....	11	3,464	1,453,932	6,198,955	3,860,429
	Sewing machines, cases, and attachments.....	47	19,296	11,102,026	28,282,416	16,807,771
	Springs, steel, car and carriage.....	54	3,190	1,852,917	9,005,362	4,278,092
	Stoves and furnaces, including gas and oil stoves.....	576	37,130	22,944,279	78,653,323	49,515,062
	Typewriters and supplies.....	89	9,578	6,221,423	19,718,767	15,841,421
	Vault lights and ventilators.....	37	327	227,761	956,720	618,390
	Wirework, including wire rope and cable.....	611	12,345	6,331,158	41,937,852	17,544,038

¹ The table does not include the statistics for establishments engaged in the manufacture of ordnance and accessories, which, in order to avoid disclosing the operations of individual establishments, is included in the total for "all other industries." (See discussion at the end of this chapter.)

At the census of 1889 a different policy was pursued. An establishment operating a rolling mill but using the rolled product in the manufacture of some more advanced commodity—wire or pipe, for example—was classified as a whole under the industry designated by the name of that commodity, provided, of course, it constituted the chief final product of the establishment. Consequently the figures for 1889 for several of the individual industries, as shown in the various subsequent tables, are relatively much larger than they would have been under the method pursued at later censuses. For the same reason the statistics for the rolling-mill industry, as shown in the general tables published at that census, are by no means comparable with those for later censuses. At the census of 1889, however, special tables were also presented which showed the total business of all establishments having rolling mills, including those which had been classified under more specific designations in the general tables. These combined totals for all rolling mills for 1889 are approximately comparable with those for later years, and have therefore been presented in Table 115.

Consequently, to add the 1889 figures for rolling mills, as shown in that table, to the figures for the industries using rolled products as materials would be entirely improper.

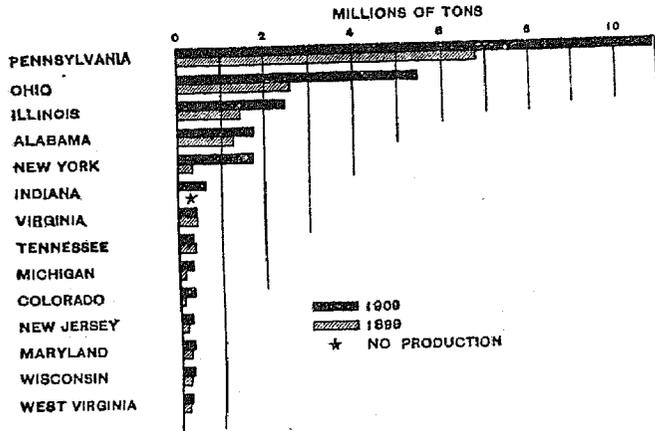
At the census of 1879 the practice with reference to the classification of rolling mills making more advanced commodities from the rolled material appears to have been substantially similar to that pursued in 1899, 1904, and 1909, thus rendering the figures for the industries in question for that census incomparable with those for 1889 but roughly comparable with those for the later censuses. On the other hand, in 1869 the practice seems to have been in general similar to that in 1889. It is impossible, however, to state definitely how far the data for 1869 are comparable with those for later censuses.

IRON AND STEEL, BLAST FURNACES.

The establishments included under this classification manufacture, from the ore, all kinds of pig iron, spiegeleisen, ferromanganese, and castings made direct

from the furnace. In many cases a single plant combines blast furnaces with steel works, but in all such cases the data were segregated so as to show the blast-furnace business separately.

IRON AND STEEL, BLAST FURNACES—TONS OF PIG IRON FOR LEADING STATES: 1909 AND 1899.



Over one-half of the pig iron made in 1909 was for consumption in the works of the companies reporting, as shown in the following table:

KIND.	Quantity (tons).	Value.
Total.....		\$391,429,283
Pig iron.....	25,651,798	387,830,443
All other products.....		3,598,840
Pig iron, classified according to disposition:		
Produced for consumption in works of same concern.....	15,858,203	239,387,017
Produced for sale.....	9,793,595	148,443,426

Almost two-fifths of the product, as shown in the table below, was intended for conversion into steel by the Bessemer process, and the balance about equally divided between iron for open-hearth steel furnaces and iron for puddling and foundry use.

KIND.	Quantity (tons).
Total.....	25,651,798
Bessemer (0.04 to 0.1 per cent phosphorus).....	10,147,052
Low-phosphorous (below 0.04 per cent phosphorus).....	248,720
Basic.....	7,741,759
Foundry.....	5,539,410
Forge or mill.....	886,685
Malleable Bessemer.....	934,211
White, mottled, and miscellaneous.....	110,810
Direct castings.....	16,181
Ferroalloys.....	326,970
Spiegeleisen.....	142,223
Ferromanganese.....	82,208
Ferrosilicon, including Bessemer ferrosilicon (7 per cent or over silicon) and ferrophosphorus.....	102,539

The statistics for blast furnaces were first reported separately at the census of 1849.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	208	38,429	\$24,606,530	\$320,637,889	\$391,429,283	\$70,791,394
1904.....	190	35,078	18,934,513	178,941,918	231,822,707	62,880,789
1899.....	223	39,241	18,484,400	131,503,655	206,756,557	75,252,902
1889.....	304	33,415	14,614,453	110,998,615	145,643,153	35,544,538
1879.....	341	41,695	12,655,428	58,619,742	89,315,568	30,695,827
1869.....	386	27,554	12,475,250	45,498,017	69,640,488	24,142,481
1859.....	286	15,927	4,545,430	12,293,030	20,870,120	8,577,090
1849.....	404	21,054	5,011,300	7,538,118	13,491,898	5,953,780

IRON AND STEEL, STEEL WORKS AND ROLLING MILLS.

This industry includes the conversion of iron into steel and the hot rolling of iron and steel. In general, the process of conversion and that of rolling are performed in the same plant, and in such cases the value of products includes only that of the final products as they leave the plant. There is, however, some duplication within the industry, due to the use of the products of one establishment—either crude steel or partly rolled steel—as materials by another. The principal finished rolled products of establishments included in this classification are bars and rods, wire rods, plates and sheets (including black plates for tinning), rails, structural shapes, and skelp.

Direct steel castings are another product. This industry also overlaps several others, steel works and rolling mills often producing manufactures from rolled products, such as wire, wrought-welded pipe and tubes, bolts, nuts, rivets, forged spikes, washers, galvanized plates or sheets, horse and mule shoes, and cut nails and spikes. Establishments whose business is confined to the manufacture of these more highly elaborated products and which do not do hot rolling are of course classed under other headings. The tin-plate dipping departments operated in connection with some rolling mills are treated as separate establishments and classed with the tin-plate industry, but it has not been possible similarly to segregate the wire departments of rolling mills, or departments making other elaborated products.

The table which follows, giving the products of steel works and rolling mills for 1909, does not in all cases show the tonnage or value of the finished products as they leave the mill. Under the heading "finished rolled products and forgings," several of the items, such as wire rods, flue and pipe skelp, and plates and sheets, represent the total tonnage of these products rolled and their actual or estimated value in the original rolled form, notwithstanding the fact that part of them were subsequently elaborated into more highly finished products in the rolling mills themselves. The added value given to the rolled iron and steel by subsequent processes performed in the same

establishment is included in the amount (\$86,534,369) given for the next to the last item in the table. On the other hand, the figures given for crude steel and for partly finished rolled products, such as billets and sheet and tin-plate bars, represent only the product made for sale or transfer to other plants, the larger quantities made but subsequently rolled or rerolled in the same mills not being included on account of the duplication which would be involved.

KIND.	Quantity (tons).	Value. ¹
Total		\$985,722,534
Rolled, forged, and other classified products of iron and steel:		
Finished rolled products and forgings.....	19,276,237	667,393,177
Rails.....	2,855,599	81,128,295
Rerolled or renewed rails.....	106,352	2,683,017
Rail fastenings.....	396,911	14,488,412
Structural shapes.....	2,123,630	65,564,593
Bars and rods.....	3,784,248	121,488,423
Bars for reinforced concrete.....	191,358	5,588,993
Wire rods.....	2,295,279	61,247,958
Plates and sheets.....	3,332,733	133,272,393
Black plates or sheets for tinning.....	631,435	30,955,967
Skelp, flue and pipe.....	2,084,286	64,514,723
Hoops, bands, and cotton ties.....	341,043	10,429,681
Nail and tack plates.....	68,557	2,540,022
Axles.....	102,348	3,831,344
Armor plates, gun forgings, and ordnance.....	26,845	10,649,079
All other.....	932,613	58,310,302
Partly finished rolled products for sale or transfer to other works.....	6,799,436	153,493,360
Blooms, billets, and slabs.....	4,837,796	108,514,747
Rolled forging blooms and billets.....	84,383	2,247,133
Sheet and tin-plate bars.....	1,652,761	37,745,299
Muck and scrap bar.....	174,496	4,996,211
Unrolled steel for sale or transfer to other works.....	647,601	42,456,174
Ingots.....	142,745	3,593,726
Direct steel castings.....	504,856	38,862,448
Scrap steel or iron.....	1,238,554	18,163,624
All other iron and steel products, including value added to rolling-mill products by further manufacture.....		86,534,369
All products, other than iron and steel, including custom work and repairing.....		17,681,830

¹ In addition, steel castings and rolled steel valued at \$6,627,039 were produced by establishments engaged primarily in the manufacture of agricultural implements; cars, steam-railroad, not including operations of railroad companies; cutlery and tools, not elsewhere specified; electrical machinery, apparatus, and supplies; files; foundry and machine-shop products; saws; shipbuilding, including boat building; and wire.

Table 115 gives the general statistics for the industry for the censuses from 1869 to 1909, inclusive. As already stated, the figures for 1889 in this table represent the combined business of all establishments having rolling mills, notwithstanding the fact that some of these establishments were also classified in the general tabulations under more specific headings according to the principal finished product manufactured—for example, under “wire” or “iron and steel pipe, wrought.” Consequently the figures for 1889 should be roughly comparable with those for subsequent censuses, although the comparability of all of the statistics is affected more or less by changes in the relative extent to which certain finished products are made in rolling mills and in separate establishments, respectively.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	446	240,076	\$163,200,758	\$637,500,856	\$985,722,534	\$328,221,678
1904.....	415	207,562	122,491,993	441,294,432	673,965,636	232,769,594
1899.....	445	183,249	102,335,876	390,895,277	597,211,716	296,316,439
1889.....	415	137,766	74,659,498	217,174,230	333,044,366	115,870,196
1879.....	451	99,103	42,796,082	132,631,498	217,242,116	74,590,708
1869.....	422	60,601	27,039,731	90,028,115	137,568,198	47,549,068

HORSESHOES, NOT MADE IN STEEL WORKS OR ROLLING MILLS.

The establishments included under this classification manufacture horseshoes of various types. These horseshoes include fiber and other cushioned kinds. Horseshoe calks are also manufactured, frequently as the sole product of an establishment. The production of horseshoes by steel works and rolling mills, which greatly exceeds that of the independent establishments, is not included, as it is impossible to segregate the items connected with this branch of the industry.

The first separate statistics for the industry were shown at the census of 1859, but the industry was included under other classifications in 1869 and 1879.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	19	293	\$166,278	\$355,854	\$1,014,576	\$658,722
1904.....	8	232	126,629	255,742	798,881	543,239
1899.....	7	231	117,427	210,537	497,619	287,082
1889.....	4	474	241,894	519,449	1,119,032	590,583
1859.....	10	93	34,704	45,751	106,383	60,632

In addition to the totals given in the above table, horse and mule shoes to the value of \$7,202,897 were made in 1909 by 11 steel works and rolling mills, and a small additional quantity by 1 establishment engaged primarily in making machine screws.

After 1889 horseshoes were produced in increasingly large quantities in rolling mills. This accounts for the decrease in the products of independent establishments from 1889 to 1899, as shown in the table.

IRON AND STEEL, BOLTS, NUTS, WASHERS, AND RIVETS, NOT MADE IN STEEL WORKS OR ROLLING MILLS.

Establishments included under this classification manufacture principally carriage and truck bolts; couplings; foundation and machine bolts; plow, stove, and tire bolts; expansion and toggle bolts; lock and axle nuts, cold or hot pressed; bifurcated rivets and

tubular nuts for boiler shop and structural purposes; lock washers and riveting and other burs; spring and other cotters; staples; gaskets; floor caps; and similar articles. The large production of similar articles by steel works and rolling mills is not included in the statistics for 1909, 1904, and 1899, but it is possible that in 1889 some establishments were classed under this heading which at later censuses would have been classed as steel works and rolling mills.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	108	11,345	\$5,763,243	\$12,804,335	\$24,484,907	\$11,680,572
1904.....	88	8,090	3,642,268	7,807,239	14,687,108	6,879,869
1899.....	72	7,660	2,991,857	8,071,071	13,978,382	5,907,311
1889.....	82	6,955	3,004,454	6,746,304	12,373,031	5,626,727
1879.....	100	5,064	1,981,300	6,097,011	10,073,330	3,976,319
1869.....	93	4,423	1,665,426	4,021,070	7,191,151	3,170,081
1859.....	54	1,504	426,090	988,993	2,175,535	1,186,542

In addition to the value of products shown above, bolts, nuts, washers, and rivets valued at \$20,538,858 were made in steel works and rolling mills in 1909; and similar products to the value of \$1,257,179 were made by 25 establishments engaged primarily in the manufacture of other products, principally machine screws and wood screws.

IRON AND STEEL, DOORS AND SHUTTERS.

Fireproof doors and shutters of iron and steel are the principal products manufactured by the establishments placed under this classification. They include, among other products, elevator and vault doors, automatic doors for mines, and rolling steel shutters. Metal and metal-covered window frames, sash, and trim are also manufactured.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	29	1,601	\$574,340	\$1,282,905	\$3,005,685	\$1,722,780
1904.....	24	699	407,360	601,754	1,477,235	875,481
1899.....	13	117	85,683	115,718	819,629	203,911
1889.....	7	46	30,764	29,792	88,515	53,723
1879.....	6	223	103,269	296,600	495,060	198,460

Seventeen establishments engaged primarily in the manufacture of foundry and machine-shop products and in other industries reported for 1909 iron and steel doors and shutters to the value of \$93,855.

IRON AND STEEL FORGINGS.

The principal products of the establishments included under this classification consist of light and heavy drop and steam-hammer forgings, rough and finished. The classification does not include the manufacture of forgings in steel works and rolling

mills. The products embrace parts for automobiles, bicycles, agricultural implements, carriages, engines, and other machinery, and for marine work; railway forgings, such as axles, car wheels, frogs, switches, steel ties, and trolley poles; and various complete articles and tools, such as anchors, anvils, drop-forged chisels, picks, vises, wrenches, and post-hole augers. Among the specific products reported are steel chains, hand and machine welded; trace chains for harness, and chains for ships, dredges, cranes, and steam shovels.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	172	8,168	\$5,003,181	\$10,239,851	\$20,293,440	\$10,053,599
1904.....	138	5,665	3,428,190	6,752,315	12,110,305	6,358,080
1899.....	90	4,088	2,559,433	5,213,030	10,438,442	5,225,412
1889.....	90	4,208	2,314,114	4,875,697	9,042,563	4,168,806
1879.....	91	3,210	1,329,151	3,960,780	6,492,028	2,531,248

In addition to the products whose value is shown above, iron and steel forgings to the value of \$1,094,244 were reported for 1909 by 14 establishments engaged primarily in the manufacture of other products, principally foundry and machine-shop products, and forgings to the value of \$18,740,241 were reported by steel works and rolling mills, the latter item not including gun forgings, ordnance, or forged axles.

IRON AND STEEL, NAILS AND SPIKES, CUT AND WROUGHT, INCLUDING WIRE NAILS, NOT MADE IN STEEL WORKS OR ROLLING MILLS.

Establishments included in this classification manufacture principally cut, wrought, and wire nails of various kinds, including shoe nails and tacks; horse-shoe nails; carpet, gimp, upholstery, and double-pointed tacks; ship and other spikes; corrugated steel fasteners; and poultry-netting staples. The figures for the industry at most censuses do not cover the large production of nails and spikes by steel works and rolling mills, nor the large output of wire nails made by plants producing wire, except at the censuses of 1869 and 1889. The statistics for this industry for 1889 and 1869, as already stated, are on an entirely different basis from those for other censuses. In recent years the business has more and more been conducted by steel works and rolling mills.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	57	2,765	\$1,352,555	\$3,072,412	\$8,191,620	\$4,219,208
1904.....	76	3,681	1,684,077	4,686,349	8,922,896	4,236,547
1899.....	102	4,477	2,042,250	8,561,571	14,777,299	6,215,728
1889.....	138	16,600	7,144,253	22,960,737	34,227,517	11,268,780
1879.....	62	2,910	1,255,171	3,312,602	5,629,240	2,316,638
1869.....	142	7,770	3,961,172	18,792,383	24,823,996	6,031,613
1859.....	99	6,878	2,398,872	6,080,195	9,857,223	3,788,028
1849.....	87	5,231	1,812,072	4,438,976	7,662,144	3,223,168

In addition to the total value of products shown in the above table, the value of cut, wrought, and wire nails and spikes, etc., reported for 1909 by establishments engaged primarily in the manufacture of other products was \$31,535,102. Of this amount, \$28,899,944 represents the value of such products made from wire by establishments in the wire industry or by the wire departments of rolling mills, and \$2,218,207 the value of cut nails and spikes made by steel works and rolling mills. The remainder, \$416,951, is the value of nails made in establishments manufacturing bolts and nuts, wirework, foundry and machine-shop products, and brass and bronze products, and in those doing galvanizing.

IRON AND STEEL PIPE, WROUGHT.

The principal products of the establishments included in this classification are wrought and wrought-welded pipe; steel-riveted pipe; lock-bar pipe; spiral pipe and fittings; riveted well-casings; seamless cold-drawn steel tubes; umbrella rods; tubular poles for electric railroads and for electric lighting, telegraph, and signal systems; and galvanized-iron pipes for heating and ventilating. The statistics for the last three censuses do not cover the manufacture of pipe in steel works and rolling mills. The figures for 1889 are entirely incomparable with those for later years, and, in fact, the statistics in general fail to show the true movement of the pipe industry as a whole.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	28	6,817	\$3,963,075	\$22,941,909	\$30,886,270	\$7,944,361
1904.....	27	5,416	2,472,721	12,746,619	17,400,912	4,654,293
1899.....	19	5,536	2,495,898	15,523,858	21,292,043	5,768,185
1889.....	22	11,693	5,397,715	25,988,798	37,906,801	11,918,003
1879.....	35	5,210	1,788,258	9,480,049	13,292,162	3,812,113
1869.....	22	2,129	1,155,910	4,872,907	7,369,194	2,496,287

Wrought iron and steel pipe and tubes to the value of \$75,109,011 were made in 1909 by steel works and rolling mills.

TIN PLATE AND TERNEPLATE.

The tin plate made by establishments included in this classification consists of thin plates or sheets of iron or steel—mainly steel—dipped into molten tin and thus brightly coated. It is used extensively in the manufacture of cans in which vegetables, fruits, and other foods are packed, and in the making of household utensils. Terne or dull plate consists also of plates of iron or steel, but these are coated with an alloy of tin and lead and used largely for roofing, being

therefore known also as roofing plate. The process of manufacture as a whole includes the rolling of the steel plates, called black plates, and the dipping of these plates in tin or terne mixture, but the rolling branch of the business can not be segregated from the other business of rolling mills. Most of the dipping business is done by the dipping departments of steel works and rolling mills, but the data for such departments have been segregated and are included in the statistics here presented. Such departments constituted 27 of the 31 establishments covered by Tables 122 and 123.

Only a little more than one-seventh of the entire production in 1909 was terneplate. Table 122 shows the quantities and values of the several products for that year.

KIND.	Quantity (pounds). ¹	Value. ¹
Total.....		\$47,969,645
Tin plate and terneplate.....	1,315,313,132	45,815,145
Tin plate.....	1,123,968,875	38,259,885
Terneplate.....	191,344,257	7,555,261
Other sheet iron or sheet steel, tinned or terneplated, taggers' tin, etc.....	19,400,934	520,465
All other products.....		1,634,034

¹ In addition, 8,389,200 pounds of tin and terne plate and taggers' tin, valued at \$398,143, were made by establishments engaged primarily in the manufacture of babbitt metal and solder, and copper, tin, and sheet-iron products.

Separate statistics for the tin-plate industry were first shown at the census of 1899, the industry in this country virtually dating from about 1891.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	31	5,352	\$3,314,874	\$41,689,434	\$47,969,645	\$6,080,211
1904.....	36	4,847	2,358,070	31,373,714	35,283,360	3,907,646
1899.....	57	3,671	1,689,917	26,728,150	31,892,011	5,163,861

WIRE.

This classification includes only establishments which draw iron and steel wire or wire of other metals from purchased rods or bars. The extensive operations of the wire-drawing departments of steel works and rolling mills are not included, as it was found impossible to segregate all the items relating to them; nor are the operations of establishments drawing wire as a minor product or by-product included. The products include plain and coated wire, barbed wire, bonnet, music, needle, and piano wire, and other special kinds of wire, and wire nails, spikes, tacks, brads, and staples. The industry overlaps that designated as "wirework, including wire rope and cable," many wire-drawing plants making such advanced products as wire rope, clothes lines, woven-wire fencing, and poultry netting.

The greater part of the wire drawn in 1909 was of steel and iron, but a considerable proportion was of copper or of other metal, such as brass, bronze, German silver, or zinc. Some insulated copper wire for electrical work is made by establishments in this industry, but much larger quantities are made by manufacturers of electrical apparatus and supplies, who, however, usually buy the plain wire. The following table shows the quantity and value of the different kinds of wire and wire products made in 1909 not only by establishments assigned to the wire industry but also by the wire departments of rolling mills and other concerns. The total value of products shown is more than double that of the "wire" industry, in the narrower sense.

The wire departments of rolling mills and establishments drawing wire as a minor product or by-product from purchased rods, reported wire and wire products to the value of \$95,597,004. Among these establishments there were 23 iron and steel rolling mills, with wire products valued at \$78,894,036, and 10 establishments manufacturing brass and bronze products, with wire products valued at \$11,443,940.

Table 124

KIND.	WIRE FACTORIES AND WIRE DEPARTMENTS OF IRON AND STEEL ROLLING MILLS COMBINED: 1909	
	Quantity (tons).	Value.
Total		\$180,083,522
Wire and manufactures of wire.....		173,349,614
Iron and steel.....	2,471,858	120,585,837
Wire drawn for sale.....	826,451	38,845,081
Plain.....	472,046	22,632,230
Coated.....	354,405	16,212,851
Wire nails and spikes ¹	696,343	27,575,774
Wire brads, tacks, and staples.....	28,125	1,324,170
Barbed wire.....	323,565	13,881,517
Woven-wire fencing and poultry netting.....	422,127	21,419,170
Wire rope and strand.....	45,303	6,083,771
Other manufactures (springs, bale ties, cold-rolled flat wire, etc.).....	129,945	10,856,154
Copper.....	154,231	47,184,164
Wire drawn for sale.....	139,482	42,336,274
Manufactures of wire.....	14,749	4,847,890
Other metal ²	17,407	5,579,813
Wire drawn for sale.....	15,583	4,993,376
Manufactures of wire.....	1,824	586,437
All other products.....		6,733,908

¹ Reported as 13,926,861 kegs of 100 pounds.

² Brass, bronze, German silver, zinc, etc.—chiefly brass.

The statistics for the industry designated as "wire" for each census from 1849 to 1909, inclusive, are given in the following table:

Table 125	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	56	18,084	\$10,315,722	\$60,542,931	\$34,486,518	\$23,943,587
1904.....	25	4,737	2,858,743	30,062,487	37,914,419	7,851,932
1899.....	29	1,603	859,645	7,014,319	9,421,238	2,406,919
1889.....	24	7,596	3,856,522	15,038,540	22,012,804	6,974,264
1879.....	40	6,169	1,982,731	7,034,065	10,836,605	3,802,540
1869.....	34	1,744	1,082,984	2,964,885	5,058,398	2,093,513
1859.....	26	790	280,020	1,134,310	2,019,633	885,323
1849 ¹	83	676	208,128	534,548	1,033,249	498,701

¹ Includes "wireworkers."

The differences in methods of classification render the statistics for 1889 entirely incomparable with those for later censuses, and the latter in turn have little significance for comparison with one another because of changes in the relative extent to which the wire business has been conducted in rolling mills and in establishments of other industries.

The data given for 1904 and 1899 do not include those for establishments drawing wire and manufacturing the entire product into nails or other articles, but statistics for such establishments are included in the figures for 1909.

CASH REGISTERS AND CALCULATING MACHINES.

The principal products manufactured by establishments included under this classification are cash registers and similar devices and machines, adding machines and adding attachments to typewriters, fare registers for electric cars, calculating machines, rotary wage tables, and slide rules. Statistics from 1889 to 1909, inclusive, are presented in the following table:

Table 126	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	50	7,465	\$5,311,890	\$3,552,466	\$23,708,326	\$20,155,860
1904.....	32	4,079	2,442,001	1,515,980	9,875,099	8,359,119
1899.....	18	2,067	1,249,741	921,237	5,675,365	4,754,128
1889.....	12	788	450,430	255,194	1,422,820	1,167,626

Establishments engaged primarily in the manufacture of other products reported similar machines for 1909 to the value of \$179,696, the greater part of this amount being reported by manufacturers of typewriters and supplies.

CUTLERY AND TOOLS, NOT ELSEWHERE SPECIFIED.

This classification includes establishments engaged in the manufacture of cutlery and edge tools, and of tools not included under some more specific classification, respectively. The manufacture of saws and files is covered by separate classifications. There is a very close connection and considerable overlapping between this industry and several others, such as "iron and steel forgings" and "foundry and machine-shop products." Separate totals were compiled for the two branches of the industry for 1909, and are given in the following table:

Table 127	ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....		959	32,996	\$17,561,244	\$18,279,201	\$53,265,757	\$34,986,556
Tools, not elsewhere specified.....		678	15,999	9,025,353	11,048,693	30,380,843	19,332,150
Cutlery and edge tools.....		281	16,997	8,555,891	7,230,508	22,884,914	15,654,406

In addition to the value of products shown above, cutlery and tools, not elsewhere specified, to the value

of \$5,592,676 were reported in 1909 by establishments engaged primarily in the manufacture of other products, principally plumbers' supplies. It is probable also that considerable quantities of articles similar to those falling under this classification were made by concerns in other industries which failed to segregate them from other products in their schedules. On the other hand, many establishments assigned to the present classification made, as subsidiary products, articles which do not fall under the designation of cutlery or tools.

Tools, not elsewhere specified.—The establishments included in this subclass manufacture all kinds of hand tools that are not edged, including such common tools as shovels, spades, and scoops, and also special tools for the use of laborers and mechanics. In some instances machinery or parts of machinery are made, such as watchmakers' lathes and attachments, cutter heads, hack saws, picker sticks, and lifting jacks of various kinds. Besides these, various minor tools and appliances are included, such as can openers, dusters and cleaners, fruit-jar wrenches, hand corn huskers, ice-skate sharpeners, nail pullers, pocket wrenches, paper cutters, tack pullers, tape measures, ticket punches, and similar articles.

Table 128

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	678	15,999	\$9,025,353	\$11,048,693	\$30,380,843	\$19,332,150
1904.....	554	11,643	6,048,587	7,249,567	20,407,372	13,157,805
1899.....	445	7,614	3,781,607	4,656,558	13,358,300	8,701,742
1889.....	462	6,410	3,482,052	3,517,269	10,528,025	7,010,756
1879.....	145	3,151	1,489,531	1,532,556	4,236,568	2,704,012

Cutlery and edge tools.—The principal products of establishments included in this subclass are table and pocket cutlery, and the edge tools used chiefly by carpenters, lumbermen, shoemakers, tanners, curriers, and other workers in wood and leather. Establishments making saws as their principal business are not included. The table cutlery includes steel knives, knife blanks, and forks, but does not include silver-plated ware. Other cutlery includes penknives and jackknives, vegetable parers and slicers, grafting knives, and the like. Razors, both ordinary and safety, razor blades, swords, shears and scissors for household and other uses, axes and hatchets, clippers, and cigar cutters are also among the products.

Table 129

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	281	16,997	\$8,555,891	\$7,230,508	\$22,884,914	\$15,654,406
1904.....	254	14,545	7,076,018	6,028,166	18,614,929	12,586,763
1899.....	275	12,028	5,652,242	5,091,114	14,787,355	9,696,241
1889.....	474	8,708	4,200,933	3,465,124	11,110,614	7,645,490
1879.....	429	10,519	4,447,349	4,682,222	11,661,370	6,979,148
1869.....	281	7,948	4,129,551	4,037,598	11,105,340	7,067,742
1859.....	217	4,207	1,559,855	1,703,663	4,610,217	2,906,554
1849.....	401	4,275	1,420,844	1,439,462	3,813,241	2,373,779

FILES.

Establishments included in this classification manufacture machine-cut and hand-cut steel files and rasps of all kinds and sizes. Small files for the use of jewelers, dentists, diesinkers, and watchmakers, and needle and manicuring files are among the products, while the rasps embrace those used by carpenters, horseshoers, and shoemakers.

Table 130

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	57	4,158	\$1,977,877	\$1,595,730	\$5,691,203	\$4,095,473
1904.....	62	3,276	1,514,412	1,310,978	4,391,745	3,080,767
1899.....	86	3,160	1,277,199	1,166,414	3,403,906	2,237,492
1889.....	140	2,435	1,217,576	1,038,943	3,179,649	2,140,706
1879.....	179	2,508	957,412	787,569	2,486,533	1,698,964
1869.....	121	1,581	638,982	468,303	1,649,394	1,181,091

In addition to the value shown in the above table, three establishments engaged primarily in the manufacture of other products reported files valued at \$4,611 as manufactured in 1909. Two of these establishments made "foundry and machine-shop products" and one of them "cutlery and tools, not elsewhere specified."

FOUNDRY AND MACHINE-SHOP PRODUCTS.

The establishments assigned to this industry make a greater variety of products than those of any other industry among the 264 distinguished at the census of 1909; yet, despite the comprehensiveness of the classification, no sharp line can be drawn between it and some of the others. A foundry is ordinarily defined as an establishment casting iron or steel into various shapes, and a machine shop as an establishment using machine tools—that is, tools capable of cutting and shaping metals, particularly iron and steel. Foundry and machine-shop processes are necessarily employed in connection with the manufacture of an enormous variety of products. Many establishments placed under other census classifications use these processes, either mainly or largely, in the manufacture of their finished products. This is true, for example, in the automobile industry and the agricultural implement industry, and in the manufacture of electrical machinery, apparatus, and supplies.

In many cases, however, establishments using foundry and machine-shop processes specialize, so that practically all of their output consists of some well-defined class of products. Where this is the case, and where the establishments thus specializing make all or the greater part of the class of products in question, the Census Bureau places them in a specific industry class, designated usually according to the nature or use of the product. On the other hand, there are many foundries and machine shops which make a great variety of products. Again, while there are certain establishments using foundry and machine-shop processes which make exclusively a well-defined class

of articles, large quantities of similar articles are made by other establishments which also turn out quite different products. It is necessary, therefore, in order to avoid excessive overlapping in industry classifications, to establish a very broad group designated as "foundry and machine-shop products," which shall take in, so far as possible, those branches of industry which use foundry and machine-shop processes, but which can not be clearly segregated.

It is evident, however, that notwithstanding the great comprehensiveness of the general classification "foundry and machine-shop products," as constituted at the present census, there is a great deal of overlapping between it and other industries.

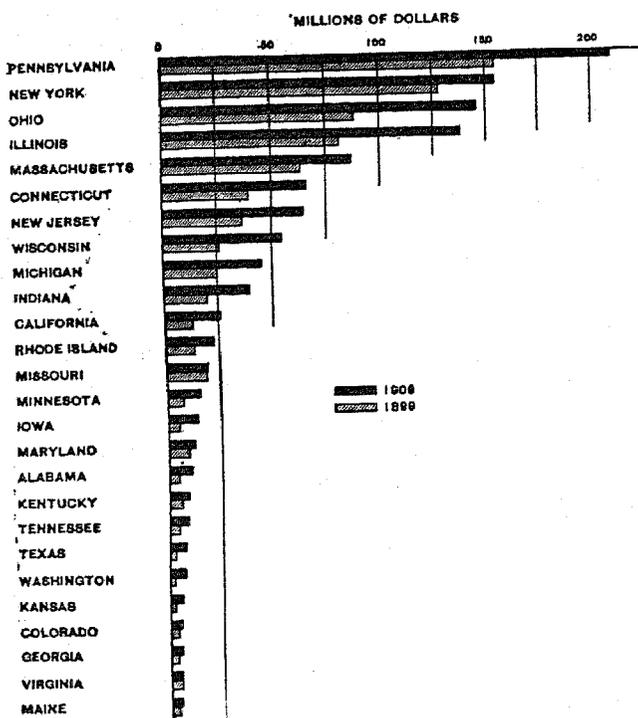
There is no way of measuring statistically the amount of such overlapping. While "foundry and machine-shop products," expressly described as such, were reported in 1909 by many establishments assigned to other classifications, the addition of the value of products so reported to the total for establishments classified under the foundry and machine-shop industry would have no great significance, since doubtless

many other very similar products were made by establishments in other industries but not reported separately. Conversely, there would be little use in attempting to deduct from the total value of products reported by establishments assigned to the foundry and machine-shop industry the value of products which were expressly reported as more closely associated with other industry classifications.

Under the general classification "foundry and machine-shop products," as used at the census of 1909, the Census Bureau has distinguished nine subclasses, most of which were shown as separate industries in the reports of the censuses of 1899 and 1904. There is so much overlapping among these subclasses that the separate statistics for them have relatively little significance. For the purpose, however, of showing, in a rough way only, the comparative importance of these branches of the industry, the establishments have been classified, each according to its product of greatest value, and the more important statistical data for the establishments in each class are shown in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	13,253	531,011	\$321,520,917	\$540,011,139	\$1,228,475,148	\$688,464,009
Foundry and machine-shop products not otherwise specified	10,797	388,911	239,802,873	368,025,308	883,947,730	515,922,422
Structural ironwork.....	1,089	40,234	26,422,372	76,659,426	133,241,379	56,531,953
Hardware.....	549	38,513	19,425,570	25,515,165	64,911,561	39,396,396
Steam fittings and heating apparatus.....	288	23,378	13,890,699	22,534,208	54,083,505	31,549,297
Plumbers' supplies.....	262	19,257	10,816,188	20,911,220	43,686,555	22,775,335
Iron and steel pipe, cast.....	52	12,228	6,502,338	18,884,342	29,153,723	10,269,381
Gas machines and gas and water meters.....	125	4,767	2,896,726	4,994,846	13,307,911	8,313,065
Hardware, saddlery.....	73	3,309	1,559,718	2,013,956	5,181,299	3,167,343
Bells.....	18	414	204,433	472,668	961,485	488,817

FOUNDRY AND MACHINE-SHOP PRODUCTS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



The list of specific products reported by establishments assigned to the foundry and machine-shop industry is exceedingly long. The more important are named in connection with the description given below of the subclasses of the general classification. The schedule did not call for quantities and values for these products severally.

Foundry and machine-shop products not otherwise specified.—The names of the principal products reported on the manufacturers' schedule by establishments assigned to this subclass of the foundry and machine-shop industry, are given in the list following, in which the attempt has been made to group the products according to the character of the industry in which they are utilized. Articles marked with an asterisk are those that are made more extensively by establishments assigned to other industries than by establishments assigned to the foundry and machine-shop industry. Besides the articles listed, many establishments assigned to this branch of the industry reported the production of the same kinds of articles as are listed in connection with the other branches. Notwithstanding the great variety of articles named, the list is only partial and many products of importance do not appear at all, simply because they were not specifically mentioned on the schedule.

PRODUCTS INTENDED FOR GENERAL CONSUMPTION.

Artesian-well tools.
Boilers, horizontal and vertical.
*Bolts.
Brackets for street signs.
Bronze and steel interior trim.
Buckets.
Buoys.
Cable ways.
Cars, industrial railway.
Cash-carrying devices.
Carousels or merry-go-rounds.
Chutes.
Clamps.
Clothes dryers.
Culverts, city.
Dam and gate machinery.
Dippers and dipper teeth.
Doorknobs.
*Dry batteries.
Dumb-waiters.
Elevators.
Engines, traction.
Envelope-sealing machines.
Extensible trench-braces.
Fasteners, corrugated joint.
Filters.
Fire escapes.
Flushing siphons.
Furnaces, soldering.
Garbage burners.
Gates, automatic safety.
Grates, fireplace.
Hangers, sliding door.
Heaters.
Heating torches.
Horse-clipping machines.
Hydrants.
Ice breakers.
Kindling-wood machinery.
Land rollers.
Laundry machinery.
Letter boxes.
Letter-cancelling machines.
Lifting jacks.
Lighting rods.
*Locomotives, electric.
Metal weather strips.
Meters, water.
Natural-gas regulators and burners.
Net-lifting machines.
Nuts.

*Organs for carousels.
Pipe.
Pipe couplings, rubber-jointed.
Pipe hangers.
Plumb bobs.
Plumbers' supplies.
*Projectiles.
*Projecting apparatus for moving pictures.
*Pumps, automobile.
*Pumps, hand.
Regulators, damper.
Rivets.
Rollers, awning, spring.
Sash weights.
Savings banks, deed and bond boxes.
Saw clamps.
*Saws.
Scales.
Scenic railways.
Screens, coal.
Shooting galleries.
Shovels, steam.
Stamp affixers.
Steam rollers.
Sterilizing and disinfecting apparatus.
*Street-railway rails and frogs, crossing switches, etc.
Tackle blocks, wood and steel.
Tanks, iron.
Tape moisteners.
Tramways, overhead.
Trimmers, tree and lawn.
Troughs, iron.
Trucks, hand.
Tubes, pneumatic.
Tubes, speaking.
Vacuum cleaners.
Vending machines.
Ventilators, automatic fresh-air inlets for sewers.
Vises.
*Washers, cast-iron.
Water-distilling apparatus.
Water towers.
*Window guards.
*Wire staples.
Wheelbarrows, steel.
Wool, steel.
Wrenches.

MACHINES AND ARTICLES FOR USE IN THE MANUFACTURE OF FOOD AND KINDRED PRODUCTS.

Automatic refrigerating plants.
Bakers' ovens.
Candy-making machinery and tools.
Centrifugal machinery.
Chocolate machinery and mills.
Cocoa presses.
Cracker cutters.
*Dairy machinery.
Feed mills.
Fruit-drying machinery.
Fruit-washing machines.

Ice-cream freezers.
Machinery for bakeries, hotels, restaurants, etc.
Machinery for grinding spices.
Machines for making ice-cream cones.
Pie markers.
Sausage stuffers.
Steamers.
Sterilizers.
Sugar machinery.
Sirup gauges.

MACHINES FOR USE IN THE TEXTILE INDUSTRIES.

Bleaching, dyeing, printing, and finishing machinery.
Braiding machinery.
*Carpet-sewing machines.
Corset and fabric machinery.
Electric cloth cutters.
Embroidery machines.

Hat-brim cutters.
Hat lathes.
Hemp machinery.
Knitting machinery.
Pressing irons, tailors'.
Textile machinery.

MACHINES AND ARTICLES FOR USE IN THE MANUFACTURE OF IRON AND STEEL AND THEIR PRODUCTS.

Annealing boxes.
Axle cutters.
Blast furnaces.
Blowers.
*Bolts, expansion.
Boring mills.
Bosh plates.
Fusible plugs.
Gear wheels.
Hammers, drop.
Iron and steel machinery.
*Locks, elevator door.
Machine gears.
Machine keys.
Machine vises and tables.
Metal-working machinery.
*Nickel-plated parts for stoves.
Oxy-acetylene welding and cutting machines.
Pig-casting machines.
Presses, drop.
Presses, radial drill.

Reamers.
Rolls, chilled.
Rolling-mill and steel-works machinery.
Springs for all kinds of machinery.
Steam specialties.
*Steel, bar.
*Steel, cold-drawn.
Tack machinery.
Taps.
Tools, machine.
*Tools, small.
Tube-works machinery.
Turnbuckles.
Turning mills.
Turret lathes.
Tuyures, brass.
Valves, engine stop.
Wire-bending machines.
Wire-drawing machinery.
Wood-screw machinery.

MACHINES FOR USE IN THE MANUFACTURE OF LUMBER AND TIMBER PRODUCTS.

Band-saw machinery.
Cork-cutting machinery.
Heading machines.
Logging machinery.
Planing machines.

Sawmills.
Saw-guard machinery.
Shingle machines.
Wood-boring machines.
Wood-turning lathes.

MACHINES FOR USE IN THE MANUFACTURE OF LEATHER AND ITS FINISHED PRODUCTS.

Eyeletting machinery.
Perforating machinery.

Punching machinery.

MACHINES FOR USE IN THE MANUFACTURE OF PAPER AND OF ARTICLES FROM PAPER, AND IN THE PRINTING AND PUBLISHING AND ALLIED INDUSTRIES.

Automatic paper feeders.
Bag machines.
Bookbinding machinery.
Creasing presses.
Cutting presses.
Disk rulers.
Electrotyping machinery.
Embossing presses.
Envelope machines.
Hand printing machines.
Iron rolls for paper mills.
Match-box machinery.
Numbering machines.
Paper-box machinery.

Paper-folding machinery.
Photo-engraving machinery.
Presses, automatic writing.
Presses, printing.
Ruling machines.
Sheet cutters.
Sheet-feeding machinery.
Tablet-binding machinery.
Type-casting machines.
Typesetting and type-casting machines.
Type-embossing machines.
Typesetting machines.
Wire-stitching machines.

MACHINES AND OTHER PRODUCTS FOR USE IN THE MANUFACTURE OF LIQUORS AND BEVERAGES.

Bottle-filling machines.
Bottle stoppers and attachments.
Bottling tables.

Brewing apparatus.
Sand blast for marking bottles.
Worms.

MACHINES AND DEVICES FOR USE IN THE MANUFACTURE OF CHEMICALS AND ALLIED PRODUCTS.

- Bark-grinding machines.
- Bone cutters.
- Candle machinery.
- Chemical plant machinery.
- Exhausters, gas.
- Gas-main stoppers.
- Glycerin machinery.
- Grease extractors.
- Grinding mills for paints and fertilizers.
- Grinding mills for cement and plaster of Paris.
- Oil and gasoline measuring pumps.
- Paint-mill machinery.
- Powder-mill machinery.
- Printing-ink machinery.
- Soap machines.

MACHINES AND SUPPLIES FOR USE IN THE MANUFACTURE OF STONE, CLAY, AND GLASS PRODUCTS.

- Brick machines.
- Brickyard supplies.
- Cement machinery.
- Emery-wheel stands.
- Furnaces, pottery, and melting.
- Glass-house machinery.
- Limekilns.
- Marble and stone working machinery.
- Pulverizing machinery for stone and cement.
- Steel abrasives for grinding and cutting stone, marble, and glass.
- Turning lathes for glass cutters.

MACHINES AND MATERIALS FOR USE IN THE MANUFACTURE OF METALS AND METAL PRODUCTS OTHER THAN IRON AND STEEL.

- Brass fittings and machine parts.
- Galvanizing kettles.
- Insulated wire machinery.
- Jewelers' foot presses.
- Jewelers' lathes.
- *Sewing-machine needles.
- Sheet-metal working tools.
- Sheet-metal ornaments.
- Silversmithing machinery.
- Stamping presses.
- Turners' tools and machines.
- Watchcase machines.

MACHINES FOR USE IN THE MANUFACTURE OF TOBACCO.

- Cigar-punching machines.
- Cigar-mold presses.
- Cigarette-making machines.
- Machines for packing cigarettes.
- Tobacco machinery.

MACHINES AND MATERIALS FOR USE IN THE MANUFACTURE OF VEHICLES FOR LAND TRANSPORTATION AND BY RAILROAD REPAIR SHOPS.

- Automobile castings and supplies.
- *Automobile machinery.
- Automobile tire pumps.
- Ball and roller bearings.
- Bent tubes for automobiles.
- *Brake beams.
- *Car axles.
- Car fenders.
- Car wheels.
- Carbureters.
- Electric street-railway supplies.
- Locomotive-bell ringers.
- *Motors, internal combustion.
- *Wheelbarrows, steel.
- Wheels, truck.

MACHINES AND DEVICES FOR USE IN BUILDING AND EQUIPPING SHIPS.

- Capstans.
- Clamps, beam.
- *Forging work for vessels.
- Marine auxiliary machinery.
- Marine gas and oil engines.
- Marine steam engines.
- Marine reversing gears.
- Propeller wheels.
- Windlasses.

MACHINES AND APPLIANCES FOR USE IN THE MANUFACTURES OF THE MISCELLANEOUS GROUP (EXCLUDING SHIPBUILDING).

- Asphalt machinery.
- Button-covering machines.
- Button dies and cutters.
- Coke-oven machinery.
- Electrical castings.
- Furriers' machinery.
- *Gun sights.
- Ice-making machines.
- *Nickel-plated parts for piano actions.
- Oscillating-fan bases.
- Rubber-working machinery.
- *Small metal parts for piano players.
- *Switchboards.

PRODUCTS INTENDED FOR USE IN MANUFACTURES IN GENERAL.

- Ash ejectors.
- Bearings, oilless, journal.
- Bends.
- Bolts, expansion.
- Clutches.
- Compressors, air and gas.
- Condensers.
- Couplings, belt.
- Cranes, traveling.
- Crank shafts.
- Cutter heads.
- Cylinders, gas.
- Dies.
- Engines, steam, of all sorts.
- Flanges.
- Gas, producers.
- Ladles.
- Nailing machines.
- Plate iron.
- Pulleys, steel.
- Pump governors.
- Saw filing and setting machines.
- Sleeves.
- Smokestacks.
- Stokers, automatic.
- Turbines, steam.
- Water wheels.
- Wheels, rope.
- Wheels, worm.

PRODUCTS INTENDED FOR USE IN MINING.

- *Cars, stripping and mine.
- Coal and ore handling equipment.
- Coal washers and wrenches.
- Cob crushers.
- Drilling and finishing rods.
- Drills, mining.
- Mine ventilator fans.
- Mining machinery.
- Oil-well rods.
- *Pipe lines.
- Pumping heads for pumping oil wells with compressed air.
- Riddles.
- Slate pickers.
- Tipples.
- Wagons, small coal.

PRODUCTS INTENDED FOR USE IN AGRICULTURE.

- *Hay presses.
- *Lime spreaders.
- *Plows, walking.
- *Presses, baling.

The statistics for "foundry and machine-shop products not otherwise specified," are comparable only for the censuses from 1879 to 1909, inclusive, and for those censuses are only roughly comparable, because of variations in the amount of overlapping between this and other branches of industry. The data for 1899 and previous censuses include the statistics for "locomotives, not made by railroad companies," and "stoves and furnaces, including gas and oil stoves;" and for those censuses and also for 1904 they include the manufacture of cast-iron and steel pipe.

Table 132	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	10,797	388,911	\$239,802,878	\$368,025,308	\$883,047,730	\$515,022,422
1904.....	8,992	345,378	196,244,931	278,072,763	685,893,788	407,821,025
1899.....	9,351	352,574	183,234,440	288,632,053	649,035,916	360,403,863
1889.....	6,524	232,254	129,788,989	172,204,051	415,335,062	243,131,011
1879.....	4,984	145,650	66,093,920	104,041,972	215,442,011	111,400,039

Structural ironwork.—The establishments in this subclass manufacture all kinds of iron and steel structural and ornamental work for bridges and buildings. Among the products are balconies, bank fixtures, beams, blast-furnace sheets, cellar doors, coal chutes, columns, crane girders, elevator inclosures, expanded metal for lathing and concrete work, fences, fire escapes, fireproof moving-picture booths, fireproof porches, gas holders, gratings, girders, grilles, ingot molds, pavement doors, purifiers, roof trusses, sand screens, stairs, steel floor plates, steel reenforcement

for concrete, steel trusses, tanks, tree boxes, trellises, and water towers. Similar articles are made to some extent in steel works and rolling mills.

Statistics for each census from 1879 to 1909, inclusive, are presented in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,069	40,234	\$28,422,372	\$76,659,426	\$133,241,379	\$56,581,953
1904.....	775	34,276	19,760,210	47,452,069	90,944,697	43,492,628
1899.....	697	24,903	13,588,779	38,053,135	66,927,305	28,874,170
1889.....	724	17,153	10,235,701	18,620,510	37,745,294	19,124,784
1879.....	220	1,934	844,614	1,699,465	3,410,086	1,710,621

Hardware.—The principal products manufactured by establishments in this subclass include automobile, coach, and carriage hardware; builders' and cabinet hardware; car and railway hardware; casket hardware; furniture, drapery, upholstery, trunk, and suitcase hardware; kitchen and household hardware; marine hardware; piano, pianoplayer, and organ hardware; plumbers' hardware; refrigerator hardware; shoe hardware; theatrical-stage hardware; postoffice equipment; and stationary findings. Many of these lines are extensive, embracing a great variety of specific articles. There is more or less overlapping between the manufacture of hardware and other branches of industry, such as "hardware, saddlery," "cutlery and tools, not elsewhere specified," "iron and steel forgings," and "foundry and machine-shop products not otherwise specified;" but the data reported are not sufficiently explicit to permit any statement or estimate of the amount of such overlapping. Because of variations in the amount of overlapping the figures for different censuses are not closely comparable.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	549	38,513	\$19,425,570	\$25,515,165	\$64,911,561	\$39,396,396
1904.....	445	31,713	14,580,589	16,031,214	45,770,171	29,138,957
1899.....	381	26,463	11,422,758	14,605,244	35,840,056	21,241,412
1889.....	350	18,495	8,656,067	10,186,442	26,726,463	16,540,021
1879.....	492	16,801	6,846,913	10,097,577	22,653,693	12,556,116
1869.....	580	14,236	6,845,640	9,188,064	22,237,329	13,049,265
1859.....	443	10,721	3,443,664	4,402,953	10,903,106	6,500,143
1849.....	340	7,030	1,973,904	3,015,688	6,957,770	3,942,082

Steam fittings and heating apparatus.—Establishments included in this subclass manufacture principally steam and hot-water radiators, safety valves, engine indicators, vacuum gauges, water gauges, hydrants and cocks, coils and bends of iron, brass and copper pipe, unions and flanges, and similar fittings. The manufacture of stoves and furnaces, including, doubtless, some hot-water heaters, is classified as a separate industry. There is considerable overlapping with other branches of the general foundry and machine-shop industry and with other industries.

The principal statistics for each census from 1859 to 1909, inclusive, are shown in Table 135. Because of changes in the method of classification, the figures for 1889 are not closely comparable with those for later censuses.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	258	23,378	\$13,890,099	\$22,534,206	\$54,083,505	\$31,549,297
1904.....	176	11,030	6,581,578	10,425,332	24,910,857	14,485,525
1899.....	227	9,252	4,982,857	10,219,506	22,084,860	11,865,354
1889.....	217	10,645	6,204,333	10,628,314	23,147,434	12,519,120
1879.....	95	2,474	1,305,739	2,857,000	5,127,842	2,270,842
1869.....	59	1,141	853,516	1,424,345	3,425,150	2,000,805
1859.....	28	665	200,232	367,262	1,029,360	662,098

Plumbers' supplies.—The statistics of establishments manufacturing principally bath and laundry tubs, bathroom closets and washbowls, kitchen and pantry sinks, bathroom and laundry fittings of all descriptions, flush valves, faucets, pipe hangers, tanks, seats, and kindred products are included in this subclass.

Statistics for each census from 1889 to 1909, inclusive, are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	262	19,257	\$10,816,188	\$20,911,220	\$43,686,555	\$22,775,335
1904.....	185	10,753	5,996,361	9,923,810	21,542,455	11,618,675
1899.....	174	8,024	3,930,594	7,289,867	14,771,185	7,481,318
1889.....	122	4,947	2,657,585	5,853,709	11,960,464	6,106,755

Iron and steel pipe, cast.—Establishments included in this subclass manufacture principally gas, water, soil, and culvert pipe, with fittings and special castings. There is little relation between this industry and the manufacture of wrought iron and steel pipe.

Prior to the census of 1909 the statistics were included with those for foundry and machine-shop products not otherwise specified.

In 1909 there were 52 establishments, having an average of 12,228 wage earners, to whom \$6,502,338 were paid in wages. The cost of materials was \$18,884,342, the value of products \$29,153,723, and the value added by manufacture \$10,269,381.

Gas machines and gas and water meters.—The principal products manufactured by the establishments in this subclass are acetylene and gasoline gas machines or generators; gas meters for stations at gas works and for consumers; meters for the measurement of water and other liquids, photometers, carbureters, gas holders, gas producers, and various other apparatus and appliances such as meter testers, gauges, guards, pump governors, relief valves, injectors, regulators, and siphons.

Statistics are given in the following table for each census from 1869 to 1909, inclusive:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	125	4,767	\$2,896,726	\$4,994,846	\$13,307,911	\$8,313,065
1904.....	89	2,674	1,532,247	2,612,907	5,630,975	3,018,068
1899.....	113	2,166	1,185,431	1,943,230	4,390,930	2,447,700
1889.....	38	958	625,902	675,542	1,838,644	1,163,102
1879.....	34	853	397,108	636,676	1,334,091	697,415
1869.....	15	664	441,940	611,663	1,452,190	840,527

At the census of 1849 two establishments reported the manufacture of gas meters to the value of \$114,000.

Hardware, saddlery.—The principal products manufactured by establishments under this subclassification are the different articles of hardware used in connection with the manufacture of saddlery and harness. These include buckles, terrets, snaps, chains, bridle irons, neck yokes, hame fasteners and other mountings, and ornaments of all descriptions. There is considerable overlapping between this and the general hardware industry.

Statistics for each census from 1869 to 1909, inclusive, are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	73	3,309	\$1,559,718	\$2,013,956	\$5,181,299	\$3,167,343
1904.....	82	3,385	1,623,890	1,830,108	4,820,726	2,990,618
1899.....	80	2,640	1,217,202	1,690,168	4,149,489	2,459,321
1889.....	102	2,617	1,260,325	1,624,849	4,118,195	2,493,346
1879.....	64	2,815	960,432	1,851,436	3,651,021	1,799,585
1869.....	155	2,566	1,062,059	1,257,947	3,227,123	1,969,176

Bells.—The establishments included in this subclassification manufacture principally bronze bells and gongs and their fixtures, including tower, chime, clock, engine, automobile, cycle, call, hand, door, sleigh, and ship bells, and bell toys.

The statistics for the industry were first reported separately at the census of 1859.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	18	414	\$204,433	\$472,668	\$961,485	\$488,817
1904.....	21	530	253,188	403,377	1,000,220	536,843
1899.....	23	663	307,991	602,856	1,247,730	644,874
1889.....	22	372	193,789	389,701	823,010	433,309
1879.....	20	773	280,169	525,175	1,065,824	540,649
1869.....	31	889	185,751	512,537	1,023,019	510,473
1859.....	9	60	20,484	139,193	224,500	85,307

The slight decrease from 1904 to 1909 is due to a change in the classification of some establishments which were included with this industry at the earlier censuses but in 1909 made some other product—in one instance, toys and games—of greater value than bells. Differences in classification also account in part for the decrease from 1879 to 1889.

LOCOMOTIVES, NOT MADE BY RAILROAD COMPANIES.

This classification includes the manufacture of heavy and light steam locomotives of all varieties, some of them geared for use in logging camps and on hill-climbing tracks. Some electric locomotives are also made by plants assigned to this classification, but others are made by those in the electrical-machinery industry.

The statistics were first presented separately in 1904, having previously been associated with those for "foundry and machine-shop products."

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	16	14,909	\$8,914,266	\$15,059,983	\$31,582,302	\$16,522,319
1904.....	15	24,806	15,798,432	27,702,930	59,562,092	31,849,162

In addition to the products covered by this table, steam-railroad repair shops in 1909 built 215 locomotives, valued at \$3,289,140.

The great decrease in value of products from 1904 to 1909 was due to the business depression of 1907. The railways in 1909 had not recovered from their financial embarrassment, and therefore could not afford the usual expenditures for the renewal of equipment, nor did they need the additional rolling stock required in other years for the extension of business.

PENS, STEEL.

Establishments included in this classification manufacture principally steel and other metallic writing pens.

The statistics for the industry from 1869 to 1909 are presented in Table 141.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	5	699	\$230,030	\$95,266	\$576,696	\$481,430
1904.....	5	603	204,778	103,005	473,847	370,842
1899.....	3	473	138,433	52,466	294,340	241,874
1889.....	3	496	132,032	56,030	288,259	211,629
1879.....	3	280	88,500	38,950	164,000	125,050
1869.....	3	257	60,000	49,043	180,000	130,057

In addition to the products covered by the table, steel pens were made in 1909 by two establishments in the industries "cutlery and tools, not elsewhere specified," and "foundry and machine-shop products," respectively, but their value can not be given without disclosure of individual operations.

PUMPS, NOT INCLUDING STEAM PUMPS.

Pumps of all descriptions, whether made of iron, steel, brass, copper or other metal, or of wood—except such as are operated by steam—are made by the es-

tablishments included in this classification. Only a comparatively small number are made of wood. Hand pumps of the suction and chain-and-bucket types predominate, but there are also air pumps, hydraulic rams, hot-air pumping engines, and electric pumps. Classified according to use, there are automobile and bicycle pumps, beer pumps, cistern pumps, pumps for wells, oil pumps, spray pumps and spraying machinery, vacuum pumps, vinegar-barrel pumps, etc.

Statistics for the industry for each census from 1849 to 1909, inclusive, are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	102	2,136	\$1,258,224	\$2,486,602	\$5,582,962	\$3,096,360
1904.....	115	1,404	718,041	1,192,754	2,852,623	1,659,869
1899.....	130	832	247,193	637,768	1,341,713	703,945
1894.....	256	1,754	827,574	1,681,275	4,103,410	2,422,135
1879.....	411	1,731	652,740	2,038,634	3,644,631	1,605,997
1859.....	465	1,905	663,594	970,547	2,818,457	1,847,910
1854.....	133	534	199,856	229,198	685,024	455,826
1849.....	30	148	49,380	55,493	166,919	111,426

In addition to the products covered by the table, establishments engaged primarily in the manufacture of "foundry and machine-shop products," "wind-mills," and "agricultural implements" reported pumps for 1909 to the value of \$1,380,377.

The decrease in the industry from 1889 to 1899, as shown by the statistics here presented, is probably due, in part, to the changes in the classification of certain individual establishments, the change being due to differences in the chief product. Pumps are also manufactured in foundries and machine shops, and by manufacturers of agricultural implements, and those industries may have covered a larger part of the production in 1899 than in 1889. Also, prior to 1899, neighborhood industries and hand trades were included and wooden pumps were doubtless made in some of these small establishments.

SAFES AND VAULTS.

The principal products of establishments included in this classification are fire and burglar proof safes for banks, offices, and residences; vaults, chests, and safe-deposit boxes; vault doors and linings; safe locks; and steel burial vaults. The principal materials are iron and steel and manganese steel.

Statistics for the industry are shown below for each census from 1859 to 1909, inclusive.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	42	3,343	\$2,071,762	\$3,442,530	\$8,490,541	\$5,045,011
1904.....	31	3,488	2,162,246	3,211,336	7,861,069	4,649,733
1899.....	35	2,033	1,017,237	1,639,148	3,927,867	2,238,719
1894.....	39	3,816	2,129,615	2,635,313	6,641,844	4,006,531
1879.....	40	2,206	1,096,504	1,431,083	3,352,896	1,921,313
1869.....	65	1,639	917,263	967,810	2,723,336	1,760,526
1859.....	36	1,093	471,924	757,515	1,910,079	1,152,564

In addition to the total given in the table above, a small product was reported for 1909 by establishments engaged primarily in the manufacture of "marble and stone work" and "stoves and furnaces, including gas and oil stoves," but the statistics can not be given without disclosing individual operations. Doubtless other concerns made similar products but failed to report them separately.

The decrease in the total value of products shown from 1889 to 1899 is probably due, in a measure, to the increased manufacture of safes and vaults in foundries and machine shops, and in part also to the inclusion in 1889 of foundries or other concerns which made many other products but whose output of safes and vaults was greater in value than that of any other one product.

SAWS.

The establishments included in this classification manufacture all kinds of hand and power saws. Among the handsaws are those for the use of butchers, of carpenters and other woodworkers, and of machinists and other metal workers. The power saws embrace band and jig saws; circular saws, solid or with inserted teeth; diamond-toothed saws for stone; splitters; and hack and other saws for cutting metals.

Statistics for the censuses from 1859 to 1909, inclusive, are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	96	4,832	\$2,856,291	\$4,911,766	\$11,535,631	\$6,623,855
1904.....	83	4,050	2,707,423	4,035,530	9,819,787	5,784,257
1899.....	96	3,215	1,692,757	2,600,217	6,443,748	3,843,531
1894.....	95	2,676	1,583,526	2,346,401	5,572,992	3,226,591
1879.....	89	2,596	1,226,370	1,744,083	3,943,105	2,199,022
1869.....	72	1,595	995,609	1,332,891	3,175,289	1,842,398
1859.....	42	759	281,392	583,123	1,237,063	653,940

In addition to the products covered above, establishments engaged principally in the manufacture of "foundry and machine-shop products," "agricultural implements," and "files," reported "saws" for 1909 to the value of \$587,062.

SCALES AND BALANCES.

The products of establishments included in this classification are scales of all descriptions—stationary and portable, light and heavy, spring and beam, counter and platform—and weighing machinery. Many of the scales and weighing machines have automatic computing devices. Coin-controlled mechanisms for weighing, micrometers, and scale parts are likewise made by the establishments included in this classification.

Nine establishments in 1909, engaged principally in the manufacture of "foundry and machine-shop products" and "agricultural implements," reported "scales and balances" to the value of \$118,125, which are not included in Table 145.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	87	3,559	\$2,186,230	\$2,703,997	\$8,785,642	\$6,081,645
1904.....	85	3,133	1,754,789	1,633,150	6,002,638	4,369,483
1899.....	80	2,775	1,436,839	1,533,379	5,239,788	3,706,409
1889.....	76	1,350	692,497	867,955	2,322,744	1,454,789
1879.....	64	1,554	783,019	654,711	3,252,460	2,597,749
1869.....	49	1,003	668,451	920,870	2,823,816	1,902,946
1859.....	43	725	280,015	336,166	1,292,560	956,384
1849.....	22	402	144,588	130,267	359,505	229,238

SCREWS, MACHINE.

The products of establishments under this classification include all kinds of screws of milled iron, steel, brass, and copper for use in the manufacture of machinery, of chemical, electrical, and other scientific instruments, and in metal work generally; and also such products as bolts, studs, rods, rivets, collars, pins, rolls, and washers. Screws for use in wood are not included.

Statistics for the industry from 1889 to 1909, inclusive, are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	43	1,667	\$970,088	\$1,160,478	\$3,014,112	\$1,853,634
1904.....	26	1,965	941,859	950,627	2,711,600	1,700,973
1899.....	25	1,557	702,965	797,308	2,058,723	1,261,415
1889.....	20	1,057	474,463	331,701	1,183,341	851,640

A value of \$939,456 was also returned for machine screws made in 1909 by six establishments in the industries designated "foundry and machine-shop products," "screws, wood," and "iron and steel, bolts, nuts, washers, and rivets, not made in steel works or rolling mills."

SCREWS, WOOD.

The establishments included in this classification manufacture principally steel, brass, and bronze screws for use in wood. Such products as bolts and rivets were also reported in some instances.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	11	3,464	\$1,453,932	\$2,308,528	\$6,198,955	\$3,890,429
1904.....	7	1,488	556,330	731,542	2,133,844	1,402,302
1899.....	8	1,970	720,873	923,147	2,599,744	1,676,597
1889.....	7	1,558	539,713	900,676	2,326,645	1,425,969

In addition to the value of products shown above, wood screws to the value of \$442,005 were made in 1909 by three establishments assigned, respectively, to the industries "brass and bronze products," "foundry and machine-shop products," and "stoves and furnaces, including gas and oil stoves."

SEWING MACHINES, CASES, AND ATTACHMENTS.

This classification includes establishments engaged in the manufacture of sewing machines and attachments and those making sewing-machine cases. Separate statistics were compiled for these two branches of the industry for 1909, and are given in the following table, but in the general tables of this report the two are combined. As the products of the second branch named are used as materials by the first, there is considerable duplication in the combined value of products. There is also some overlapping between the two branches.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	47	19,296	\$11,102,026	\$11,454,645	\$23,262,416	\$16,807,771
Sewing machines and attachments.....	41	15,217	9,107,437	8,195,615	22,510,644	14,315,029
Sewing-machine cases	6	4,079	1,994,589	3,259,030	5,751,772	2,492,742

Establishments engaged primarily in the manufacture of foundry and machine-shop products, organs, and tools, respectively, also reported as made in 1909 sewing machines, cases, and attachments to the value of \$68,005.

Sewing machines and attachments.—The products of establishments in this subclassification are the many varieties of sewing machines, foot and power, for family and factory use, and for sewing leather as well as cloth. Attachments, heads, and other parts and accessories are also included.

Statistics for the industry for each census from 1859 to 1909, inclusive, are presented in Table 149.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	41	15,217	\$9,107,437	\$8,195,615	\$22,510,644	\$14,315,029
1904.....	46	12,671	7,464,325	8,107,366	20,869,870	12,762,504
1899.....	57	10,712	6,265,938	7,924,596	18,309,752	10,385,156
1889.....	59	8,837	4,750,324	3,502,173	12,823,147	9,320,974
1879.....	106	9,553	4,636,099	4,829,106	13,863,188	9,034,082
1869.....	69	8,421	5,781,221	3,641,695	15,847,304	12,205,609
1859.....	75	2,297	1,094,796	648,312	4,255,820	3,607,508

The decline in value of products of the industry from 1869 to 1889 is due, in part, to the expiration of basic patents and the consequent disruption of the "sewing-machine combination."

Sewing-machine cases.—The principal products manufactured by establishments in this subclassification are sewing-machine cases, cabinet and other, and sewing-machine tables. They are mainly made of wood.

Statistics for each census from 1879 to 1909, inclusive, are presented in the next table.

Table 150

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	6	4,079	\$1,994,559	\$3,259,050	\$5,751,772	\$2,492,742
1904.....	8	4,450	2,025,933	2,593,141	5,272,547	2,679,406
1899.....	7	2,633	1,065,180	1,533,850	2,815,142	1,281,262
1889.....	7	1,822	852,603	990,439	2,249,551	1,259,112
1879.....	18	1,822	683,338	1,239,400	2,064,837	825,437

At the census of 1859 statistics were returned for one establishment manufacturing sewing-machine cases, but no separate returns for the industry appeared at the census of 1869.

SPRINGS, STEEL, CAR AND CARRIAGE.

The principal products of establishments included in this classification are steel springs, flat, coil, and elliptical, for railway equipment, carriages, wagons, and automobiles. Some steel, brass, and phosphor-bronze springs intended for other uses were also among the products reported.

Statistics for each census from 1859, when they were first presented, are given in Table 151.

Table 151

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	54	3,196	\$1,852,917	\$4,727,270	\$9,005,362	\$4,278,092
1904.....	52	2,476	1,242,553	2,741,764	5,740,836	2,999,072
1899.....	48	2,102	1,061,006	3,024,656	5,690,499	2,665,843
1889.....	57	1,734	962,942	2,219,408	4,331,571	2,112,163
1879.....	59	1,530	699,412	2,346,818	3,654,862	1,308,044
1869.....	41	1,021	601,706	1,662,920	2,928,993	1,266,073
1859.....	40	1,009	408,160	1,093,142	2,117,377	1,024,235

In addition to the products covered by the above table, steel works and rolling mills made in 1909 springs for cars and carriages and for other uses to the value of \$374,924, foundries and machine shops reported similar products valued at \$264,319, and establishments in other industries products valued at \$83,198, making a total of \$722,441.

STOVES AND FURNACES, INCLUDING GAS AND OIL STOVES.

This classification includes establishments engaged in the manufacture of coal and wood stoves and furnaces, and of gas and oil stoves, respectively. The principal statistical data were compiled separately for the two branches of the industry for 1909, and they are given in the following table; but as there is considerable overlapping between the two, only combined totals are shown in most tables.

Table 152

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	576	37,130	\$22,944,279	\$29,338,261	\$78,853,323	\$49,515,062
Stoves and furnaces, not including gas and oil stoves.....	482	32,118	19,873,587	23,529,404	65,997,500	42,468,096
Stoves, gas and oil.....	94	5,012	3,070,692	5,808,857	12,855,823	7,046,966

In addition to the products covered by Table 152, 90 establishments assigned to other industries reported in 1909 an output of stoves and furnaces valued at \$1,184,855. Most of these establishments were in the following industries: Foundry and machine-shop products, copper, tin, and sheet-iron products, agricultural implements, clocks, furniture, and gas and electric fixtures.

Stoves and furnaces, not including gas and oil stoves.—The principal products manufactured by the establishments in this subclass are cast-iron and sheet-iron and wrought-steel stoves, ranges, and furnaces, for cooking or heating. Some fireless cookers are also among the products, together with evaporating furnaces and auxiliary heaters, marine ranges, ventilating heaters, laundry clothes dryers, and furnace and stove parts.

The subclassification of "steam fittings and heating apparatus," which is included with "foundry and machine-shop products," covers establishments which manufacture hot-water, steam, and combination heaters, and radiators.

Prior to 1904 stoves and furnaces were included with "foundry and machine-shop products."

Table 153

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	482	32,118	\$19,873,587	\$23,529,404	\$65,997,500	\$42,468,096
1904.....	415	29,728	17,823,434	18,483,865	54,409,108	35,925,243

Stoves, gas and oil.—All kinds of gas, oil, alcohol, acetylene, and gasoline heaters, burners, and furnaces are manufactured by the establishments included in this subclass. Asbestos fireplace gas burners, natural-gas stoves and ranges, vapor stoves, and hot plates and sadirons heated with alcohol or other fuel burned internally are also among the products.

Statistics for the censuses of 1909 and 1904 only are presented in the following table:

Table 154

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	94	5,012	\$3,070,692	\$5,808,857	\$12,855,823	\$7,046,966
1904.....	79	3,676	1,946,469	3,786,763	7,723,697	3,956,934

TYPEWRITERS AND SUPPLIES.

The principal products manufactured by the establishments under this classification are typewriting machines and parts, but such supplies and specialties as inked ribbons, carbon paper and pads, tools, copyholders, steel type, metal covers, and baseboards are minor products.

The census of 1889 was the first at which separate statistics for the industry were presented.

In addition to the value of products given in Table 155, the value of typewriters and supplies made in

1909 by establishments engaged primarily in the manufacture of other products was \$507,065. The greatest part of this sum was reported by establishments manufacturing writing ink as their chief product.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	89	9,578	\$6,221,423	\$4,077,346	\$19,718,767	\$15,641,421
1904.....	66	6,232	3,468,784	1,870,261	10,640,495	8,770,234
1899.....	47	4,340	2,403,604	1,402,170	6,932,029	5,529,859
1889.....	30	1,631	945,476	632,723	3,630,126	2,997,403

VAULT LIGHTS AND VENTILATORS.

The principal products manufactured by establishments in this classification are lights, made of iron or steel with glass set in, for bank, burial, and other vaults; window, roof, floor, and sidewalk ventilators; coalhole covers; exhaust blower fans; and glass prisms for windows and sidewalks.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	37	327	\$227,761	\$338,330	\$956,720	\$618,390
1904.....	24	222	154,334	160,604	484,466	323,802
1899.....	14	138	81,184	140,719	338,111	197,392
1889.....	15	174	115,780	185,629	455,413	269,884
1879.....	12	115	66,204	108,981	273,395	164,414

In addition, in 1909, two establishments, engaged primarily in the manufacture of lumber and timber products, made vault lights and ventilators, but the statistics can not be published without disclosing individual operations.

WIREWOK, INCLUDING WIRE ROPE AND CABLE.

The articles manufactured by establishments under this classification are made of steel, brass, and copper wire, either round or flat.

The most important products are woven-wire fencing, wire cloth and netting, and wire rope and cable. There are, however, many minor products, such as wire baskets, bird cages, buckles, broilers, ornamental fences, gates, flexible steel tubing, desk trays, fly killers, gopher and game traps, kitchen wire goods, milk-bottle carriers and racks, metal reinforcement for concrete construction, millinery wire, mats, pinhole cameras, porch swings, paper clips, rat and mouse traps, ring travelers for cotton yarn and other wire parts for textile machinery, wire springs of steel, brass, and phosphor-bronze, skewers, meat forks,

sheet-steel band hoops, umbrella runners, wire designs for florists, pile wire for carpet mills, and wire cloth for use on Fourdrinier machines in the manufacture of paper.

The following table presents separate statistics for 1909 (1) for the establishments engaged primarily in manufacturing wire fence, (2) for those making chiefly wire cloth and wire rope, (3) for those making both the classes of products just mentioned, and (4) for those making chiefly other products included in the classification. Establishments assigned to the first three subclasses make some products similar to those of establishments assigned to the fourth, and vice versa. In the general tables of this report only totals for the entire industry are shown.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	811	12,348	\$6,331,158	\$24,393,914	\$41,937,952	\$17,544,038
Wire fence.....	132	1,841	1,006,766	8,192,182	11,095,811	3,503,629
Wire cloth and wire rope.....	55	2,912	1,695,297	5,817,917	10,362,588	4,544,671
Both wire fence and wire cloth and rope.....	17	1,824	885,038	4,098,977	6,799,442	2,700,465
All other wire products.....	407	5,771	2,744,057	6,284,838	13,080,111	6,795,273

The statistics for the industry from 1859 to 1909 are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	611	12,348	\$6,331,158	\$24,393,914	\$41,937,952	\$17,544,038
1904.....	649	13,379	6,099,869	17,856,211	33,038,495	15,182,284
1899.....	596	9,142	3,894,001	10,313,342	19,840,382	9,027,040
1889.....	569	6,954	3,085,691	8,325,435	15,552,857	7,227,422
1879.....	365	4,469	1,708,165	5,410,084	9,127,818	3,717,734
1869.....	141	2,526	719,633	1,548,006	2,959,227	1,411,221
1859.....	66	539	146,424	283,655	594,028	310,373

In addition to the products covered by the above table, establishments assigned to other industries (for the most part to "foundry and machine-shop products" and "furniture and refrigerators") also made in 1909 wirework, including wire rope and cable, to the value of \$944,014. Moreover, establishments assigned to the "wire" industry, and wire departments of iron and steel rolling mills and other concerns, made large quantities of similar products, the value of which is shown in Table 124. The production of insulated wire is mainly conducted by establishments engaged in the manufacture of electrical machinery, apparatus, and supplies (see Table 402).

LUMBER AND ITS REMANUFACTURES.

THE GROUP AS A WHOLE.

The following table shows the number of establishments, average number of wage earners, total wages

paid, value of products, and value added by manufacture for each of the industries included in the general group as reported for the census of 1909:

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total.....	48,533	907,514	\$422,764,807	\$1,582,522,263	\$867,848,552
Lumber and timber products.....	40,671	695,019	318,739,207	1,156,128,747	648,011,168
Manufactures of lumber.....	7,733	209,461	102,705,737	411,422,016	214,741,914
Baskets and rattan and willow ware.....	456	4,664	1,747,394	5,095,356	3,359,943
Billiard tables and materials.....	54	1,495	1,010,716	5,877,837	2,509,159
Boxes, cigar.....	274	6,115	2,234,329	8,491,082	4,178,038
Coffins, burial cases, and undertakers' goods.....	284	9,339	4,632,713	24,525,905	12,561,638
Cooperage and wooden goods, not elsewhere specified.....	1,693	26,269	11,714,582	60,248,260	23,320,419
Cork cutting.....	62	3,142	1,068,019	5,979,938	2,505,317
Furniture and refrigerators.....	3,155	128,452	65,617,975	229,887,506	131,111,664
Lasts.....	60	1,728	1,202,982	4,158,933	2,834,478
Looking-glass and picture frames.....	437	6,021	3,260,622	13,475,082	7,050,076
Matches.....	26	3,031	1,389,719	11,353,138	6,754,260
Pulp goods.....	14	783	377,079	1,770,107	799,169
Rules, ivory and wood.....	9	109	51,394	143,811	112,979
Show cases.....	149	3,390	2,016,838	7,167,100	4,027,239
Wood carpet.....	10	184	138,151	490,389	262,654
Wood, turned and carved.....	1,050	14,139	6,213,224	22,198,572	12,454,876
Products of chemical processes.....	129	3,034	1,319,863	14,871,500	5,195,470
Charcoal.....	76	631	253,397	872,522	424,945
Wood preserving.....	53	2,403	1,066,466	14,098,978	4,770,525

In this table the industries are divided into (1) those reporting lumber and timber products, (2) those reporting manufactures of lumber, and (3) those reporting certain wood products resulting from chemical processes. Since establishments of the first class largely furnish the materials for those of the second, there is considerable duplication in the total value of products for the group.

Except for the basic industry, "lumber and timber products," there is in general very little duplication in value of products within any single industry in the group.

LUMBER AND TIMBER PRODUCTS.

This classification includes establishments engaged in the manufacture of lumber and timber products,

including planing-mill products, sash, blinds, doors, etc., and of wooden packing boxes. Separate data for the three branches of the industry are given in Table 160 for 1909. Each establishment is assigned according to its product of chief value with the exception that the class "sawmills and logging establishments" includes all mills using logs or bolts as materials and also all logging establishments. So many of the establishments, however, make two or all three of these classes of products that only the totals for all branches combined are shown in the general tables. The total value of products and the total cost of materials for the combined industry, however, involve much duplication, due to the use of the products of one establishment as materials for another.

CLASS.	Number of establishments.	Wage earners.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	40,671	695,019	\$318,739,207	\$508,117,579	\$1,156,128,747	\$648,011,168
Sawmills and logging establishments.....	33,090	547,178	238,866,806	265,559,595	753,368,368	487,828,773
Planing mills.....	6,402	112,392	64,538,409	196,079,522	327,397,891	131,318,369
Wooden packing-box factories.....	1,179	35,449	15,335,992	46,478,462	75,342,488	28,864,026

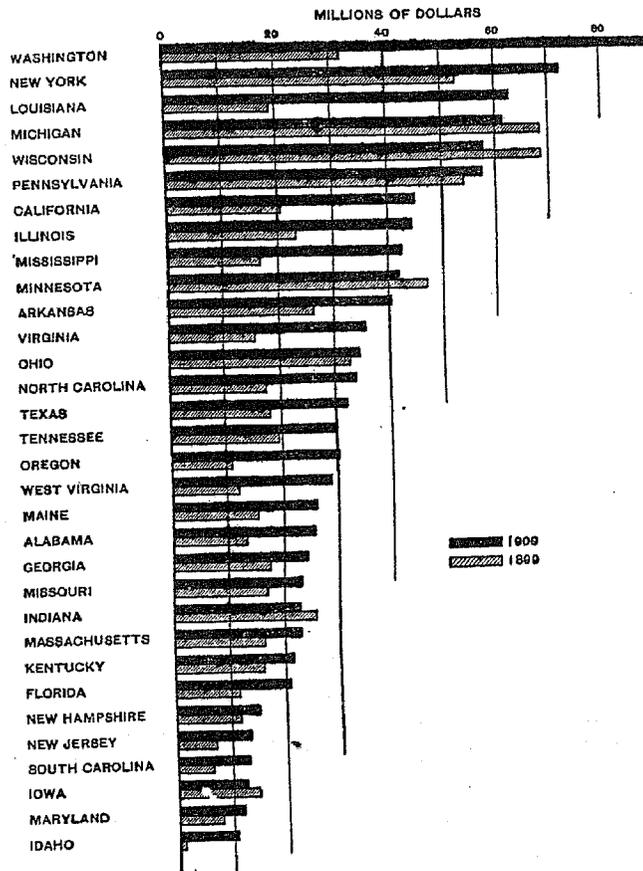
The extent to which these branches overlap is indicated by the fact that in 1909 the value of the dressed lumber and other planing-mill products reported by sawmills amounted to \$222,325,705, or 40.4 per cent of the total value of planing-mill products for the United States. The cost of materials, labor, etc., involved in the manufacture of these products could not be separated from those for the production of rough lumber. In like manner many planing mills manufactured boxes, but the statistics for this branch of their business, or even the value of the boxes produced, could not be segregated.

Lumber and timber products to the value of

\$5,667,950 were reported in 1909 by establishments engaged primarily in the manufacture of other products, chiefly furniture and refrigerators, fancy and paper boxes, and pianos and organs and materials. This value is not included in Table 160.

Custom grinding of flour-mill and gristmill products to the value of \$1,002,731, and foundry and machine-shop products, cooperage and wooden goods not elsewhere specified, and other products, to the value of \$5,730,556, were reported as subsidiary products by establishments in the lumber industry, and their value forms part of the value of products shown in the table.

LUMBER AND TIMBER PRODUCTS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



Sawmills and logging establishments.—This is the leading branch of the industry. The statistics cover logging camps, sawmills, and also planing mills when operated in connection with sawmills. The principal products of logging camps are sawlogs; shingle, stave, and heading bolts; telegraph and telephone poles; fence posts; and hewn railway ties. Those of sawmills include rough lumber, shingles, cooperage materials, veneers, lath, and sawed railway ties. When, as is usually the case, the logging and sawing are done by the same concern, there is no duplication in value of products, but so far as logs are purchased from other establishments in the industry there is duplication. The cost of materials includes the value of the standing timber, even when owned by the operator.

The classification in its present form appeared first at the census of 1899. In 1889 there were two classifications—"lumber and other mill products from logs and bolts" and "timber products not manufactured at mills;" in 1879, three—"lumber, sawed," "shingles, split," and "veneering;" in 1869, three—"lumber, sawed," "staves, shooks, and headings," and "veneering;" in 1859, six—"lumber, sawed," "masts and spars," "shingles and lath," "staves, headings, hoops, and shooks," "timber cut and timber hewed," and "veneers;" and in 1849, seven—"lumber, sawed and planed," "barrel heading," "shingles," "staves,"

"staves and shooks," "timber hewers," and "masts and spars." It is uncertain to what extent logging camps, especially if not connected with sawmills, were covered at the earlier censuses.

Statistics for the industry as reported for each census from 1849 to 1909 are given in the following table, the separate classes shown at the earlier censuses being combined. Except for 1849, the statistics are roughly comparable.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	33,090	547,178	\$238,866,806	\$265,559,595	\$753,388,368	\$487,828,778
1904.....	19,121	404,563	182,949,649	183,708,296	579,777,310	396,069,014
1899.....	23,043	413,257	147,951,886	242,617,767	555,042,605	312,424,838
1889.....	22,607	311,888	87,915,659	242,532,098	437,898,942	195,366,844
1879.....	25,758	148,290	31,893,098	146,312,937	233,608,886	87,295,949
1869.....	25,842	150,091	40,054,472	103,473,348	210,401,077	106,927,729
1859.....	20,870	77,439	22,196,533	45,368,925	98,679,948	53,311,023
1849.....	18,769	55,810	13,787,852	28,328,792	60,413,187	32,084,396

1 "Lumber, sawed and planed."

The quantity and value of the principal classes of products of sawmills are given for 1909 in the following table:

KIND.	Quantity.	Value.
Total.....		\$753,388,368
Lumber, total (M feet b. m.).....	44,509,761	684,479,859
Softwoods.....	33,896,959	477,345,046
Hardwoods.....	10,612,802	207,134,813
Lath, thousands.....	3,703,195	9,963,439
Shingles, thousands.....	14,907,371	30,282,462
All other products.....		23,682,608

Statistics for small custom sawmills for 1909, 1904, and 1899 are not included in the general totals for all manufacturing industries combined nor in the tables given above. For censuses prior to 1899 they are included in Table 161. It is not possible to revise the figures for these earlier censuses, but, as the value of products reported by mills doing custom work exclusively is comparatively small, the inclusion of data for such mills does not greatly affect the comparability of the statistics except for the number of establishments.

Statistics for custom sawmills were collected for 1909, and the totals for the United States are presented in the following summary:

Number of establishments.....	4,133
Wage earners (average number).....	7,090
Wages.....	\$1,687,252
Cost of materials (not including logs).....	\$97,574
Value of products (amount received for work done)....	\$4,515,881

Planing mills.—The establishments included in this subclassification manufacture principally dressed lumber; sash, doors, and blinds; interior woodwork; and moldings. Among the minor products are cattle stanchions, water tubs and cisterns, wooden tanks, wooden pipe, and wooden covering for water and steam pipes.

The manufacture of these various products was combined for the first time at the census of 1889 under the heading "lumber, planing-mill products, including sash, doors, and blinds." In 1879 "lumber, planed," and "sash, doors, and blinds" were considered separately. In 1869, in addition to "lumber, planed," and "sash, doors, and blinds," another classification appeared—"wood brackets, moldings, and scrolls." In 1859 "pump logs," "drainpipe, wooden," and "splints" were shown, in addition to "lumber, planed," and "sash, doors, and blinds." In 1849 "sash and blinds" was the only separate classification covering products now assigned to the planing-mill branch of the lumber industry. The figures published for that year under "lumber, sawed and planed," are included in the totals shown in Table 161.

The statistics are given in the following table for each census from 1849 to 1909, inclusive, the various classes of planing-mill products distinguished at the earlier censuses being combined. The figures for 1849 are not comparable, and, as already stated, the large planing-mill business done by establishments which operate sawmills is not covered.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	6,402	112,392	\$64,536,409	\$196,079,522	\$327,397,891	\$131,318,369
1904.....	5,009	97,674	50,713,007	143,137,662	247,441,956	104,304,284
1899.....	4,198	73,510	32,621,704	99,568,501	167,780,122	68,217,621
1889.....	3,670	79,923	42,221,856	104,268,634	183,081,552	78,754,715
1879.....	2,491	37,187	14,431,054	45,268,462	78,424,081	28,156,219
1869.....	2,783	34,760	16,716,528	46,946,585	89,277,550	33,330,965
1859.....	1,456	11,179	4,086,629	12,179,527	21,237,383	9,057,856
1849 ¹	433	2,497	840,924	859,827	2,277,061	1,417,234

¹ Sash and blinds only.

The decrease in the value of products of the planing-mill branch of the lumber industry between 1889 and 1899 was due to the increase in the relative amount of planed lumber manufactured in establishments classified as sawmills. The apparent decrease between 1869 and 1879 results from the fact that the values for 1869 were reported in currency, which was worth only about 80 cents gold to the dollar. If these values were reduced to a gold basis, the decade 1869-1879 would show an increase.

Wooden packing-box factories.—Box shooks, wooden boxes used for packing, crates for butter, fruits, and vegetables, egg cases, carrier trays, and wine cases are the principal products reported for establishments included under this subclassification.

The various kinds of boxes here included were first assembled under one classification in 1879. In 1869 "boxes, cheese," and "boxes, tobacco" (not cigar boxes), were shown separately from "boxes, wooden, packing." In 1859, statistics were presented for the manufacture of "boxes, sugar," and of "box-shooks," as well as of cheese, tobacco, and packing boxes. In 1849 "boxes, cheese," was segregated from the main classification of "boxes, packing." The figures for these separate classifications have been combined in the next table.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,179	35,449	\$15,325,992	\$46,478,462	\$75,342,488	\$23,864,026
1904.....	1,023	39,229	12,171,194	33,478,991	67,047,743	23,568,752
1899.....	829	21,999	7,821,033	22,777,573	38,183,633	15,386,060
1889.....	636	13,936	5,615,707	14,244,593	25,513,180	11,268,477
1879.....	602	7,722	2,703,135	7,674,921	12,637,068	5,012,147
1869.....	636	5,503	2,058,318	4,590,062	8,964,903	4,374,841
1859.....	350	2,035	743,357	1,410,643	2,939,917	1,520,274
1849.....	246	990	308,808	514,738	1,039,936	685,148

Many manufacturing concerns in a variety of industries make packing boxes for their own products, but the census schedules did not call for the value of such containers as a separate item.

BASKETS, AND RATTAN AND WILLOW WARE.

The establishments included in this classification manufacture principally market and shipping baskets of splint, reed, and willow; laundry hampers; coffee drums, and small articles of rattan and willow ware. Small fruit boxes, picking trays, and bottle and demijohn coverings were also reported. Rattan and willow furniture are not covered by this classification, but are included under "furniture and refrigerators."

The industry was shown in 1869 and 1849 under the two classifications, "baskets" and "willow ware"; and in 1859 under the two classifications, "baskets" and "willow furniture and willow ware."

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	456	4,664	\$1,747,394	\$2,335,408	\$5,695,266	\$3,359,948
1904.....	436	5,106	1,730,932	1,893,290	5,187,263	3,383,973
1899.....	454	4,217	1,212,999	1,334,523	3,636,454	2,391,925
1889.....	403	3,303	1,004,021	1,393,483	3,633,592	2,235,109
1879.....	304	3,119	657,495	867,031	1,922,861	1,125,820
1869.....	295	1,779	396,091	391,743	1,105,669	593,926
1859.....	113	544	156,198	78,052	337,382	259,330
1849.....	70	207	57,732	43,110	153,100	109,990

In addition to the products covered by the table, baskets, and rattan and willow ware to the value of \$500,609 were reported for 1909 by establishments engaged primarily in the manufacture of other products, principally lumber and timber products, furniture and refrigerators, and fancy articles, but the line of demarcation between the various kinds of products is not well defined.

BILLIARD TABLES AND MATERIALS.

In addition to establishments manufacturing billiard and pool tables and materials used in their manufacture, this classification includes establishments producing supplies such as billiard cues and chalk, cue tips, ball and cue racks, and pool and billiard balls. In 1869 the statistics were published under "billiard and bagatelle tables, cues, and materials." In 1859 there were two classifications—"billiard cues" and "billiard and bagatelle tables."

MANUFACTURES.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	54	1,495	\$1,010,716	\$3,368,678	\$5,877,837	\$2,509,159
1904.....	48	796	500,907	936,608	2,222,922	1,286,314
1899.....	74	453	277,818	729,462	1,648,182	918,720
1889.....	57	1,017	705,200	1,295,942	2,823,278	1,527,336
1879.....	46	857	400,779	1,080,466	2,289,758	1,209,292
1869.....	39	505	383,768	650,864	1,692,943	1,042,079
1859.....	25	302	140,556	343,868	739,900	396,032

Billiard tables and materials to the value of \$429,830 were reported for 1909 as subsidiary products by manufacturers of furniture and refrigerators.

The apparent decrease from 1889 to 1899 was due to a change in the classification of one of the largest establishments manufacturing this class of products in the country. In 1889 this establishment was included under "billiard tables and materials," but in 1899 it was classified under "furniture, factory products," as its chief product at the latter census was bar fixtures and office furniture.

BOXES, CIGAR.

The cigar boxes manufactured by the establishments included in this classification are made from wood. During recent years paper cigar boxes have been largely used, and their production is included under "boxes, fancy and paper" (see Table 210). Their increased use has apparently retarded the development of the wooden cigar-box industry. Part of the decrease from 1889 to 1899 is chargeable to changes in classification.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	274	6,115	\$2,234,329	\$4,313,044	\$8,491,082	\$4,178,038
1904.....	297	6,282	2,120,468	3,809,961	7,788,286	3,978,325
1899.....	315	4,609	1,439,599	3,061,193	5,856,915	2,795,722
1889.....	291	5,125	1,802,666	3,567,320	7,091,948	3,524,628
1879.....	221	2,365	748,657	1,389,700	2,903,465	1,513,765
1869.....	164	783	242,180	477,499	960,222	482,723
1859.....	10	22	8,748	16,555	31,800	15,245

In 1909, in addition to the value of products shown above, wooden cigar boxes to the value of \$399,095 were reported by establishments engaged primarily in the manufacture of planing-mill products, fancy and paper boxes, cigars and cigarettes, etc.

COFFINS, BURIAL CASES, AND UNDERTAKERS' GOODS.

Coffins, whether made of wood or of metal, caskets, burial cases, shipping cases, embalming fluids, undertakers' sundries, robes, and clothing, and casket linings and draperies, are the principal products of establishments included in this classification. In 1869 and 1859 "coffins" was the title of the classification, but the figures are doubtless fairly comparable.

In addition to the value of products shown in Table 168 for 1909, coffins, burial cases, and undertakers' goods to the value of \$333,458 were reported by establishments engaged primarily in the manufacture of other products.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	284	9,339	\$4,632,713	\$11,964,267	\$24,525,905	\$12,561,638
1904.....	239	8,468	4,119,811	9,501,267	20,266,110	10,764,843
1899.....	217	6,840	3,077,481	6,945,348	13,952,308	7,006,960
1889.....	194	5,751	2,842,444	5,547,082	12,230,554	6,683,472
1879.....	769	4,415	1,895,805	3,776,222	8,157,760	4,381,538
1869.....	642	2,365	1,011,397	1,412,078	4,026,989	2,614,911
1859.....	210	688	297,564	312,838	1,024,953	712,115

COOPERAGE AND WOODEN GOODS, NOT ELSEWHERE SPECIFIED.

Separate statistics were compiled for the two branches of this industry for 1909, each establishment being assigned according to its chief product, and these are given in the following table, but there is such an overlapping in the products of some of the establishments that only the combined totals are shown in the general tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	1,693	26,289	\$11,714,582	\$36,927,841	\$60,248,260	\$23,320,419
Cooperage.....	1,374	19,489	8,969,951	32,162,050	49,621,527	17,459,477
Wooden goods, not elsewhere specified..	319	6,780	2,744,631	4,765,791	10,626,733	5,860,942

In addition to the products covered by the table "cooperage and wooden goods, not elsewhere specified," to the value of \$1,878,791 were reported by establishments assigned to other industries, principally "lumber and timber products," "cement," and "foundry and machine-shop products;" but many manufacturing concerns which make barrels and other similar containers for use in packing their own products did not report separately the value of cooperage made.

Cooperage.—This subclassification includes establishments engaged in the manufacture of all classes of articles made from staves. Casks, kegs, barrels, hogsheads, wooden tubs, tanks, and vats were reported in 1909. Establishments making staves and other cooperage materials, unless they also make finished products, are not covered by this subclassification, but the statistics are included under "lumber and timber products."

The following table presents the statistics from 1849 to 1909, inclusive:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,374	19,489	\$8,969,951	\$32,162,050	\$49,621,527	\$17,459,477
1904.....	1,517	21,149	9,485,455	31,092,679	49,424,394	18,331,715
1899.....	1,694	22,117	8,786,428	22,150,885	38,439,745	16,288,860
1889.....	2,652	22,555	10,056,249	20,636,911	38,617,956	17,981,045
1879.....	3,898	25,973	8,992,603	18,441,064	33,714,770	15,373,706
1869.....	4,961	23,314	7,819,813	12,831,796	26,868,784	14,031,938
1859.....	2,707	13,750	4,284,704	4,105,203	11,943,221	7,238,018
1849.....	2,902	11,916	3,201,204	2,644,582	7,126,317	4,481,735

The slight increase in value of products between 1904 and 1909 does not fully represent the increase in the manufacture of barrels and similar containers, as a constantly increasing number are made by flour mills, refiners of sugar, molasses, and petroleum, meat packers, manufacturers of lime and of cement, and evaporators of salt. Containers so made are not, as a rule, covered by the above table, although where they were made in more or less distinct plants data for such plants were secured, if possible, and included with those for the cooperage industry. The value of the containers made by establishments in other industries is ordinarily included as part of the value of the specific products contained, though in some cases containers remaining unused at the end of the year are reported under "all other products." The extent of the manufacture of barrels by flour mills is shown by the fact that 310 mills reported such manufacture. The large petroleum refineries, as a rule, returned separate reports for their cooperage plants.

Wooden goods, not elsewhere specified.—This sub-classification includes establishments engaged primarily in the manufacture of articles for kitchen, dairy, laundry, and miscellaneous uses, such as wooden dishes, trays, bowls, meat boards, salt boxes, knife boxes, rolling pins, potato mashers, butter bowls, butter molds, churns, tubs, washboards, pulleys, clothes reels, clothespins, curtain stretchers, coat hangers, toothpicks, grain measures, ladders, etc. There is, as already stated, considerable overlapping in products between this branch of the industry and "cooperage" and there is also some overlapping between it and "furniture and refrigerators" and "house-furnishing goods, not elsewhere specified."

The statistics for the industry were published under "woodenware" in 1849, 1859, and 1869, and under "woodenware, not elsewhere specified," for 1879, 1889, 1899, and 1904.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	319	6,780	\$2,744,631	\$4,765,791	\$10,626,733	\$5,860,942
1904.....	202	6,594	2,357,494	3,578,015	8,531,492	4,653,477
1899.....	104	3,206	1,073,303	1,468,383	3,585,542	2,117,159
1889.....	167	2,881	1,050,413	1,498,773	3,597,602	2,098,829
1879.....	287	5,033	1,539,571	2,635,720	5,235,474	2,599,754
1869.....	269	3,169	1,210,268	1,623,694	4,142,124	2,518,420
1859.....	229	1,933	619,022	835,273	2,108,656	1,273,383
1849.....	197	1,360	372,122	436,676	1,138,078	701,402

CORK, CUTTING.

Statistics for establishments engaged in the manufacture of various articles from cork, including such products as life preservers and cork board for insulation, but comprising chiefly bottle corks, are presented under this industry designation, which has appeared since 1869. At the census of 1849 there were two

classifications, "corks" and "cork cutters." In 1859 the classification was called "corks," and was probably somewhat less comprehensive.

The following table presents statistics from 1849 to 1909, inclusive:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	62	3,142	\$1,068,019	\$3,434,621	\$5,939,933	\$2,505,317
1904.....	59	2,895	888,240	2,459,197	4,499,952	2,031,755
1899.....	62	2,340	687,795	2,403,829	4,392,364	1,938,535
1889.....	65	2,019	636,869	1,501,902	2,840,359	1,338,457
1879.....	46	792	232,846	978,274	1,566,555	590,281
1869.....	27	482	144,518	426,739	754,530	327,791
1859.....	13	86	21,288	54,911	141,000	56,689
1849.....	14	104	31,320	57,103	138,890	81,787

FURNITURE AND REFRIGERATORS.

Separate data for the two branches of this industry for 1909 are given in the following table. As some of the establishments assigned to each of these classes manufacture products similar to those of establishments assigned to the other class, only the combined totals are given in the general tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	3,155	128,452	\$85,617,975	\$108,774,842	\$239,886,506	\$131,111,664
Furniture.....	3,024	123,426	82,935,245	103,863,033	229,197,231	125,394,196
Refrigerators.....	131	5,026	2,682,730	4,911,809	10,689,275	5,717,468

In addition to the products covered by the table, furniture and refrigerators to the value of \$8,591,043 were reported as subsidiary products by manufacturers of mattresses and spring beds, lumber and timber products, foundry and machine-shop products, etc.

Furniture.—This branch includes establishments engaged in the manufacture of cabinetwork and wood and metal furniture of all kinds, including hall stands, hat trees, tables, chairs, couches, taborets, music cabinets and stands, consoles, pedestals, sideboards, buffets, china closets, desks, sectional and other book-cases, bedsteads, dressers, chiffoniers, wardrobes, shirt-waist boxes, cedar chests, commodes, cradles, baby walkers, medicine cabinets, office, school, and church furniture, store and office fixtures, telephone booths, counters, racks, and stands for displaying merchandise, railroad-ticket cases, and similar products. Willow, reed, rattan, splint, and rustic furniture are included.

The next table presents separate statistics for 1909 for the establishments engaged primarily in manufacturing wooden household furniture (including willow and rattan); store, bar, and office furniture; and metal furniture, respectively; there is some overlapping among the three classes.

Table 174
ESTABLISHMENTS MANUFACTURING PRIMARILY—

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	3,024	123,426	\$62,935,245	\$103,863,033	\$229,197,231	\$125,334,198
Wooden furniture	2,185	96,504	47,123,483	76,331,702	170,458,252	94,156,469
Store, bar, and office furniture..	637	16,955	10,434,663	14,380,195	34,312,602	19,932,407
Metal furniture...	152	9,967	5,327,094	13,151,946	24,396,377	11,245,331

At the censuses of 1889 and 1869 the classification "chairs" was shown separately, and in 1869 "iron bedsteads" also, but the data are combined with those for the general furniture industry in the table below. In 1859 the industry bore the designation "furniture, cabinet, school, and other," and in 1849, "cabinet ware." Small shops making furniture to individual order were included at the censuses prior to 1899.

Table 175

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	3,024	123,426	\$62,935,245	\$103,863,033	\$229,197,231	\$125,334,198
1904.....	2,482	110,133	49,833,235	73,619,914	170,446,825	96,826,911
1899.....	1,814	87,262	35,632,523	54,929,631	125,315,986	70,386,355
1889.....	1,919	72,869	35,068,979	45,368,770	111,743,080	66,374,310
1879.....	5,227	69,304	23,695,080	35,860,206	77,845,725	41,985,519
1869.....	5,954	53,031	21,433,319	25,660,761	68,522,221	42,861,480
1859.....	3,594	27,106	8,909,993	8,181,250	25,632,293	17,451,043
1849.....	4,242	22,010	6,638,568	6,039,546	17,663,054	11,573,508

Refrigerators.—The statistics for the establishments assigned to this branch of the industry at the censuses from 1859 to 1909, inclusive, are given below:

Table 176

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	131	5,026	\$2,682,730	\$4,911,809	\$10,689,275	\$5,777,466
1904.....	111	4,032	1,905,114	3,271,707	7,347,935	4,076,163
1899.....	95	3,329	1,287,488	2,476,513	5,317,886	2,841,398
1889.....	82	2,178	1,033,832	2,377,958	4,513,515	2,135,653
1879.....	71	1,053	423,680	881,842	1,739,731	857,889
1869.....	27	267	141,212	192,409	566,463	374,054
1859.....	13	93	41,844	70,727	162,550	91,823

LASTS.

Establishments manufacturing principally trees, stretchers, and display forms for boots and shoes, fiber tops for lasts, and lasts for rubber and leather boots and shoes are included in this classification. The industry designation has been "lasts" since 1849 except in 1859, when it was "lasts and boot trees."

Table 177

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	60	1,728	\$1,202,982	\$1,324,455	\$4,153,933	\$2,834,473
1904.....	55	1,203	797,714	787,712	2,519,771	1,732,059
1899.....	65	1,131	649,654	526,570	1,879,742	1,353,072
1889.....	62	696	495,743	331,225	1,239,055	907,840
1879.....	62	537	308,975	221,905	765,296	543,391
1869.....	60	510	202,212	137,657	665,703	528,046
1859.....	77	434	134,884	93,818	454,279	330,461
1849.....	43	284	104,152	38,420	240,935	202,516

LOOKING-GLASS AND PICTURE FRAMES.

Establishments manufacturing all kinds of frames—paper, wood, or metal—for mirrors, pictures, photographs, or medallions, are included in this classification. Passe partouts are also among the products. The data for 1909, 1904, and 1899 relate only to establishments in the wholesale business, the many small shops which make frames to order not being canvassed. As the earlier censuses (those prior to 1899) covered such small establishments more or less completely, the figures in Table 178, covering the censuses for 1849 to 1909, inclusive, are not strictly comparable.

Table 178

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	437	6,021	\$3,260,622	\$5,525,006	\$13,475,082	\$7,950,076
1904.....	442	6,025	3,314,735	4,975,121	13,269,645	8,294,524
1899.....	362	6,029	2,550,371	4,729,282	10,846,929	6,117,647
1889.....	1,290	7,928	3,846,857	7,069,115	16,376,173	9,307,058
1879.....	645	6,183	2,471,105	4,831,248	9,596,219	4,784,971
1869.....	320	3,537	1,623,653	2,466,313	5,962,335	3,495,922
1859.....	199	1,896	704,274	1,223,831	2,854,132	1,625,301
1849.....	103	963	347,976	544,980	1,252,746	707,766

In addition to the products covered by the above table for 1909, establishments engaged primarily in the manufacture of planing-mill products and furniture, and in lithographing, reported mirror and picture frames to the value of \$404,605.

MATCHES.

The establishments included in this classification manufacture friction, parlor, and safety matches. Statistics are given in the following table for each census from 1849 to 1909, inclusive:

Table 179

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	26	3,631	\$1,389,719	\$4,598,873	\$11,353,138	\$6,754,260
1904.....	23	3,185	1,100,890	3,284,855	5,646,741	2,361,886
1899.....	22	2,047	612,715	3,420,740	6,095,937	2,585,197
1889.....	27	1,696	473,556	3,298,008	2,193,633	1,258,630
1879.....	37	2,219	535,911	3,298,562	4,668,496	1,369,934
1869.....	75	2,556	616,714	1,179,656	3,540,008	2,360,342
1859.....	75	1,252	179,450	229,720	693,566	468,846
1849.....	60	1,021	154,620	137,514	427,823	290,309

PULP GOODS.

In this classification are included establishments engaged in the manufacture from wood pulp or paper chemically treated of such articles as pails, kegs and boxes, tubs, cuspidors, vases, measures, coolers, bases, jars, trays, etc. Composite board for car ceilings, bulkheads, and door panels for steamboats, vulcanized fiber and fiber specialties for motors and dynamos, automobile parts, insulators, skate wheels, bibcock washers, railway signals, electric-rail joints, noiseless rollers and gears, fiber sheets, and fiber rods and tubes were also reported.

The manufacture of wood pulp itself, except so far as conducted by establishments making the finished products mentioned, and the manufacture of paper from wood pulp are not included.

The statistics of pulp goods were first reported separately at the census of 1889.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	14	783	\$377,079	\$970,938	\$1,770,107	\$709,169
1904.....	17	696	283,658	719,161	1,467,407	743,246
1899.....	22	691	283,835	648,639	1,267,013	629,374
1889.....	9	252	111,484	122,851	352,682	229,731

In addition to the products covered by the above table, pulp goods to the value of \$52,231 were reported in 1909 by establishments engaged primarily in the manufacture of other products.

RULES, IVORY AND WOOD.

Statistics of establishments engaged in the manufacture of carpenters' rules, log rules, and commercial and advertising rules and yardsticks, and of office and school rulers, are included under this classification. The products are made principally of hickory, maple, basswood, and boxwood.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	9	109	\$51,894	\$30,832	\$143,811	\$112,979
1904.....	13	149	54,860	55,113	248,906	193,793
1899.....	11	213	66,732	72,657	207,757	135,100
1889.....	16	136	51,933	34,325	154,173	119,848
1879.....	6	56	19,974	18,075	66,200	50,125

The apparent decrease in value of products from 1904 to 1909 is accounted for by the fact that one establishment which was included under this classification in 1904 and at previous censuses was classified under "cutlery and tools, not elsewhere specified" in 1909. Had the value of the output of this establishment in 1909—which included rules having a considerable value—been included in the foregoing table, an increase over 1899 would have been shown.

SHOW CASES.

Statistics for establishments manufacturing show cases have been presented separately since 1859. Statistics from that year to 1909, inclusive, are presented in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	149	3,390	\$2,016,838	\$3,139,861	\$7,167,100	\$4,027,239
1904.....	141	3,082	1,681,071	2,374,097	5,721,724	3,347,627
1899.....	102	1,363	708,211	1,057,666	2,467,901	1,410,235
1889.....	69	1,331	718,102	1,077,345	2,569,557	1,492,212
1879.....	93	692	329,230	519,585	1,172,172	632,587
1869.....	47	353	219,384	419,466	838,699	419,233
1859.....	9	40	18,648	29,141	85,200	56,059

In addition to the products covered by the above table, show cases to the value of \$468,778 were made in 1909 by establishments engaged primarily in the manufacture of other products—chiefly furniture factories.

WOOD CARPET.

This classification includes establishments engaged primarily in the manufacture of parquet flooring, parquet strips, and fiber floor veneers. The name given to the industry at earlier censuses has become somewhat misleading, but is retained for convenience in comparisons. Wood carpet and parquet floorings are allied products; in the former, strips or blocks of wood are held together by a textile backing; in the latter they are glued together. Very little wood carpet was made in 1909.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	10	184	\$128,151	\$227,735	\$490,389	\$262,654
1904.....	20	373	288,886	350,937	801,266	450,329
1899.....	31	698	332,112	418,343	1,056,702	638,359
1889.....	6	300	136,932	210,814	511,700	300,888
1879.....	5	119	23,750	23,500	102,170	78,670

WOOD, TURNED AND CARVED.

This classification covers establishments manufacturing principally articles of wood, turned, carved, or sawed by scroll or jig saws. The products include, among others, fretwork, grill work, handles, rollers, wheels, reels, spools, spindles, bobbins, plugs, bungs, blocks, molds, racks, bowling balls, tenpins, novelties, and souvenirs. In 1879 there were two classifications—"wood, turned and carved," and "handles, wooden." In 1859, in addition to "carving" and "turning, scroll sawing, and molding," there were "broom handles," "brush blocks," "brush handles and stocks," "handles," "money drawers," "plugs and wedges," "wooden clothes frames," and "wooden door knobs." In 1849 statistics were shown for "bobbins and spools," for "carvers," and for "turners." These separate classes have been combined for comparative purposes in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,050	14,139	\$8,213,224	\$9,743,696	\$22,198,572	\$12,454,876
1904.....	1,697	14,687	6,031,148	8,578,415	20,109,173	11,590,758
1899.....	1,168	11,558	4,270,713	5,829,996	14,317,573	8,487,677
1889.....	872	7,402	3,333,553	3,947,227	10,939,647	6,962,420
1879.....	916	7,240	2,585,578	3,637,950	8,426,817	4,788,867
1869.....	733	4,103	1,499,565	1,648,008	4,959,191	3,311,183
1859.....	337	2,046	738,660	946,526	2,408,434	1,621,906
1849.....	479	1,828	575,572	434,800	1,525,329	1,090,529

In addition to the products covered by the above table, wood, turned and carved, to the value of \$1,062,877 was reported in 1909 by establishments assigned to other census classifications, such as "lumber and timber products," foundry and machine-shop

products," and "carriages and wagons and materials." Many concerns turn and carve wood in connection with the manufacture of various finished products, but they did not make a separate report for such work in their returns.

CHARCOAL.

Establishments under this classification carbonize wood in kilns, or by merely placing it in circular piles covered with earth and allowing it to smolder after firing.

By far the greater part of the charcoal made in 1909 was reported as a by-product of the industry "wood distillation, not including turpentine and rosin." The following statement shows the value of the production of charcoal in 1909 and 1904 as reported by establishments in that industry and by those classified under "charcoal."

INDUSTRY.	1909	1904
Total value.....	\$3,224,166	\$2,489,727
Charcoal.....	872,522	1,291,754
Wood distillation, not including turpentine and rosin..	2,351,644	1,197,973

In 1909 charcoal to the value of \$123,229 was reported by establishments engaged primarily in the manufacture of fertilizers, chemicals, lumber and timber products, and brick and tile.

The value of the charcoal by-product of wood distillation, as shown in the above table, is much less than the value given in the annual report for 1909 on forest products, compiled by the Bureau of the Census in cooperation with the Forest Service of the Department of Agriculture. The value there given, \$3,509,019, includes charcoal made and consumed in blast-furnace plants.

Statistics of establishments manufacturing charcoal, although reported separately at the censuses of

1849 and 1859, were merged in 1869 in "charcoal and coke." In 1889 the charcoal plants were included under "timber products, not manufactured at mill," but the value of charcoal was given separately as \$1,339,524.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	76	631	\$253,397	\$447,577	\$872,522	\$424,945
1904.....	74	923	342,874	641,778	1,291,754	649,976
1899.....	183	1,786	431,381	405,339	1,133,638	728,299
1879.....	175	1,401	390,697	320,735	975,540	654,805

Two large establishments engaged in wood distillation in Michigan were classed under "charcoal" in 1904 because the charcoal product had the greatest total value. At the census of 1909 these establishments reported a greater value for wood alcohol and other distillates from wood than for charcoal and were therefore classed under "wood distillation, not including turpentine and rosin." This is the principal reason for the apparent decrease from 1904 to 1909.

WOOD PRESERVING.

Establishments engaged in treating wood with creosote, coal tar, crude oil, and other preservatives to prevent decay and for protection against fire and against insects, mollusks, worms, and other parasites are included in this classification.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	53	2,403	\$1,066,466	\$9,328,453	\$14,098,978	\$4,770,525
1904.....	26	737	314,664	2,462,860	3,368,480	905,620
1899.....	21	478	205,105	1,825,355	2,395,748	570,393
1889.....	4	80	29,317	50,697	143,475	92,778
1879.....	2	36	14,717	62,700	101,110	38,410

LEATHER AND ITS FINISHED PRODUCTS.

THE GROUP AS A WHOLE.

The following table shows the industries included in this general group and the number of establishments,

average number of wage earners, total wages paid, value of products, and value added by manufacture for each, as reported for the census of 1909:

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total.....	5,728	309,766	\$155,110,878	\$992,713,322	\$322,838,804
Leather:	919	62,202	32,162,645	327,874,187	79,595,254
Leather, tanned, curried, and finished.....	4,809	247,564	123,008,033	664,839,135	243,243,550
Finished products.....	139	3,698	1,870,880	23,691,887	8,069,284
Belting and hose, leather.....	1,018	19,257	9,462,665	512,797,642	180,059,429
Boots and shoes, including cut stock and findings.....	377	11,354	4,753,820	23,630,598	10,422,597
Gloves and mittens, leather.....	2,375	34,907	17,920,628	104,719,008	44,692,240
Leather goods.....					

The total value of products for the group, \$992,713,322 in 1909, which represents nearly one-twentieth of the total value of manufactured products

for the country, includes much duplication, the products of the tanneries being used as materials for the other industries listed.

LEATHER, TANNED, CURRIED, AND FINISHED.

The establishments included in this classification manufacture leather from hides and skins of all kinds, domestic and imported, by various methods of tanning, such as the oak, the hemlock, and the chrome or other chemical processes. The classification also includes the currying and finishing of leather to be used for various purposes, as in the manufacture of shoes, gloves and mittens, bags, and harness, in the automobile, carriage, and furniture industries, and in the binding of books. Many establishments tan or curry and finish leather under contract for concerns other than those engaged in the leather industry. The total value of products for the industry does not include the value of leather thus made for concerns in other industries, but only the amount received for the processes performed. There is some duplication in value.

The table below shows the products made in 1909:

KIND.	Quantity. ¹		Value. ²
	Amount.	Unit.	
Total			\$327, 874, 187
Leather			306, 476, 720
Sold in rough			6, 335, 599
Sides.....	828, 887	Number.....	3, 539, 617
Grains.....	317, 814	Sides.....	2, 718, 562
Splits.....	2, 912, 964	Number.....	2, 077, 423
Sole leather			88, 331, 713
Hemlock.....	7, 963, 728	Sides.....	32, 237, 151
Oak.....	3, 805, 861	Sides.....	26, 083, 793
Union.....	5, 756, 227	Sides.....	28, 375, 815
Chrome.....	279, 436	Sides.....	1, 634, 954
Upper leather, other than calf or kip skins			39, 951, 460
Grain, satin, pebble, etc.....	7, 946, 769	Sides.....	24, 198, 993
Finished splits.....	8, 134, 229	Number.....	7, 410, 740
Patent and enameled shoe.....	2, 705, 291	Sides.....	8, 341, 727
Horsehides and coltskins.....	1, 342, 938	Number.....	4, 953, 145
Calf and kip skins, tanned and finished.....	19, 012, 064	Number.....	42, 412, 256
Goatskins, tanned and finished.....	47, 907, 211	Number.....	40, 882, 640
Sheepskins, tanned and finished.....	19, 665, 155	Number.....	12, 236, 637
Belting leather.....	1, 042, 070	Sides.....	6, 995, 133
Harness leather.....	3, 946, 235	Sides.....	24, 802, 734
Carriage, automobile, and furniture leather.....	1, 398, 842	Hides.....	14, 266, 742
Trunk, bag, and pocketbook leather.....			6, 198, 544
Bookbinder's leather.....			2, 450, 155
Glove leather.....			4, 913, 543
All other.....			11, 746, 369
All other products			8, 632, 689
Work on materials furnished by others			12, 764, 778

¹ In addition, 1,903,278 hides and 27,936,887 skins were treated for others not tanners, curriers, or finishers (the amount received for the work done—but not the value of the finished products—being shown in the last line of the table); and 252,639 hides and 194,796 skins were treated by establishments in other industries using the leather for further manufacture.

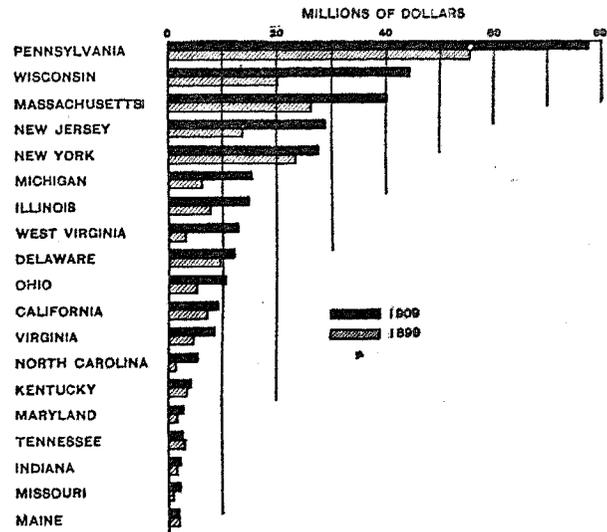
² In addition, leather to the value of \$6,231,374 was tanned, curried, or finished, and consumed by establishments engaged primarily in the manufacture of the following products: belting and hose, leather, boots and shoes, including cut stock and findings; dyestuffs and extracts; furniture and refrigerators; gloves and mittens, leather; leather goods; and soap.

The statistics for "leather, tanned, curried, and finished" were first reported separately at the census of 1849. The following table shows the chief items for each census from 1849 to 1909, inclusive:

Year	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	919	62, 202	\$32, 102, 845	\$248, 278, 933	\$327, 874, 187	\$79, 505, 254
1904.....	1, 049	57, 239	27, 049, 152	191, 179, 073	232, 620, 986	61, 441, 913
1899.....	1, 306	52, 109	22, 591, 091	155, 009, 094	204, 038, 127	49, 038, 123
1889.....	1, 787	42, 392	21, 249, 989	122, 946, 721	173, 136, 092	49, 189, 371
1879.....	5, 623	40, 282	16, 503, 828	156, 384, 117	200, 264, 044	43, 880, 827
1869.....	7, 569	35, 243	14, 505, 775	118, 569, 634	157, 237, 597	38, 667, 963
1859.....	5, 188	26, 246	8, 175, 593	49, 812, 659	75, 688, 747	25, 886, 088
1849.....	6, 686	25, 595	6, 541, 678	26, 429, 881	43, 457, 898	17, 028, 017

The apparent decrease from 1879 to 1889 in value of products and cost of materials is due to the fact that in 1879, as at earlier censuses, a plant engaged both in tanning and in currying and finishing was treated as two establishments, thus involving much more duplication than occurs in the figures for later censuses.

LEATHER, TANNED, CURRIED, AND FINISHED—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



Hides and skins taken from animals killed in the United States: 1909.—By reason of a special amendment to the Thirteenth Census act, the Census Bureau collected statistics regarding the number of animals killed for food and the number of hides and skins taken off, not only in the wholesale slaughtering and meat-packing establishments, but also by retail butchers and on farms and ranges. Each wholesale or retail slaughtering establishment was required to report the number of hides and skins taken off, a number which differs somewhat from the total number of animals slaughtered. In the case of farms and ranges it has been assumed that the hides or skins were taken from all the animals reported as slaughtered, except, of course, from swine; but it was not considered practicable to ascertain the number taken off animals dying a natural death. The following table shows the results of this inquiry:

KIND.	HIDES AND SKINS TAKEN FROM ANIMALS KILLED.		
	Total.	In slaughter-houses, rendering establishments, etc.	On farms and ranges.
Total	33, 665, 169	36, 478, 414	3, 188, 755
Beeves.....	13, 764, 686	12, 356, 046	1, 408, 640
Calves.....	5, 196, 043	4, 664, 443	1, 191, 600
Sheep and lambs.....	14, 274, 413	13, 744, 587	529, 826
Goats and kids.....	287, 497	168, 598	118, 899
Horses and colts.....	114, 534	114, 534	
All other animals.....	27, 696	27, 696	

In addition to the hides and skins taken from animals in the United States, the tanning establish-

ments use large numbers that are imported. On the other hand, there is some exportation of green hides and skins.

BELTING AND HOSE, LEATHER.

The establishments included in this classification manufacture principally leather belting for power transmission, only small quantities of leather hose being made. No establishments were reported at the census of 1909 as engaged primarily in the manufacture of leather hose, but the name of the industry is retained for comparison with prior censuses, at some of which large quantities of leather hose were reported.

Table 192

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	129	3,066	\$1,869,889	\$15,622,003	\$23,691,857	\$3,069,284
1904.....	117	2,692	1,164,548	9,317,296	14,220,366	4,903,100
1899.....	104	1,667	913,877	7,499,952	10,622,522	3,122,570
1889.....	93	1,342	783,615	6,132,794	8,623,634	2,500,939
1879.....	66	1,227	626,057	5,019,853	6,525,737	1,505,884
1869.....	61	898	454,187	3,231,204	4,558,043	1,326,839
1859.....	46	354	134,952	915,271	1,481,750	566,479
1849.....	8	39	15,298	111,755	160,500	48,715

In addition to the products covered by the table for 1909, leather belting and hose to the value of \$237,801 were reported by establishments engaged primarily in the manufacture of foundry and machine-shop products, wood, turned and carved, and boots and shoes, including cut stock and findings

BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.

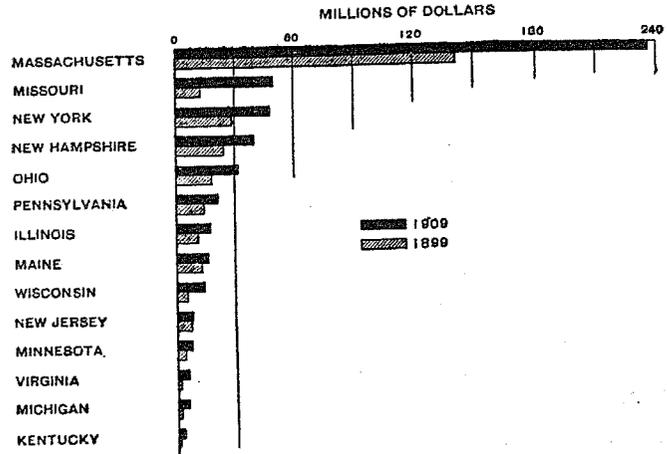
This classification includes three classes of establishments—those engaged in the manufacture of boots and shoes, of boot and shoe cut stock, and of boot and shoe findings, respectively. As a number of large manufacturers of boots and shoes cut out their own stock and make some of the articles classed as findings, only the combined totals for all three classes are shown in the general tables, and the total value of products for the industry as a whole necessarily involves considerable duplication. Separate statistics were, however, compiled for 1909 for the three branches of the industry, each establishment being classified according to its product of chief value, and the principal items are given in the following table. It should not be assumed that the values shown for "cut stock" and "findings" represent the total value of these products made.

Table 193

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	1,918	194,297	\$98,462,695	\$32,738,213	\$512,797,642	\$180,059,429
Boots and shoes..	1,343	185,116	\$2,359,152	277,467,743	442,630,726	165,162,983
Boot and shoe cut stock.....	232	6,669	3,156,460	36,919,919	44,661,497	7,741,578
Boot and shoe findings.....	343	6,488	2,947,083	18,350,551	25,505,419	7,154,868

In addition to the products covered by this table, similar products to the value of \$1,439,280 were reported for 1909 by establishments engaged primarily in the manufacture of leather belting and hose, leather goods, and other products.

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



Boots and shoes.—The establishments included under this subclassification are engaged primarily in the manufacture of men's, women's, and children's boots and shoes, slippers, sandals, moccasins, and similar articles. There is a certain amount of duplication in the total value of products even for this single branch of the industry. Some of the establishments work upon materials furnished by others and some are engaged principally in certain partial processes of shoe manufacture, such as bottoming and heeling. Certain shops do stitching only, others crimping only, some do nothing but work buttonholes in uppers, and a number make overgaiters, moccasins, leggings, etc., as their chief product. The business of such specialized shops is, however, comparatively unimportant. Statistics for rubber boots and shoes are given in Table 390.

The production of footwear for women, misses, and children in 1909 exceeded that for men, youths, and boys, as indicated by the table following, which shows the output of the principal classes of footwear in 1909.

Table 194

KIND.	Quantity (pairs).
Boots and shoes.....	247,643,197
Men's.....	93,838,892
Boys' and youths'.....	23,838,626
Women's.....	86,595,314
Misses' and children's.....	43,320,365
Slippers.....	17,507,834
Men's, boys', and youths'.....	4,802,841
Women's, misses', and children's.....	12,704,993
Infants' shoes and slippers.....	15,000,721
All other.....	4,865,429

Prior to the census of 1879 the statistics for the boot and shoe industry included those for the small shops engaged in custom work and repairing. The statistics for the factory industry were first reported separately at that census; the figures for that and subsequent censuses are shown in the next table.

Table 195

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,343	185,116	\$92,359,152	\$277,467,743	\$442,630,726	\$165,162,953
1904.....	1,316	149,924	69,059,680	197,363,495	320,107,458	122,743,963
1899.....	1,569	141,830	58,440,893	168,632,654	258,969,580	90,336,926
1889.....	2,082	133,090	60,687,145	118,785,831	220,649,358	101,863,527
1879.....	1,959	111,152	43,001,438	102,442,442	166,050,354	63,607,912

Boot and shoe cut stock.—The establishments included in this subclass are engaged primarily in the manufacture of soles, tops, lifts, leather and rubber heels, tips, and similar articles. As already stated, some products of the same character are manufactured by establishments in the boot and shoe industry proper.

Table 196

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	232	6,693	\$3,156,460	\$36,919,919	\$44,661,497	\$7,741,578
1904.....	290	5,936	2,364,209	21,586,872	27,675,815	6,088,943
1899.....	342	6,155	2,280,691	17,800,282	23,242,892	5,442,610
1889.....	344	4,992	1,891,031	13,744,655	17,903,846	4,159,191
1879.....	172	2,885	735,482	5,939,249	7,531,635	1,592,386

Boot and shoe findings.—The establishments included in this subclass manufacture supplies, such as trimmings, pipings, cotton and paper specialties, dressing, blacking and fillers, shoe wax, burnishing ink, bindings, steel and wooden shanks, fiber-board and counters, wooden and cork heels, foot-arch supporters, linings, metal protectors, vamp stays, rands, straps, beading, leather bows, eyelets, back stays, shoe tacks, and shoe pegs.

The statistics in the table begin with the census of 1869. At the census of 1859 one establishment classified under "shoe and boot tips" and 43 establishments classified under "shoe findings" reported products valued at \$456,928. At the census of 1849 there were 24 establishments classified under "shoe pegs," with a product valued at \$73,918.

Table 197

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	343	6,488	\$2,947,083	\$18,350,551	\$25,505,419	\$7,154,868
1904.....	289	4,434	1,647,877	6,337,810	9,904,887	3,567,077
1899.....	312	3,246	1,252,491	5,022,591	7,834,615	2,812,224
1889.....	455	3,434	1,205,397	3,868,099	6,805,330	2,937,231
1879.....	216	1,935	621,500	1,636,921	2,935,787	1,298,866
1869 ¹	297	3,052	871,008	1,880,764	3,653,938	1,773,174

¹ "Boot and shoe findings" and "shoe pegs."

GLOVES AND MITTENS, LEATHER.

Establishments manufacturing all kinds of gloves, mittens, and gauntlets, made in whole or in part from leather, are included under this classification. The industry was designated as "gloves and mittens" at censuses prior to 1904, but fur gloves and mittens were then and are now classified under "fur goods," and knit gloves and mittens under "hosiery and knit goods."

Table 198

IND.	Quantity (dozen pairs) ¹	Value. ¹
Total		\$23,630,598
Gloves, mittens, and gauntlets.....	3,368,655	22,525,861
Men's.....	2,585,977	17,060,737
Lined.....	921,259	5,222,174
Unlined.....	1,664,718	11,838,623
Women's and children's.....	782,678	5,465,064
Lined.....	365,477	1,718,198
Unlined.....	417,201	3,746,866
All other products.....		1,104,737

¹ In addition, 36,944 dozen pairs of gloves, mittens, and gauntlets, valued at \$264,961, were made by establishments engaged primarily in the manufacture of boots and shoes, including cut stock and findings; corsets; fur goods; furnishing goods, men's; hosiery and knit goods; leather goods; leather, tanned, curried, and finished; and whips.

The following table gives statistics for each census since and including 1849:

Table 199

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	377	11,354	\$4,763,830	\$13,208,001	\$23,630,598	\$10,422,597
1904.....	330	10,645	3,840,253	10,000,889	17,740,385	7,739,496
1899.....	394	14,345	4,182,518	9,483,130	16,926,156	7,443,026
1889.....	324	8,187	2,670,344	5,021,144	10,103,821	5,082,677
1879.....	300	7,697	1,655,695	4,351,469	7,379,005	3,028,136
1869.....	221	4,058	959,549	1,884,146	3,998,521	2,114,375
1859.....	126	1,429	330,419	537,580	1,176,735	639,296
1849.....	110	1,938	233,495	322,837	768,154	385,347

The apparent decline in the number of wage earners and in wages since 1899 is due to the fact that contract workers, who were formerly counted among the wage earners, have not been so included at the last two censuses.

LEATHER GOODS.

The following table presents separate figures for four branches of the leather-goods industry as reported for the census of 1909, each establishment being assigned according to its product of chief value. There is so much overlapping among these classes that combined totals only are given in most tables, and the statistics presented in this table and in Tables 201 to 204 must not be taken as indicating precisely the relative importance of the several branches. Changes in the amount of overlapping have doubtless occurred from census to census, and an establishment classed in one subgroup at one census may have been classed in another at a subsequent census, without any great change in the character of its products.

Table 200

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	2,375	34,907	\$17,920,628	\$60,026,768	\$104,719,008	\$44,682,240
Saddlery and harness.....	1,347	14,632	8,071,484	33,177,937	54,224,002	21,046,665
Trunks and valises.....	524	11,122	5,537,329	14,623,065	28,027,964	13,398,899
Leather goods, not specified.....	425	7,681	3,623,200	10,290,439	18,838,281	8,547,842
Pocketbooks.....	79	1,472	688,615	1,929,327	3,628,161	1,665,534

In addition, in 1909, 81 establishments engaged primarily in the manufacture of leather belting and hose; flags, banners, regalia, society badges, and emblems; awnings, tents, and sails; and other products, reported

leather goods to the value of \$2,963,204, but it is hardly likely that this represents the value of all goods of that character made in establishments not classed in the leather-goods industry.

Saddlery and harness.—Saddles and stirrups, wagon, buggy, and carriage harness, horse collars, halters, riding and other bridles, sweat pads, lines, and feed bags are the principal products reported for establishments included in this subclass. Because of the inclusion of small custom shops in the returns for censuses prior to 1899 the data are by no means comparable.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,347	14,632	\$3,071,434	\$33,177,937	\$54,224,602	\$21,046,665
1904.....	1,076	15,032	7,634,311	23,774,239	42,054,842	18,280,603
1899.....	873	14,364	6,254,462	19,770,574	33,702,563	13,931,989
1889.....	7,931	22,672	10,908,918	24,674,225	52,970,801	28,296,576
1879.....	7,999	21,446	7,997,752	19,968,716	38,081,643	18,112,927
1869.....	7,607	23,557	7,046,207	16,068,310	32,709,981	16,641,671
1859.....	3,621	12,285	4,150,365	6,606,415	14,169,037	7,562,022
1849.....	3,615	12,958	3,154,008	4,427,006	9,935,474	5,508,468

Trunks and valises.—The establishments included in this subclass manufacture for the most part trunks of wood, leather, and canvas, and suit cases, satchels, and traveling bags of leather, leatherette, imitation leather, canvas, and fiber.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	524	11,122	\$5,537,329	\$14,629,065	\$28,027,964	\$13,398,899
1904.....	373	9,091	4,139,034	9,107,785	18,643,580	9,535,795
1899.....	312	6,964	2,777,016	5,954,718	12,423,646	6,473,928
1889.....	395	6,632	2,790,750	4,703,982	10,821,621	6,117,639
1879.....	265	4,534	1,786,586	3,910,133	7,252,470	3,342,337
1869.....	222	3,479	1,810,798	3,815,038	7,725,488	4,410,450
1859.....	154	2,197	701,982	1,408,420	2,890,469	1,482,049
1849.....	116	1,320	386,160	765,816	1,553,388	792,572

Leather goods, not specified.—The establishments included in this branch of the industry manufacture principally hand bags, belts, straps, suspender trimmings, music rolls, burnt-leather goods, razor strops, dog collars, leather garments, and similar products.

At the census of 1859, nine establishments classified under "razor strops" reported products to the value of \$56,800, and, at the census of 1849, five classified under "morocco cases" reported products to the value of \$31,200. No establishments falling within the class known as "leather goods" were reported for 1869.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	425	7,681	\$3,623,200	\$10,230,439	\$18,838,281	\$8,547,842
1905.....	423	7,785	3,137,125	9,626,614	17,655,345	3,028,731
1899.....	315	6,293	2,271,755	6,191,058	11,787,611	5,596,553
1889.....	164	2,997	1,237,587	3,324,828	6,291,507	2,966,679
1879.....	84	1,430	587,208	1,511,848	2,736,543	1,224,695

Pocketbooks.—Pocketbooks and purses, chiefly of leather, for bills and coins, ladies' pocketbook hand bags, and travelers' dressing cases are the principal products reported for establishments included in this branch.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	79	1,472	\$688,615	\$1,929,327	\$3,628,161	\$1,698,834
1904.....	46	2,291	796,985	1,926,723	3,767,446	1,840,723
1899.....	68	1,653	588,595	1,278,226	2,495,188	1,216,962
1889.....	62	1,208	491,911	968,948	2,165,462	1,196,514
1879.....	53	1,413	434,947	930,033	1,769,035	839,003
1869.....	60	733	233,258	467,922	1,108,380	640,458
1859.....	46	820	156,996	354,264	706,037	351,773
1849.....	37	770	142,356	202,775	593,550	330,772

PAPER AND PRINTING.

THE GROUP AS A WHOLE.

The table below shows the number of establishments, average number of wage earners, total wages paid,

value of products, and value added by manufacture for each of the industries included in the group "paper and printing," as reported at the census of 1909.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total.....	34,828	415,990	\$242,062,243	\$1,179,285,247	\$728,046,613
Paper: Paper and wood pulp.....	777	75,978	40,804,502	267,656,964	102,214,623
Manufactures of paper.....	1,617	65,696	25,257,704	133,630,609	63,360,435
Bags, paper.....	74	3,212	1,806,342	15,697,959	5,343,367
Boxes, fancy and paper.....	940	39,514	14,015,333	54,450,015	28,733,774
Card cutting and designing.....	68	525	237,773	1,031,392	657,279
Labels and tags.....	96	2,313	1,122,548	4,669,965	2,759,626
Paper goods, not elsewhere specified.....	403	19,211	8,168,773	53,170,564	23,921,645
Paper patterns.....	27	921	406,883	2,610,714	1,964,744
Printing and publishing.....	31,445	258,434	164,628,180	737,876,087	536,101,497
Industries related to printing and publishing.....	989	15,882	11,371,857	40,121,587	26,350,058
Engraving and diesinking.....	253	1,308	821,472	2,249,561	1,899,097
Engraving, wood.....	82	318	258,578	711,279	585,178
Photo-engraving.....	313	5,343	4,750,046	11,624,000	9,490,020
Stereotyping and electrotyping.....	174	2,850	2,312,104	6,383,694	4,618,592
Typefounding and printing materials.....	122	2,026	1,190,720	4,703,506	2,931,275
Wall paper.....	45	4,037	2,038,937	14,449,247	6,825,596

In this table the group is divided into four sub-groups, comprising, respectively, (1) the manufacture of paper and wood pulp, (2) the manufacture of articles from paper, (3) printing and publishing, and (4) industries related to printing and publishing. As industries of the second and third classes use materials provided by those of the first, and to some extent by those of the fourth, there is considerable duplication in the value of products for the group as a whole.

PAPER AND WOOD PULP.

The principal products manufactured by establishments under this classification are news, book, writing, and wrapping paper of all kinds, roofing and sheathing paper, cigarette paper, and wood pulp.

Statistics of mills making paper exclusively, of those making both paper and wood pulp, and of those making wood pulp exclusively have been compiled separately for 1909, and are given in the following table. As many paper mills use the product of pulp mills as material, there is considerable duplication in the value of products for the industry as a whole, and the relative amount of duplication has varied somewhat from census to census. Many paper mills, of course, use basic materials other than wood pulp, such as rags, straw, and fibers of various sorts. Where mills make pulp and convert it into paper, the value of products reported represents only that of the paper.

CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	777	75,978	\$40,804,502	\$165,442,341	\$267,656,964	\$102,214,623
Mills making paper exclusively.....	538	37,649	19,277,475	79,692,160	129,381,108	49,689,038
Mills making both paper and pulp.....	158	32,191	18,151,223	72,093,031	116,708,334	44,615,303
Mills making pulp exclusively.....	81	6,138	3,375,804	13,657,150	21,567,432	7,910,282

Data for the industry as a whole, as reported for each census from 1849 to 1909, inclusive, are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	777	75,978	\$40,804,502	\$165,442,341	\$267,656,964	\$102,214,623
1904.....	761	65,964	32,019,212	111,251,478	188,715,199	77,463,711
1899.....	763	49,646	20,746,426	70,530,236	127,326,162	56,795,928
1894.....	649	31,050	13,204,828	44,228,480	78,937,134	34,708,704
1879.....	742	25,631	8,970,133	34,862,132	57,366,860	22,504,728
1869.....	677	18,021	7,208,691	30,068,863	48,849,285	15,790,722
1859.....	555	10,911	2,767,212	11,602,266	21,216,802	9,614,536
1849.....	443	6,785	1,497,792	6,555,929	10,187,177	4,631,248

The output and value of the various classes of paper and of wood pulp are given for 1909 in the next table.

KIND.	Quantity (tons of 2,000 pounds).	Value. ¹
Total.....		\$267,656,964
News paper:		
In rolls for printing.....	1,091,017	42,807,064
In sheets for printing.....	84,837	4,048,496
Book paper:		
Book.....	575,616	42,846,674
Wood fiber, chief ingredient.....	512,926	37,323,029
Rags, chief ingredient.....	62,690	5,523,645
Coated.....	95,213	9,413,961
Plate, lithograph, map, woodcut, etc.....	6,498	555,352
Cover.....	17,578	1,982,853
Cardboard, bristol board, card middles, tickets, etc.....	51,449	3,352,151
Fine paper:		
Writing.....	169,125	24,966,102
All other.....	29,088	4,110,536
Wrapping paper:		
Manila (rope, lute, tag, etc.).....	73,731	6,989,436
Heavy (mili wrappers, etc.).....	108,561	4,380,794
Straw.....	32,988	870,419
Bogus or wood manila, all grades.....	367,932	19,777,707
All other.....	179,855	10,202,035
Boards:		
Wood pulp.....	71,036	2,639,466
Straw.....	171,789	3,760,851
News.....	74,606	2,215,469
All other.....	514,208	17,539,768
Other paper products:		
Tissues.....	77,745	8,553,654
Blotting.....	9,577	1,186,180
Building, roofing, asbestos, and sheathing.....	225,824	9,251,368
Hanging.....	92,158	4,421,514
Miscellaneous.....	96,577	6,869,169
Wood pulp made for sale or for consumption in mills other than where produced: ²		
Ground.....	310,747	5,649,466
Soda fiber.....	155,844	6,572,152
Sulphite fiber.....	444,256	17,935,748
All other products.....		4,738,549

¹ In addition, paper and wood pulp to the value of \$2,567,267 were made by establishments engaged primarily in the manufacture of bags, paper, boxes, fancy and paper explosives; paper goods, "not elsewhere specified;" pulp goods; roofing materials; sand and emery paper and cloth; and steam packing.

² In addition, 868,519 tons of ground wood pulp, 142,782 tons of soda fiber, and 573,376 tons of sulphite fiber were produced and used in further processes of manufacture in the mills where manufactured.

BAGS, PAPER.

All kinds of paper bags are manufactured by the establishments included under this classification.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	74	3,212	\$1,306,342	\$10,354,592	\$15,697,959	\$5,243,367
1904.....	62	2,473	930,171	6,594,976	10,085,863	3,491,837
1899.....	63	1,989	628,033	4,499,416	6,799,425	2,300,009
1894.....	56	1,200	399,714	3,167,717	5,023,703	1,856,076
1879.....	80	1,569	439,620	3,037,319	4,112,566	1,075,247
1869.....	39	444	134,932	1,053,463	1,453,963	430,500

In addition to the value given in the above table, paper bags to the value of \$658,974 were made in 1909 by establishments engaged primarily in the industries "bags, other than paper," "printing and publishing," and "paper goods, not elsewhere specified," and in other industries. A number of establishments manufacturing flour make the bags in which they ship their products and the same is true of other industries, such as "lime" and "cement," for instance. The value of these bags is not reported separately.

BOXES, FANCY AND PAPER.

The establishments in this classification manufacture a large variety of plain and metal-edged boxes, made of paper, newsboard, or cardboard, for con-

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fectionery, millinery, small cigars, cigarettes, etc. Cartons, folding boxes, mailing cases, shipping drums, charlotte-russe boxes, holders, and bonbon cups are among the articles reported. Although paper and wood pulp are the principal materials, the products also include lithographed, lacquered, and plain tin boxes, tea caddies and canisters of tin, and fancy boxes of wood covered with cretonne, silk, tapestry, and similar textiles.

Statistics for the industry were first shown separately at the census of 1849.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	949	39,514	\$14,015,383	\$25,716,241	\$54,450,015	\$28,733,774
1904.....	796	32,052	10,207,827	16,685,826	35,868,589	20,180,763
1899.....	729	27,653	8,151,625	11,765,424	27,316,317	15,550,893
1889.....	588	18,949	5,827,069	7,893,941	18,805,330	10,911,389
1879.....	369	9,678	2,373,948	3,578,827	7,865,553	4,086,726
1869.....	249	4,632	1,258,652	1,592,976	4,029,659	2,436,633
1859.....	110	1,601	368,658	467,350	1,162,777	695,427
1849.....	82	716	139,764	187,796	434,104	246,306

In addition to the products covered by the above table, boxes to the value of \$6,098,306 were reported for 1909 by establishments engaged in other industries, principally "printing and publishing," "paper and wood pulp," "labels and tags," "bags, paper," "paper goods, not elsewhere specified," and "stationery goods, not elsewhere specified," and by establishments in industries requiring large numbers of boxes or cartons for their own use, as, for example, those making women's clothing, confectionery, corsets, collars and cuffs, glass, hosiery and knit goods, matches, needles, pins, hooks and eyes, cigars and cigarettes, and toys and games.

CARD CUTTING AND DESIGNING.

This industry includes the designing and cutting of cards. Index and library cards, guides, etc., stencil cards for addressing machines, coin cards, card novelties, photograph mats and mounts, cards for the display of jewelry and samples, and lacquered cards for textile industries are among the products specified.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	68	525	\$237,775	\$374,113	\$1,031,392	\$657,279
1904.....	60	696	261,023	477,609	1,083,278	605,669
1899.....	43	325	135,139	312,760	618,488	305,728
1889.....	26	180	76,545	89,186	243,070	154,884
1879.....	9	64	18,215	15,610	51,670	36,060
1869.....	13	377	150,240	422,000	754,000	332,000
1859.....	5	184	55,776	115,845	455,700	369,555

In addition to the products covered by the above table, jewelers' and sample cards to the value of \$50,635 were reported in 1909 by establishments engaged primarily in the industries "boxes, fancy and paper", of "furnishing goods, men's", and "jewelry." Doubtless, however, a large quantity of products similar to those of establishments in this classification are

made by other establishments which were unable to segregate their value from that of other products. Changes in the classification of individual establishments were doubtless largely responsible for the decrease from 1869 to 1879.

LABELS AND TAGS.

The principal manufactures of establishments in this classification are labels for cans, bags, and boxes; tags; tickets for clothing; and checks for hotel, club, and restaurant use, etc.; but patented specialties, such as drug labels with dials to indicate the time for doses, and labels of woven cotton and silk fabrics, were also reported. Paper and cardboard are the principal materials used, but metals and other materials are used in some cases.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	96	2,313	\$1,122,548	\$1,910,339	\$4,650,965	\$2,750,626
1904.....	67	1,345	609,439	957,028	2,462,497	1,505,469
1899.....	47	754	289,273	387,517	1,104,652	717,135
1889.....	47	618	238,960	402,371	1,048,304	645,933
1879.....	19	323	149,268	492,655	865,825	373,170

In addition to the products covered by the above table labels and tags to the value of \$415,896 were reported for 1909 as made incidentally by establishments in other industries, principally "boxes, fancy and paper," "printing and publishing," and "boxes, cigar."

PAPER GOODS, NOT ELSEWHERE SPECIFIED.

Separate statistics were compiled for three branches of this industry for 1909, and are given in the following table. There is such an overlapping in the products of some of the establishments that only the combined totals are shown in most tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	403	19,211	\$8,168,773	\$31,248,919	\$55,170,564	\$23,921,645
Paper goods, not elsewhere specified.....	313	12,983	5,528,292	21,014,068	37,937,962	16,923,894
Envelopes.....	78	5,303	2,226,187	7,566,996	13,453,522	5,886,826
Cardboard, not made in paper mills.....	12	925	414,294	2,667,855	3,779,080	1,111,225

In addition to the products covered by the above table, paper goods of a similar character to the value of \$2,369,437 were reported in 1909 by establishments engaged primarily in the manufacture of paper and wood pulp, fancy and paper boxes, glass, foundry and machine-shop products, stationery goods, cigars and cigarettes, and other products. This does not include the cardboard, bristol board, card middles, tickets, etc., made in paper mills, the value of which was reported as \$3,352,151.

Paper goods, not elsewhere specified.—Establishments classified under "paper goods, not elsewhere specified," make crêpe and surface-coated paper; glazed, waxed, oiled, and corrugated paper; tar, fly, toilet, and shelf paper; paper lace; cigarette paper; cut and fancy paper for box and book covers; paper printed in imitation of wood and of stained glass; playing cards; papier-mâché; confetti; doilies; folding cases; bottle caps; mailing and shipping tubes; and many other articles.

Table 214

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	313	12,983	\$5,528,292	\$21,014,068	\$37,937,962	\$16,923,894
1904.....	232	9,842	3,712,537	12,743,559	22,159,202	9,415,043
1899.....	190	6,117	2,242,702	9,819,820	16,785,269	6,965,449
1889.....	66	1,519	611,353	2,627,454	4,179,235	1,561,781

Envelopes.—Establishments under this subclass manufacture a great variety of machine-made envelopes, including those with metal clasps and patented devices, for letters, circulars, pamphlets, and other matter, for filing systems, and for numerous other purposes. The manufacture of *papeterie* and paper boxes, as well as printing, is frequently carried on in connection with envelope making.

The manufacture of envelopes in this country is said to have begun about 1840. The census of 1849 was the first at which statistics were presented, two establishments reporting with a product valued at \$45,000. Data for each census from 1859 to 1909, inclusive, are given in the following table:

Table 215

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	78	5,303	\$2,226,187	\$7,566,996	\$13,453,522	\$5,886,526
1904.....	72	4,298	1,629,511	5,974,948	10,222,356	4,247,418
1899.....	51	2,984	1,150,463	3,665,276	6,299,330	2,634,055
1889.....	41	2,325	812,544	2,530,793	4,855,680	2,324,857
1879.....	12	1,204	344,143	2,346,500	3,000,617	654,117
1869.....	22	910	316,158	1,288,139	2,277,541	989,402
1859.....	16	432	117,180	433,637	763,700	330,063

Cardboard, not made in paper mills.—Establishments included in this subclass are engaged principally in

Table 218

CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	31,445	258,434	\$184,628,180	\$201,774,590	\$737,876,087	\$536,101,497
Printing and publishing, newspapers and periodicals.....	18,871	108,672	74,401,593	97,359,605	496,691,122	308,730,517
Printing and publishing, book and job.....	10,708	108,687	66,521,316	77,650,547	250,623,534	173,275,387
Printing and publishing, music.....	178	738	438,928	980,252	5,575,963	4,589,701
Lithographing.....	318	15,073	10,202,184	11,930,731	34,193,233	22,178,502
Bookbinding and blank-book making.....	1,054	10,938	9,676,270	11,829,966	31,742,416	20,112,510
Engraving, steel and copper plate, including plate printing.....	316	5,326	3,387,889	2,217,599	9,432,479	7,214,880

There are many establishments in other industries that incidentally do printing, lithographing, etc., chiefly for themselves but sometimes for others. The

coating and lining box-boards and other paper boards for cards, boxes, picture mats, and the like. The output of cardboard in paper mills is much greater than that in the establishments covered by this classification. The statistics for 1879 to 1909 follow:

Table 216

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	12	925	\$414,294	\$2,667,855	\$3,779,060	\$1,111,225
1904.....	4	556	234,490	925,964	1,564,303	637,539
1899.....	5	626	264,427	705,527	1,270,416	564,889
1889.....	5	206	104,772	701,704	1,070,893	369,041
1879.....	8	345	116,410	637,971	939,145	321,174

At the census of 1859 six establishments in this industry reported the employment of 24 wage earners to whom they paid \$7,620 in wages; the cost of materials was \$6,136, and the value of products was \$17,246. The next separate presentation was at the census of 1879.

PAPER PATTERNS.

The principal manufactures of establishments included under this classification are cut and stamped paper patterns for garments, embroidery, etc.

Table 217

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	27	921	\$406,883	\$645,970	\$2,610,714	\$1,964,744
1904.....	26	1,082	444,659	337,022	2,266,125	1,928,103
1899.....	15	835	262,259	124,804	562,353	437,549
1889.....	27	409	106,526	85,260	377,456	292,187
1879.....	4	97	40,538	44,000	512,550	468,550

In 1909, in addition to the products covered by the above table, paper patterns valued at \$907,433 were made, principally by printing and publishing establishments, as an incidental product.

PRINTING AND PUBLISHING.

Separate statistics were compiled for six branches of this industry for 1909 and are given in the following table. These branches are so closely allied, and there is so much overlapping, that only the combined totals are shown in most tables.

principal industries in which such work is incidentally done are "boxes, fancy and paper," "stationery goods, not elsewhere specified," and "cash registers

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and calculating machines," others being "bags, paper," "blacking and cleansing and polishing preparations," boxes, cigar," "jewelry," "labels and tags," "paper goods, not elsewhere specified," "photo-engraving," "signs and advertising novelties," "stereotyping and electrotyping," and "toys and games." The value of the printing and similar work reported by such establishments in 1909 was \$2,942,282, which is not included in the above table. In many cases, however, the value of such work done by establishments assigned to other industries was not reported separately, but separate reports were made for the printing departments of mercantile establishments doing a large mail-order business, and for those of large manufacturing concerns engaged primarily in the manufacture of other products, and statistics for these are included. Such establishments do not sell their printed products—stationery, catalogues, pamphlets, circulars, and other advertising matter—but use them in their regular business.

Considerable duplication appears in the total value of products of the industry as a whole, and of some of the branches.

Printing and publishing, newspapers and periodicals.—Statistics as to periodicals published by establishments under this subclassification in 1909 are shown in Table 221. This branch of the industry includes the printing of railway guides and other directories issued at frequent intervals, but not of theater programs or catalogues. The printing of "patent insides" and "ready prints" is included. All establishments publishing, or printing and publishing, newspapers are classified under this heading, however large the value of their job printing or other printing business. Establishments which print periodicals for others to publish are, however, included with "book and job printing" establishments.

Statistics for 1909 for establishments in this branch of the industry which did their own printing, and for such as hired their printing done in other plants, respectively, are presented in the following table:

CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	18,871	108,672	\$74,401,593	\$97,359,605	\$406,090,122	\$308,730,517
Newspaper and periodical publishing and printing	15,533	108,137	74,013,775	89,403,701	340,176,310	250,772,609
Newspaper and periodical publishing, without printing	3,338	535	387,818	7,955,904	65,913,812	57,957,908

The great body of newspaper and periodical establishments do their own composition and presswork. The value of products of the plants hiring such work done outside, although large, was only 16.2 per cent of the total.

Data for "newspapers and periodicals" were not shown separately until 1869. At the census of 1879 a special report on this branch of the printing and publishing industry was made, but general statistics sufficient for a comparative statement were not published. Statistics for the census of 1869 and for each census from 1889 to 1909, inclusive, are given in the following table:

Year	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	18,871	108,672	\$74,401,593	\$97,359,605	\$406,090,122	\$308,730,517
1904	18,033	96,957	59,821,488	70,354,474	309,301,554	238,947,380
1899	15,335	94,604	50,333,051	50,214,904	222,983,599	172,768,665
1889	12,262	85,975	50,824,359	38,955,322	179,839,759	140,904,428
1869	1,199	13,130	8,188,515	8,709,632	25,333,029	16,683,397

The number of newspapers and periodicals, classified according to period of issue, character, and language, together with the aggregate circulation per issue, is given for 1909 in Table 221.

PERIOD OF ISSUE, CHARACTER, AND LANGUAGE OF NEWSPAPERS AND PERIODICALS.	Number.	Aggregate circulation per issue.
All kinds	22,141
Classified according to period of issue:		
Daily (exclusive of Sunday)	2,600	24,211,977
Sunday	520	13,347,282
Semiweekly and triweekly	708	2,648,308
Weekly	15,097	49,322,965
Monthly	2,491	63,280,535
All other	725	20,151,973
Classified according to character:		
News, politics, and family reading	17,698	61,074,990
Religious	1,251	29,533,777
Agricultural, horticultural, dairy, stock raising, etc.	316	11,327,253
Commerce, finance, insurance, railroads, etc.	264	1,411,788
Trade journals	685	3,572,441
General literature, including monthly and quarterly magazines	340	31,322,035
Medicine and surgery	197	931,584
Law	56	151,346
Science and mechanics	139	1,421,955
Fraternal organizations	419	6,982,235
Education and history	202	1,879,383
Society, art, music, fashion, etc.	164	13,445,661
College and school periodicals	271	330,705
Miscellaneous	139	1,087,937
Classified according to language:		
English	20,744	155,432,243
Foreign (including foreign and English)	1,397	9,030,797
French	39	446,739
German	692	4,434,146
Italian	104	500,475
Scandinavian	161	1,118,601
Letto Slavic	169	917,649
All other	232	1,613,187

Printing and publishing, book and job.—Some establishments included in this subclassification both print and publish books and pamphlets; others publish but do not print them; others do no publishing, but print

books, etc., for publishers and do miscellaneous jobs, such as the printing of posters, letterheads, billheads, catalogues, cards, circulars, pamphlets, etc.; and still others do linotype work or typesetting exclusively. The statistics for establishments of these several classes, for 1909, are given in the following table:

Table 222

ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	10,708	108,687	\$66,521,316	\$77,650,547	\$250,925,934	\$173,275,387
Job printing.....	9,721	99,122	60,596,553	68,074,849	198,006,576	129,931,727
Book publishing, without printing.....	666	423	316,219	3,327,461	32,859,180	29,531,719
Book publishing and printing.....	163	7,727	4,353,839	6,019,409	17,338,734	11,319,325
Linotype work, typesetting, etc....	158	1,415	1,254,705	228,825	2,721,444	2,492,616

There is much duplication in the total value of products for the four classes of establishments combined. Job printing is also done to a great extent by establishments assigned to the newspaper and periodical branch of the industry.

The statistics for "printing and publishing, book and job," were first shown separately at the census of 1869; these, with the figures for each census since then to 1909, inclusive, are given in the following table:

Table 223

Year	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	10,708	108,687	\$66,521,316	\$77,650,547	\$250,925,934	\$173,275,387
1904.....	8,244	87,746	48,720,854	52,575,110	182,611,720	130,036,610
1899.....	6,919	67,610	33,541,701	36,191,582	121,798,476	85,606,894
1889.....	4,125	50,399	27,762,177	29,502,178	93,909,432	64,407,254
1879.....	3,463	58,506	30,541,657	32,660,395	90,970,341	58,309,946
1869.....	960	17,613	10,626,841	15,890,613	41,075,971	25,185,358

The number of the several classes of books and pamphlets reported as "published" in 1909 is shown in Table 224. Many books and pamphlets issued by business houses, societies and organizations, by public authorities, and others are not here included. The statistics represent essentially the business of what are commonly understood as book publishers.

Table 224

CHARACTER OF BOOKS AND PAMPHLETS.	Titles or editions.	Volumes.	Copies.
Total number published	46,739	54,620	161,361,844
Biography and correspondence.....	554	616	657,464
Description, geography, and travel.....	847	952	4,540,647
Domestic and rural.....	330	356	2,023,193
Education.....	10,390	12,159	41,636,847
Fiction.....	14,606	15,772	46,942,399
Fine arts, including illustrated gift books.....	541	587	2,549,371
History.....	613	954	2,923,187
Humor and satire.....	208	211	885,262
Juvenile.....	4,167	4,202	10,154,030
Law.....	535	1,496,194	862
Literature and collected works.....	2,047	3,841	5,037,972
Medicine and hygiene.....	681	738	1,519,480
Philosophy.....	222	252	265,077
Physical and mathematical science.....	291	307	356,413
Poetry and the drama.....	1,387	1,574	1,950,824
Political and social science.....	658	659	1,562,429
Scientific and similar associations.....	1,082	1,141	1,258,562
Sports and amusements.....	412	423	2,430,674
Theosophy and religion.....	5,096	6,539	23,608,230
Useful arts.....	512	538	1,104,599
Works of reference.....	1,560	1,927	7,799,530

Printing and publishing, music.—The principal products of the establishments in this subclass are sheet music and books of music, but no establishment is included that does not itself publish the music. Plants printing music exclusively for others are included under book and job printing.

The greater number of publishers of music had their printing and presswork done by others, as is shown by the statistics in the following table relating to 1909:

Table 225

CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	178	738	\$438,928	\$986,202	\$5,575,903	\$4,589,701
Music publishing, without printing.....	138	7	2,198	383,953	3,794,930	3,410,977
Music publishing and printing.....	40	731	436,730	602,249	1,780,973	1,178,724

Establishments in the newspaper and periodical branch of the industry reported the printing and publishing of a considerable quantity of music, the value of which is not included in the above table.

At the census of 1859 two establishments were reported as engaged in printing and publishing music. After that no separate statistics were given for this branch of the industry until the census of 1889.

Table 226

Year	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	178	738	\$438,928	\$986,202	\$5,575,903	\$4,589,701
1904.....	145	577	340,176	541,220	4,147,703	3,606,563
1899.....	87	778	375,202	449,674	2,272,385	1,822,711
1889.....	79	462	223,783	401,415	1,683,333	1,281,918

Lithographing.—This subclass includes establishments producing prints from designs inked upon stone or certain metals. The products include calendars, bank notes, commercial and bank forms, fashion plates, labels, maps, picture post cards, religious cards and mottoes, show cards, lithometal novelties, and others. The making of designs and the preparation of lithograph plates of stone and metal, to be used by others in printing, are often included.

Table 227

Year	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	318	15,073	\$10,262,184	\$11,920,731	\$34,109,233	\$22,178,502
1904.....	248	12,614	8,198,676	8,349,823	25,245,266	16,895,443
1899.....	293	12,994	6,882,168	7,886,045	22,240,679	14,374,634
1889.....	219	9,656	5,855,330	6,265,464	17,968,157	11,722,663
1879.....	167	4,322	2,307,302	2,755,264	6,912,338	4,177,874
1869.....	91	1,399	857,732	735,510	2,515,684	1,779,874
1859.....	53	785	338,968	229,206	848,230	619,624
1849.....	11	162	51,288	49,650	136,000	86,350

Bookbinding and blank-book making.—The principal products of establishments in this subclassification are ledgers, account books, pass books; receipts, orders,

checks, etc., usually bound into books; loose-leaf devices and binders; indexes; etc. The binding of books and pamphlets for the trade is an important branch of the business. Many establishments assigned to other branches of the printing industry do more or less work of the same character as those assigned to this branch.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,054	19,938	\$9,676,270	\$11,629,906	\$31,742,416	\$20,112,510
1904.....	908	17,713	7,886,945	9,139,937	25,223,650	16,083,713
1899.....	954	15,971	6,671,666	7,702,543	20,790,853	13,038,315
1889.....	865	12,473	5,508,483	6,007,417	17,097,780	11,000,363
1879.....	588	10,612	3,927,349	5,195,771	11,976,764	6,780,993
1869.....	500	7,697	3,095,821	8,026,870	14,077,399	6,050,439
1859.....	271	4,787	1,050,346	1,554,982	3,733,180	2,178,198
1849.....	235	3,468	901,404	1,560,330	3,225,678	1,653,348

Engraving, steel and copper plate, including plate printing.—Establishments assigned to this branch of the industry engrave steel and copper plates for use by others in printing, or engrave such plates and themselves make prints from them. The products include engraved stationery, visiting cards, invitations, etc.; maps, art engravings, etchings, book illustrations, and other illustrations of similar character. The industry is distinguished from that of "engraving and diesinking" in that the plates engraved in this industry are in all cases intended for use in printing. The statistics for this branch of the printing and publishing industry for each census from 1879 to 1909 are shown in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	316	5,326	\$3,387,889	\$2,217,599	\$9,432,479	\$7,214,580
1904.....	215	3,580	2,227,850	1,553,618	5,943,089	4,389,402
1899.....	286	3,303	2,012,327	1,209,536	5,100,662	3,891,126
1889.....	134	2,296	1,576,405	742,765	3,347,804	2,605,039
1879.....	55	1,916	1,951,745	648,994	2,998,616	2,349,622

ENGRAVING AND DIESINKING.

Establishments included in this classification are engaged in engraving and etching on metals for purposes other than printing. The work is frequently done on materials furnished by others. Many different classes of articles are engraved, chased, or etched—among others, name plates, watchcases, fobs, and medals. Steel and brass dies for embossing and stamping are also manufactured.

It is probable that the figures for this industry for 1869 and 1889 are incomparable with those for other censuses by reason of differences in the classification of certain establishments.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	253	1,308	\$821,472	\$350,764	\$2,249,861	\$1,899,097
1904.....	305	1,573	1,032,232	376,409	2,422,487	2,046,078
1899.....	277	964	543,094	203,046	1,468,202	1,265,156
1889.....	382	1,168	696,651	434,606	2,187,157	1,752,651
1879.....	246	852	419,646	262,828	1,180,165	917,337
1869.....	157	1,407	1,022,090	452,072	2,093,482	1,641,410
1859.....	191	724	330,524	157,171	829,140	671,969
1849.....	112	480	227,776	130,714	666,005	435,291

In addition to the products covered by the above table for 1909, engraving and diesinking to the value of \$112,694 was reported by establishments assigned to other industries, such as "foundry and machine-shop products," "photographic apparatus and materials," "hand stamps and stencils and brands," "jewelry," and "gas and electric fixtures and lamps and reflectors." Beyond question, however, a great deal of engraving is done by other establishments as incidental to their business, and is not reported separately.

ENGRAVING, WOOD.

The principal products of establishments under this classification are woodcuts for use in printing. Statistics were first reported separately in 1879.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	82	318	\$258,578	\$126,101	\$711,279	\$585,178
1904.....	114	338	245,032	60,283	647,909	587,626
1899.....	144	336	205,757	63,097	613,936	550,929
1889.....	285	945	600,453	157,656	1,555,418	1,397,762
1879.....	167	509	333,590	68,605	734,728	666,123

The decreases from 1889 to 1899 are attributable to changes in the classification of individual establishments and to the substitution of photo-engraving and other kinds of engraving for wood engraving.

In addition to the products covered by the table, woodcuts to the value of \$17,778 were reported for 1909 by establishments engaged primarily in stereotyping and electrotyping and photo-engraving. Woodcuts were also made to some extent by printing establishments, but the value of these was not reported separately.

PHOTO-ENGRAVING.

Establishments included under this classification manufacture photo-engraved plates for printing. The photographic process is now by far the most common method of reproducing drawings, photographs, maps, and illustrations of all sorts. The establishments assigned to this classification do not ordinarily print from the plates which they make, but prepare them for printing by other concerns. A

variety of different processes are used for making the plates. Some establishments make a specialty of the reproduction of colored work by the photographic method.

The designation of the industry at the census of 1889 was "photo-lithographing and engraving," and at the censuses of 1899 and 1904 "photo-lithographing and photo-engraving," but the scope was the same at these censuses as at the census of 1909. The statistics for the years 1889 to 1909, inclusive, are shown below:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	313	5,343	\$4,750,046	\$2,133,980	\$11,624,060	\$9,490,020
1904.....	223	3,876	2,916,073	1,303,147	7,268,262	5,965,115
1899.....	203	2,691	1,749,578	725,069	4,190,062	3,464,933
1889.....	89	1,145	760,619	541,395	2,071,580	1,530,185

In addition to the value of products for 1909, shown in the table, photo-engraving to the value of \$205,203 was reported in 1909 by establishments assigned to other industries, principally "stereotyping and electrotyping" and "signs and advertising novelties." Many concerns in the printing industry, including, among others, periodical publishers, do photo-engraving work in connection with their general printing business, but they did not report the value of such work separately.

STEREOTYPING AND ELECTROTYPING.

A large part of the printing of periodicals and books at the present time is done, not directly from type, but from plates prepared from the type by the stereotype or electrotype process. Establishments engaged primarily in making stereotype and electrotype plates for printing are included in the present classification. These establishments do not themselves do printing. Data for each census from 1859 to 1909 are shown in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	174	2,850	\$2,312,104	\$1,765,102	\$6,353,694	\$4,618,592
1904.....	146	2,679	1,993,067	1,032,063	5,095,338	3,973,285
1899.....	140	2,408	1,458,977	768,693	3,772,025	3,005,422
1889.....	81	1,259	823,885	500,744	2,183,909	1,683,165
1879.....	45	642	312,203	200,491	724,689	524,193
1869.....	36	766	446,532	220,774	1,075,050	854,306
1859.....	41	305	120,540	60,507	286,300	225,793

In addition to the value of products shown for 1909 stereotype and electrotype work to the value of \$108,383 was reported by establishments in other industries, principally in "photo-engraving," "type founding and printing materials," and "printing and publishing." A great many printing establishments, however, make stereotype and electrotype plates for their own use.

TYPE FOUNDING AND PRINTING MATERIALS.

The manufacture of printing materials is so closely associated with type founding, and there is so much overlapping between these two branches that the statistics are combined in most tables of this report. The following table presents statistics for the two branches, however, for 1909, and gives the combined totals:

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	122	2,026	\$1,190,720	\$1,772,231	\$4,703,506	\$2,931,275
Type.....	29	1,491	835,882	1,011,345	2,721,090	1,709,745
Printing materials....	93	535	354,838	760,886	1,982,416	1,221,530

In addition to the products covered by the above table, type founding and the manufacture of printing materials to the value of \$85,207 were reported at the census of 1909 by establishments engaged primarily in the manufacture of other products, principally "foundry and machine-shop products," and in "stereotyping and electrotyping" and "printing and publishing."

Type founding.—Printer's type and type for type-writing machines are the principal products of establishments included under this subclassification. In 1849 the classification was "type and stereotype," and in 1859 "type and stereotype founding," and these statistics are not strictly comparable with those for later censuses.

The statistics are given in the following table for each census from 1869 to 1909, inclusive. The introduction of typesetting machines which cast the type directly has checked the development of the industry and is responsible for the decrease shown at the last three censuses.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	29	1,491	\$835,882	\$1,011,345	\$2,721,090	\$1,709,745
1904.....	21	1,446	883,295	749,170	2,727,759	1,981,583
1901.....	22	1,424	803,470	863,689	2,842,384	1,978,695
1899.....	38	1,950	1,121,511	1,434,062	3,916,964	2,482,812
1889.....	48	1,986	958,693	690,743	4,390,298	1,699,550
1879.....	31	1,331	729,105	819,938	2,150,001	1,360,063

Printing materials.—Establishments included under this subclassification manufacture principally printer's rules, sticks, chases, quoins, galleys, rollers, blocks, and blankets.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	93	535	\$354,838	\$760,886	\$1,982,416	\$1,221,530
1904.....	77	357	239,636	372,480	1,207,163	834,683
1899.....	70	500	222,799	406,357	1,088,432	682,075
1889.....	64	715	338,096	567,638	1,459,434	891,796
1879.....	27	191	98,878	190,353	421,316	330,963

WALL PAPER.

This classification includes statistics for establishments engaged in the designing of patterns and the printing of paper used to cover interior walls. The paper itself is made in paper mills, and the production for the census year 1909 is designated as "hanging paper" and the total given under "other paper products" in Table 208.

The statistics for the industry from 1849 to 1909, inclusive, are shown in Table 237.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	45	4,037	\$2,038,937	\$7,623,351	\$14,449,247	\$6,825,896
1904.....	44	3,913	1,868,213	6,658,165	12,636,580	5,978,415
1899.....	51	4,172	2,074,138	6,072,899	10,663,209	4,590,400
1889.....	27	2,584	1,172,154	3,572,027	7,431,726	3,859,699
1879.....	25	2,487	874,921	3,629,222	6,267,303	2,638,081
1869.....	15	869	329,267	1,315,106	2,165,510	850,404
1859.....	26	1,294	328,224	1,153,670	2,148,800	995,130
1849.....	6	93	25,872	52,335	107,040	54,705

LIQUORS AND BEVERAGES.

THE GROUP AS A WHOLE.

The following table shows the number of establishments, average number of wage earners, total wages paid, value of products, and value added by manufacture for each of the industries included in this general group, as reported at the census of 1909.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total.....	7,347	77,827	\$53,501,779	\$274,311,051	\$488,183,164
Liquors, distilled.....	613	6,430	3,074,395	204,699,412	168,722,519
Liquors, malt.....	1,414	54,579	41,205,761	374,730,098	278,134,460
Liquors, vinous.....	290	1,911	971,502	13,120,846	6,495,313
Malt.....	114	1,760	1,248,067	38,252,233	7,787,634
Mineral and soda waters.....	4,916	13,147	6,902,054	43,508,464	27,042,938

The quantities of the distilled and fermented liquors, which are the chief products of this group, are not given here, as they are presented in detail in the annual reports of the Commissioner of Internal Revenue.

LIQUORS, DISTILLED.

This classification includes establishments engaged in distilling whisky, brandy, rum, gin, and alcohol. The by-products include dried distillers' grain, bran, fusel oil, and slop or refuse.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	613	6,430	\$3,074,395	\$35,976,893	\$204,699,412	\$168,722,519
1904.....	305	5,355	2,657,025	25,625,858	131,269,886	105,644,028
1899.....	965	3,720	1,732,798	15,145,363	96,793,681	81,648,315
1889.....	440	4,762	2,246,064	14,909,173	104,197,869	89,258,696
1879.....	844	6,502	2,663,967	27,744,245	41,063,663	13,319,418
1869.....	719	5,131	2,019,810	19,729,432	36,191,133	16,461,701
1859.....	1,193	5,416	1,753,445	18,330,713	26,768,225	8,437,512
1849.....	968	4,008	1,089,864	10,543,201	15,770,240	5,227,039

The figures shown in the table for 1909 do not cover the distilled liquors, valued at \$1,095,560, which were reported by establishments engaged primarily in other classes of manufacture; the wine manufacturers of California, especially, reported a large quantity of fruit brandies.

The value of products given in the table is greatly affected by internal-revenue taxes, and the variations

in the tax rate from time to time must be taken into account in considering the statistics.

The large increase in value of products from 1904 to 1909 is due, in part, to the fact that in 1909, in order to secure uniformity in the statistics, the internal-revenue tax was included in the value of products, whether paid by the manufacturer at the time the report was made, or whether the liquors were still held in bond pending the payment of the tax, whereas in 1904 and at prior censuses this tax was included only when it was actually paid and reported by the manufacturer. At censuses prior to that of 1909 the internal-revenue tax was not reported separately, but was included with miscellaneous expenses, such as advertising, insurance, and repairs. For this reason it is impossible to determine how much of the increase in value of products from 1904 to 1909 is due to the uniform inclusion of the internal-revenue tax for 1909.

The number of distilleries operated during the year ending June 30, 1909, as reported by the Commissioner of Internal Revenue, was 1,292. This number is more than twice that reported by the census for the calendar year 1909, the difference being due to the fact that the Census Bureau does not canvass small establishments—that is, those having an annual product valued at less than \$500—and does not count as distilleries those establishments which are engaged primarily in manufacturing other products, such as vinous liquors, or vinegar and cider, and which report distilled spirits only as a by-product.

LIQUORS, MALT.

The principal product included under this classification is lager beer. Less important products are ale, stout, porter, steam beer, weiss beer, bock beer, temperance beer, malt, tonics, and sake. Nearly all breweries reported the sale of sprouts and malted grain—by-products which are used for stock feed. Establishments doing nothing but bottling were not canvassed.

Statistics for each census from 1849 to 1909, inclusive, are presented in the following table. Variations in the rate of internal-revenue tax on beer have affected somewhat the movement of the value of products. The expenses reported by brewers always include the internal-revenue tax on their entire output.

Table 240

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,414	54,579	\$41,205,761	\$96,595,636	\$374,730,096	\$278,134,460
1904.....	1,530	48,137	34,540,497	74,906,920	298,346,482	223,439,562
1899.....	1,507	39,459	25,776,468	51,598,247	236,914,914	185,316,667
1889.....	1,248	30,257	20,713,383	64,003,347	182,731,622	118,728,275
1879.....	2,191	26,220	12,193,053	56,836,500	101,058,385	44,221,835
1869.....	1,972	12,443	6,758,602	28,177,684	55,706,643	27,528,959
1859.....	1,269	6,433	2,305,970	9,997,293	21,310,933	11,313,640
1849.....	431	2,347	654,144	3,055,266	5,728,568	2,673,302

Many breweries manufacture ice for their own use, and 205 of those reporting for 1909 sold ice to the value of \$3,130,639.

LIQUORS, VINOUS.

This industry includes the manufacture of various kinds of wines and champagnes. It is practically confined to a few states, California alone furnishing 68.1 per cent of the total value of products for the United States in 1909. The internal-revenue tax on such vinous liquors as are taxable is included in the statistics of 1909 and in those for some of the previous censuses, but does not affect the figures materially.

Table 241

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	290	1,911	\$971,502	\$6,625,533	\$13,120,846	\$6,495,313
1904.....	435	1,913	1,001,554	5,663,394	11,097,833	5,404,459
1899.....	359	1,163	446,035	3,689,330	6,547,310	2,857,980
1889.....	236	1,048	299,453	1,318,012	2,846,148	1,528,136
1879.....	117	967	216,559	1,340,629	2,169,193	628,564
1869.....	338	1,486	230,650	1,263,172	2,225,238	1,022,066
1849.....	32	106	48,208	196,075	400,791	204,716

¹ Liquors, wine.

Of the 290 wineries reporting for 1909, 91 reported a by-product of distilled liquor (chiefly brandy), the total value amounting to \$1,089,675. This amount is included in the value of products shown in Table 241 for 1909. The figures in the table do not, however, include the wine and grape juice produced on farms. The value of this farm product was not reported, but the quantity reported for 1909 was 18,636,225 gallons.

MALT.

This classification includes establishments producing malt, chiefly from barley, but in some cases from corn and other cereals. Feed sprouts, screenings, malt dust, and skimmings are sold as by-products.

It is likely that the great increase in the malt industry from 1849 to 1859 was due to the rapid increase in the brewing of malt liquors and also to the increas-

ing practice of making malt in separate establishments instead of in the breweries. The decline in the industry from 1889 to 1899 may have been due to an increased tendency of the brewers to make their own malt.

Table 242

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	114	1,760	\$1,348,067	\$30,464,299	\$38,252,233	\$7,787,934
1904.....	141	2,054	1,456,908	23,620,964	30,258,964	6,686,000
1899.....	146	1,990	1,182,513	14,816,741	19,373,600	4,536,559
1889.....	202	3,328	1,590,175	17,100,074	23,442,559	6,342,485
1879.....	216	2,332	1,004,548	14,321,423	18,273,102	3,651,079
1869.....	208	1,640	700,624	9,002,094	12,016,515	3,014,421
1859.....	65	589	189,800	2,365,290	3,228,857	663,558
1849.....	11	73	18,276	363,660	471,035	107,375

In 1909, in addition to the products covered by the table, malt valued at \$1,004,437 was reported as made for sale by establishments engaged primarily in brewing beer.

MINERAL AND SODA WATERS.

Under this classification are included establishments which manufacture, or manufacture and bottle, all kinds of carbonated beverages and so-called soft drinks. Some of the principal products are soda water, ginger ale, seltzer, artificial mineral waters, grape juice, celery phosphate, root beer, orangeade, and fruit phosphates. Many of the manufacturers make beverages according to secret formulas and sell them under trade-mark names. Some of these beverages contain a small percentage of alcohol, but if the percentage is less than 3, the beverage is exempt from internal-revenue tax.

The industry first appeared in census statistics at the census of 1849.

Table 243

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	4,916	13,147	\$6,902,054	\$16,465,526	\$43,508,464	\$27,042,938
1904.....	3,468	10,879	5,487,901	10,001,882	30,250,650	20,248,768
1899.....	2,763	8,788	4,079,770	8,565,351	23,268,876	14,703,525
1889.....	1,377	5,919	2,780,163	4,562,803	14,353,745	9,790,942
1879.....	512	2,726	1,065,633	2,117,764	4,741,709	2,623,945
1869.....	367	2,383	923,703	1,687,931	4,222,278	2,534,347
1859 ¹	123	727	241,292	454,458	1,415,420	960,962
1849 ²	64	589	153,916	313,631	760,489	446,858

¹ "Mineral water."

² "Mineral water and pop."

In addition to the products covered by the table for 1909, mineral and soda waters to the value of \$1,267,885 were reported by establishments engaged primarily in other branches of manufacture.

MANUFACTURES.

CHEMICALS AND ALLIED PRODUCTS.

THE GROUP AS A WHOLE.

The group "chemicals and allied products" includes not only the industries whose products are chemicals in the ordinary sense of that term, but also the industries which employ to a large extent chemical processes in manufacture. The group is a very complicated one and the various products differ most widely in character and in the use to which they are put. There

is considerable duplication in the combined value of products for the group, due to the use of the products of certain industries as materials for others.

The following table shows the number of establishments, average number of wage earners, total wages paid, value of products, and value added by manufacture for each of the industries included in this general group, as reported for the census of 1909.

Table 244	INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
	Total.....	11,745	237,983	\$113,548,929	\$1,430,901,954	\$563,882,428
	Axle grease.....	38	170	83,318	1,480,811	652,698
	Baking powders and yeast.....	144	2,155	1,045,544	20,774,588	11,436,603
	Bleacking and cleansing and polishing preparations.....	501	2,417	1,146,112	14,679,120	7,716,723
	Bluing.....	82	313	113,812	1,074,231	580,489
	Bone, carbon, and lamp black.....	27	228	149,327	1,093,494	648,886
	Calcium lights.....	10	15	11,422	52,216	28,323
	Candles.....	16	539	246,200	3,130,521	954,419
	Chemicals.....	349	23,714	14,084,501	117,688,887	53,567,351
	Drug grinding.....	25	922	464,128	6,006,999	2,553,279
	Dyestuffs and extracts.....	107	2,397	1,291,379	15,954,574	6,270,923
	Explosives.....	85	6,274	4,304,370	40,139,661	17,328,113
	Fertilizers.....	550	18,310	7,477,179	103,060,213	34,438,293
	Gas, illuminating and heating.....	1,295	37,215	20,930,697	186,814,371	114,386,527
	Glue.....	65	3,265	1,570,643	13,717,820	6,193,291
	Grease and tallow.....	353	4,357	2,629,239	23,419,395	7,875,956
	Ink, printing.....	71	1,121	772,528	8,865,504	4,690,587
	Ink, writing.....	47	505	203,155	2,505,414	1,427,406
	Oil, castor.....	4	54	32,174	904,825	243,647
	Oil, cottonseed, and cake.....	817	17,071	5,835,249	147,867,894	28,034,419
	Oil, essential.....	68	290	122,990	1,737,234	481,756
	Oil, linseed.....	29	1,452	892,612	36,738,604	5,704,118
	Oil, not elsewhere specified.....	189	1,715	1,060,366	30,865,122	9,458,161
	Paint and varnish.....	791	14,240	8,270,713	124,839,422	45,873,867
	Patent medicines and compounds and druggists' preparations.....	3,642	22,895	9,896,674	141,941,602	91,565,937
	Petroleum, refining.....	147	13,929	9,830,078	236,997,659	37,724,257
	Salt.....	124	4,936	2,531,446	11,327,834	6,124,480
	Soap.....	420	12,999	6,226,882	111,357,777	39,178,359
	Sulphuric, nitric, and mixed acids.....	42	2,252	1,494,894	9,884,057	4,498,229
	Turpentine and rosin.....	1,585	39,511	9,383,359	25,295,017	20,384,179
	Wood distillation, not including turpentine and rosin.....	120	2,721	1,462,848	9,736,998	3,861,147

AXLE GREASE.

This classification includes establishments engaged primarily in the manufacture of axle grease and of other lubricating compounds for use on the axles of automobiles, carriages, wagons, and railway cars.

The statistics for "axle grease" were first reported separately at the census of 1879.

Table 245	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	33	176	\$83,319	\$323,113	\$1,450,811	\$652,698
1904.....	25	119	61,593	363,074	879,483	511,409
1899.....	29	127	55,238	360,411	718,114	357,703
1890.....	31	126	61,642	401,897	846,459	444,562
1879.....	16	72	41,407	269,152	365,043	155,896

In addition to the products covered by Table 245, axle grease to the value of \$490,363 was made in

1909 by establishments engaged primarily in the manufacture of other products, principally lead pencils, paint and varnish, and grease and tallow. The lubricating and other greases reported, to the value of \$1,567,647, by establishments refining petroleum also included some axle grease.

The decreases from 1889 to 1899 shown in the table were due doubtless to a change in the classification of individual establishments by reason of a change in the character of the chief product.

BAKING POWDERS AND YEAST.

The products of the establishments in this classification include various compounds for raising bread, cake, and pastry, together with dry, compressed, and liquid yeast.

Statistics for the industry from 1859 to 1909 are given in Table 246.

MANUFACTURES.

Table 251

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	27	228	\$149,327	\$444,608	\$1,093,494	\$648,886
1904.....	25	200	105,159	203,386	647,717	444,321
1899.....	15	85	46,107	105,712	359,787	254,075
1889.....	24	323	152,041	485,867	1,031,030	545,163
1879.....	18	224	80,249	440,068	661,376	221,308
1869.....	9	56	20,734	107,555	193,800	86,235
1859.....	24	168	52,176	179,288	376,710	197,422
1849.....	5	24	7,056	20,925	42,250	21,325

In addition, bone black to the value of \$961,995 was made in 1909 by establishments engaged primarily in the manufacture of fertilizers and of glue; and manufacturers of paint and varnish reported lampblack and other blacks made for sale as pigments, to the value of \$105,063.

It is probable that the decreases shown for 1899 as compared with 1889 are due to differing classifications of establishments reporting. The same reason may be assigned for the variations shown in the statistics for some of the other censuses.

CALCIUM LIGHTS.

Establishments in this classification manufacture principally stereopticon lime cylinders and oxygen gas. The gas is compressed into tanks for use with illuminating gas in the production of calcium light, or "limelight."

The statistics for the industry were first presented separately at the census of 1879.

Table 252

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	10	15	\$11,422	\$23,893	\$52,216	\$28,323
1904.....	22	41	23,978	35,346	135,246	99,900
1899.....	19	55	24,418	34,982	118,666	83,684
1889.....	15	80	34,152	35,048	110,062	75,014
1879.....	4	20	10,912	25,031	51,443	26,412

Some establishments classified in 1904 under "calcium lights" reported in 1909 nothing but the oxygen gas in tanks, and were accordingly placed under "chemicals," where oxygen gas is specified among the "compressed or liquefied gases." This accounts for the decrease in the value of products as shown in the above table for the period 1904-1909.

CHEMICALS; SULPHURIC, NITRIC, AND MIXED ACIDS; AND WOOD DISTILLATION, NOT INCLUDING TURPENTINE AND ROSIN.

Combined statistics.—Prior to the census of 1904, the general statistics of all three of these industries were included under the single classification of "chemicals." For the censuses of 1909 and 1904 the three have been shown separately throughout the reports, and a segregation of the data has been made for 1899 for comparison.

The following table gives statistics for the three industries combined at each census from 1849 to 1909, inclusive:

Table 253

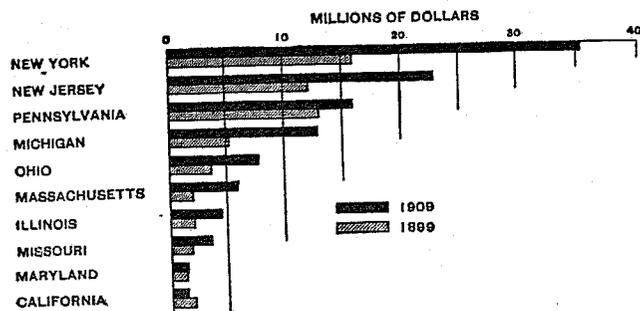
	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	511	28,687	\$17,042,243	\$75,383,215	\$137,309,942	\$61,926,727
1904.....	448	24,525	13,361,972	51,833,219	92,088,378	40,205,159
1899.....	453	19,020	9,393,236	34,545,862	62,637,008	28,091,146
1889.....	563	15,038	7,308,411	33,694,927	59,352,548	25,657,621
1879.....	695	9,724	4,222,663	24,665,766	38,640,458	13,974,692
1869.....	408	5,119	2,252,850	12,010,576	20,091,575	8,080,999
1859.....	299	2,014	637,156	3,086,681	5,419,791	2,333,110
1849.....	170	1,389	422,560	3,235,380	4,979,630	1,744,250

Chemicals.—The principal products of the establishments under this classification are acids, except sulphuric, nitric, and mixed acids, and such as are made by establishments in the wood-distillation industry; sodas; potashes; alums; coal-tar products; cyanides; bleaching materials; chemical substances made by electrical processes; plastics; compressed or liquefied gases; fine chemicals; and all chemicals not covered by other more specific classifications. The industry is thus a very complex one. The products of one establishment are often used as materials by other establishments in the industry, so that there is some duplication in the gross value of products for the industry as a whole.

Statistics for the industry at the censuses of 1909, 1904, and 1899 are given in the following table:

Table 254

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	349	23,714	\$14,084,501	\$64,121,536	\$117,638,887	\$53,567,351
1904.....	275	19,806	10,789,780	42,062,011	75,222,249	33,159,638
1899.....	297	15,108	7,365,203	27,057,609	48,039,595	20,981,986

CHEMICALS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.¹

¹ Statistics for 1899 include "sulphuric, nitric, and mixed acids" and "wood distillation, not including turpentine and rosin."

The quantity and value of the principal classes of products manufactured in 1909 are given in the next table.

Table 255	KIND.	Quantity. ¹		Value. ¹	KIND.	Quantity. ¹		Value. ¹
		Amount.	Unit.			Amount.	Unit.	
	Total value.....			\$117,688,887				
	Acids.....			11,926,389	Chemical substances produced by the aid of electricity.....			\$17,968,277
	Acetic.....	51,963,788	Pounds.....	1,136,134	Calcium carbide.....	121,946,967	Pounds.....	2,984,001
	Boric.....	5,554,414	Pounds.....	295,739	Caustic soda.....	19,428	Tons.....	1,032,647
	Citric.....	2,102,206	Pounds.....	777,200	Chlorates.....	11,568,915	Pounds.....	904,525
	Hydrofluoric.....	4,790,963	Pounds.....	214,657	Hypochlorites.....	45,976	Tons.....	1,506,831
	Muriatic.....	123,394,736	Pounds.....	1,171,082	All other.....			11,540,273
	Oleic.....	13,337,717	Pounds.....	650,015	Plastics.....			7,180,172
	Phosphoric.....	25,702,006	Pounds.....	505,791	Pyroxylin plastics.....			5,339,819
	Other.....			7,145,771	All other.....	10,234,928	Pounds.....	1,790,353
	Sodas.....			21,417,982	Compressed or liquefied gases.....			4,992,805
	Soda ash.....	646,007	Tons.....	10,361,756	Anhydrous ammonia.....	11,802,076	Pounds.....	2,593,315
	Sal soda.....	76,285	Tons.....	977,712	Carbon dioxide.....	47,238,267	Pounds.....	2,317,808
	Bicarbonate of soda.....	82,800	Tons.....	1,515,031	Laughing gas.....	72,675	Pounds.....	33,689
	Caustic soda.....	112,152	Tons.....	4,230,954	Oxygen.....	4,777,977	Gallons.....	95,150
	Borax.....	20,154	Tons.....	1,769,910	All other.....			16,843
	Other.....			2,569,619	Fine chemicals.....			10,956,666
	Potashes.....	1,866,570	Pounds.....	88,940	Alkaloids.....	3,482,492	Ounces.....	3,188,691
	Alums.....			2,578,842	Gold salts.....	42,544	Ounces.....	430,944
	Alum cake.....	26,884,880	Pounds.....	273,711	Silver salts.....	2,027,719	Ounces.....	726,222
	Potash alum.....	7,939,702	Pounds.....	123,623	Platinum salts.....	1,561	Ounces.....	19,123
	All other.....			2,176,508	Chloroform.....	1,861,435	Pounds.....	472,759
	Coal-tar products.....			2,675,327	Ether.....	1,177,888	Pounds.....	199,448
	Coal-tar distillery products.....			2,402,330	Acetone.....	6,927,886	Pounds.....	719,995
	Chemicals made from coal-tar distillery products.....			212,997	All other.....			5,199,584
	Cyanides.....			1,941,893	Chemicals, not elsewhere specified:			
	Yellow prussiate of potash.....	3,510,208	Pounds.....	463,983	Glycerin.....	33,986,974	Pounds.....	4,838,826
	All other.....			1,477,910	Epsom salts.....	47,785,318	Pounds.....	357,728
	Bleaching materials.....			1,635,046	Blue vitriol.....	810,958	Pounds.....	37,626
	Hydrogen peroxide.....	9,403,717	Pounds.....	850,417	Copperas.....	24,199,526	Pounds.....	71,081
	Bisulphites.....	14,528	Tons.....	202,504	Phosphates of soda.....	35,178,354	Pounds.....	634,292
	All other.....			582,125	Tin salts.....	13,492,233	Pounds.....	1,194,546
					Zinc salts.....	43,204,652	Pounds.....	1,477,486
					Other chemicals.....			21,207,939
					By-products and residues sold to other industries.....			4,530,624

¹ In addition, similar products to the value of \$9,105,453 were produced by establishments engaged primarily in the following industries: Butter, cheese, and condensed milk; candles; emery and other abrasive wheels; explosives; fertilizers; food preparations; foundry and machine-shop products; glue; oil, not elsewhere specified; paint and varnish; patent medicines and compounds and druggists' preparations; roofing materials; smelting and refining, copper; smelting and refining, lead; soap; sulphuric, nitric, and mixed acids; wood distillation, not including turpentine and resin; and in others of minor importance. These products include the following:

	Quantity.	Value.		Quantity.	Value.
Total value.....		\$9,105,453	Pyroxylin plastics.....		\$292,580
Acids:			Compressed or liquefied gases:		
Acetic.....	4,959,955	200,740	Anhydrous ammonia c.....	167,770	40,923
Hydrofluoric.....	2,051,951	79,722	Carbon dioxide.....	454,254	19,262
Muriatic.....	74,805,743	587,253	Laughing gas.....	24,500	4,900
Oleic.....	2,959,346	165,091	Oxygen.....	23,826,325	79,319
Stearic.....	5,094,774	399,386	Other.....		9,072
Other a.....		49,520	Chloroform.....	8,259	4,779
Sodas:			Acetone.....	2,007,590	210,287
Sal soda.....	10,822	184,297	Glycerin d.....	1,022,920	123,472
Other b.....	75,902	1,835,292	Blue vitriol.....	37,185,585	1,496,645
Potashes.....	14,293,552	625,054	Copperas.....	3,031,596	53,372
Alums.....	49,450,260	1,610,782	Phosphates of soda.....	310,588	27,034
Coal-tar distillery products.....			Zinc salts.....	4,312,983	103,503
Bleaching materials:			Other chemicals.....		495,183
Hydrogen peroxide.....	521,851	20,124			
Bisulphites.....	1,531	23,650			
Other.....		20,703			

a Not including acids reported by manufacturers of explosives and fertilizers.
 b Including sodas reported by manufacturers of paints and varnishes and fertilizers.
 c Not including 4,871,014 pounds, valued at \$448,455, reported by manufacturers of coke.
 d Not including 46,886,021 pounds, valued at \$6,790,264, reported by manufacturers of soap.

Sulphuric, nitric, and mixed acids.—Establishments under this classification are engaged in the manufacture of sulphuric acid and nitric acid and in the mixing of these acids.

Statistics for the industry were first presented separately at the census of 1904, but it was afterwards found practicable to make a segregation of the data for 1899, which were included at that census with "chemicals."

Table 256	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	42	2,252	\$1,494,894	\$5,385,825	\$9,884,057	\$4,498,220
1904.....	32	2,447	1,505,409	4,972,838	9,052,646	4,079,808
1899.....	34	2,356	1,327,549	4,033,238	8,596,390	4,563,152

The quantity and value of each kind of acid made in 1909 are given in Table 257.

KIND.	Quantity. ¹		Value. ¹
	Amount.	Unit.	
Total			\$9,884,057
Acids			7,567,274
Sulphuric, total, reduced to 50° Baumé.....	855,191	Tons.....	6,629,496
66° Baumé.....	267,476	Tons.....	3,158,097
60° Baumé.....	73,073	Tons.....	401,734
50° Baumé.....	2,362,636	Tons.....	2,069,665
Nitric.....	3,396,326	Pounds.....	499,303
Mixed.....	45,361,026	Pounds.....	1,438,475
All other products.....			2,316,783

¹ In addition, similar products were made by establishments engaged primarily in the manufacture of chemicals, explosives, muellage and paste, and paint and varnish, and in petroleum refining; the smelting and refining of copper; and the smelting and refining of zinc, as follows: 621,801 tons of sulphuric acid, 50° Baumé (including the sulphuric acid made in the fertilizer industry), valued at \$4,455,263; 18,929,620 pounds of nitric acid, valued at \$857,795; 11,820,542 pounds of mixed acids, valued at \$422,312; and other products valued at \$511,532.

² Includes the equivalent of 27,602 tons of oleum.

In 1909, 1,271,535 tons of sulphuric acid (50°) and 110,760,619 pounds of nitric acid were made and consumed in the establishments where produced. These quantities are not covered by the table or the footnote.

Wood distillation, not including turpentine and rosin.—The establishments included in this classification are engaged in the manufacture of pyroligneous acid, wood alcohol, acetates, tar, and charcoal by the destructive distillation of wood in closed vessels at a red heat. The statistics for the industry for 1899, 1904, and 1909 are shown in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	120	2,721	\$1,462,848	\$5,675,851	\$9,736,998	\$3,861,147
1904.....	141	2,272	1,069,786	4,847,770	7,813,483	2,965,713
1899.....	102	1,556	700,484	3,455,015	6,001,023	2,546,008

In addition, distilled wood products valued at \$583,141 were manufactured in 1909 by various establishments engaged primarily in other industries, as the manufacture of pig iron, (charcoal iron), of explosives, of chemicals, of lumber and timber products, of electrical machinery, apparatus, and supplies, of paper and wood pulp, and of dyestuffs and extracts.

DRUG GRINDING.

Powdered or pulverized drugs are the principal products reported by establishments under this classification.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	25	922	\$404,128	\$3,453,720	\$6,006,999	\$2,553,279
1904.....	27	981	483,097	3,024,305	5,145,522	2,121,217
1899.....	26	644	291,823	3,315,228	4,308,144	992,916
1889.....	13	148	74,711	192,321	436,766	244,445

One establishment engaged primarily in the manufacture of flour-mill and gristmill products ground drugs to a small value in 1909, but the figure can not be given without disclosing individual operations.

There are no statistics giving the quantity or value of drugs ground by establishments classed under "patent medicines and compounds and druggists' preparations."

DYESTUFFS AND EXTRACTS.

Establishments in this industry make materials for dyeing and tanning purposes. The products include natural dyestuffs made from the wood, bark, or berries of trees; vegetable dyeing extracts, such as extract of logwood; artificial dyestuffs, including the coal tar and the mineral dyes; tanning extracts and liquors, including chrome tanning solutions; and mordants, sizes, gums, and dextrins.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	107	2,397	\$1,291,379	\$9,683,651	\$15,954,574	\$6,270,923
1904.....	98	2,707	1,264,492	6,829,340	10,893,113	4,063,773
1899.....	77	1,647	787,942	4,745,912	7,350,748	2,604,836
1889.....	62	2,111	1,037,651	6,500,923	9,292,514	2,791,586
1879.....	41	992	512,097	3,918,741	5,253,038	1,334,297
1869.....	73	803	398,649	1,667,257	2,878,609	1,211,352
1859.....	55	440	149,488	1,115,717	1,655,444	599,727
1849.....	41	114	32,128	119,389	229,841	110,452

The apparent decline in the industry from 1889 to 1899 is due probably to the difference in classification of establishments making certain acids and compounds which are used in some cases for dyeing and in some cases in other arts. Sometimes they may have been classed under "dyestuffs and extracts," and at other times under "chemicals."

The quantity and value of each class of products reported for 1909 were as follows:

KIND.	Quantity (pounds).	Value. ¹
Total		\$15,954,574
Artificial dyestuffs.....	12,267,399	3,462,436
Extracts		280,487
Hemlock.....	12,588,078	991,974
Logwood.....	22,317,248	6,061,162
Oak and chestnut.....	287,908,285	107,456
Sumac.....	3,148,790	24,531
Ground sumac.....	554,032	176,510
Ground bark.....	25,142,076	143,720
Ground and chipped wood.....	15,046,954	610,999
Gums and dextrins.....	16,148,931	30,282
Iron liquors.....	3,079,418	69,515
Mordants.....	1,735,887	1,735,600
Sizes.....	54,054,711	249,297
Tannic acid.....	5,085,748	72,053
Turkey-red oil.....	1,048,719	365,304
Other tanning liquors.....	9,285,048	1,573,248
All other products.....		

¹ In addition, dyestuffs and extracts to the value of \$834,102 were produced by establishments engaged primarily in the manufacture of chemicals; fertilizers; foundry and machine-shop products; foundry supplies; oil, castor; oil, "not elsewhere specified;" paper and wood pulp; patent medicines and compounds and druggists' preparations; and soap.

² Includes a small production of natural dyestuffs.

There is no way of ascertaining from census returns the quantity of bark ground or extract made by tanners of leather for their own use, or the extent to which dyers of textiles used dyestuffs and extracts of their own manufacture. Manufacturers of dyestuffs and extracts reported 936,578,482 pounds of ground and chipped wood, 293,062,168 pounds of ground bark, and 1,955,040 pounds of ground leaves which

they prepared for their own use in the manufacture of extracts, tannic acid, and other tanning liquors.

EXPLOSIVES.

The principal products of establishments included in this classification are blasting powder, dynamite, nitroglycerin, gunpowder, smokeless powder, permissible, and other explosives.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	86	6,274	\$4,304,370	\$22,811,548	\$40,139,661	\$17,328,113
1904.....	124	5,800	3,308,774	17,203,667	29,602,894	12,399,217
1899.....	97	4,502	2,383,756	10,334,974	17,125,418	6,790,444
1889.....	69	2,353	1,240,502	5,481,723	11,352,615	5,870,892
1879.....	54	1,340	675,414	3,271,549	5,802,029	2,530,480
1869.....	36	973	594,379	2,398,407	4,237,539	1,839,132
1859.....	58	747	291,144	1,812,290	3,223,090	1,410,800
1849.....	54	579	192,588	860,997	1,590,332	729,335

The various kinds of explosives, so far as specifically reported, are given in the table following for 1909:

KIND.	Quantity (pounds). ¹	Value. ¹
Total		\$40,139,661
Dynamite.....	195,155,851	18,699,746
Nitroglycerin, sold as such.....	28,913,253	3,162,434
Blasting powder.....	² 233,477,175	9,608,265
Permissible explosives.....	9,607,448	863,209
Gunpowder.....	12,862,700	1,735,427
Other explosives ³	7,464,825	3,913,787
All other products.....		2,155,793

¹ In addition, 1,471,042 pounds, valued at \$656,969, were made by Federal establishments, and 219,356 pounds, valued at \$135,979, were made by establishments engaged primarily in the manufacture of "firearms and ammunition."

² Reported as 9,339,087 kegs.

³ Includes smokeless powder and gun-cotton or pyroxylin, to avoid disclosing operations of individual establishments.

NOTE.—The following products were made and consumed in the establishments where produced: Saltpeter, 12,050,225 pounds; nitroglycerin, 70,283,667 pounds; sulphuric acid, 42,555 tons; nitric acid, 31,484 tons; charcoal, 737,884 bushels; and nitrate of ammonia, 10,904,319 pounds.

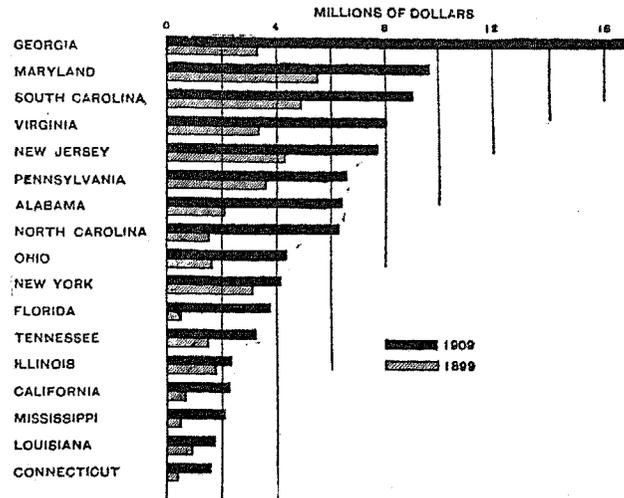
FERTILIZERS.

Establishments included in this classification manufacture principally superphosphates from minerals, bones, etc., ammoniated fertilizers, concentrated phosphates, and "complete" fertilizers. The production, for sale, of sulphuric and other acids, fish scrap, soda products, pyrite cinder, oil, and various chemicals is also reported. Large quantities of some of these products are made by fertilizer establishments for their own use.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	550	18,210	\$7,477,179	\$69,521,920	\$103,960,213	\$34,438,293
1904.....	399	14,184	5,127,147	39,287,914	56,541,253	17,253,339
1899.....	422	11,881	4,185,289	28,958,473	44,657,385	15,698,912
1889.....	300	9,026	3,417,870	25,113,874	39,180,844	14,066,970
1879.....	364	8,598	2,648,422	15,595,078	23,650,795	8,055,717
1869.....	126	2,501	766,712	3,838,025	5,815,118	2,007,093
1859.....	47	308	95,016	599,816	891,344	300,528

Statistics for fertilizers were first reported separately at the census of 1859.

FERTILIZERS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



The quantity and value of the different classes of fertilizers manufactured in 1909 are given in the table following:

KIND.	Quantity (tons). ¹	Value. ¹
Total		\$103,960,213
Fertilizers.....	5,249,164	\$92,369,631
Superphosphates from minerals, bones, etc.....	1,201,354	13,318,529
Ammoniated.....	472,757	10,061,193
Concentrated phosphate.....	313,888	3,638,210
Complete.....	2,717,797	57,243,899
Other.....	534,368	8,107,800
Sulphuric acid (reduced to 50° Baumé).....	153,057	923,492
Other acids.....	30,651	611,288
All other products.....		10,055,502

¹ In addition, 231,287 tons of complete fertilizers, valued at \$4,806,832; 49,632 tons of ammoniated fertilizers, valued at \$943,197; 22,615 tons of superphosphates, valued at \$426,302; 63,581 tons of "other" fertilizers, valued at \$1,365,931; 10,955 tons of concentrated phosphates, valued at \$178,078; and other products valued at \$190,928, making a total value of \$7,911,268, were made by establishments engaged primarily in the industries; fancy articles, not elsewhere specified; food preparations; glue; grease and tallow; oil, cottonseed, and cake; patent medicines and compounds and druggists' preparations; slaughtering and meat packing; soap; tobacco manufactures; and others.

NOTE.—The following products were made and consumed in the establishments where produced: Acid phosphate, 1,838,865 tons, and sulphuric acid, 841,935 tons.

GAS, ILLUMINATING AND HEATING.

Establishments under this classification manufacture illuminating and fuel gas, chiefly by destructive distillation of coal, wood resins, and oil, or other carbonaceous substances. The production of natural gas, of course, is not included. Many manufacturing concerns convert coal, through imperfect combustion, into "producer" gas for use as fuel or in gas engines. This process, however, is not covered by the statistics of the gas industry, nor is the production of blast-furnace gas. The manufacture of Pintsch gas, used principally for lighting railway cars, which carry it in compressed form, is included, as well as the operations of municipal gas plants.

The data for the industry for every census since 1849, except that of 1879, when no returns were received, are given in the next table.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,296	37,215	\$20,930,697	\$52,427,844	\$166,814,371	\$114,386,527
1904.....	1,019	30,566	17,057,817	37,180,066	125,144,945	87,984,879
1899.....	877	22,469	12,436,296	20,605,356	75,716,693	55,111,337
1889.....	742	13,896	8,499,625	14,037,087	66,987,290	42,950,203
1899.....	390	8,723	6,546,734	10,869,373	32,048,851	21,179,478
1859.....	221	5,730	2,321,636	3,667,630	12,016,353	8,348,723
1849.....	30	952	350,684	503,074	1,921,746	1,418,672

The quantity and value of the different kinds of gas made, and the principal by-products, are shown for 1909 in the following table:

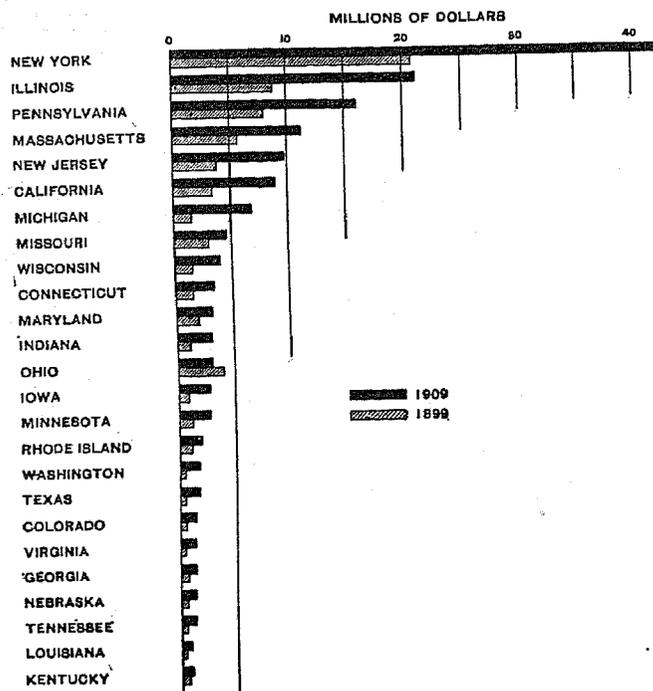
KIND.	Quantity. ¹		Value. ¹
	Amount.	Unit.	
Total.....			\$166,814,371
Gas.....	150,835,793	1,000 cu. ft.	138,615,309
Straight coal.....	19,985,253	1,000 cu. ft.	18,065,841
Straight water.....	1,726,082	1,000 cu. ft.	1,289,031
Carbureted water.....	79,418,486	1,000 cu. ft.	69,513,749
Mixed coal and water.....	40,775,283	1,000 cu. ft.	36,953,543
Oil.....	8,688,860	1,000 cu. ft.	12,111,458
Acetylene.....	25,186	1,000 cu. ft.	361,348
All other.....	216,643	1,000 cu. ft.	320,339
Coke.....	82,049,683	Bushels.....	5,723,215
Tar.....	78,339,880	Gallons.....	1,875,549
All other products ²			13,556,908
Receipts from rents and sales of lamps.....			7,043,390

¹ In addition, products of gas manufacture to the value of \$261,802 were reported by establishments engaged primarily in the manufacture of cotton goods, foundry and machine-shop products, ice, and lumber and timber products. The specific items reported were 27,558,000 cubic feet of coal gas, valued at \$29,419; 13,070,000 cubic feet of acetylene gas, valued at \$224,618; 44,347 bushels of coke, valued at \$3,399; 38,370 gallons of tar, valued at \$1,372; and receipts from the sale of lamps and appliances to the amount of \$2,994.

² In addition, 13,813,058 gallons were produced for which no value was reported. ³ Includes 37,277,864 gallons of ammonia liquor, valued at \$725,702, and 1,054,220 pounds of hydrocarbons, valued at \$44,509. In addition, 12,442,356 gallons of ammonia liquor and 100,099 pounds of hydrocarbons were produced, for which no value was reported.

NOTE.—The following products were made by gas works and consumed in the establishments where produced: Coke, 49,550,153 bushels; tar, 31,590,178 gallons; gas, 1,730,563,000 cubic feet; and benzine or benzol, 302,994 gallons. Gas to the value of \$2,609,211, representing 15,701,220,000 cubic feet, was sold as a by-product by establishments classed under "coke." The total quantity of gas produced by coke establishments, so far as reported to the Census, was 76,590,763,000 cubic feet, of which 60,799,543,000 were used in coke making or wasted.

GAS, ILLUMINATING AND HEATING—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



GLUE.

The principal products of establishments included in this classification are glue, gelatin, and glue jelly, derived from hides, bone, and fish.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	65	3,265	\$1,570,643	\$7,524,529	\$13,717,820	\$6,193,291
1904.....	58	2,864	1,528,512	6,186,139	10,034,685	3,848,546
1899.....	61	1,618	685,096	3,767,023	5,389,066	1,621,983
1889.....	62	1,697	676,089	2,510,927	4,270,460	1,759,533
1879.....	82	1,801	600,018	2,786,342	4,324,072	1,537,730
1869.....	70	860	309,673	882,981	1,709,605	826,624
1859.....	62	875	305,964	537,276	1,185,625	648,349
1849.....	47	391	99,432	371,616	652,405	280,789

The value of glue made in 1909 by establishments engaged primarily in other industries—principally of "fertilizers," of "grease and tallow," and of "leather, tanned, curried, and finished"—was \$666,421. Glue and gelatin to the value of \$1,944,338 were also made in slaughtering and meat-packing establishments. The value of these products should be added to that shown in the above table to obtain the aggregate for the year.

GREASE AND TALLOW.

Establishments in this classification render soap grease from fat, bones, meat, scraps, garbage, etc., gathered principally from houses, markets, hotels, and restaurants, and render tallow from the solid fat of cattle, sheep, and other animals.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	353	4,357	\$2,629,239	\$15,543,439	\$23,419,395	\$7,875,956
1904.....	300	3,628	2,114,355	12,369,075	18,814,533	6,445,458
1899.....	287	2,040	1,066,693	8,751,797	11,953,021	3,201,224
1889.....	233	1,470	793,888	5,135,901	7,474,911	2,339,010
1879.....	156	1,091	556,015	11,779,482	13,730,013	1,950,531
1869.....	62	442	184,737	5,114,868	6,035,845	920,977
1859.....	18	99	40,320	972,186	1,267,533	295,347

Establishments engaged primarily in the manufacture of other products—principally of fertilizers, "oil, not elsewhere specified," and glue—rendered grease and tallow in 1909 to the value of \$5,006,390. The tallow or oleo stock reported by slaughtering and meat-packing establishments reached a value of \$13,499,659. These amounts are not included in the value of products given in the table. The variations in the extent to which the business of rendering grease and tallow has been conducted in establishments assigned to other industries affect the comparability of the statistics for different censuses.

INK, PRINTING.

The mixing of boiled oil or varnish with black or other pigments to be used in printing is the principal business of establishments in this classification.

At the censuses of 1849 and 1879 there was no separate presentation of the statistics, the classification "ink" including both printing and writing ink.

Table 270

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	71	1,121	\$772,528	\$4,174,917	\$8,865,504	\$4,690,587
1904.....	60	711	474,987	2,612,558	5,774,254	3,161,696
1899.....	60	503	298,161	1,535,916	3,079,948	1,544,032
1889.....	35	380	269,740	1,145,554	2,376,672	1,231,118
1869.....	16	155	100,187	353,711	600,329	246,618
1859.....	16	79	33,264	498,505	802,900	304,395

Establishments engaged primarily in lithographing and in the manufacture of other products—principally of paint and varnish and “oil, not elsewhere specified”—made printing ink in 1909 to the value of \$89,839, and this value should be considered in connection with that given in the above table.

INK, WRITING.

Establishments under this classification manufacture inks consisting principally of an infusion of galls, copperas, gum arabic, and pigments of various kinds. At the census of 1879 only the totals for “ink” of all kinds were given.

Table 271

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	47	505	\$203,155	\$1,078,008	\$2,505,414	\$1,427,406
1904.....	42	430	169,726	858,304	1,831,038	1,022,734
1899.....	44	285	113,979	573,226	1,292,769	719,533
1889.....	38	381	150,488	519,231	1,128,307	609,076
1869.....	25	160	45,962	176,399	366,473	190,074
1859.....	13	68	18,432	45,344	119,578	74,234

In addition to the products covered by the above table, writing ink to the value of \$59,965 was made in 1909 by establishments engaged primarily in the manufacture of other products—for the most part of stationery goods, typewriters and typewriter supplies, and mucilage and paste.

OIL, CASTOR.

The establishments under this classification are engaged in expressing oil from castor beans.

Table 272

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	4	54	\$32,174	\$661,178	\$904,825	\$243,647
1904.....	4	43	25,276	487,292	642,065	155,373
1899.....	3	49	29,068	293,408	395,400	101,992
1889.....	7	77	44,532	431,231	573,363	142,132
1879.....	8	103	44,714	354,890	653,900	269,010
1869.....	6	94	46,950	537,250	737,700	220,450
1859.....	8	97	41,196	239,540	320,370	80,530
1849.....	23	147	43,824	447,065	593,050	145,985

Changes in the customs duties on castor oil may have had something to do with the decrease in production during the decades 1849–1859 and 1889–1899. The decrease from 1869 to 1879 was due in part to the

depreciated currency of 1869, which increased nominal values by about one-fifth.

In addition to the products covered by the above table, castor oil to the value of \$225,960 was made in 1909 by establishments engaged primarily in the manufacture of linseed oil, flavoring extracts and chemicals.

OIL, COTTONSEED, AND CAKE.

The establishments under this classification express oil from the seed of the cotton plant and in some cases refine it. The chief by-product of the industry is cottonseed cake, which is used as feed for live stock and as a fertilizer.

Table 273

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	817	17,071	\$5,835,249	\$119,533,475	\$147,867,894	\$28,034,419
1904.....	715	15,540	4,837,004	80,029,863	96,407,621	16,377,758
1899.....	399	11,007	3,143,459	45,165,823	58,726,632	13,560,809
1889.....	119	5,906	1,493,780	14,363,126	19,335,947	4,972,821
1879.....	45	3,319	880,836	5,091,251	7,690,921	2,599,670
1869.....	26	664	292,032	1,333,631	2,205,610	871,979
1859.....	7	133	76,956	498,000	741,000	243,000

In addition to the products covered by the above table, products to the value of \$2,017,305 were produced by establishments engaged primarily in the manufacture of fertilizers, flour-mill and gristmill products, and food preparations.

The quantity of cotton seed crushed by establishments in this industry in 1909 was 3,798,549 tons.

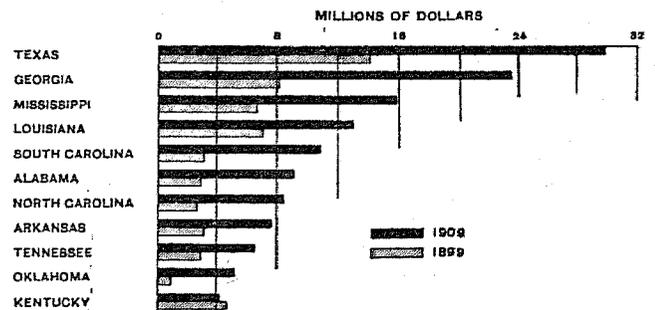
The principal crude cottonseed products returned for 1909 by establishments classed under “oil, cottonseed, and cake,” whether for sale or for use in further processes of manufacture, are shown below.

Table 274

KIND	Quantity. ¹	
	Amount.	Unit.
Crude oil.....	157,115,689	Gallons.
Meal and cake.....	1,661,734	Tons.
Hulls.....	1,258,612	Tons.
Linters.....	174,620,099	Pounds.

¹In addition, establishments engaged primarily in other industries (see text following table 273) crushed 28,752 tons of seed and produced 1,212,852 gallons of crude oil, 12,811 tons of meal and cake, 8,926 tons of hulls, and 1,152,978 pounds of linters.

OIL, COTTONSEED, AND CAKE—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



MANUFACTURES.

OIL, ESSENTIAL.

Establishments under this classification extract or distill the oils of various plants, such as peppermint, spearmint, wormwood, pennyroyal, wintergreen, black birch, and sassafras. Peppermint-camphor (menthol) and witch-hazel extract are among the products.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	68	290	\$122,990	\$1,255,478	\$1,737,234	\$481,756
1904.....	52	132	69,711	1,110,470	1,464,662	354,192
1899.....	47	168	61,415	588,594	813,495	224,901
1889.....	67	197	28,924	129,735	265,847	126,112
1879.....	124	278	24,030	125,167	248,858	123,091
1869.....	118	2,365	32,864	274,058	631,445	357,387
1859.....	45	74	12,247	87,399	124,317	36,918

The decrease in the value of products for the decade 1869-1879 may be accounted for on the supposition that in 1869 the production on farms was included in the manufactures statistics and that in 1879 it was given with statistics of agriculture. The depreciated currency of 1869 also increased the nominal value of the products that year by about one-fifth.

The quantity and value of the natural oils, and of witch-hazel extract, produced, and the value of all other products of the essential oil industry for 1909, are shown below:

KIND.	Quantity.		Value. ¹
	Amount.	Unit.	
Total value.....			\$1,737,234
Essential oils.....			1,108,603
Peppermint.....	305,781	Pounds.....	519,079
Black birch.....	67,053	Pounds.....	102,045
Spearmint.....	33,400	Pounds.....	83,283
Wintergreen.....	22,281	Pounds.....	68,983
Other ²			335,213
Witch-hazel extract.....	679,190	Gallons.....	412,322
All other products.....			216,309

¹ In addition, essential oils to the value of \$117,469 were reported by establishments engaged primarily in the manufacture of baking powders and yeast; blacking and cleansing and polishing preparations; chemicals; flavoring extracts; patent medicines and compounds and druggists' preparations; and wood, turned and carved.

² The products classified under this heading include 49,327 pounds, valued at \$44,494; quantities not reported for the remainder.

OIL, LINSEED.

The expressing of oil from flaxseed is the chief business of the establishments in this classification. The product is used principally in mixing paints.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	29	1,452	\$892,612	\$31,034,576	\$36,738,694	\$5,704,118
1904.....	30	1,349	785,634	23,153,151	27,577,152	4,424,001
1899.....	48	1,328	693,311	24,395,775	27,184,331	2,783,556
1889.....	62	1,886	977,344	19,374,543	23,534,306	4,159,763
1879.....	81	1,416	681,677	12,574,294	15,393,812	2,519,518
1869.....	77	945	458,387	7,216,414	8,881,662	1,665,548
1859.....	94	814	234,694	5,044,267	5,981,843	937,576
1849.....	168	479	143,664	1,477,645	1,948,934	471,289

Linseed oil to the value of \$63,100 was made in 1909 by establishments engaged primarily in the manu-

facture of oilcloth and linoleum, "oil, not elsewhere specified," and food preparations, and linseed oil to the value of \$1,912,594 was reported by paint and varnish factories. These amounts are in addition to the value of products shown in the above table.

OIL, NOT ELSEWHERE SPECIFIED.

The compounding and blending of mineral, animal, and vegetable oils for lubricating purposes and the manufacture of oleo oil, fish or whale oil, resinol and neat's-foot oil, floor oil, signal oil, etc., constitute the operations carried on by the establishments in this classification.

The classifications at the various censuses which were combined under "oil, not elsewhere specified," at the census of 1909 included "oil, lard" in 1904 and 1899; "oil, illuminating, not including petroleum refining," "oil, lard," "oil, lubricating," and "oil, resin," in 1889; the same, with the addition of "oil, neat's foot," in 1879; "oil, animal," "oil, fish," "oil, lubricating," and "oil, vegetable, not specified," in 1869; "oil, cocoanut," "oil, fish, whale and other," "oil, lard," "oil, neat's foot," "oil, resin," and "oil, chemical," in 1859; and "oil, lard," "oil, whale," and "oil, miscellaneous," in 1849.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	189	1,715	\$1,060,366	\$21,406,961	\$30,865,122	\$9,458,161
1904.....	186	1,305	752,408	14,437,611	22,923,364	8,485,753
1899.....	201	1,456	737,535	10,974,726	18,611,640	7,636,914
1889.....	144	942	574,169	6,859,492	11,176,548	4,317,051
1879.....	104	968	421,911	7,128,785	8,654,124	1,525,339
1869.....	178	2,150	641,208	10,976,896	14,581,830	3,604,934
1859.....	97	602	232,664	7,717,320	9,390,143	1,672,823
1849.....	101	795	270,552	7,808,581	9,523,323	1,714,742

Additional products of "oil, not elsewhere specified," to the value of \$2,651,710 were reported for 1909 by establishments engaged primarily in the manufacture of glucose and starch, candles, paint and varnish, grease and tallow, and other products. Such oils were also reported by manufacturers of fertilizers to the value of \$810,489. Slaughtering and meat-packing establishments returned oleo oil to the value of \$16,475,726; and "other oils," including lard oil, to the value of \$6,350,475.

Differences in the classification of individual establishments are doubtless responsible for the great apparent increase in the industry from 1859 to 1869 and the great decline from 1869 to 1879. At the census of 1869 there was only one kind of schedule for all industries; it called for general statistics only. It is probable that at that census the manufacture of lard and other animal oils in slaughtering and meat-packing establishments was included under "oil, animal." At the more recent censuses, and probably also at those of 1889 and 1879, this branch of the business of slaughtering and meat-packing establishments was not segregated.

PAINT AND VARNISH.

Separate statistics for establishments engaged primarily in the manufacture of paint and for those engaged primarily in the manufacture of varnish are given for 1909 in the following table. There is such an overlapping in the products of some of the establishments, however, that only the totals for both branches combined are shown in most tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	791	14,240	\$3,270,713	\$79,015,555	\$124,889,422	\$45,873,867
Paint.....	588	11,864	6,736,798	62,458,250	94,572,005	32,113,755
Varnish.....	203	2,376	1,533,915	16,557,305	30,317,417	13,760,112

Many manufacturing and other concerns mix paints for their own use, the value of which is not reported; but the materials used for such paints are mainly covered by the data for the paint and varnish, linseed oil, and turpentine and rosin industries.

The paints in oil made in 1909 exceeded in value the varnishes and japans, but the value of the latter was nearly double that of the pigments:

KIND.	Quantity.		Value. ¹
	Amount.	Unit.	
Total			\$124,889,422
Pigments			16,885,588
White lead, dry.....	85,234,414	Pounds.....	3,921,803
Oxides of lead.....	63,404,846	Pounds.....	3,662,062
Lampblack and other blacks.....	1,810,445	Pounds.....	105,063
Iron oxides and other earth colors.....	111,674,675	Pounds.....	876,331
Other dry colors.....	162,409,565	Pounds.....	6,574,333
Barytes.....	49,496,025	Pounds.....	268,757
Pulp colors, sold moist.....	28,435,722	Pounds.....	1,277,239
Paints in oil			56,763,296
White lead in oil.....	246,567,570	Pounds.....	15,234,411
Paste.....	162,356,330	Pounds.....	11,270,459
Already mixed for use.....	33,272,033	Gallons.....	30,249,426
Varnishes and japans			31,262,535
Oleoresinous varnishes.....	18,476,523	Gallons.....	17,350,113
Damar and similar turpentine and benzine varnishes.....	3,431,231	Gallons.....	2,836,341
Spirit varnishes not turpentine.....	1,131,746	Gallons.....	1,408,048
Pyroxylin varnishes.....	1,880,141	Gallons.....	2,351,425
Drying japans and lacquers.....	9,474,939	Gallons.....	5,094,973
All other.....	4,238,097	Gallons.....	2,221,635
Fillers			3,126,271
Liquid.....	1,159,569	Gallons.....	823,063
Paste.....	14,050,329	Pounds.....	887,948
Dry.....	50,983,472	Pounds.....	295,728
Putty.....	63,502,048	Pounds.....	1,119,532
Water paints and kalsomine			1,979,007
Dry or in paste.....	47,465,265	Pounds.....	1,917,038
Already mixed for use.....	522,283	Gallons.....	61,969
Linseed oil			1,912,594
Bleached shellac.....	3,014,195	Pounds.....	578,650
All other products.....			12,251,481

¹ In addition, paints and varnishes to the value of \$2,583,397 were made in establishments engaged primarily in the manufacture of brick and tile; carriages and wagons and materials; chemicals; coke; dyestuffs and extracts; enameling and japanning; foundry and machine-shop products; ink, writing; lead, bar, pipe, and sheet; mucilage and paste; oil, "not elsewhere specified;" patent medicines and compounds and druggists' preparations; roofing materials; soap; and other products.

NOTE.—The following products were made and consumed in the establishments where produced: White lead, dry, 162,702,089 pounds; lead oxides, 4,526,425 pounds; varnishes, 4,407,312 gallons; drying japans and dryers, 3,090,756 gallons; collodion and other cellulose nitrate solutions, 20,600 gallons; pyroxylin, 24,750 pounds; and coppers, 11,531,006 pounds.

The table and note do not cover the pigments ground in establishments classified as engaged in the manufacture of kaolin and ground earths, the products of

the establishments classified as engaged in the manufacture of bone, carbon, and lamp black, nor the lead and zinc oxide made by lead and zinc smelters.

Paint.—The principal products of establishments in this subclass are dry vegetable and mineral pigments, and the mixtures of these with linseed oil, turpentine, benzine, wood alcohol, etc., which constitute paint in paste or ready for use. Water paints and kalsomine, stains, and putty are also among the products. Sometimes the linseed oil used as a vehicle is made by the plants for their own use and occasionally some is made for sale; the value of that for sale is included in the reports. The manufacture of white lead or of zinc white is the sole or principal business of some of the concerns, while some are engaged solely in paint mixing, using the materials made by other establishments. There is thus considerable duplication in the gross value of products for the industry as a whole.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	588	11,864	\$6,736,798	\$62,458,250	\$94,572,005	\$32,113,755
1904.....	449	9,781	5,063,177	46,306,183	67,277,510	20,971,727
1899.....	419	8,151	3,929,787	33,799,396	50,574,995	17,075,609
1889.....	382	7,044	3,568,757	24,930,532	40,438,171	15,507,639
1879.....	244	4,483	2,132,255	17,062,552	23,390,767	6,328,215
1869.....	143	2,940	1,567,037	11,468,728	16,932,405	5,463,677
1859.....	45	563	213,864	1,567,238	2,574,955	1,007,717
1849.....	4	22	5,064	5,509	77,000	71,491

Varnish.—The establishments in this subclass manufacture principally varnishes consisting of solutions of gums of various kinds, or of rosins, in solvents such as alcohol, linseed oil, turpentine, naphtha, benzine, and pyroxylin. Among the products are the black varnishes called japans, enamels, and fillers made of linseed oil with powdered glass, ground slate, or silica. In some instances other products are reported as made for sale, such as linseed oil, raw and boiled, and bleached shellac, but larger quantities of such products are made for use in the same establishment.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	203	2,376	\$1,533,915	\$16,557,305	\$30,317,417	\$13,760,112
1904.....	180	1,852	1,200,431	13,520,491	23,561,669	10,041,208
1899.....	181	1,546	955,802	10,939,131	18,657,240	7,748,109
1889.....	140	1,145	792,715	7,805,663	13,795,510	5,959,847
1879.....	81	573	365,716	3,699,684	5,721,474	2,621,490
1869.....	59	415	252,059	3,311,097	4,691,465	1,650,308
1859.....	45	315	126,024	1,549,413	2,402,750	853,377

PATENT MEDICINES AND COMPOUNDS AND DRUGGISTS' PREPARATIONS.

For 1909 separate statistics were compiled for three branches of this industry. These are given in the next table. There is such an overlapping in the products of some of the establishments that only the combined totals for all branches are shown in most of the tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	3,642	22,895	\$9,896,674	\$50,375,665	\$141,941,602	\$91,565,937
Patent medicines and compounds.....	2,838	11,030	4,744,021	26,894,028	83,771,154	56,876,526
Druggists' preparations.....	375	9,490	4,158,432	17,847,006	43,958,479	26,111,473
Perfumery and cosmetics.....	429	2,375	994,221	5,634,031	14,211,969	8,577,938

Establishments engaged primarily in the manufacture of other products—principally of soap, flavoring extracts, food preparations, chemicals, fertilizers, and in the roasting and grinding of coffee and spice, and in drug grinding—reported patent medicines and compounds and druggists' preparations for 1909 to the value of \$7,232,799.

Patent medicines and compounds.—Establishments in this subclass manufacture principally articles which have special trade names and are not included in the subclass of "druggists' preparations." Besides patent medicines the products include ointments, tooth powders and pastes, inhalants, foot powders, liniments, preparations for the hair, horse remedies, and various compounds not used for medicinal or sanitary purposes, such as dust-laying compositions, vermin exterminators, etc.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	2,838	11,030	\$4,744,021	\$26,894,028	\$83,771,154	\$56,876,526
1904.....	2,245	10,380	4,351,867	21,293,051	74,520,765	53,227,714
1899.....	1,719	11,606	4,334,425	18,000,441	58,988,181	40,987,740
1890.....	1,127	7,053	2,955,883	11,030,916	32,620,182	21,589,266
1879.....	563	4,025	1,651,696	6,704,729	14,682,494	7,977,785
1869.....	319	2,436	1,017,795	7,319,752	16,257,720	8,937,968
1859.....	173	1,659	372,127	1,492,248	3,465,594	1,973,346
1849.....	143	827	276,488	1,657,886	3,508,465	1,850,579

Druggists' preparations.—The principal products of the establishments under this subclassification are compounded medicines; biological products, such as diphtheria antitoxin and vaccine virus; preparations of the digestive ferments; medicinal tablets; pharmaceutical compounds for physicians' use; capsules, filled or empty; elixirs and sirups; pills; effervescent salts and tablets, etc. There is a close relation between this industry and certain branches of the chemical industry, and the drug grinding industry, but it is impossible to determine the extent of the overlapping in value of products.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	375	9,490	\$4,158,432	\$17,847,006	\$43,958,479	\$26,111,473
1904.....	240	7,410	2,792,914	13,419,635	31,782,250	18,362,615
1899.....	173	5,658	2,095,540	10,814,432	22,714,880	11,900,457
1889.....	1,805	2,031	839,686	2,411,651	6,659,797	4,247,946

Perfumery and cosmetics.—The establishments under this subclassification are engaged principally in diluting and blending various essential oils to make perfumes, and in compounding glycerin, grease, chalk, talc, waxes, and like substances with oils, alcohol, etc., for face lotions and cosmetics. Barbers' and manicure preparations, toilet water, perfumed powder, sachet powder, and breath perfumes are among the products reported.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	429	2,375	\$994,221	\$5,634,031	\$14,211,969	\$8,577,938
1904.....	292	2,082	768,537	4,781,603	11,132,859	6,351,256
1899.....	262	1,764	508,646	3,135,017	7,087,704	3,952,687
1889.....	157	1,396	501,520	2,128,420	4,630,141	2,501,721
1879.....	67	741	238,259	1,201,409	2,203,004	1,001,695
1869.....	64	727	260,415	892,219	2,029,582	1,137,364
1859.....	33	535	146,076	400,194	1,222,400	762,206
1849.....	39	188	43,720	163,826	355,350	191,524

PETROLEUM, REFINING.

All crude petroleum refineries are included under this classification. The principal products are illuminating, fuel, and lubricating oils, gasoline, and paraffin wax. Other products are lubricating and other greases, sludge acid, oil asphaltum, coke, black naphtha, tar, and residuum.

The statistics for each census from 1859 to 1909, inclusive, are given in Table 287.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	147	13,929	\$9,830,078	\$199,273,402	\$236,997,659	\$37,724,257
1904.....	98	16,770	9,989,367	139,387,213	178,005,320	35,618,107
1899.....	67	12,199	6,717,087	102,859,341	123,929,384	21,070,043
1889.....	94	11,403	5,872,467	67,918,723	85,001,198	17,052,475
1879.....	86	9,869	4,381,572	34,999,101	43,708,218	8,708,117
1869.....	170	1,870	1,184,559	21,450,189	26,942,287	5,482,028
1859.....	78	1,473	556,294	3,062,227	6,897,680	3,335,453

The quantity and value of the various kinds of products are given in Table 288 for the census of 1909.

KIND.	Quantity. ¹		Value.
	Amount.	Unit.	
Total.....			\$236,997,659
Oils:			
Illuminating.....	33,495,798	Barrels (50 gallons).	94,547,010
Fuel (including gas oils).....	34,034,577	Barrels.....	36,462,883
Lubricating.....	10,745,885	Barrels.....	38,884,236
Naphtha and gasoline (including gas naphtha).	10,806,550	Barrels.....	39,771,959
Paraffin wax.....	946,830	Barrels.....	9,388,812
Oil asphaltum.....	233,328	Tons (2,000 pounds).	2,724,752
Residuum or tar.....	1,787,008	Barrels.....	2,215,623
Greases (lubricating, etc.).....	138,302	Barrels.....	1,567,647
Coke and black naphtha.....			507,695
Sludge acid.....	133,215	Tons (2,000 pounds).	402,295
All other products.....			10,524,747

¹ In addition, 43,559 tons of sulphuric acid were made and used in further processes of manufacture in the establishments where produced.

SALT.

All establishments producing salt, whether by mining or by evaporating, as well as those refining salt, are included in this classification. The products include brine and bromine. The major part of the business is of the nature of manufacturing rather than of mining or extracting material from the earth.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	124	4,936	\$2,531,446	\$5,203,354	\$11,327,834	\$6,124,460
1904.....	146	4,666	2,066,399	4,166,137	9,437,662	5,271,525
1899.....	159	4,774	1,911,140	3,335,922	7,966,897	4,630,975
1889.....	200	4,255	1,593,442	1,826,770	5,484,618	3,667,848
1879.....	268	4,289	1,260,023	2,074,049	4,529,566	2,755,517
1869.....	282	2,921	1,147,910	1,760,670	4,590,629	3,129,959
1859.....	399	2,213	371,954	1,054,750	2,289,504	1,234,724
1849.....	340	2,786	753,360	1,051,419	2,177,945	1,126,526

The quantity and value of the salt and bromine reported at the census of 1909 are shown in the following table:

KIND.	Quantity.		Value. ¹
	Amount.	Unit.	
Total.....			\$11,327,834
Salt.....	29,933,060	Barrels.....	8,311,729
Bromine.....	2,728,875	Pounds.....	92,735
All other products.....			2,923,370

¹ In addition, salt to the value of \$191,431 was produced in establishments engaged primarily in the manufacture of chemicals, ice, lumber and timber products, and soap.
² Includes potassium bromide reduced to the equivalent of bromine.

SOAP AND CANDLES.

Combined statistics.—Statistics for the candle industry were not shown separately from those for the soap industry until the census of 1904.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	436	13,538	\$6,473,172	\$74,355,520	\$114,488,298	\$40,132,778
1904.....	453	11,860	5,050,611	46,536,823	72,164,062	25,627,239
1899.....	558	9,487	3,754,787	33,143,230	53,231,017	20,087,787
1889.....	578	7,821	3,416,854	28,687,412	43,600,285	14,912,873
1879.....	629	5,259	2,219,513	19,907,444	26,552,627	6,645,183
1869.....	618	4,471	1,944,331	15,268,847	22,624,612	7,355,765
1859.....	620	3,464	1,129,678	13,413,609	19,611,374	6,197,765

Soap.—Establishments under this classification manufacture chiefly hard soaps, shaving and special soaps, powdered soaps, soft soaps, and glycerin. Statistics for the soap plants of slaughtering and meat-packing

concerns were, save in a few instances, reported separately and are included in the totals given in Tables 292 and 293.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	420	12,999	\$6,226,882	\$72,179,418	\$111,357,777	\$39,173,359
1904.....	436	11,044	4,762,676	43,625,608	68,274,700	24,649,092

The quantity and value of the principal products reported at the census of 1909 are shown in Table 293.

KIND.	Quantity (pounds). ¹	Value. ¹
Total.....		\$111,357,777
Hard soap.....	1,736,740,566	88,550,830
Soft soap.....	44,652,615	943,676
Glycerin.....	39,689,300	5,713,558
Special soap articles.....		731,823
All other products.....		15,417,890

¹ In addition, 30,424,855 pounds of hard soap, valued at \$1,279,004; 15,984,055 pounds of soft soap, valued at \$325,511; 42,216,615 pounds of glycerin, valued at \$6,039,004; and other products valued at \$1,416,174, making a total value of \$9,059,693, were made by establishments engaged primarily in the manufacture of axle grease, bluing, candles; chemicals; dyestuffs and extracts; flavoring extracts; food preparations; grease and tallow; oil, cottonseed, and cake; oil, "not elsewhere specified," paint and varnish, patent medicines and compounds and druggists' preparations; and other products, and in slaughtering and meat packing.

NOTE.—The following products were made and consumed in the establishment where produced: Red oil, 3,175,795 gallons; tallow, 17,709,219 pounds; cottonseed oil, 2,422,843 gallons; caustic lye, 30° Baumé, 15,931,639 gallons; sodium silicate, 37,466,246 pounds; glycerin, 5,816,279 pounds; and framed soap, 527,370,123 pounds.

Candles.—The principal products of establishments under this classification are candles of all descriptions, made of tallow, paraffin, stearin, and wax.

Statistics for the industry for the censuses of 1909 and 1904 are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	16	539	\$246,290	\$2,176,102	\$3,130,521	\$354,419
1904.....	17	816	293,935	2,911,215	3,889,362	973,147

In addition, candles to the value of \$527,910 were made in 1909 by establishments engaged primarily in the manufacture of soap, chemicals, and "oil, not elsewhere specified."

The candles made by refineries were not reported separately, and the amount can not be stated. It is evident, however, that the value of the product as given in the above table is much less than the true value of all candles manufactured during the census year.

MANUFACTURES.

TURPENTINE AND ROSIN.

The establishments included in this classification distill the gum exuded from the southern pine, the distillate being turpentine and the residuum rosin. Establishments engaged in the destructive distillation of wood are not included here, but under "wood distillation." The industry includes the extraction of the raw material from the trees as well as its distillation.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	1,585	39,511	\$9,363,359	\$4,910,838	\$25,295,017	\$20,384,179
1904	1,287	33,382	8,382,700	3,774,637	23,837,024	20,162,387
1899	1,503	41,864	8,393,483	6,186,492	20,344,888	14,158,306
1889	670	15,266	2,906,547	2,874,693	8,077,379	5,202,686
1879	508	10,535	1,623,061	2,324,637	5,876,983	3,552,346
1869	227	2,635	476,284	2,146,090	3,585,225	1,439,135
1859	625	4,214	770,696	4,324,414	6,468,369	2,143,955
1849	856	3,437	447,348	1,484,318	2,855,637	1,371,233

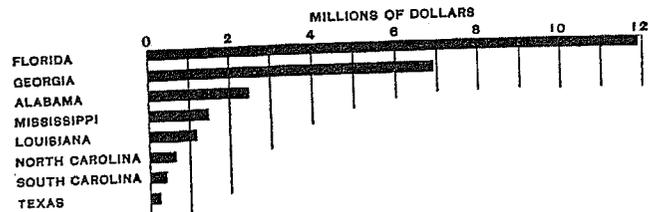
The decrease shown in value of products during the decade 1859-1869 was due primarily to the Civil War.

The values of turpentine and of rosin as reported for 1909 are shown in the following table:

KIND.	Quantity. ¹		Value. ¹
	Amount.	Unit.	
Total.....	28,988,954	Gallons.	\$25,295,017
Turpentine.....	3,263,857	Barrels (280 pounds).	12,654,223
Rosin.....			12,576,721
Dross and other products.....			64,068

¹ In addition, 682,702 gallons of turpentine, valued at \$243,491, were produced in the processes of wood distillation. (See census report on Forest Products of the United States: 1909.)

TURPENTINE AND ROSIN—VALUE OF PRODUCTS FOR LEADING STATES: 1909.



STONE, CLAY, AND GLASS PRODUCTS.

THE GROUP AS A WHOLE.

Nearly all of the establishments included in this group derive their principal material from the earth in the form of stone, clay, or sand, and the grouping is based upon this similarity with respect to source of material rather than upon any similarity in the character or use of the finished product. The industries designated "china decorating," "statuary and art goods," "mirrors," and "glass, cutting, staining, and ornamenting," which are included in the group, use as their principal materials the products of other industries in the group. In the total value of products of the group there is thus a certain amount of duplication.

Some of the industries in this group are closely related to quarrying. In a number of instances both quarrying and manufacturing are carried on by the same establishment, and the two branches of the business are in many cases of nearly equal importance. As these establishments usually keep but one set of books, and as the same employees in many cases work in both branches of the industry, a separation of the data for quarrying from those for manufacturing is not practicable. The statistics for these borderline establishments are included both with those for manufactures and with those for mining. In certain industries, however, in which raw material

is extracted from the ground and subsequently manipulated by the same concern, as in the manufacture of cement, brick, tile, terra cotta, fire-clay products, pottery, lime, etc., the manufacturing operations are so much the more important that the statistics for these establishments as a whole are included with those for manufactures, and no part of their operations is included with the statistics for mines and quarries.

On the other hand, in some industries, such as the production of gypsum, slate, graphite, whetstones, oilstones, and millstones, the operations of most of the establishments are primarily those of quarrying, and the manufacturing processes are only an incidental or minor part of the work of preparing the products for sale. For such establishments the data are omitted from the general statistics for manufactures and included only with those for mines and quarries; but establishments which perform similar manufacturing operations on materials bought from the original producers are covered by the report on manufactures. Thus it will be seen that the statistics presented in the report for manufactures do not represent the entire production of the products named above. The most conspicuous example is in the case of millstones. There was in 1909 only 1 establishment reporting millstones which bought

stones in the rough and dressed them, while 14 stone quarries reported millstones.

The following table shows the number of establishments, average number of wage earners, total wages

paid, value of products, and value added by manufacture for the different industries included in the group "stone, clay, and glass products," as reported for the census of 1909.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total ¹	16,168	342,827	\$189,256,482	\$531,736,831	\$347,945,281
Industries using stone as a material.....	9,672	124,512	73,444,508	234,316,624	144,565,170
Artificial stone.....	3,439	9,957	5,342,063	18,595,688	11,532,746
Cement.....	135	20,775	15,319,662	63,205,455	33,861,664
Emery and other abrasive wheels.....	51	1,943	1,155,624	6,710,666	4,059,351
Grindstones.....	14	1,394	637,610	1,688,171	1,219,979
Hones and whetstones.....	18	1,152	71,578	267,932	157,935
Lime.....	853	13,897	5,980,174	17,951,987	11,221,081
Marble and stone work.....	4,964	65,603	42,546,384	113,092,967	75,695,833
Wall plaster.....	198	4,791	2,391,413	12,803,758	6,796,581
Industries using clay as a material.....	5,402	137,048	69,499,676	179,653,078	129,883,631
Brick and tile.....	4,215	76,528	37,138,584	92,776,504	69,040,402
China decorating.....	40	328	190,860	756,293	475,176
Crucibles.....	12	325	180,216	1,843,326	760,144
Kaolin and ground earths.....	119	1,990	897,458	4,680,548	2,628,737
Pottery, terra-cotta, and fire-clay products.....	822	56,163	29,753,495	76,118,861	54,207,956
Statuary and art goods.....	194	1,699	1,339,063	3,441,546	2,761,216
Glass and manufactures of glass.....	1,094	81,267	46,312,298	117,767,129	73,486,480
Glass.....	363	68,911	39,299,624	92,095,203	59,975,704
Glass, cutting, staining, and ornamenting.....	583	9,362	5,249,277	16,101,129	9,854,685
Mirrors.....	148	2,994	1,763,397	9,570,797	3,666,091

¹ The table does not include the statistics for establishments engaged in the manufacture of millstones, which, in order to avoid disclosing the operations of individual establishments, is included in the total for "all other industries" (see discussion at the end of this chapter).

In this table the industries are divided into three groups: (1) Those in which stone is the principal material, (2) those in which clay is the principal material, and (3) the glass industry and those industries using glass as their principal material. The placing of one or two industries is rather arbitrary. For example, artificial stone may be made from sand and cement, and plaster and stone as well as clay are used in the manufacture of statuary and art goods.

ARTIFICIAL STONE.

The principal materials used in this industry are Portland or other cement, sand, gravel, and crushed rock; but since cement is the material which binds the others together, the artificial stone is often referred to as "cement." "Concrete" is another term used to describe the product. While cement building blocks form the chief product of this industry, many articles which were formerly made of stone, brick, wood, or iron are now made of cement. A few of the many uses to which it is put are the manufacture of burial vaults, water tanks, sewer pipes and draitile, monuments and headstones, laundry tubs, ash and garbage cans, vases and garden furniture, posts, chimneys, floor tiles, columns, arches, balusters, and capitals, window and door sills and lintels, caps, porch spindles, and copings, moldings, shingles, mangers and troughs, tables, covers for sewers and catch basins, and receptacles for railway signal batteries. Concerns engaged chiefly in constructing concrete buildings, bridges, walks, foundations, cellar walls, curbing, steps, piers, etc., were

not canvassed by the census, which does not cover the building industries generally. Some establishments, however, were engaged in building work and also in making portable articles of the kinds named, and the statistics here presented cover a certain amount of such construction work.

In addition to the principal materials already named, other materials, such as cinders, marble scrap, plaster of Paris, marble dust, clay, coal ashes, slag, lime, iron rods, and asbestos, are used in some cases.

The following tabular statement presents the more important data for this industry for 1909 and 1904. Prior to 1904 the statistics for "artificial stone" were included with those for the marble and stone work industry. Cement blocks and concrete work were made only to a limited extent, however, even in 1899, and the artificial stone industry in its present form is of very recent development.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	3,439	9,957	\$5,342,063	\$7,042,042	\$18,595,688	\$11,532,746
1904.....	477	2,596	1,462,838	1,430,238	4,128,221	2,697,983

In addition to the products covered by the above table for 1909, the manufacture of artificial stone to the value of \$279,023 was reported by establishments engaged primarily in the manufacture of other products, principally wall plaster, lumber and timber products, and brick and tile.

CEMENT.

This industry consists chiefly in the manufacture of Portland cement from rock usually quarried by the same establishments.

In the following comparative table no figures are presented for the censuses of 1879, 1889, and 1899, as in the published reports for these years the data for the manufacture of cement were included with those for the manufacture of lime under the classification of "lime and cement."

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	135	26,775	\$15,319,662	\$29,343,791	\$63,205,455	\$33,861,664
1904.....	129	17,478	8,814,077	12,215,113	28,873,122	17,658,009
1899.....	45	1,632	631,993	773,192	2,033,893	1,260,701
1859.....	14	740	208,460	262,920	767,080	504,160
1849.....	35	497	117,924	235,157	509,110	270,953

Comparatively little natural cement was made in 1909 and a still smaller quantity of puzzolan cement. The former is an argillaceous limestone calcined and ground; the latter a ground mixture of blast-furnace slag and slaked lime. The hydraulic cement called Portland cement is a calcined and ground mixture of limestone, chalk or marle and clay or shale.

KIND.	Quantity (barrels.)	Value. ¹
Total.....		\$63,205,455
Cement.....	66,689,715	53,610,563
Portland.....	64,991,431	52,858,354
Natural.....	1,537,638	652,756
Puzzolan.....	160,646	99,453
All other products.....		9,594,892

¹ In addition, cement to the value of \$69,260 was made by establishments engaged primarily in the manufacture of pig iron and of lime.

The statistics of the production of cement were collected in cooperation with the United States Geological Survey, which compiles annual statistics for the industry and reports the value of the cement in bulk, exclusive of the value of the barrels and bags used as containers. In order to make the census figures agree with those of the Survey, the value of the cement in bulk is given here, and the value of the containers used is included in the total for "all other products," which also covers crushed rock sold as such, marble dust, and mixed ashes and cement.

EMERY AND OTHER ABRASIVE WHEELS.

This classification embraces the manufacture of grinding wheels of emery, corundum, adamite, and alundum, and also of polishing and buffing wheels, belts, and disks of cloth or leather. Some of the establishments also reported as subsidiary products oilstones, hones, and emery bricks. The classification was "emery wheels" from the census of 1869 to that of 1904, inclusive; it was changed to "emery and other abrasive wheels" at the census of 1909.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	51	1,943	\$1,155,624	\$2,651,315	\$0,710,668	\$4,059,351
1904.....	34	801	451,016	705,220	2,062,120	1,356,900
1899.....	24	546	303,091	508,753	1,381,675	872,922
1859.....	17	245	135,356	186,579	726,425	539,846
1879.....	11	112	58,253	109,952	322,022	213,070
1869.....	6	41	31,222	53,840	156,300	102,400

Emery and other abrasive wheels to the value of \$6,003 were reported for 1909 by other industries, principally by foundries and machine shops, and by manufacturers of furniture and refrigerators and of saws. The establishments engaged in the manufacture of sandpaper and emery paper and cloth use practically the same kind of materials as those in this industry. These establishments, however, are classified as a separate industry, and included in the group of "miscellaneous industries" (see Table 380).

GRINDSTONES.

The following table presents the statistics for this industry as shown in the reports of the manufactures censuses from 1849 to 1909. Owing to the lack of a sharp line of demarcation between the manufacturing and the quarrying business the statistics for the different censuses are by no means closely comparable, and none of them have much significance.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	14	1,394	\$637,610	\$468,192	\$1,688,171	\$1,219,979
1904.....	23	706	274,743	264,413	788,049	523,636
1899.....	25	1,167	407,153	263,811	1,088,909	825,098
1889.....	9	124	51,776	34,742	122,240	87,498
1879.....	14	231	57,040	85,366	184,555	99,189
1869.....	10	236	59,600	33,853	163,700	129,847
1859.....	11	145	41,640	12,800	67,040	54,240
1849.....	3	10	4,740	9,500	16,500	7,000

¹ "Grindstones and grindstone quarrying."

Grindstones were made to a comparatively small extent in 1909 by one establishment classified under "brick and tile."

HONES AND WHETSTONES.

This industry includes the manufacture of razor hones, whetstones, oilstones, scythestones, and lawn-mower sharpeners.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	18	152	\$71,578	\$109,997	\$267,932	\$157,935
1904.....	17	220	94,428	103,334	307,789	204,455
1899.....	18	189	72,879	64,278	196,323	132,045
1889.....	9	57	18,754	6,332	54,136	47,604
1879.....	25	225	52,961	92,461	224,130	131,669
1869.....	39	296	80,260	74,980	258,942	183,962
1859.....	15	48	11,916	7,394	36,235	28,841

There were several classifications in 1859 which are combined in the table above for comparison. These classifications were "oilstones," "scythe rifles," "scythestones," and "whetstones."

One establishment in 1909 classed under "emery and other abrasive wheels" made hones and whetstones, but the value of its products was small. These articles are also made by certain quarries, no part of whose business is covered by Table 303.

LIME.

At the censuses from 1879 to 1899 the data for the manufacture of lime were included with those for the manufacture of cement and wall plaster under the designation "lime and cement." The figures appear to have some value for purposes of comparison, however, and Table 304 gives statistics for "lime and cement" for 1899, 1889, and 1879, in addition to the available statistics for "lime."

The quarrying of limestone and the burning of the stone into lime are usually done by the same establishment.

Table 304

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
LIME.						
1909.....	853	13,897	\$5,980,174	\$6,730,906	\$17,951,987	\$11,221,081
1904.....	526	11,152	4,597,113	5,437,150	14,751,170	9,314,020
1869.....	1,001	6,450	1,936,160	4,458,542	8,917,405	4,458,863
1859.....	714	3,053	877,377	1,760,103	3,798,505	2,038,402
1849.....	761	2,838	735,746	1,106,775	2,286,242	1,179,467
LIME AND CEMENT.						
1899.....	998	19,085	7,740,735	11,039,727	28,673,735	17,634,008
1889.....	873	13,043	4,944,313	5,667,863	15,741,501	10,073,938
1879.....	615	5,069	1,579,313	2,640,189	5,772,318	3,123,129

In addition to the products covered by the table for 1909, lime valued at \$180,206 was reported by establishments engaged primarily in other lines of manufacture, principally in the manufacture of cement and of food preparations, and in canning and preserving.

MARBLE AND STONE WORK.

Separate statistics have been compiled for establishments making chiefly monuments and tombstones and for those doing chiefly other marble and stone work, but there is so much overlapping of products that only combined totals are given in most of the tables.

Table 305

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	4,964	65,803	\$42,546,384	\$37,397,134	\$113,092,967	\$75,695,833
Marble and stone work, not specified.....	1,986	51,292	32,305,618	22,248,305	74,688,388	52,439,993
Monuments and tombstones.....	2,978	14,311	10,240,766	15,148,739	38,404,579	23,255,840

In addition to the products covered by the table, marble and stone work valued at \$123,880 was reported for 1909 by establishments engaged primarily in the manufacture of copper, tin, and sheet-iron products, and of statuary and art goods, in the cutting, staining, and ornamenting of glass, and in other industries.

Marble and stone work, not specified.—This branch of the industry covers, broadly speaking, the sawing, cutting, and polishing of marble, granite, limestone, and other stones for building work and other purposes, whether done at quarries (in which case statistics of the quarrying operations are included) or in separate establishments. The products include building stone, door and window sills and lintels, floors and ceilings, step stones, posts, bond stones, copings, columns, sidewalk stones, paving blocks and curbing, altars, marble counter slabs, basins, soda-water fountains, fireplace work, shelves, stairs, mosaic work, and store and office fixtures. A great variety of articles are made from slate, such as electrical switchboards, wainscoting, counter tops, billiard and pool table beds, sinks, mantels, roofing slate, school slates, slate blackboards, and laundry tubs. Soapstone, onyx, blue-stone, and Caen stone are among the less important materials used.

In many cases stonecutting is done in immediate connection with building construction, which is not covered by the census of manufactures.

The following table presents the statistics for this industry for each census year from 1859 to 1909. The statistics for artificial stone, if reported prior to 1904, are included in this table.

Table 306

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,986	51,292	\$32,305,618	\$22,248,395	\$74,688,388	\$52,439,993
1904.....	1,169	38,486	23,686,270	17,813,109	69,165,327	41,342,218
1899 ¹	1,687	31,072	16,607,300	13,655,673	43,344,253	29,688,590
1889.....	1,321	21,950	15,314,598	16,232,430	41,924,264	25,691,534
1879 ²	2,546	21,471	10,238,885	12,743,345	31,415,150	18,671,805
1869.....	923	13,190	7,601,471	8,034,858	21,316,860	13,282,000
1859.....	1,806	15,379	5,672,211	5,345,526	16,244,044	10,598,518

¹ Includes artificial stone.

² Includes monuments and tombstones.

Monuments and tombstones.—This subclassification includes establishments engaged primarily in the cutting, polishing, and finishing, for the wholesale trade, of all kinds of stone, but chiefly of slate, marble, and granite, for cemetery purposes. The principal products are monuments, tombstones, tablets, headstones, posts, markers, vaults, bases, mausoleums, sarcophagi, shafts, and inclosures for cemetery lots. The census does not now cover the numerous small shops where finished or partly finished monuments and tombstones are purchased and where the only work is usually lettering done to the individual order. Such establishments, however, are included in the figures prior to 1899, which accounts for the decrease in number of establishments and value of products from 1889 to 1899.

The table following gives the statistics for this branch of the marble and stone work industry for the censuses at which they were shown separately, beginning with 1869. In 1879 the industry was included with "marble and stone work" and the statistics for that year are included in those given in the table just preceding this.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	2,978	14,311	\$10,240,766	\$15,148,739	\$38,494,579	\$23,255,840
1904.....	1,439	12,624	8,213,030	8,755,417	25,688,607	16,933,190
1899.....	1,265	10,614	6,236,006	7,890,137	20,322,081	12,432,844
1889.....	2,052	9,778	6,028,025	7,636,474	20,671,498	13,035,024
1869.....	1,049	5,719	2,490,296	3,709,518	8,916,654	5,207,136

WALL PLASTER.

This classification covers the manufacture for sale of a great variety of wall plasters or similar preparations, such as hard wall plaster, whitewash, plaster wainscoting, fiber plaster, stucco, calcined plaster, hydrated lime, plaster board, terra alba, marble dust, asphalt mastic, plaster of Paris, and ornamental plasterwork for interior decoration. This industry was reported at the census of 1869 as "plaster, ground," at the census of 1859 as "plaster, and manufactures of," and at the census of 1849 as "plaster, gypsum." At the censuses of 1879, 1889, and 1899 it was included with "lime and cement," and at the census of 1904 it was reported separately under the classification of "gypsum wall plaster." So many materials besides gypsum rock are used, however, that the designation was changed in 1909 to "wall plaster." Some of the more important of these materials reported in 1909 were sand, lime, cement, plaster of Paris, wood fiber, asbestos, cinders, coal ashes, asphalt, clay, and slag.

The following table summarizes the statistics for the industry as reported for the censuses from 1849 to 1909, inclusive, except those of 1899, 1889, and 1879, when they were included with "lime and cement."

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	198	4,791	\$2,391,413	\$6,007,177	\$12,803,758	\$6,796,581
1904.....	176	3,758	1,890,350	4,725,919	10,184,185	5,438,266
1869.....	321	1,513	533,407	1,430,140	2,691,851	1,261,711
1859.....	307	865	232,500	522,838	1,110,854	588,018
1849.....	140	381	100,692	239,063	428,914	189,851

Wall plaster to the value of \$175,094 was also made in 1909 by establishments engaged primarily in the manufacture of roofing materials, cement, and artificial stone.

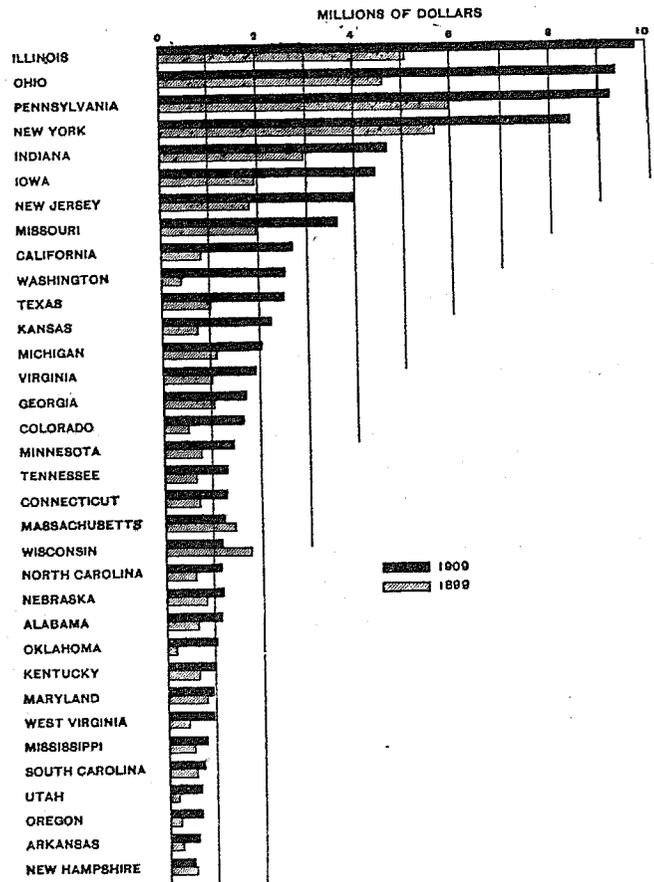
The figures for 1909 cover the entire quarrying and manufacturing operations of certain establishments which quarried gypsum and made wall plaster from it.

BRICK AND TILE.

Under this classification are included establishments manufacturing brick of various kinds—common, vitrified, paving, fancy, ornamental, etc.—and establishments manufacturing draintile. The great bulk of the product was brick and tile, though a few establishments reported such products as chimney pipe, flue lining, gas logs, crucibles, scorifiers, and water pipe for irrigating purposes. The establishments usually take the clay, which is the principal material, directly from the ground, so that the chief expense is in the manufacturing process. The main factor in the cost of materials reported is fuel.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	4,215	76,523	\$37,138,584	\$23,736,102	\$92,776,504	\$69,040,402
1904.....	4,634	66,021	28,646,005	16,316,499	71,152,002	54,835,583
1899.....	5,423	61,979	21,833,333	11,006,148	51,270,476	40,264,328
1889.....	5,828	104,176	29,709,357	12,639,597	67,770,695	55,131,098
1879.....	5,631	66,355	13,443,532	9,774,834	32,833,587	23,058,753
1869.....	3,182	44,051	11,035,374	7,828,457	30,322,615	22,494,158
1859.....	1,651	20,941	4,054,254	2,132,224	10,769,747	8,637,523
1849.....	1,603	17,345	4,235,088	1,474,023	6,610,731	5,136,708

BRICK AND TILE—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



Brick and tile to the value of \$70,486 were also made in 1909 by establishments engaged primarily in

the manufacture of other products, principally wall plaster, lumber and timber products, and artificial stone.

Part of the decrease in the average number of wage earners between 1889 and 1899 results from a change in the method of computing the average, which seriously affects the comparability of the figures for wage earners in the case of highly seasonal industries. In 1889 the "average number" of wage earners was the average for the time the establishment was in operation, while in 1899 and in later census years it was the number who would have been required to perform the work done if all had worked for a full year. Thus a brick yard in operation six months in the year and employing for that time 50 hands would have contributed 50 to the total average number of wage earners in 1889, but only 25 in 1899.

CHINA DECORATING

This classification includes establishments engaged in firing or decorating china. The china pieces themselves are usually owned by others and the value of products represents the charges for work done. The decorations may be painted by hand or added by the use of decalcomania. The numerous small establishments where such work is done to individual order or for private customers are not included in Table 310, except for the census of 1889. Many establishments in the pottery industry decorate the china they produce, so that the statistics given below by no means represent the entire business.

The census of 1889 was the first at which separate statistics appeared for the industry, except that two establishments, with products valued at \$185,000, were classed under "china and glass decorating" at the census of 1859.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	40	328	\$190,860	\$311,117	\$736,293	\$475,176
1904.....	28	225	99,137	107,647	326,679	219,032
1899.....	49	298	122,423	207,356	484,891	277,535
1889.....	78	353	162,620	364,778	847,555	482,777

CRUCIBLES.

In the manufacture of crucibles, fire clay, blue clay, kaolin, and plumbago are the principal materials. Besides crucibles, most of which are made to withstand a very high temperature, some of the establishments in this classification reported in 1909 the manufacture of fire brick, tiles, retorts, stoppers, nozzles, fire-clay supplies for glass factories, and various other fire-clay specialties.

In addition to the products covered by the table for 1909, crucibles valued at \$751,007 were made by establishments engaged primarily in making lead pencils.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	12	335	\$180,216	\$1,089,182	\$1,849,326	\$760,144
1904.....	11	280	159,219	761,851	1,342,716	550,865
1899.....	11	671	250,654	1,672,290	2,607,308	834,012
1889.....	10	230	110,230	392,296	726,703	330,412
1879.....	11	694	284,169	955,841	1,445,641	459,800
1869.....	10	119	127,188	538,712	1,117,463	578,731
1859.....	3	59	25,200	58,700	150,000	91,300

KAOLIN AND GROUND EARTHS.

Under this classification are included those establishments which are engaged in the grinding or pulverizing of certain earths, rocks, or minerals. Some of the more important of these are emery ore, flint, chalk, cliffstone, talc, ochre, clay, mica, pumice, feldspar, rotten stone, ferromanganese, slate, slag, marble, and alundum. Operations of quarries are included, if any of the material is prepared for the market at the quarry. The industry was first reported at the census of 1869.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	119	1,990	\$397,458	\$2,041,811	\$4,690,548	\$2,638,737
1904.....	131	2,157	896,700	1,863,901	4,438,794	2,569,893
1899.....	145	2,094	820,678	1,651,335	3,722,151	2,070,816
1889.....	95	1,271	548,879	1,330,290	2,846,862	1,516,372
1879.....	63	898	310,909	697,006	1,455,757	753,751
1869.....	52	262	101,213	163,874	388,054	224,180

The value of the production of kaolin and ground earths in 1909 by establishments engaged primarily in the manufacture of other products was \$49,654. The leading industries represented were "pottery, terra-cotta, and fire-clay products," "artists' materials," and "brick and tile."

POTTERY, TERRA-COTTA, AND FIRE-CLAY PRODUCTS.

This classification covers establishments which manufacture stoneware, earthenware, white and cream-colored ware, chinaware, delft and belleek ware, porcelain electrical supplies, building and architectural terra-cotta, fire brick, sewer pipe, stove lining, faience, filter disks, lead-corroding pots, and similar clay products.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	822	56,168	\$23,753,495	\$21,910,905	\$76,118,861	\$54,207,958
1904.....	873	52,428	25,177,665	16,591,462	64,200,792	47,609,330
1899.....	1,000	43,714	17,691,737	11,915,236	44,283,386	32,345,150
1889.....	707	18,980	8,869,032	5,618,401	22,057,090	16,438,689
1879.....	752	10,221	3,600,727	2,908,063	8,977,333	6,065,270
1869.....	777	6,116	2,247,173	1,702,705	6,045,536	4,342,331
1859.....	589	3,623	1,170,605	798,323	3,218,681	2,419,758
1849.....	518	2,466	655,334	294,351	1,578,628	1,254,277

In addition, in 1909, pottery, terra-cotta, and fire-clay products to the value of \$566,905 were made by

establishments engaged primarily in the manufacture of other products, principally electrical machinery, apparatus, and supplies, crucibles, and brass and bronze products.

STATUARY AND ART GOODS.

This classification covers the manufacture of a variety of products, such as statues, vases, brackets, garden and lawn furniture, plaques, mantels, columns, panels, moldings, pedestals, ornamental work, architectural sculpture, small images, scagliola, bronze statuary, and papier-mâché novelties. When bronze statues are cast in bronze foundries as a subordinate part of the business, their value is included in the value of products for the brass and bronze products industry. The cutting of marble and other stone statues is a part of the industry. The materials used are as varied as the products. Besides the principal materials—clay, plaster of Paris, cement, marble, white lead, whiting, chalk, granite, and alabaster—a great number of binding, coloring, and finishing materials were reported. The term "art goods" is necessarily vague, and there are many products of other industries to which it might be applied; but the art goods covered by this classification are more or less closely related to the art of sculpture.

Prior to 1904 the statistics for statuary and art goods were included under other classifications.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	194	1,690	\$1,339,063	\$680,330	\$3,441,546	\$2,761,216
1904.....	135	1,507	1,030,481	392,374	2,416,730	2,024,356

In addition, in 1909, products to the value of \$89,137 were made by establishments engaged primarily in other industries, such as "shipbuilding, including boat building," "brass and bronze products," and "models and patterns, not including paper patterns."

GLASS.

The products of this industry are the various kinds of building glass—window glass, rough and polished plate glass, cathedral glass, wire glass, and skylight glass—as well as all kinds of pressed and blown glass, such as tableware, lamps, lamp chimneys, globes, vases, bulbs, tubes, opal ware, bottles and jars, stoppers, lenses, glass bars and canes, marbles, nest eggs, blanks for cutting, and glass brick and tile.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	363	68,911	\$30,299,624	\$32,119,499	\$92,095,203	\$59,975,704
1904.....	399	63,969	37,288,148	26,145,522	79,607,998	53,462,476
1899.....	355	52,818	27,084,710	16,731,009	56,539,712	39,808,703
1889.....	294	44,892	20,885,961	12,140,985	41,051,004	28,910,019
1879.....	169	24,177	9,144,100	8,028,821	21,154,571	13,126,950
1869.....	154	15,367	7,589,110	5,864,365	18,467,507	12,603,142
1859.....	112	9,016	2,903,832	2,914,303	8,775,155	5,860,852
1849.....	94	5,668	2,094,576	1,556,833	4,641,676	3,084,843

The quantity and value of the different kinds of glass and glassware made in 1909 are shown in Table 316.

KIND.	Quantity.		Value.
	Amount.	Units.	
Total.....			\$92,095,203
Building glass.....			26,308,438
Window.....	6,921,611	50-ft. boxes.	11,742,959
Plate, total cast.....	60,105,694	Sq. feet.....	
Polished.....	47,370,254	Sq. feet.....	12,204,875
Rough, made for sale.....	205,690	Sq. feet.....	37,431
Cathedral.....	7,405,980	Sq. feet.....	569,848
Skylight.....	15,409,966	Sq. feet.....	788,726
All other.....			964,599
Pressed and blown glass.....			27,398,445
Tableware.....	1,286,056	100 pieces.....	
Jellies, tumblers, and goblets.....	11,687,036	Dozen.....	
Lamps.....	322,482	Dozen.....	
Chimneys.....	6,652,967	Dozen.....	
Lantern globes.....	952,620	Dozen.....	
Globes and other electrical goods.....	11,738,798	Dozen.....	
Shades, globes, and other gas goods.....	1,541,449	Dozen.....	
Blown tumblers, stem ware, and bar goods.....	9,132,060	Dozen.....	
Opal ware.....	3,095,666	Dozen.....	
Cut ware.....	206,336	Dozen.....	
Bottles and jars.....			36,018,333
Prescription, vials, and druggists' wares.....	3,624,022	Gross.....	
Beer, soda, and mineral.....	2,345,204	Gross.....	
Liquor and flasks.....	1,887,344	Gross.....	
Milk.....	440,302	Gross.....	
Fruit.....	1,124,455	Gross.....	
Battery jars and other electrical goods.....	9,981	Gross.....	
Patent and proprietary.....	1,637,798	Gross.....	
Packers and preservers.....	1,237,175	Gross.....	
Demi-johns and carboys.....	122,570	Dozen.....	
All other products.....			2,369,987

GLASS, CUTTING, STAINING, AND ORNAMENTS.

This classification covers establishments engaged in cutting, beveling, staining, ornamenting, and engraving glass. The most important products are cut-glass tableware, decanters, buttons, imitation precious stones, artificial eyes, graduated measures, leaded art-glass windows, partitions, screens and panels, lamp shades, mosaic work, glass surgical instruments, chemical apparatus, syringes, test tubes, medicine droppers, beads, prismatic glass, jewelry boxes, magnifying glasses, spirit-level vials, silver decorated glass, and spun glass. Establishments which make a specialty of bending glass are also included in this classification. Establishments engaged chiefly in making lenses and other optical and photographic apparatus are not included under this classification, but are classified under "optical goods" and "photographic apparatus and materials."

At the census of 1849 eight "glass cutters" were reported, having 174 wage earners and showing \$60,300 paid in wages, \$71,133 expended for materials, and \$165,950 as the value of products. There was no separate classification for the industry for 1859.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	583	9,362	\$5,249,277	\$6,246,444	\$16,101,129	\$9,854,655
1904.....	453	8,379	4,359,199	4,843,369	13,137,653	8,292,260
1899.....	411	4,914	2,393,711	3,534,980	8,750,042	5,215,052
1889.....	279	3,320	1,954,560	2,188,287	6,090,378	3,902,091
1879.....	170	1,586	706,768	1,156,866	2,535,009	1,378,143
1869.....	47	455	257,315	268,808	768,355	499,552

In addition to the products covered by the table for 1909, glass, cutting, staining, and ornamenting to the value of \$618,437 was reported by establishments engaged primarily in the manufacture of products covered by other industry designations, principally mirrors, paint and varnish, and silverware and plated ware.

MIRRORS.

Establishments engaged in the production of mirrors—pier glasses, mantel mirrors, and mirrors for hall racks and for show cases, etc., are placed under this classification. Receipts for the resilvering of mirrors form a part of the value of products. The statistics for the censuses of 1869 and 1879 are probably not closely comparable with those for later censuses.

METALS AND METAL PRODUCTS OTHER THAN IRON AND STEEL.

THE GROUP AS A WHOLE.

The group "metals and metal products other than iron and steel" is intended to cover industries of the same general type as those included in the group "iron and steel and their products," the only difference being that the basic materials are other metals. As in the case of the iron and steel group, there is no very sharp line of distinction between certain industries assigned to this group and certain ones assigned to other groups, particularly the group "miscellaneous industries."

The principal basic metals of the industries in this group are copper, lead, zinc, tin, gold, and silver. Some of the industries included in the group extract these metals from ores, or refine them or alloy them, while other industries use these metals in the manufacture of more highly elaborated commodities. It should be noted that these same basic metals are used to a very large extent in industries assigned to other groups. Thus, in the various kinds of machinery the

Table 318

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	148	2,994	\$1,763,397	\$5,904,706	\$9,570,797	\$3,666,091
1904.....	119	2,649	1,374,807	4,587,349	7,605,435	3,018,086
1899.....	103	2,555	1,231,689	4,995,671	8,004,391	3,008,639
1889.....	45	1,404	842,407	3,274,131	6,000,553	2,726,402
1879.....	7	77	42,900	212,500	304,000	91,500
1869 ¹	11	206	106,772	197,061	458,800	291,739

¹ "Looking glasses."

In addition to the products covered by the table for 1909, mirrors valued at \$730,619 were reported by establishments engaged primarily in other industries, principally "lumber and timber products," "glass, cutting, staining, and ornamenting," and "furniture and refrigerators."

manufacture of which is included in the iron and steel group, other metals are frequently used, at least in a minor way.

As the metals and alloys produced by the basic industries of this general group are used as materials by other industries in the group, there is much duplication in the total value of products for the group as a whole. It may be noted that the basic industries which extract the metals from ores or refine and alloy them usually add relatively little to the value of the raw material which they use, while the industries which use these metals and alloys as materials are of a more highly elaborative character and add very considerably to the value of the materials.

The following table shows the number of establishments, average number of wage earners, total wages paid, value of products, and value added by manufacture for each of the industries included in the general group, as reported for the census of 1909.

Table 319

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total.....	8,750	248,785	\$146,333,727	\$1,238,251,401	\$347,236,668
Metals.....	1,409	74,627	49,411,808	811,003,246	132,222,812
Babbitt metal and solder.....	109	897	560,804	19,767,935	3,498,235
Brass and bronze products.....	1,021	40,618	23,677,353	149,989,058	50,760,646
Gold and silver, reducing and refining, not from the ore.....	62	456	345,738	23,611,764	1,628,055
Lead, bar, pipe, and sheet.....	33	802	510,047	6,144,980	1,733,397
Smelting and refining, copper.....	33	15,623	13,395,719	378,505,974	45,274,236
Smelting and refining, lead.....	23	7,424	5,430,652	167,405,650	15,442,628
Smelting and refining, zinc.....	29	6,655	4,210,341	34,203,804	8,975,593
Smelting and refining, not from the ore.....	89	2,147	1,281,124	28,072,041	4,909,622
Metal products.....	6,834	169,994	94,482,808	415,400,266	210,089,851
Clocks and watches, including cases and materials.....	120	23,857	12,944,169	35,106,842	24,066,144
Copper, tin, and sheet-iron products.....	4,228	73,615	39,500,794	199,824,218	87,241,945
Gas and electric fixtures and lamps and reflectors.....	619	18,551	10,893,073	45,657,372	24,590,015
Gold and silver, leaf and foil.....	85	1,383	636,867	2,630,500	1,112,626
Jewelry.....	1,537	30,347	18,357,950	80,349,874	43,675,015
Needles, pins, and hooks and eyes.....	49	4,638	2,064,373	6,684,095	4,365,421
Silverware and plated ware.....	153	16,610	10,281,761	42,225,547	23,896,440
Tin foil.....	10	683	303,711	3,413,819	1,143,245
Related industries.....	507	4,164	2,439,111	11,847,889	4,924,005
Electroplating.....	461	2,717	1,652,315	4,509,579	3,304,374
Galvanizing.....	46	1,447	786,796	7,338,310	1,619,631

In this table the industries are divided into (1) those producing metals and alloys, (2) those using metals and alloys in the manufacture of articles ready for consumption, and (3) those performing certain partial processes of manufacture.

BABBITT METAL AND SOLDER.

The establishments included under this classification manufacture nonferrous metals and alloys, principally from pig lead and tin, used for antifriction bearings and for joining metals.

Table 320

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	109	897	\$560,804	\$16,269,700	\$19,767,935	\$3,498,235
1904.....	75	599	337,507	10,823,752	13,099,835	2,236,086
1899.....	51	535	294,584	7,998,369	9,191,409	1,193,040
1889.....	33	173	84,283	2,385,894	2,905,102	519,208
1879.....	9	44	18,745	214,193	262,950	48,757
1869.....	8	34	15,610	246,513	309,900	63,387

In addition to the products covered by this table, babbitt metal and solder to the value of \$884,261 were reported in 1909 by establishments in other industries, such as "brass and bronze products," "lead, bar, pipe, and sheet," and "copper, tin, and sheet-iron products."

BRASS AND BRONZE PRODUCTS.

This classification includes establishments engaged in the manufacture of brass (an alloy consisting chiefly or solely of copper and zinc), of brass castings, of bronze castings, and of brass-ware, and in the rolling of brass and copper, respectively. Separate statistics were compiled for five branches of the industry for 1909, each establishment being classified according to its product of greatest value, but there is such an overlapping of the products of some of the establishments that combined totals only are shown in most of the tables.

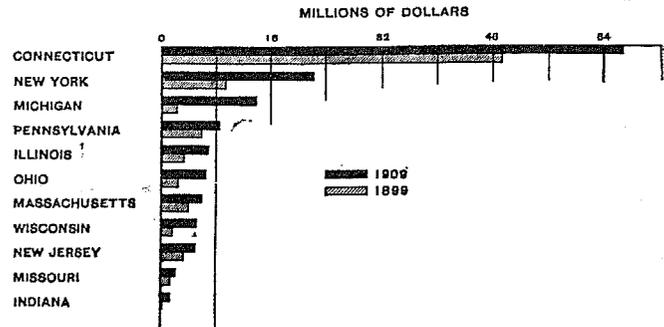
Table 321

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	1,021	40,618	\$23,677,383	\$99,228,412	\$149,989,058	\$50,760,646
Brass and copper, rolled.....	32	13,823	7,803,775	54,694,702	71,517,432	16,822,730
Brass castings and brass finishing.....	640	12,481	7,426,110	24,292,437	41,317,657	17,025,220
Brass ware.....	286	12,847	7,409,662	15,792,820	29,999,793	14,206,973
Bronze castings.....	44	1,279	902,197	2,823,745	5,037,158	2,213,413
Brass.....	19	188	135,639	1,624,708	2,117,018	492,310

In addition to the value of products shown above, brass and bronze products to the value of \$8,392,081 were reported for 1909 by establishments engaged primarily in other industries, principally "foundry and

machine-shop products," "smelting and refining, copper," and "smelting and refining, not from the ore." Steel works and rolling mills also rolled copper rods to the value of \$4,824,443.

BRASS AND BRONZE PRODUCTS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



Brass and copper, rolled.—The most important branch of the industry "brass and bronze products" is the rolling of brass and copper from ingots. The brass used is ordinarily made in the establishments where the rolling is done. Among the principal products are brass and copper sheets, seamless brass and copper tubing, brass and copper rods to be used for drawing wire, and German silver sheets and rods. Such articles as wire, rivets, and coin blanks are made by some establishments as minor products. Copper wire is also made by establishments assigned to the wire industry, or by the wire departments of iron and steel rolling mills.

The statistics for "brass and copper, rolled," were reported under "brass and copper tubing," "brass, rolled," and "copper, rolled," at the census of 1869 and the combined figures for these classifications are the first shown in the table.

The designations employed for the group of brass industries at the census of 1859 were "brass and bell founding," "brass and copper tubing," "brass and German silver, rolled," "brass book clasps and badges," "brass founding and brass ware," "brass ornaments," "brass wire and wire cloth," "copper and brass ware," "copper mining," "copper, rolled," "copper, sheet and bolt," "copper smelting," and "copper work." At the census of 1849 only "brass foundries" and "copper and brass" were shown.

Table 322

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	32	13,823	\$7,803,775	\$54,694,702	\$71,517,432	\$16,822,730
1904.....	25	10,909	5,733,487	39,798,683	51,912,853	12,114,170
1899.....	22	8,459	4,436,853	35,111,425	44,309,829	9,193,404
1889.....	16	2,698	1,380,378	5,493,231	8,381,472	2,888,241
1879.....	26	5,082	2,524,169	9,523,157	14,329,731	4,806,574
1869.....	21	835	477,793	2,828,330	4,145,426	1,317,096

The abnormal increases from 1869 to 1879 and decreases from 1879 to 1889, also the great increases from 1889 to 1899, are probably due largely to changes in the classification of the reports of some establishments. There was a greater uniformity in method of classifying reports from 1899 to 1909, and the increases during this period are fairly uniform. The close interrelation of the brass and copper industries is the reason for their consolidation under "brass and bronze products" in most of the tables.

Brass castings and brass finishing.—The making of brass castings, large and small, for a variety of uses, and the polishing, turning, and enameling of brass, constitute the principal business of establishments in this branch of the industry. Statistics for each census from 1869 to 1909, inclusive, are shown in Table 323.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	640	12,481	\$7,426,110	\$24,292,437	\$41,317,657	\$17,025,220
1904.....	520	11,305	6,208,291	16,170,153	29,671,928	13,501,775
1899.....	439	9,154	4,590,623	14,800,836	23,891,248	9,090,412
1889.....	453	10,943	5,758,333	12,249,607	24,344,434	12,094,527
1879.....	396	6,237	2,729,794	5,894,452	10,808,742	4,914,290
1869.....	275	3,377	1,731,306	3,293,629	6,855,756	3,562,127

Statistics for this industry were not given separately at the census of 1859, but were included with the bell foundry industry and with brass ware. At the census of 1849, 148 "brass foundries" were reported with 1,678 wage earners, receiving \$591,672 in wages. The cost of materials was \$2,112,592 and the value of products \$3,625,618.

Brass ware.—A very large variety of articles made from sheet brass and wire are manufactured by the establishments included in this subclassification. Fire-place, office, and display fixtures, candlesticks, clock trimmings, church goods, automobile trimmings, bottle stoppers, nuts, screws, special brass parts, tools, dies, metal specialties, brass moldings and strips, nautical brass work, corset eyelets and fastenings, and buckles are among the articles reported. No separate statistics were given prior to the census of 1869. It is probable that changes in the classification of certain establishments account in part for the great increase shown between 1879 and 1889.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	286	12,847	\$7,409,662	\$15,792,820	\$29,999,793	\$14,206,973
1904.....	220	10,078	5,176,758	7,631,943	17,499,056	9,867,113
1899.....	203	8,770	4,100,372	8,784,706	16,803,764	8,019,058
1889.....	113	7,157	3,557,069	7,089,202	13,615,172	6,525,970
1879.....	20	1,142	411,329	948,118	1,523,098	574,980
1869.....	30	757	386,008	907,908	1,849,013	941,165

Bronze castings.—The establishments included in this subclassification manufacture principally bronze, copper, and aluminum castings of great variety, including statuary castings for architectural work,

bronze doors, castings for railway use, and the like. Manganese bronze ingots and ingots of phosphor-bronze and other alloys, were reported by some establishments. No statistics were presented separately before the census of 1869.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	44	1,279	\$902,197	\$2,823,745	\$5,037,158	\$2,213,413
1904.....	27	798	501,054	1,688,831	2,622,495	933,664
1899.....	21	621	372,797	1,339,722	2,229,329	889,607
1889.....	14	271	195,535	695,455	1,165,163	469,678
1879.....	7	153	64,072	498,470	670,912	172,442
1869.....	9	157	111,714	63,375	280,400	217,025

Brass.—The production of brass included under this subclassification is principally from scrap metal. It does not include the manufacture of ingot brass by establishments using it in the production of other articles, such as rolled brass and brass wire, which are included under the classification of "brass and copper, rolled." The statistics for "brass" were not shown separately prior to the census of 1889.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	19	188	\$135,639	\$1,624,708	\$2,117,018	\$492,210
1904.....	12	78	46,496	363,720	700,772	337,052
1899.....	10	162	98,796	1,152,655	1,419,817	267,182
1889.....	14	780	401,235	1,765,605	2,549,860	784,255

GOLD AND SILVER, REDUCING AND REFINING, NOT FROM THE ORE.

Establishments classed under this heading are generally such as reduce and refine manufacturing jewelers' gold and silver and platinum sweepings, clippings, and polishings; plated scrap and other waste; and old gold and old silver from all sources. They are known as "sweep smelters" and sometimes also as "assayers and refiners." A few of the establishments reported refined doré bars. The value of products reported in some instances included considerable amounts representing the value of gold and silver bought and sold again, but it was not practicable to separate the statistics for these purely commercial transactions. Statistics of smelting and refining from the principal ores in which gold and silver are found are included under "smelting and refining, copper," and "smelting and refining, lead."

The statistics for "gold and silver, reducing and refining, not from the ore," were first reported separately at the census of 1869. The great decrease in value of products from 1889 to 1899 was doubtless due to a difference in the statistical treatment of the industry at the two censuses. The value of products of some establishments extracting gold and silver from sweepings, etc., for others has included the value of the precious metals extracted, while that of others has included only the amount received for the work

done. Thus an abnormal increase or decrease may be shown from one census to another.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	62	456	\$345,738	\$21,983,709	\$23,611,764	\$1,623,055
1904.....	41	287	206,263	17,538,379	18,724,095	1,185,716
1899.....	57	219	141,400	10,932,361	11,811,537	879,176
1889.....	38	883	625,608	30,005,096	32,035,520	2,030,424
1879.....	28	304	178,698	9,128,811	9,548,188	419,377
1869.....	12	165	110,118	673,020	848,801	175,781

LEAD, BAR, PIPE, AND SHEET.

The establishments in this classification manufacture lead pipe and sheet lead. Bar and block lead, milled lead, and lead traps and bends were also reported. In 1879 the classification was "lead, bar, pipe, sheet, and shot," and, as the statistics for the production of shot can not be segregated, the figures as reported are included in Table 328. At the census of 1869 there were two classifications, "lead, bar and sheet," and "lead pipe." At the census of 1859 the only reports were for "lead, manufactures of," and "lead, mining and smelting." The figures for these classifications are not comparable with those for this industry for other censuses. At the census of 1849 "lead" and "lead pipe" were the classifications. Ten establishments reported the manufacture of lead pipe, with 71 wage earners, to whom \$26,004 were paid in wages. The cost of materials was \$678,330 and the value of products \$797,166.

The decrease in the value of products of this industry from 1869 to 1879 was due to the great reduction in the price of lead and to the fact that currency values were reported for the former census.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	33	802	\$510,047	\$7,411,533	\$9,144,930	\$1,733,397
1904.....	32	646	405,025	7,910,180	9,277,462	1,367,282
1899.....	34	605	321,598	6,279,497	7,477,824	1,198,327
1889.....	28	637	353,188	6,882,157	8,351,754	1,469,597
1879.....	32	571	316,363	4,363,209	5,600,671	1,237,462
1869.....	22	190	138,520	9,997,658	13,609,659	3,612,001

In addition to the products covered by this table, "lead, bar, pipe, and sheet," to the value of \$917,499 was reported in 1909 by establishments engaged primarily in the manufacture of other products, principally babbitt metal and solder and paints and varnish.

SMELTING AND REFINING, COPPER.

This classification includes the smelting and refining establishments owned by mining companies, and also those independent of mines, which usually smelt or refine copper ore for toll. The cost of ma-

terials and the value of products reported for establishments which treat ore for others include the estimated value of the ore treated and of the metal produced.

In the smelting and refining of both copper and lead a very large part of the value of products consists of the value of the gold and silver extracted. The output of gold and silver reported for 1909 by the refiners of copper and the refiners of lead aggregated 140,636,-889 ounces of silver and 3,536,720 ounces of gold. Estimating the silver at a value of 52 cents per ounce, and gold at a value of \$20.67 per ounce, the values of these precious metals were \$73,131,182 and \$73,104,-002, respectively, an aggregate of \$146,235,184.

The following table presents, for 1909, separate statistics for the establishments engaged in copper smelting exclusively and for those reporting both smelting and refining.

CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	38	15,628	\$13,395,719	\$333,531,638	\$378,805,974	\$45,274,336
Establishments both smelting and refining.....	18	7,642	5,843,206	231,517,743	251,105,669	19,587,926
Establishments smelting only.....	20	7,986	7,552,513	102,013,895	127,700,305	25,686,410

¹ Includes one establishment engaged exclusively in refining.

The value of the products of establishments engaged in both smelting and refining copper duplicates largely that of the establishments engaged only in smelting, the value of the blister copper as it comes from the smelter being included in the cost of materials for the refineries.

The distinction between the mining and manufacturing industries was not clearly made prior to the census of 1899, and the statistics for smelting and refining were included with those for mines in such a manner as to make it impossible to obtain satisfactory comparative figures.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	38	15,628	\$13,395,719	\$333,531,638	\$378,805,974	\$45,274,336
1904.....	40	12,752	10,827,043	195,735,985	240,780,216	44,043,230
1899.....	47	11,324	8,529,021	122,174,129	165,131,670	42,957,541

SMELTING AND REFINING, LEAD.

Separate statistics for 1909 are given in the following table for the establishments that both smelt the lead ores and refine the bullion and for those that smelt only. The value of products of establishments of the first class largely duplicates that of the establishments which smelt only.

In addition to refined lead, lead smelters and refineries in 1909 produced as subsidiary products chemicals, gold, silver, and copper. The value of the precious metals can not be given separately for this industry, but the total value for this industry and "smelting and refining, copper," combined, has been given on page 464.

CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	28	7,424	\$5,430,652	\$151,963,022	\$167,405,650	\$15,442,628
Establishments both smelting and refining ¹	12	2,753	1,892,645	111,309,206	119,880,003	8,570,797
Establishments smelting only..	16	4,666	3,538,007	40,653,816	47,525,647	6,871,831

¹ Includes one establishment engaged exclusively in refining.

For the reasons given in the discussion of the smelting and refining of copper, it is impossible to obtain satisfactory comparative statistics for the smelting and refining of lead for censuses prior to 1899, but Table 332 gives the statistics for 1909, 1904, and 1899.

The decrease from 1904 to 1909 is due almost entirely to the fact that separate reports were prepared for the copper and lead departments of an important copper and lead smelting and refining establishment in 1904, while the operations of the entire establishment were reported as smelting and refining copper at the census of 1909.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	28	7,424	\$5,430,652	\$151,963,022	\$167,405,650	\$15,442,628
1904.....	32	7,573	5,374,691	168,958,076	185,826,539	16,868,763
1899.....	39	8,319	5,088,634	144,195,163	175,466,304	31,271,141

SMELTING AND REFINING, ZINC.

Spelter and sheet zinc, which is a rolled product, are the principal products reported for establishments included under this classification. The only comparable figures are for 1909, 1904, and 1899.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	29	6,655	\$4,210,341	\$25,230,101	\$34,205,894	\$3,975,803
1904.....	31	6,523	3,856,466	17,028,418	24,791,299	7,782,881
1899.....	31	4,869	2,355,921	13,286,058	18,188,498	4,902,440

SMELTING AND REFINING, NOT FROM THE ORE.

Establishments in this industry smelt and refine scrap metals of many kinds, not including gold and silver. The products include art metal; babbitt metal; solder obtained from old tin boxes and cans; spelter; refined white metal; linotype, monotype, electrotype, and stereotype metal; lead pipe; brass and copperingots; antimony; platinum; nickel; and similar products.

In 1879 there were four establishments reported under "smelting and refining (base scrap metal, not from the ore)," with 311 wage earners, \$158,300 paid in wages, \$8,171,900 as cost of materials, and \$8,411,100 as the value of products. At the census of 1889 there was a classification "smelting and refining," but the statistics are not comparable with those for subsequent censuses.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	89	2,147	\$1,281,124	\$23,162,419	\$28,072,041	\$4,909,622
1904.....	65	1,712	994,951	13,759,805	17,402,987	3,643,182
1899.....	61	983	522,063	5,899,935	7,784,693	1,884,760

In 1909 establishments engaged primarily in the manufacture of copper, tin, and sheet-iron products, pig iron, and other products, and in the reducing and refining of gold and silver other than from the ore, also reported products similar to those of the establishments in this classification, to the value of \$177,340.

CLOCKS AND WATCHES, INCLUDING CASES AND MATERIALS.

This classification includes establishments engaged in the manufacture of clocks, of watches, of watch-cases, and of watch and clock materials. Clocks and watches are in a number of instances made in the same factory, and all four branches of the industry are so closely related that only the combined totals are given in most of the tables, but separate statistics were compiled for 1909 and are given in the following table, each establishment being assigned according to its product of chief value. The total value of products includes some duplication.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	120	23,857	\$12,944,169	\$11,130,698	\$35,196,842	\$24,066,144
Clocks.....	52	7,961	4,142,344	3,692,754	12,235,631	8,542,877
Watches.....	13	10,634	6,085,700	2,185,825	11,771,065	9,585,249
Watchcases.....	29	4,569	2,428,262	5,034,377	10,514,854	5,480,477
Watch and clock materials.....	26	643	237,863	217,742	675,292	457,550

In addition to the products covered above, clocks, watches, cases, and materials were reported in 1909 to the value of \$24,337 by establishments engaged primarily in the manufacture of other products, mostly by establishments in the industry "foundry and machine-shop products."

Clocks.—Complete clocks of all descriptions, with wooden or metal cases, and clock movements are the principal products of establishments under this heading.

Table 336

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	52	7,961	\$4,142,344	\$3,692,754	\$12,235,631	\$8,542,877
1904.....	38	7,249	3,514,185	3,077,574	8,868,000	5,790,426
1899.....	46	6,037	2,650,703	3,028,606	7,157,856	4,129,250
1898.....	27	3,491	1,808,025	1,457,778	4,228,846	2,771,068
1879.....	22	3,940	1,622,693	1,908,411	4,110,267	2,201,856
1869.....	26	1,330	805,340	818,409	2,509,643	1,691,234
1859.....	22	975	391,320	474,668	1,187,550	712,852
1849.....	23	800	278,508	456,534	1,181,600	724,666

Watches.—Establishments manufacturing complete watches, watch parts, and watch movements are included in this subclass. There was no classification "watches" in 1849, and as watch repairing was included in the returns for 1859, the figures for that year are not comparable with those for subsequent censuses.

Table 337

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	13	10,684	\$6,065,700	\$2,185,825	\$11,771,065	\$9,585,240
1904.....	14	10,724	6,024,400	2,258,683	11,866,400	9,607,717
1899.....	13	6,880	3,586,723	1,291,318	6,822,611	5,531,293
1898.....	19	6,595	3,587,808	995,740	6,051,066	5,055,326
1879.....	11	3,346	1,712,276	982,224	3,271,244	2,289,020
1869.....	37	1,816	1,304,304	412,783	2,819,080	2,406,297

Watchcases.—Gold, gold-filled, platinum, silver, nickel, and brass watchcases, with some cases made of other metals, are the principal products of the establishments for which statistics are given here. In some instances watchcase parts were reported.

Table 338

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	29	4,509	\$2,428,262	\$5,034,377	\$10,514,854	\$5,480,477
1904.....	28	4,221	2,170,507	4,428,627	8,626,504	4,197,877
1899.....	30	3,907	1,924,847	4,393,647	7,783,960	3,390,313
1898.....	45	3,679	1,896,587	5,022,455	8,618,479	3,596,024
1879.....	27	1,758	976,041	2,812,922	4,589,314	1,776,392
1869.....	49	703	555,018	1,152,979	2,333,340	1,180,361

Watch and clock materials.—This subclass includes establishments manufacturing balance staffs, watch springs, jewels, other watch materials, and clock cases.

The first separate statistics appeared for 1869, when there were three classifications, "clock cases," "clock materials," and "watch materials," statistics for which are combined in the following table:

Table 339

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	26	643	\$287,863	\$217,742	\$675,292	\$457,550
1904.....	17	385	182,475	107,361	438,682	321,331
1899.....	20	331	152,224	105,540	345,347	239,798
1898.....	36	647	358,422	320,398	831,348	504,950
1879.....	23	324	101,059	149,315	350,685	201,380
1869.....	39	322	152,074	244,307	573,631	329,264

COPPER, TIN, AND SHEET-IRON PRODUCTS.

The following table shows for 1909 separate figures for the three branches of the industry included in this classification. Some establishments in each of the branches manufacture products similar to those of the other branches, and therefore in most of the tables the statistics are combined under the general classification of "copper, tin, and sheet-iron products."

Table 340

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	4,228	73,615	\$39,500,794	\$112,582,273	\$199,824,218	\$87,241,945
Copper, tin, and sheet-iron products, not otherwise specified.....	3,671	28,448	19,367,740	46,933,262	89,387,570	42,454,308
Tinware.....	318	19,754	8,676,257	39,272,571	58,814,323	19,541,752
Stamped and enameled ware.....	239	25,413	11,457,797	26,376,440	51,622,325	25,245,885

The first group includes establishments engaged primarily in the manufacture of cornices, gutters, spouts, smokestacks, and similar products; the second group, those making tin pails, cans, boxes, and other tinware; and the third, those making various articles stamped out of metal, some of the ware being enameled.

In addition to the products covered by the above table, establishments engaged primarily in the manufacture of stoves and furnaces, including gas and oil stoves, foundry and machine-shop products, and other products, and in canning and preserving reported, for 1909, copper, tin, and sheet-iron products to the value of \$4,498,091. Steel works and rolling mills and tin-plate and terneplate mills also reported such products to the value of \$2,452,903.

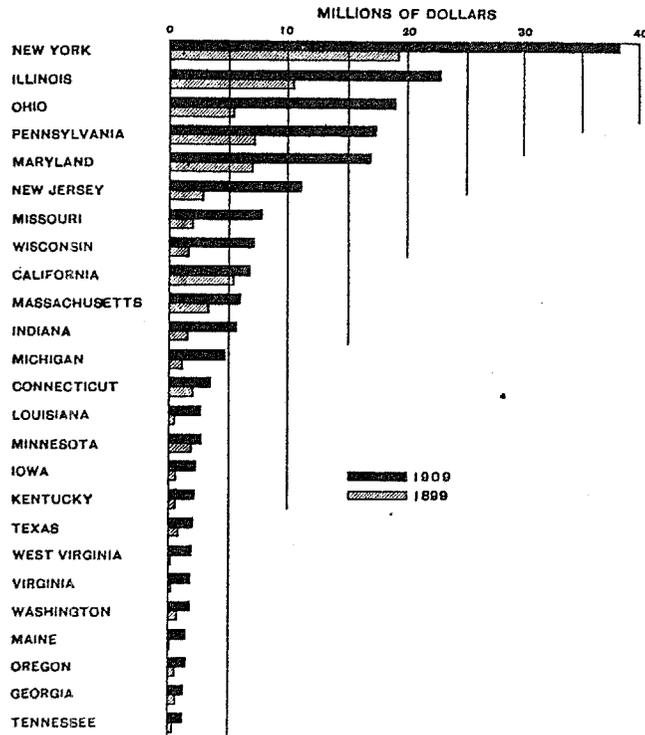
The manufacture of tinware, except at the censuses of 1909 and 1904, was included under "tinsmithing, coppersmithing, and sheet-iron working," or under "tinware, copperware, and sheet-iron ware." Statistics for the tinware industry are therefore included in the following table with those for "copper, tin, and sheet-iron products, not otherwise specified" for each of the censuses from 1849 to 1909, inclusive.

Table 341

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	3,989	48,202	\$28,042,997	\$86,205,833	\$148,201,893	\$61,996,060
1904.....	2,366	39,475	20,608,179	53,396,217	97,974,838	44,578,621
1899.....	1,846	28,315	13,193,307	35,268,722	63,812,878	28,544,156
1898.....	7,002	31,377	15,610,265	31,217,522	66,653,746	35,436,224
1879.....	7,093	27,116	11,243,276	26,460,228	50,183,811	23,723,583
1869.....	6,710	26,461	9,878,161	19,864,569	42,357,228	22,492,659
1859.....	3,558	11,818	4,315,536	8,362,028	17,999,650	9,637,622
1849.....	2,280	7,393	2,363,100	4,305,389	8,933,188	4,627,799

The above table, of course, does not cover the manufacture of tin cans and other containers by establishments engaged in the canning and preserving industry.

COPPER, TIN, AND SHEET-IRON PRODUCTS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



Stamped and enameled ware.—The establishments included in this subclassification manufacture primarily articles stamped out of sheet tin, copper, aluminum, and zinc, including kitchen utensils, the most important class; combs, buckles, pins, initials, monograms, millinery ornaments, etc.; perforated metals for milling and mining; baggage checks; bag frames; and railway-car seals. In many cases these articles are enameled, usually in the same establishment which stamps them.

At the censuses of 1889 and 1879 establishments manufacturing stamped and enameled ware were classed under the headings "enameled goods," "fruit-jar trimmings," and "stamped ware." They were not reported separately at the censuses of 1869 and 1859, unless "enameling" embraced "enameled goods."

At the censuses of 1904 and 1899 establishments reporting either the manufacture of enameled stamped ware or the enameling of materials for others were classified under "enameling and enameled goods." This accounts in part for the large increase shown for stamped and enameled ware for 1909, as compared with the two preceding censuses.

At the census of 1909 the manufacture of enameled stamped ware was distinguished from the enameling of products by establishments other than the original manufacturers of the stamped ware, the latter business being classified separately as "enameling and japanning" (see Table 403).

Table 342

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	239	25,413	\$11,457,797	\$26,376,440	\$51,622,325	\$25,245,885
1904.....	174	13,560	5,600,459	10,524,880	21,958,049	11,433,169
1899.....	139	10,002	3,730,241	7,333,023	14,546,191	7,213,163
1889.....	123	8,018	3,451,532	5,621,291	11,722,450	6,098,159
1879.....	30	2,941	1,014,470	2,659,666	4,319,437	1,659,771

GAS AND ELECTRIC FIXTURES AND LAMPS AND REFLECTORS.

Separate figures for 1909 for the two branches of the industry included under this classification are given in the following table, each establishment being assigned according to its product of chief value. As some of the establishments assigned to each of these classes manufacture articles similar to those of establishments assigned to the other class, only the combined totals are given in most of the tables.

Table 343

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	619	18,861	\$10,393,078	\$20,467,357	\$45,057,372	\$24,590,015
Gas and electric fixtures.....	450	11,751	6,517,661	13,994,819	29,844,303	15,849,484
Lamps and reflectors.....	169	7,110	3,875,417	6,472,538	15,213,069	8,740,531

In addition to the products covered by this table, gas and electric fixtures and lamps and reflectors to the value of \$1,763,794 were reported for 1909 by establishments engaged primarily in the manufacture of other products, principally foundry and machine-shop products, brass and bronze products, and clocks and watches, including cases and materials. Electric lighting fixtures to the value of \$2,031,056 were also reported by establishments classed under "electrical machinery; apparatus, and supplies."

Gas and electric fixtures.—Chandeliers and electroliers for gas and electric lighting, together with gasoline lighting devices and systems, are manufactured by establishments included in this subclassification. Portable lamps, incandescent mantles and mantle webbing, acetylene gas burners, and lava insulators are also among the products reported.

Separate figures for 1909 are given in the following table for the establishments which manufactured principally electric fixtures and for those that made chiefly other kinds of fixtures.

Table 344

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	450	11,751	\$6,517,661	\$13,994,819	\$29,844,303	\$15,849,484
Electric fixtures.....	279	7,716	4,795,132	7,613,336	18,118,870	10,505,534
Other products.....	171	4,035	1,722,529	6,381,483	11,725,433	5,343,950

In 1849 this industry was reported under the designation "gas fixtures." In 1859 two classifications were employed—"gas fixtures, lamps, and chandeliers," and "lamp fixtures"—statistics for which are combined in Table 345. "Gas and lamp fixtures" was the classification used at the census of 1869 and at each subsequent census until 1909, when it was changed to its present form and thus made more comprehensive, although it had previously included the manufacture of electric fixtures.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	459	11,751	\$6,517,661	\$13,994,819	\$29,844,303	\$15,849,484
1904.....	263	8,141	4,237,394	7,395,207	17,560,380	10,165,179
1899.....	221	6,513	3,111,083	4,464,729	11,479,960	7,015,231
1889.....	198	5,014	2,879,813	2,208,124	7,825,672	5,017,543
1879.....	35	3,069	1,499,287	1,675,875	4,329,656	2,653,781
1869.....	39	2,469	1,232,424	1,626,579	4,061,778	2,435,199
1859.....	34	1,633	571,104	695,282	2,257,900	1,562,618
1849.....	20	241	75,312	130,969	293,725	162,759

Lamps and reflectors.—The manufacture of lamps, lanterns, headlights, reflectors, and supplies of various kinds and for many purposes is covered by this subclassification. Among the specific products reported are night lamps, desk lamps and lamp holders, coach and carriage lamps, mirrorscopes, marine lamps and fixtures, lenses for searchlights, reflectors for use with gas or electricity, art glass shades, acetylene generators, folding lanterns, locomotive and street-railway lights, and kerosene lighting fixtures and appurtenances.

In 1849 and 1859 the classification was "lamps," and in 1869, "lamps, lanterns, and locomotive headlights."

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	169	7,110	\$3,875,417	\$6,472,538	\$15,213,069	\$8,740,531
1904.....	142	4,429	2,170,590	3,682,551	8,999,874	5,317,323
1899.....	156	4,725	2,076,980	3,497,236	8,341,374	4,844,138
1889.....	93	2,056	1,035,960	1,542,062	4,039,359	2,497,267
1879.....	74	1,790	742,423	1,852,906	3,357,829	1,504,623
1869.....	40	558	285,843	403,295	995,289	591,994
1859.....	40	558	135,848	242,536	578,020	335,484
1849.....	26	938	290,424	490,862	1,060,022	569,160

The demand for automobile lamps and reflectors was largely responsible for the decided advance of the industry from 1904 to 1909.

GOLD AND SILVER, LEAF AND FOIL.

The establishments included in this classification manufacture principally gold leaf for sign painters, decorators, and bookbinders, and gold foil for dentists. A small amount of silver leaf and of aluminum leaf was reported, with some composition leaf. The statistics for "gold and silver, leaf and foil," were first reported separately at the census of 1859.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	83	1,383	\$636,967	\$1,517,874	\$2,630,500	\$1,112,626
1904.....	83	1,402	662,813	1,476,111	2,695,298	1,219,157
1899.....	93	1,163	498,692	1,604,013	2,666,224	1,062,211
1889.....	81	1,405	698,167	1,834,716	2,977,791	1,143,075
1879.....	60	955	410,647	1,011,792	1,614,040	602,245
1869.....	51	613	264,408	621,773	1,411,431	789,658
1859.....	23	226	77,592	299,696	481,072	151,376

JEWELRY.

Jewelry, made of gold, silver, platinum, "gold-filled" metal, rolled gold plate, brass, copper, or other metal, with or without precious or semiprecious stones, constitutes the principal product reported for establishments included under this designation. Gold and silver mountings for canes, combs, pipes, fountain pens, umbrellas, and other articles, buckles and hair ornaments, gold and silver pencils, and jewelers' findings are also among the products. Statistics of establishments engaged in setting diamonds and other stones and in chasing gold and silver for the trade are included. Since some establishments do work in whole or in part on materials furnished by others, there is some duplication in value of products.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,537	30,347	\$18,357,950	\$36,674,850	\$80,349,874	\$43,675,015
1904.....	1,023	22,080	12,592,846	24,177,229	53,225,681	29,048,452
1899.....	851	20,468	10,643,857	22,234,634	46,128,659	23,894,025
1889.....	783	13,880	8,034,327	16,110,219	34,781,458	18,651,239
1879.....	739	12,697	6,441,685	10,824,890	22,201,621	11,876,631
1869.....	681	10,091	4,433,235	9,187,364	22,104,032	12,916,668
1859.....	463	5,947	2,605,056	5,102,500	10,415,811	5,313,311

In addition to the products covered by the table, jewelry to the value of \$1,321,571 was reported for 1909 by 20 establishments engaged primarily in other industries, such as "lapidary work," "silverware and plated ware," and "fancy articles, not elsewhere specified," but this figure probably does not indicate the full extent to which jewelry was produced by other industries.

NEEDLES, PINS, AND HOOKS AND EYES.

The principal products of establishments included in this classification are spring and latch knitting-machine needles, sewing-machine needles, mattress and bag needles, needle-pointed goods used in the various textile industries, ordinary pins, hairpins, safety pins, hooks and eyes, garment fasteners, and dress hooks.

"Pins" was the only classification in 1849, when 4 establishments were reported, with 265 wage earners and products valued at \$297,550. In 1859 there were three classifications, "needles," "pins," and "hooks and eyes", and thereafter two, "needles and pins"

and "hooks and eyes," until the census of 1904, when they were consolidated as at present. The combined figures are shown in the following table for each census from 1859 to 1909, inclusive.

In addition, needles, pins, and hooks and eyes to the value of \$414,901 were reported for 1909 by establishments engaged primarily in the manufacture of brass and bronze products, buttons, foundry and machine-shop products and other products.

Table 349

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	49	4,638	\$2,064,378	\$2,328,674	\$6,694,095	\$4,365,421
1904.....	46	3,965	1,595,923	1,583,644	4,750,589	3,166,945
1899.....	52	2,653	1,067,364	1,227,997	3,237,982	2,009,985
1889.....	55	1,827	755,555	776,057	2,109,469	1,333,412
1879.....	45	1,305	480,535	805,999	1,748,101	942,102
1869.....	48	841	358,660	446,002	1,225,436	779,374
1859.....	13	373	101,244	339,222	627,700	288,478

SILVERWARE AND PLATED WARE.

The following table gives, for 1909, separate statistics for the two branches of industry included under this classification. Establishments in each branch, however, manufacture some products covered by the other class, and therefore only the combined totals are given in the general tables.

Table 350

ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	183	16,610	\$10,281,761	\$18,332,107	\$42,228,547	\$23,896,440
Silversmithing and making silverware..	125	8,643	6,821,952	10,085,309	23,702,354	13,617,045
Making plated ware..	58	7,967	4,459,809	8,246,798	18,526,193	10,279,395

In addition to the products covered by the above table,* establishments engaged primarily in the manufacture of clocks and watches, including cases and materials, jewelry, and umbrellas and canes, with a few in still other industries reported for 1909 silverware and plated ware to the value of \$1,128,742.

Silversmithing and silverware.—The principal products reported for establishments included under this heading are hollow and flat table ware; ecclesiastical ware; candelabra; prize cups; loving cups; mounts for umbrellas, canes, and pipes; ornaments; silver-deposited glassware; manicure goods; and toilet ware.

Table 351

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	125	8,643	\$5,821,952	\$10,085,309	\$23,702,354	\$13,617,045
1904.....	98	8,580	5,265,049	9,010,086	20,700,703	11,690,617
1899.....	103	5,813	3,443,142	5,783,645	13,595,583	7,721,938
1889.....	54	2,419	1,588,751	2,333,581	6,435,304	4,101,723
1879.....	77	1,160	752,583	1,130,500	2,517,561	1,387,001
1869.....	55	815	542,113	1,222,428	2,344,357	1,121,629
1859 ¹	106	1,344	556,140	2,266,784	3,571,634	1,304,870

¹ Manufactures of silver.

The classification in 1849 was "silversmiths, jewelers, etc.," the figures of course not being comparable with those shown in the table. The number of establishments reported was 583, employing 5,262 wage earners, and having products valued at \$9,401,765.

Plated ware.—Various kinds of ware plated with gold, silver, and other metals are represented in the products of the establishments classified under this heading. Some britannia ware and German-silver ware are also reported. The articles made are similar to those made in the silverware branch of the industry except as to material.

In 1849 the classifications were "britannia and plated ware," in 1859, "silver plated and britannia ware." In 1899 it was "plated and britannia ware."

Table 352

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	58	7,967	\$4,459,809	\$8,246,798	\$18,526,193	\$10,279,395
1904.....	60	6,251	3,360,425	5,448,619	12,138,896	6,690,267
1899.....	66	6,392	3,088,224	5,875,312	12,608,770	6,733,458
1889.....	68	6,617	3,355,260	4,647,890	11,502,966	6,855,076
1879.....	55	4,675	2,453,361	4,100,116	8,596,181	4,496,065
1869.....	203	4,235	2,350,169	3,771,981	8,142,150	4,370,169
1859.....	128	2,499	832,756	1,738,806	3,676,490	1,937,654
1849.....	91	1,276	414,140	760,978	1,535,765	774,787

TIN FOIL.

The establishments included in this classification manufacture principally tin foil. Collapsible tubes, bottle caps, and aluminum leaf are also among the products. Separate statistics were first shown in 1879, when four establishments were reported, employing 186 wage earners, whose wages for the year were \$100,673, expending \$198,942 for materials, and reporting products valued at \$416,849. In 1889 there were only two establishments.

Table 353

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	10	683	\$303,711	\$2,276,573	\$3,418,818	\$1,142,245
1904.....	14	766	303,307	1,887,745	2,794,828	907,063
1899.....	15	582	227,774	1,074,192	1,593,169	518,977

ELECTROPLATING.

The silver and gold plating of jewelry by means of electric current is the principal business of establishments in this industry. In many cases the work is done on articles furnished by jewelry manufacturers or dealers, the value of the work performed constituting the value of products reported. Oxidizing and coloring, and the plating of carriage and other mountings with brass, bronze, nickel, and copper, are also reported.

Many establishments making jewelry, plated ware, and other articles electroplate their own wares, but the cost of the electroplating is not reported separately.

MANUFACTURES.

Table 354

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	461	2,717	\$1,652,315	\$1,205,185	\$4,509,559	\$3,304,374
1904.....	312	1,943	1,092,835	747,331	2,965,014	2,217,683
1899.....	302	2,086	949,062	783,854	2,719,961	1,936,107
1889.....	313	1,765	891,752	1,048,057	3,121,642	2,073,585
1879.....	221	1,441	620,848	663,538	1,975,700	1,312,112

Electroplating to the value of \$202,725 was reported for 1909 by 42 establishments engaged primarily in other industries, such as "foundry and machine-shop products," "toys and games," and "photo-engraving."

GALVANIZING.

Galvanized sheets and roofing are the principal products of the establishments included under this classification. Statistics for the industry as reported for

each census from 1869 to 1909, inclusive, are given in the following table:

Table 355

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	40	1,447	\$786,796	\$5,718,699	\$7,338,330	\$1,619,631
1904.....	36	1,256	620,012	4,744,466	6,418,850	1,674,384
1899.....	28	535	229,406	1,677,584	2,470,703	793,119
1889.....	27	761	361,878	1,940,712	2,957,143	1,016,431
1879.....	21	518	244,799	1,103,186	1,884,695	781,509
1869.....	9	146	88,650	584,996	796,326	211,330

At the census of 1909, in addition to the products covered by the above table, galvanized plates and sheets to the value of \$25,912,056 were reported by steel works and rolling mills, and to the value of \$109,432 by establishments engaged chiefly in making foundry and machine-shop products and copper, tin, and sheet-iron products.

TOBACCO MANUFACTURES.

Establishments included.—The tobacco manufacturing industry is, by itself, classed as one of the fourteen generic groups of manufacturing industries. There are several fairly distinct branches of tobacco manufacture, but at previous censuses they have been combined into two groups, the one covering the establishments engaged primarily in the manufacture of chewing and smoking tobacco and snuff, and the other those manufacturing chiefly cigars and cigarettes. Even between these two broad groups there is some overlapping, and therefore in the general tables the statistics for all branches of tobacco manufacture have been combined. The following statement, however, gives, for 1909, separate statistics for the two main groups of establishments:

Table 356

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	15,822	166,810	\$69,354,594	\$177,185,621	\$416,895,104	\$239,509,483
Cigars and cigarettes.....	15,362	139,578	60,431,949	102,719,795	260,088,233	157,368,438
Chewing and smoking tobacco and snuff....	460	27,232	8,922,645	74,465,826	156,806,871	82,141,045

While there are a number of large factories engaged in the manufacture of cigars and cigarettes, the majority of the cigar factories are small. Chewing and smoking tobacco and snuff, on the other hand, are usually made in comparatively large establishments.

All branches of tobacco manufacture are subject to internal-revenue taxes, and the value of products is much affected by these taxes, the rates of which have been changed from time to time.

Cigars and cigarettes.—The next table shows, for 1909, separate statistics for establishments that made cigars only, for those that made cigarettes only, and for those that made both cigars and cigarettes.

Table 357

ESTABLISHMENTS MANUFACTURING—	Number of establishments.	Wage earners (average number.)	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	15,362	139,578	\$60,431,949	\$102,719,795	\$260,088,233	\$157,368,438
Cigars only.....	15,146	129,518	56,887,790	85,213,603	214,621,345	129,407,742
Cigarettes only.....	193	8,159	2,862,848	16,227,838	41,499,284	25,271,446
Both cigars and cigarettes.....	23	1,901	681,311	1,278,354	3,967,604	2,689,250

The following statement gives the statistics for the establishments engaged primarily in making either cigars or cigarettes, or both, for each census from 1859 to 1909:

Table 358

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	15,362	139,578	\$60,431,949	\$102,719,795	\$260,088,233	\$157,368,438
1904.....	16,394	135,416	55,863,678	81,131,561	214,343,551	133,211,990
1899.....	14,522	103,365	40,865,510	57,823,255	159,958,811	102,130,556
1889.....	10,956	87,000	36,475,060	60,298,960	129,693,275	79,394,315
1879.....	7,145	53,297	18,464,562	29,577,833	63,979,575	34,401,742
1869 ¹	4,631	26,049	9,098,709	13,047,370	33,373,685	20,326,315
1859 ¹	1,478	7,997	2,531,354	3,511,312	9,068,778	5,557,466

¹ The industry designation did not specify cigarettes, which at that time were not made to any considerable extent.

Chewing and smoking tobacco, and snuff.—The following statement shows, for 1909, statistics for four classes of establishments comprised in this general branch of tobacco manufacture:

Table 359

ESTABLISHMENTS MANUFACTURING—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	460	27,232	\$8,922,645	\$74,465,826	\$156,806,871	\$82,141,045
Chewing and smoking tobacco only.....	373	24,338	7,719,471	68,038,065	136,497,598	70,459,533
Snuff only.....	40	1,698	742,141	5,940,345	15,034,369	9,694,024
Chewing and smoking tobacco and cigars.....	35	1,091	414,216	2,275,287	4,599,416	2,324,129
Chewing and smoking tobacco and snuff.....	12	105	46,817	212,129	475,488	263,359

The next table is a comparative summary of the statistics for the manufacture of chewing and smoking tobacco and snuff for each census from 1859 to 1909.

At the census of 1849 the classification was "tobacco-nists." The number of establishments reported was 1,418, employing 14,236 wage earners, with a wage payment of \$2,420,208, and reporting \$7,341,728 as cost of materials used, while the products reported were valued at \$13,491,147.

Table 360

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	460	27,232	\$8,922,645	\$74,465,826	\$156,606,871	\$82,141,045
1904.....	433	23,990	6,775,325	44,954,047	116,767,630	71,813,583
1899.....	437	29,161	7,199,821	35,038,287	103,754,362	63,716,075
1889.....	395	29,790	6,947,158	29,192,249	65,543,587	36,651,338
1879.....	477	32,756	6,419,024	34,397,072	52,793,056	18,395,984
1869.....	573	21,799	5,216,633	21,609,237	38,388,359	16,779,122
1859.....	626	18,859	3,571,294	13,024,988	21,326,535	8,795,547

VEHICLES FOR LAND TRANSPORTATION.

THE GROUP AS A WHOLE.

This group of industries includes the manufacture of all kinds of vehicles for transportation on land, such as carriages, wagons, automobiles, motor cycles, bicycles, railway cars, sleighs, sleds, baby carriages, and wheelbarrows. Work done in small repair shops and in railroad repair shops is not included. The manufacture of locomotives is also omitted from this group.

The following table shows the number of establishments, average number of wage earners, total wages paid, value of products, and value added by manufacture for each of the industries included in the general group, as reported at the census of 1909:

Table 361

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total.....	6,562	202,719	\$121,047,239	\$561,763,289	\$255,226,614
Automobiles, including bodies and parts.....	743	75,721	48,693,867	249,202,075	117,556,339
Carriages and wagons and materials.....	5,492	69,928	37,594,919	159,892,547	77,941,259
Cars, steam-railroad, not including operations of railroad companies.....	110	43,086	27,135,222	123,729,627	44,976,766
Cars, street-railroad, not including operations of railroad companies.....	14	3,583	2,176,949	7,809,866	3,549,306
Bicycles, motorcycles, and parts.....	95	4,437	2,908,199	10,698,567	5,615,998
Carriages and sleds, children's.....	84	5,300	2,216,861	8,805,129	4,876,255
Wheelbarrows.....	24	664	321,222	1,625,478	910,601

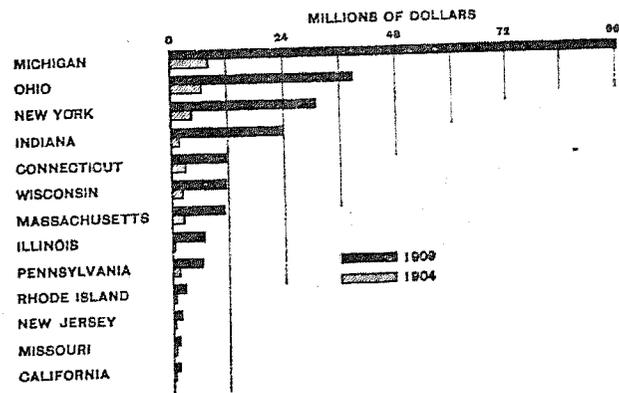
There is an intimate connection between the group of industries classed under the heading "vehicles for land transportation," and the group classed under the heading "railroad repair shops" (see Table 375). The repair shops of steam and street railroads manufacture considerable numbers of complete cars, although the greater part of their expenditure is for repairs to cars and locomotives. Inasmuch, however, as some of the work of railroad repair shops is not connected with the rolling stock, and as the method of valuing the product of such shops is different from that in most other industries, it has been deemed wisest to class steam and street railroad repair shops as a separate main group. The manufacture of locomotives, which is assigned to the group "iron and steel and their products," is also intimately associated with the manufacture of vehicles for land transportation. If to the total value of products of the industries classed in the group "vehicles for land transportation,"

\$561,763,289, be added the value of products of railroad repair shops, \$437,563,288, and also the value of products of the locomotive industry, \$31,582,302, a grand total of \$1,030,908,879 is obtained, which represents approximately the value of the output of industries producing or repairing vehicles or engines for land transportation in 1909. This grand total is equal to about one-twentieth of the total value of the products of all manufacturing industries in that year.

AUTOMOBILES, INCLUDING BODIES AND PARTS.

There are two classes of establishments engaged in the automobile industry: (1) Those which produce the complete machine, either from parts manufactured in the establishment or from parts purchased from others; and (2) those manufacturing chiefly parts, such as chassis, bodies, tops, mufflers, radiators, windshields, mudguards, steering wheels and gears, transmissions, differentials, springs, carbureters, axles, bearings, gaskets, crank-shafts, gears, wheels, hoods, tanks, etc. The products of establishments of the second class largely become the materials of those of the first class. There is thus considerable duplication within the industry as a whole. Some establishments that manufacture complete automobiles also manufacture, incidentally, parts of machines for sale. The manufacture of automobile engines, if not conducted by establishments making complete automobiles, is classified under "foundry and machine-shop products," and the manufacture of rubber tires for automobiles under "rubber goods, not elsewhere specified."

AUTOMOBILES, INCLUDING BODIES AND PARTS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1904.



MANUFACTURES.

The following table presents combined statistics for the two classes of establishments in the automobile industry for 1909, 1904, and 1899, and also the statistics for each class separately for 1909 and 1904. In most of the general tables of this report only the combined totals for both classes of establishments are shown, under "automobiles, including bodies and parts."

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Automobiles, including bodies and parts:						
1909.....	743	75,721	\$43,693,867	\$131,645,730	\$249,202,075	\$117,556,339
1904.....	178	12,049	7,153,958	13,151,395	30,033,536	16,882,171
1899.....	57	2,241	1,820,658	1,804,287	4,745,011	2,943,724
Automobiles only:						
1909.....	265	51,294	33,180,474	107,731,446	193,823,108	86,091,662
1904.....	121	10,239	6,178,950	11,058,188	26,045,064	14,986,926
Automobile bodies and parts:						
1909.....	478	24,427	15,513,393	23,914,290	55,378,967	31,464,677
1904.....	57	1,810	930,008	1,493,227	3,388,472	1,896,245

The manufacture of automobiles was first shown as a separate industry at the census of 1904, but establishments reporting automobiles in 1899, which were originally included with those making carriages and wagons, have been segregated for purposes of comparison.

KIND.	Number. ¹	Value. ¹
Total.....		\$249,202,075
Automobiles.....	126,593	164,269,324
Gasoline.....	120,393	153,529,653
Electric.....	3,825	7,259,430
Steam.....	2,374	3,480,241
Passenger vehicles (pleasure, family, and public conveyances).....	123,338	159,039,301
Gasoline.....	117,633	149,530,232
Electric.....	3,331	6,028,828
Steam.....	2,374	3,480,241
Buggies.....	4,582	2,391,250
Gasoline.....	4,314	2,039,129
Electric.....	268	352,121
Runabouts.....	36,204	28,030,479
Gasoline.....	35,347	27,116,901
Electric.....	496	648,630
Steam.....	361	264,948
Touring cars.....	76,114	113,403,188
Gasoline.....	73,883	109,844,295
Electric.....	243	357,526
Steam.....	1,988	3,171,367
Closed (limousines, cabs, etc.).....	5,205	12,729,304
Gasoline.....	3,290	8,762,768
Electric.....	1,915	3,966,536
All other (omnibuses, sight-seeing wagons, ambulances, patrol wagons, etc.).....	1,233	2,485,080
Gasoline.....	799	1,767,139
Electric.....	409	674,015
Steam.....	25	43,926
Business vehicles (merchandise).....	3,255	5,230,023
Gasoline.....	2,760	3,999,421
Electric.....	495	1,230,602
Delivery wagons.....	1,862	1,918,856
Gasoline.....	1,645	1,474,063
Electric.....	217	444,793
Trucks.....	1,366	3,165,512
Gasoline.....	1,090	2,384,703
Electric.....	276	780,809
All other.....	27	145,655
Gasoline.....	25	140,655
Electric.....	2	5,000
All other products, including bodies and parts.....		\$78,584,753
Amount received for custom work and repairing.....		6,347,995

¹ In addition, 694 automobiles, valued at \$830,080, and bodies and parts valued at \$4,415,266, were reported by establishments engaged primarily in the manufacture of other products. These include, among others, establishments making as their chief products agricultural implements; bicycles, motorcycles, and parts; brass and bronze products; carriages and wagons and materials; laundry and machine-shop products; gas and electric fixtures and lamps and reflectors; lumber and timber products; and wood, turned and carved.

² Includes custom work and repairing by establishments manufacturing bodies and parts.

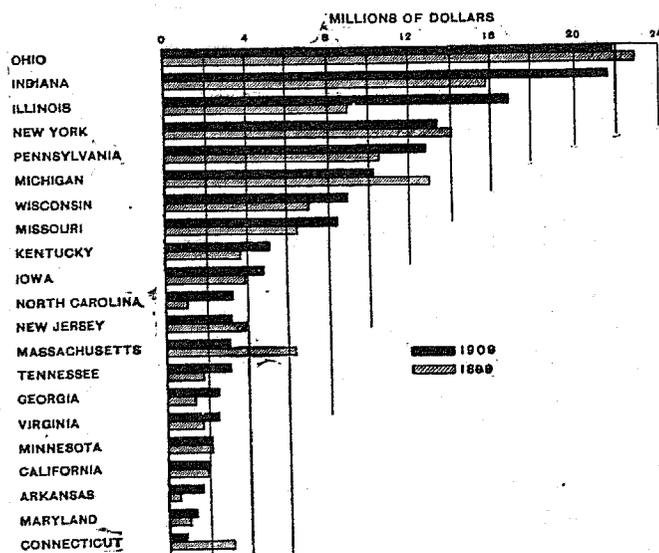
It is probable that the statistics here given for 1899 do not represent the extent of the industry as fully as do those for 1909 and 1904. The figures for 1909 by no means represent the full value of automobile parts and supplies made by establishments in other industries, since products of this character were not always distinguished from the other products of such establishments. In particular, the value of automobile tires made by establishments in the rubber-goods industry is large. Many of the parts and tires made by establishments in other industries are sold to repair shops and to automobile owners, and do not appear in the value of products of the automobile industry, though many of them are represented in that item.

Gasoline-propelled automobiles constituted by far the largest proportion of those made in 1909, as is shown in the preceding table, and the passenger cars vastly outnumbered those intended for transporting merchandise.

CARRIAGES AND WAGONS AND MATERIALS.

The manufacture of complete carriages and wagons and that of carriage and wagon materials are closely connected and there is considerable overlapping in the statistics. For this reason the data for the two branches of the industry are combined in most of the tables under the classification "carriages and wagons and materials." The statistics for the combined industry necessarily include considerable duplication.

CARRIAGES AND WAGONS AND MATERIALS—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



The next statement shows the statistics for 1909 for the two subclasses separately, each establishment being assigned according to its product of chief value.

In 4,870, or 88.7 per cent, of the 5,492 establishments the chief product was complete carriages or wagons. These establishments reported products valued at \$125,366,912, or 78.4 per cent of the total.

Table 364

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	5,492	69,928	\$37,594,919	\$81,951,288	\$159,892,547	\$77,941,259
Carriages and wagons.....	4,870	52,540	29,621,148	63,890,422	125,366,912	61,476,490
Carriage and wagon materials.....	622	17,388	7,973,771	18,060,866	34,525,635	16,464,769

The following table shows the several classes of products in 1909:

Table 365

KIND.	Number. ¹	Value. ¹
Total.....		\$159,892,547
Carriages (family and pleasure).....	828,411	47,756,118
Wagons.....	587,685	39,932,910
Business.....	154,631	16,440,816
Farm.....	429,952	22,615,875
Government, municipal, etc.....	3,102	876,219
Public conveyances (cabs, hacks, hansoms, hotel coaches, omnibuses, etc.).....	2,243	939,267
Sleighs and sleds.....	100,899	2,065,850
Automobiles ²	544	569,119
All other products, including parts and amount received for repair work.....		68,629,283

¹ In addition, 14,908 carriages, valued at \$1,078,935; 42,112 wagons, valued at \$2,083,288; 104 public conveyances, valued at \$5,615; 8,209 sleighs and sleds, valued at \$105,917; and parts and materials, valued at \$1,184,256, were reported by establishments engaged primarily in other industries, such as "agricultural implements;" "automobiles, including bodies and parts;" "bicycles, motorcycles, and parts;" "cars, street-railroad, not including operations of railroad companies;" "coffins, burial cases, and undertakers' goods;" "cutlery and tools, not elsewhere specified;" "foundry and machine-shop products;" "furniture and refrigerators;" "lumber and timber products;" "mattresses and spring beds;" "springs, steel, car and carriage;" "wheelbarrows;" and "wood, turned and carved."

² Automobiles manufactured in establishments devoted primarily to the manufacture of carriages and wagons.

Carriages and wagons.—This subclass covers for 1909 establishments manufacturing a great variety of vehicles, including light and heavy business wagons, such as delivery wagons, baggage wagons, express wagons, drays and trucks; farm wagons; hand carts; hearses; street sprinklers and street sweepers; ambulances; mail wagons; police and fire wagons; family and pleasure carriages; and cabs, hacks, hansoms, and omnibuses. Sleighs, pungs, and sleds are also included. The manufacture of children's carriages and sleds is classed under another heading (see Table 373). A large amount of repair work is also done by establishments of this class, though concerns doing only repair work were excluded from the canvass, as well as those making less than five complete vehicles during the year covered by the census.

The figures for 1859 and 1869 given in the following table probably include a great number of small repair shops, and they also include a good many establishments making only parts, so that there is considerable duplication in the value of products.

Table 366

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	4,870	52,540	\$29,621,148	\$63,890,422	\$125,366,912	\$61,476,490
1904.....	4,956	60,722	30,878,229	61,215,228	125,332,976	64,117,748
1899.....	6,204	58,425	27,578,046	53,723,311	112,234,590	59,511,279
1889.....	4,572	50,525	28,972,401	46,022,769	102,680,341	56,667,572
1879.....	3,841	45,294	18,888,615	30,597,086	64,951,617	34,354,531
1869.....	11,847	54,928	21,272,730	22,787,341	65,362,837	42,575,496
1859.....	7,222	37,102	13,417,816	11,898,282	35,552,842	23,654,560
1849 ¹	1,822	14,040	4,268,904	3,955,689	11,073,630	7,117,941

¹ Coaches and carriages.

Carriage and wagon materials.—Under this subclass are included establishments making carriage and wagon bodies, hubs, felloes, spokes, wheels, axles, whippletrees, eveners, neck yokes, poles, reaches, dashboards, tops, cushions, lamp brackets, gears, washers, whip sockets, etc. The manufacture of car, carriage, and wagon springs is, however, classed as a separate industry (see Table 151). The figures for 1859 and 1869 in the table below are for the industry designated as "carriage trimmings," and therefore are not as wide in their scope as those for later censuses.

Table 367

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	622	17,388	\$7,973,771	\$18,060,866	\$34,525,635	\$16,464,769
1904.....	632	17,160	7,484,450	16,312,683	30,535,873	14,223,150
1899.....	588	15,387	5,967,267	13,048,608	25,027,173	11,978,565
1889.....	539	9,996	4,366,233	7,387,904	16,262,293	8,874,389
1879.....	412	7,502	2,733,004	4,781,095	10,114,352	5,333,257
1869.....	44	453	144,278	214,544	590,878	376,234
1859.....	8	25	8,436	12,884	29,790	15,906

CARS, STEAM-RAILROAD, NOT INCLUDING OPERATIONS OF RAILROAD COMPANIES.

This classification includes establishments whose chief product is cars, whether of wood or of steel, for use on steam railroads. It does not include, however, the manufacture of steam-railroad cars in steam-railroad repair shops or in establishments engaged primarily in the manufacture of street-railroad cars. Some establishments, besides making finished cars, reported the manufacture, for sale as such, of car materials and parts, such as brake beams, axles, underframes, trucks, car wheels, bolsters, castings, and car bodies, so that there is some duplication of value of products within the industry. Most concerns making exclusively or primarily parts or materials for cars are, however, placed under other classifications, such as "brass and bronze products," "foundry and machine-shop products," "lumber and timber products," and "springs, steel, car and carriage."

Besides the common classes of passenger cars, box cars, and flat cars, a large variety of cars designed for carrying special kinds of freight were reported, as, for instance, poultry, ice, rock, logging, and tank cars. Construction cars, track-laying cars, dump, work, and sprinkler cars, snowplows, show and boarding cars, and cabooses were also reported. Sleeping and parlor cars and other special classes of passenger cars are likewise included.

No separation of the statistics was made at the census of 1879, but 130 establishments classified as "cars, railroad and street, and repairs, not including establishments operated by steam-railroad companies," reported \$27,997,591 in value of products. At the census of 1869, 170 establishments shown under "cars, railroad and repairs" in the general table reported products valued at \$31,070,734. "Cars,

MANUFACTURES.

omnibuses, and repairing" were reported at the census of 1859 to the value of \$4,302,613, by 62 establishments; and at the census of 1849 "cars, railroad," were made by 41 establishments to the value of \$2,493,558. These statistics can not be considered comparable with those for later censuses.

Statistics for "cars, steam-railroad, not including operations of railroad companies," are given for the last four censuses in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	110	43,086	\$27,135,222	\$78,752,861	\$123,729,627	\$44,976,766
1904.....	73	34,658	20,247,821	75,657,126	111,175,310	35,518,184
1899.....	65	33,453	16,987,294	61,742,747	90,510,180	28,767,433
1889.....	71	31,354	16,076,829	44,674,456	70,083,737	25,409,251

In 1909, 73,177 freight cars, 1,601 passenger cars, and 603 street-railroad cars were reported by the establishments engaged primarily in building steam-railroad cars.

The value of cars built by steam-railroad repair shops in 1909, not covered by Table 368, was \$13,326,171. In addition, the manufacture of steam-railroad cars and parts and the making of repairs to cars were reported in 1909 to the value of \$6,135,358 by establishments engaged primarily in the industries "iron and steel, steel works and rolling mills," "foundry and machine-shop products," "slaughtering and meat packing," and "lumber and timber products."

The number and value of cars of all kinds, whether for steam or for electric roads, made by establishments reporting them as a chief product, by railroad repair shops, or by establishments in other industries, respectively, are given in the following table:

INDUSTRY.	CARS MADE: 1909					
	Total.		For steam railroads.		For electric railroads.	
	Number.	Value.	Number.	Value.	Number.	Value.
Total.....	101,243	\$102,147,396	98,471	\$94,884,287	2,772	\$7,263,109
Cars, steam-railroad, not including operations of railroad companies.....	75,381	77,545,354	74,778	75,521,432	603	2,023,322
Cars, street-railroad, not including operations of railroad companies.....	2,089	4,714,248	167	111,813	1,922	4,602,435
Cars and general shop construction and repairs by steam-railroad companies.....	14,549	13,326,171	14,549	13,326,171
Cars and general shop construction and repairs by street-railroad companies.....	243	626,752	1,243	626,752
All other industries.....	8,981	5,934,871	8,977	5,924,871	4	10,000

1 Divided only into "passenger," "freight," and "other" cars, but practically all are electric.

CARS, STREET-RAILROAD, NOT INCLUDING OPERATIONS OF RAILROAD COMPANIES.

The establishments engaged primarily in the manufacture of the various kinds of street-railroad cars—such as open, closed, and combination (open and closed) passenger cars; freight, express, and mail cars; and sweepers, sprinklers, trailers, elevated-railroad cars—are included under this classification, but not the street-railroad repair shops, which often make some complete cars (see Table 379). The manufacture of motors and controllers, which are used as materials by car constructing establishments, falls under the classification "electrical machinery, apparatus, and supplies."

The following statement presents the principal statistics for the last four censuses:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	14	3,583	\$2,176,949	\$4,260,470	\$7,809,860	\$3,549,396
1904.....	14	4,730	2,839,579	5,341,444	10,844,199	5,502,752
1899.....	20	3,583	1,950,876	3,996,863	7,305,363	3,338,505
1889.....	17	1,785	1,091,270	1,699,235	3,302,115	1,602,880

BICYCLES, MOTORCYCLES, AND PARTS.

The statistics for this industry cover establishments engaged primarily in the manufacture or assembling of complete bicycles and motorcycles, and also those

making parts and accessories for these machines, such as handles and handlebars, frames, saddles, saddle springs and seat posts, hubs, bicycle bells and cyclometers, coaster brakes, spokes, nipples, rims, pedals, chains, ball bearings, guards, shock absorbers, parcel carriers, motors, spark plugs, and various kinds of drop forgings. There is thus considerable duplication in the total value of products for the industry. Some establishments engaged in this industry also manufacture aeroplanes and parts, three-wheeled delivery vans, tandems, velocipedes, and the various types of wheels used by vaudeville acrobats and circus performers. At the censuses of 1899 and 1904 the industry designation was "bicycles and tricycles," and the published reports include the statistics for a considerable output of children's tricycles and velocipedes. Establishments engaged primarily in this latter class of manufacture were classified under "toys and games" in 1909.

The following statement presents the general statistics for the industry for the last four censuses:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	95	4,437	\$2,908,199	\$5,082,569	\$10,698,567	\$5,615,993
1904.....	101	3,319	1,971,403	2,628,146	5,153,240	2,525,094
1899.....	312	17,525	8,189,817	16,792,051	31,915,908	15,123,557
1889.....	27	1,797	982,014	718,848	2,568,326	1,549,478

This table shows that there was a remarkable growth in this industry from 1889 to 1899, at about which time the use of bicycles reached its height, but the decline during the next five years was even more marked. For the industry as a whole there has been a partial recovery since 1904, due to the growth in the motorcycle branch, the manufacture of bicycles having continued to decline.

The number of motorcycles reported by establishments falling under this classification was 160 in 1899, 2,300 in 1904, and 18,628 in 1909; the number of bicycles, on the other hand, decreased from 1,112,880 in 1899 to 225,309 in 1904 and 168,824 in 1909.

While the number of motorcycles manufactured in 1909 was much smaller than the number of bicycles, as shown in the table following, their value was nearly one-third greater.

KIND.	Number. ¹	Value. ¹
Total		\$10,698,567
Bicycles.....	168,824	2,436,956
Motorcycles.....	18,628	3,015,988
All other products, including parts.....		5,245,623

¹ In addition, 64,883 bicycles, valued at \$791,193, and other products, including parts, etc., valued at \$579,927, were reported by establishments engaged primarily in the following industries: "Automobiles, including bodies and parts;" "boxes, cigar;" "carriages and sleds, children's;" "copper, tin, and sheet-iron products;" "cutlery and tools, not elsewhere specified;" "dairy-men's, poulterers', and apiarists' supplies;" "firearms and ammunition;" "foundry and machine-shop products;" "iron and steel forgings;" "screws, wood;" "sewing machines, cases, and attachments;" "statuary and art goods;" "stoves and furnaces, including gas and oil stoves;" and "wood, turned and carved."

It is impossible to present statistics showing the full value of all parts and supplies made in other industries, many of which are not used by the factories, but are sold directly by the manufacturers to the owners of motorcycles or bicycles or to dealers, repair shops, etc. In particular, the value of tires, a product—not shown separately—of the rubber-goods industry, is only partly accounted for in the cost of materials reported for the bicycle and motorcycle industry.

CARRIAGES AND SLEDS, CHILDREN'S.

Under this classification are included those establishments engaged primarily in the manufacture of baby carriages, gocarts, children's sleds, "walkers," and doll carriages.

RAILROAD REPAIR SHOPS.

THE GROUP AS A WHOLE.

This group includes only two industries, which are designated in the tables in other chapters of the report by the full titles, "cars and general shop construction and repairs by steam-railroad companies" and "cars and general shop construction and repairs by street-railroad companies," respectively. More briefly, they may be called steam-railroad repair shops and street-railroad repair shops, respectively.

As shown in the following comparative summary, which covers a period of 40 years, there has not been a great increase in the number of establishments, but the value of products in 1909 was over six times that reported in 1869.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	84	5,300	\$2,216,861	\$4,128,874	\$8,805,129	\$4,876,255
1904.....	78	4,093	1,782,984	2,849,462	6,370,911	3,530,449
1899.....	77	2,726	1,090,286	1,996,070	4,289,655	2,293,625
1889.....	87	2,726	1,134,905	1,990,907	4,094,255	2,193,345
1879.....	67	1,310	42,852	868,054	1,677,776	809,722
1869.....	53	913	407,327	495,281	1,432,833	937,552

In 1909, in addition to the products covered by the above table, children's carriages and sleds to the value of \$1,759,271 were made by establishments engaged primarily in the manufacture of other products.

At the census of 1859 the manufacture of "carriages, children's" (sleds were not included), was reported by 32 establishments, employing 357 wage earners. The products were valued at \$374,350.

WHEELBARROWS.

The following table presents comparative statistics for the manufacture of wheelbarrows for all censuses from 1869 to 1909. Some of the establishments reported, in 1909, products other than wheelbarrows, the more important being hand carts, warehouse trucks, and minor articles used on farms, such as stone boats, whippletrees, sleds, crates, etc.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	24	664	\$321,222	\$714,877	\$1,625,478	\$919,661
1904.....	26	584	295,950	494,313	1,177,780	683,467
1899.....	15	321	127,398	180,036	454,441	274,465
1889.....	26	567	251,189	637,720	1,155,565	547,845
1879.....	22	239	72,459	101,853	227,392	125,539
1869.....	23	238	111,390	166,420	472,720	306,300

In addition to the products covered by the table for 1909, wheelbarrows to the value of \$197,659 were reported by establishments engaged primarily in the manufacture of other products, principally foundry and machine-shop products.

Every steam-railroad or street-railroad company of any magnitude operates one or more repair shops, chiefly for the purpose of maintaining its own rolling stock in proper condition. Incidentally to their repair work, however, such shops often manufacture complete cars, and some of them manufacture complete locomotives. While the great bulk of the work of repair shops is connected with the rolling stock, they sometimes also do work in connection with the repair or construction of bridges and other features of the

fixed plant of the railroads. The repair shops of a given railroad company may occasionally do repair work or manufacture cars or locomotives for other railroads, but by far the greater part of the work of any shop is for the company owning it. Work of this latter character is not ordinarily assigned a selling or contract value, the amount reported as the value of products for such operations usually representing cost—that is, cost of materials plus the expenditure for salaries, wages, and miscellaneous items connected with the work. There is obviously an intimate relation between the industries constituting the group designated "railroad repair shops" and those included under "vehicles for land transportation." The following statement presents, for 1909, the principal statistics for the two industries which make up the group under consideration.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total....	1,686	304,592	\$195,830,305	\$214,581,311	\$437,563,288	\$222,981,977
Steam-railroad repair shops...	1,145	282,174	181,344,296	199,413,412	405,600,727	206,187,315
Street-railroad repair shops...	541	22,418	14,486,009	15,167,899	31,962,561	16,794,662

The steam-railroad repair shops are far more important than the street-railroad repair shops. In fact, from the standpoint of employment they constitute one of the most important individual industries covered by the statistics of manufactures. They employed in 1909 an average of 282,174 wage earners, and in this respect ranked fourth among the manufacturing industries of the country.

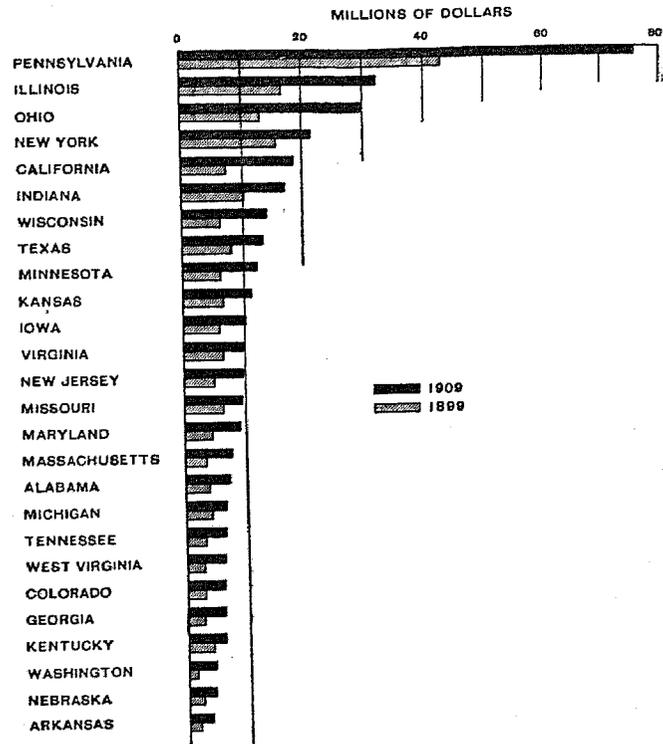
STEAM-RAILROAD REPAIR SHOPS.

The following table presents the statistics for the steam-railroad repair shops for each census from 1889 to 1909. So far as possible, repair work performed in engine roundhouses and car barns was excluded at each census, because such work can not be accurately segregated from that of cleaning and caring for engines and cars.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,145	282,174	\$181,344,296	\$199,413,412	\$405,600,727	\$206,187,315
1904.....	1,140	236,870	142,152,745	151,104,501	309,775,089	153,670,288
1899.....	1,292	173,595	96,006,570	109,472,353	213,113,658	108,041,305
1889.....	716	106,632	60,213,433	66,561,526	129,461,668	62,900,172

The number of establishments was less in 1909 and in 1904 than in 1899. This decrease is due probably to the concentration of railroad repair work in large repair shops. All the other items show decided increases from census to census.

CARS AND GENERAL SHOP CONSTRUCTION AND REPAIRS BY STEAM-RAILROAD COMPANIES—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



The table below shows, for 1909, the value of the various kinds of repair work and other work, according to the department of the railroad in which such work was done, and the number and value of complete cars and locomotives manufactured.

KIND.	Number.	Value.
Total.....		\$405,600,727
Motive power and machinery department.....		184,971,370
Locomotives built.....	215	3,259,140
Repairs to locomotives, motors, etc.....		127,628,773
Work for other corporations.....		4,735,004
All other products or work.....		49,018,953
Car department.....		199,708,939
Cars built.....		13,526,171
Passenger.....	218	1,291,354
Freight.....	13,972	11,767,664
Other.....	359	267,153
Repairs to cars of all kinds.....		147,194,065
Work for other corporations.....		8,784,239
All other products or work.....		30,464,464
Bridge and building department (shopwork).....		2,799,898
Repairs and renewals.....		1,906,737
Work for other corporations.....		40,496
All other products or work.....		846,665
All other products and work not classified.....		18,660,020

STREET-RAILROAD REPAIR SHOPS.

For the censuses of manufactures prior to 1889 separate statistics for the street-railroad repair shops are not available. The principal statistics for the last four censuses (1889, 1899, 1904, and 1909) are presented in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	541	22,413	\$14,486,009	\$15,167,899	\$31,962,561	\$16,794,662
1904	86	11,052	7,012,793	5,463,360	13,437,121	7,973,761
1899	108	7,025	4,404,593	4,336,744	9,370,811	5,034,067
1889	78	2,009	1,411,205	1,154,840	2,966,347	1,811,507

The table following gives the value of the various kinds of work done and of cars made in 1909:

KIND.	Number.	Value.
Total		\$31,962,561
Motive power and machinery department		4,519,332
Repairs to motors, etc.		4,064,336
Work for other corporations		88,479
All other products or work		1,417,906
Car department		25,835,468
Cars built		626,732
Passenger	179	498,789
Freight	63	59,102
Other	51	68,841
Repairs to cars of all kinds		22,969,777
Work for other corporations		624,806
All other products or work		1,714,129
Bridge and building department (shopwork)		330,946
Repairs and renewals		279,261
Work for other corporations		5,000
All other products or work		32,274
All other products and work not classified		1,285,818

1 Includes value of three electric locomotives.

MISCELLANEOUS INDUSTRIES.

THE GROUP AS A WHOLE.

This group includes all industries not presented in the 13 groups preceding. Some of them could not be properly classed in any of the other groups on account of the varied character of the materials used; others, on account of the peculiar character or use of the products. Some of the industries, however, resemble rather closely industries included under other groups, especially the groups "iron and steel and their products" and "metals and metal products, other than iron and steel." Such resemblance is particularly marked in the case of the following industries of the miscellaneous group: "Electrical machinery, apparatus, and supplies;" "agricultural implements;" "fire extinguishers, chemical;" "instruments, professional and scientific;" and "soda-water apparatus." It

often happens that articles such as constitute the chief products of these industries are also made in considerable quantities by establishments assigned to certain industries in the two groups before mentioned.

There is also a considerable overlapping of the products in several of the industries in the miscellaneous group itself. On the other hand, there are few of the industries in the miscellaneous group whose products are chiefly used as materials in other industries of the group, or in industries assigned to other groups.

The following table shows the number of establishments, average number of wage earners, total wages paid, value of products, and value added by manufacture, for each of the industries included in the general group as reported for the census of 1909.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total	16,974	526,351	\$284,182,372	\$1,479,855,852	\$721,305,441
Agricultural implements	640	50,551	28,608,615	146,329,268	86,022,749
Artificial flowers and feathers and plumes	412	10,016	3,973,801	23,980,567	10,353,153
Artists' materials	46	658	367,040	2,339,935	979,445
Belting and hose, woven and rubber	46	6,319	2,956,211	24,739,221	10,229,814
Boots and shoes, rubber	22	17,612	8,544,252	49,729,567	20,143,391
Brooms	898	5,199	2,363,085	14,431,593	6,640,260
Brushes	334	6,954	3,041,145	14,694,003	7,567,060
Buttons	444	16,427	6,789,177	22,708,003	13,166,774
Coke	315	29,273	15,454,345	95,666,622	31,672,095
Dairymen's, poulterers', and apiarists' supplies	233	4,871	2,671,297	15,463,492	9,374,591
Dentists' materials	87	1,573	744,416	10,835,553	2,794,236
Electrical machinery, apparatus, and supplies	1,009	87,256	49,381,145	221,395,563	112,742,159
Enameling and japanning	108	2,125	921,667	3,315,694	1,819,613
Engravers' materials	18	129	95,545	929,727	311,674
Fancy articles, not elsewhere specified	494	12,191	5,065,980	22,632,199	12,271,483
Fire extinguishers, chemical	31	195	126,728	754,165	449,344
Firearms and ammunition	66	14,715	8,427,249	34,111,564	17,990,961
Fireworks	42	1,403	579,601	2,293,549	1,373,159
Foundry supplies	49	464	276,201	2,297,690	1,623,904
Fuel, manufactured	11	88	49,574	311,010	156,302
Fur goods	1,241	11,927	7,787,545	55,937,549	24,160,544
Furs, dressed	93	1,241	806,468	2,399,569	1,540,159
Graphite and graphite refining	9	162	1,139,587	88,708	734,196
Hair work	250	3,534	1,609,788	11,216,175	5,135,565
Hand stamps and stencils and brands	361	1,651	951,814	3,673,025	2,345,722
Hat and cap materials	74	2,367	946,526	8,256,319	2,529,813
Hats, straw	98	9,814	4,470,831	21,424,255	9,369,453
House-furnishing goods, not elsewhere specified	260	4,697	2,034,903	18,598,886	6,129,077
Ice, manufactured	2,014	16,114	9,778,370	22,953,655	31,629,573
Instruments, professional and scientific	203	4,817	2,325,987	10,503,061	7,386,610

Table 380—Continued.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Jewelry and instrument cases	120	2,070	\$953,666	\$3,116,519	\$1,895,242
Lapidary work	77	627	889,485	9,172,832	2,612,383
Mattresses and spring beds	930	11,322	5,771,334	35,783,154	15,300,846
Models and patterns, not including paper patterns	709	4,171	2,929,252	8,868,166	5,991,936
Moving pictures	16	506	334,794	4,206,448	2,014,323
Mucilage and paste	127	538	285,627	4,918,341	1,634,900
Musical instruments and materials, not specified	187	1,822	992,275	3,228,108	2,338,508
Musical instruments, pianos and organs and materials	507	38,020	22,761,568	89,789,544	46,024,807
Optical goods	217	6,398	3,394,340	11,734,811	7,547,354
Paving materials	49	1,419	749,572	6,229,400	2,751,794
Pencils, lead	11	4,134	1,711,981	7,378,744	3,783,111
Pens, fountain, stylographic, and gold	65	1,225	711,795	4,738,693	2,492,239
Photographs and graphophones	18	5,199	2,840,603	11,725,996	8,626,005
Photographic apparatus and materials	103	5,195	3,037,077	22,561,341	15,853,709
Pipes, tobacco	62	2,775	1,254,842	5,311,900	2,353,245
Roofing materials	117	2,465	1,338,697	19,204,423	6,746,246
Rubber goods, not elsewhere specified	227	26,521	14,119,848	128,435,747	46,243,926
Sand and emery paper and cloth	10	611	369,603	4,357,792	1,976,334
Shipbuilding, including boat building	1,353	40,506	25,267,686	73,360,315	42,145,957
Signs and advertising novelties	288	5,540	3,104,593	13,546,385	8,887,470
Soda-water apparatus	63	1,797	1,239,450	6,555,597	4,113,059
Sporting and athletic goods	180	5,321	2,165,434	11,052,250	5,487,520
Stationery goods, not elsewhere specified	153	6,206	2,735,860	16,647,223	8,903,587
Steam packing	153	3,648	1,811,421	12,159,959	5,509,096
Surgical appliances and artificial limbs	324	4,241	2,128,927	12,399,314	7,027,058
Toys and games	226	5,205	2,227,412	8,264,135	4,709,897
Umbrellas and canes	256	5,472	2,252,858	15,864,122	5,808,207
Washing machines and clothes wringers	100	1,835	903,789	5,824,839	2,987,523
Whips	57	1,546	703,527	3,948,643	2,303,900
Windmills	34	2,337	1,403,147	6,676,599	3,345,230
Window shades and fixtures	219	3,830	1,917,692	18,570,932	6,918,325
All other industries ¹	8	96	66,580	390,206	275,154

¹ Includes the following industries with number of establishments as indicated: "Millstones," 1; "ordnance and accessories," 2; "pulp, from fiber other than wood," 2; "straw goods, not elsewhere specified," 2; "whalebone cutting," 1.

AGRICULTURAL IMPLEMENTS.

Establishments in this classification manufacture all kinds of seeders and planters, implements of cultivation and of harvesting, and seed separators. The more important products are listed in the table following, which gives the number manufactured in 1909. Some of the establishments make, as subsidiary products, articles similar to those made primarily in other industries, such as engines, wagons, automobiles, and hand tools.

Table 381

KIND.	Number.	KIND.	Number.
Implements of cultivation:		Harvesting implements:	
Cultivators—		Grain cradles	22,635
Foot	3,172	Harvesters—	
Small	469,696	Bean	1,409
Wheeled	435,429	Corn	19,693
Cotton scrapers	20,180	Grain	129,274
Harrows—		Harvesters and thrashers combined	543
Disk	193,000	Other	1,707
Spring-tooth	112,832	Hay carriers	45,064
Spike-tooth	394,988	Hay forks, horse	43,675
Plows—		Hay loaders	34,785
Disk	22,132	Hayrakes, horse	266,260
Gang	91,686	Haystackers	17,212
Shovel	254,737	Hay tedders	34,396
Steam	2,355	Mowers	359,264
Sulky or wheel	134,936	Potato diggers, horse	25,632
Walking	1,110,006	Reapers	58,294
Seeders and planters:		Seed separators:	
Seeders—		Clover hullers	437
Broadcast	35,007	Corn huskers	372
Combination	23,963	Corn huskers and shredders	1,240
Corn planters—		Corn shellers—	
Hand	96,465	Hand	74,223
Horse	122,780	Power	9,049
Listers	44,840	Fanning mills	33,805
Cotton planters	79,271	Thrashers—	
Potato planters	23,092	Horsepower	822
Drills		Steam power	23,586
Corn	20,137		
Disk	21,292		
Grain	68,611		
All other	32,507		
Seed sowers	7,847		

Some minor tools and implements, not specifically called for by the schedule, were made in addition to those specified, and their values are included in the total for "all other products" given in Table 382.

The value of implements of cultivation and that of harvesting implements made in 1909 were substantially the same. The value of each main class of products in 1909 was as follows:

Table 382

KIND.	Value. ¹
Total	\$146,329,268
Implements of cultivation	35,246,030
Seeders and planters	13,679,921
Harvesting implements	34,568,131
Seed separators	11,080,412
All other products	48,600,682
Amount received for repair work	3,114,692

¹ In addition, agricultural implements to the value of \$2,989,276 were made by establishments engaged primarily in the manufacture of carriages and wagons and materials; cooperage and wooden goods, not elsewhere specified; copper, tin, and sheet-iron products; cutlery and tools, not elsewhere specified; dairymen's, poultrymen's, and apiarists' supplies; foundry and machine-shop products; lumber and timber products; and pumps, not including steam pumps; and by a few establishments in other industries.

Table 383 presents statistics for the industry from 1849 to 1909, inclusive.

Table 383

Year.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	640	50,551	\$28,608,615	\$60,306,519	\$146,329,268	\$86,022,749
1904	645	47,394	25,002,650	48,281,406	112,007,344	63,725,938
1899	715	46,582	22,450,880	43,944,628	101,207,428	57,262,800
1894	910	38,827	18,107,094	31,603,265	81,271,651	49,668,386
1879	1,943	39,580	15,359,610	31,531,170	68,640,486	37,109,316
1869	2,676	25,249	12,151,504	21,473,925	52,066,875	30,592,950
1859	1,982	14,814	5,080,549	5,636,169	17,597,960	11,961,791
1849	1,333	7,220	2,167,868	2,445,765	6,842,611	4,398,846

ARTIFICIAL FLOWERS AND FEATHERS AND PLUMES.

The statistics for the preparation or manufacture of feathers and plumes are combined in most of the tables with those for the manufacture of artificial flowers because both kinds of products are often reported by a single establishment. The principal statistics for the two branches of the industry, as reported for 1909, are shown in the following statement, but there is considerable overlapping between them. The character of the products is indicated with sufficient clearness by the industry designation. Some of the establishments, however, make as subsidiary products millinery and lace goods and other related articles.

Table 384
ESTABLISHMENTS MANUFACTURING PRIMARILY—

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	412	10,016	\$3,973,801	\$13,627,404	\$23,980,567	\$10,353,163
Feathers and plumes..	187	5,181	2,233,518	9,009,740	14,939,120	5,929,380
Artificial flowers.....	225	4,835	1,740,283	4,617,664	9,041,447	4,423,783

In addition to the products covered by the table above, establishments engaged primarily in the manufacture of millinery and lace goods, fur goods, women's clothing, and other products reported artificial flowers and feathers and plumes made in 1909 to the value of \$63,998.

The statistics for the combined industry from 1869 to 1909 are as follows:

Table 385

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	412	10,016	\$3,973,801	\$13,627,404	\$23,980,567	\$10,353,163
1904.....	213	4,343	1,396,817	2,014,380	5,246,322	3,232,442
1899.....	224	5,331	1,561,403	2,763,337	6,293,235	3,529,898
1889.....	251	6,357	2,125,906	4,645,850	9,078,683	4,432,833
1879.....	174	4,342	1,081,040	2,444,418	4,879,324	2,434,906
1869 ¹	73	2,034	420,428	836,204	1,846,050	1,009,846

¹ Designated as "artificial feathers, flowers, and fruits," and "feathers, cleaned, dressed, and dyed."

The classification "feathers and plumes" was a part of "artificial feathers and flowers" at the census of 1904 and previous censuses covered by Table 385 except as indicated in the footnote. At the census of 1859 three establishments were reported under the heading of "flowers." Seven wage earners were employed; the total amount of wages paid was \$2,028; the materials cost \$9,500; and the value of products was \$16,500. At the census of 1849, 23 establishments were classed under "artificial flowers." The wage earners numbered 434, receiving \$45,792 in wages; the cost of materials was \$52,785; and the value of products was \$146,120.

A great many artificial flowers and feathers and plumes are made as subsidiary products in establishments classed under "millinery and lace goods," although they have not always been reported separately. Sometimes one class of products predominates, sometimes another, thus changing the classification of individual establishments from one census to another. This is the explanation for some of the apparent decreases shown in Table 385, but the fact that small neighborhood establishments were included in 1889 and excluded in the comparative totals shown for 1899 is also responsible for part of the decrease.

The phenomenal increase of 357 per cent in value of products from 1904 to 1909 was due largely to the growth of the production of feathers and plumes, especially of willow plumes made of ostrich feathers.

ARTISTS' MATERIALS.

Among the many kinds of products manufactured by establishments in this classification are canvas board; prepared canvases or frames; oil colors; air-brushes for portrait work; air compressors for art work; easels; drawing tables; palettes; sketch boxes; pantographs; wax crayons; gold and bronze mixtures; paint for china painting; pyrography goods, including platinum points; brass-craft goods; drafting tools and materials; and blue-print and brown-print cloth and paper.

The statistics given below are for the censuses from 1859 to 1909, inclusive, except that of 1879, when the industry was included under other classifications.

Changes in classification are doubtless responsible for the decrease in value of products from 1889 to 1899.

Table 386

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	46	658	\$307,040	\$1,360,490	\$2,339,965	\$979,445
1904.....	28	274	126,658	687,283	1,139,353	452,070
1899.....	21	200	79,267	249,107	497,045	247,999
1889.....	39	242	102,196	190,850	531,785	340,935
1869.....	8	50	20,062	21,680	94,156	72,470
1859.....	8	43	15,500	11,966	44,800	32,524

Artists' materials to the value of \$571,514 were also reported at the census of 1909 by establishments engaged primarily in other industries, principally "fancy articles, not elsewhere specified," "wood, turned and carved," and "pencils, lead." Artists' paints are made to some extent by establishments in the paint and varnish industry, but were not reported separately as such.

BELTING AND HOSE, WOVEN AND RUBBER.

This classification includes establishments engaged in the manufacture of woven belting and hose and rubber belting and hose, respectively. Owing to the

overlapping of the products of the two branches, the statistics for the combined industry only are shown in most of the tables, but separate statistics have also been compiled for the two branches, and are given in the table following, each establishment being assigned according to its product of chief value:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	46	6,319	\$2,956,211	\$14,505,407	\$24,729,221	\$10,223,814
Belting and hose, rubber	18	5,131	2,472,876	10,976,105	19,238,324	8,262,219
Belting and hose, woven	28	1,188	483,335	3,529,302	5,490,897	1,961,595

In addition to the products covered by the table above, establishments engaged primarily in the industries "rubber goods, not elsewhere specified," "awnings, tents, and sails," "furnishing goods, men's," and a few other industries reported woven and rubber belting and hose made in 1909 to the value of \$2,724,186.

Belting and hose, rubber.—The chief products of establishments in this subclass are fire and garden hose and machinery belting made of rubber. In many instances, factories assigned to this subclass also reported other rubber articles, such as tiling, mats, matting, and tubing.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	18	5,131	\$2,472,876	\$10,976,105	\$19,238,324	\$8,262,219
1904	19	3,698	1,804,992	9,089,786	14,954,186	5,864,400
1899	18	1,771	918,191	4,075,702	6,169,044	2,093,342
1889	17	1,835	833,020	3,479,538	5,512,840	2,033,302

Belting and hose, woven.—Establishments in this subclass manufacture principally cotton and stitched canvas belting, woven camel's-hair belting, solid woven waterproofed belting, endless belts of seine twine, pulley covering of glue and canvas, and cotton and linen fire hose. The classification was "belting and hose, linen," until the census of 1909.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	28	1,188	\$483,335	\$3,529,302	\$5,490,897	\$1,961,595
1904	20	632	252,061	1,697,515	2,836,690	1,139,184
1899	7	254	64,102	452,430	717,137	264,707
1889	9	273	123,524	427,365	777,942	350,077

The woven hose has almost entirely replaced the leather hose and this accounts for the large increase from 1899 to 1904.

BOOTS AND SHOES, RUBBER.

All kinds of rubber footwear for men, women, and children are made by establishments in this classification. Leather-soled rubber boots, rubber-soled cloth or leather tennis shoes, and rubber heels are also reported.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	22	17,612	\$8,544,252	\$29,577,176	\$49,720,567	\$20,143,391
1904	22	18,991	8,866,806	32,000,464	70,065,296	38,064,832
1899	22	14,391	6,426,579	22,682,543	41,089,819	18,407,276
1889	11	9,134	3,813,073	11,650,787	18,632,060	6,981,273
1879	9	4,662	1,469,038	6,023,053	9,705,724	3,682,671

At the census of 1909 no rubber boots and shoes were reported by any concern as an incidental or subsidiary product, but a large quantity—valued at \$2,724,039—of rubber goods other than boots and shoes were made by establishments engaged primarily in the manufacture of rubber boots and shoes, their value being included above. These miscellaneous rubber goods include mackintoshes, rubberized silk garments, rain coats, rubber-surface clothing, rubber-coated cloth, mechanical rubber goods, druggists' sundries, rubber bands, dolls, balls, etc. There is thus considerable overlapping between this industry and the industry "rubber goods, not elsewhere specified." The large decrease in value of products from 1904 to 1909 is due in part to the fact that some establishments reported list price values at the census of 1904.

BROOMS AND BRUSHES.

The manufacture of brooms and that of brushes were not shown as separate industries at the censuses from 1879 to 1904, inclusive, but separate statistics are available for 1849, 1859, and 1869, as well as for 1909. For comparative purposes the two industries are combined in the following table which presents the statistics from 1849 to 1909, inclusive.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	1,282	12,153	\$5,404,233	\$15,578,270	\$29,125,596	\$13,547,326
1904	1,316	11,425	4,380,220	10,998,946	21,103,776	10,104,830
1899	1,523	10,346	3,787,746	9,544,313	18,483,760	8,939,447
1889	1,235	9,556	3,299,303	6,900,553	14,156,383	7,255,830
1879	980	8,773	2,424,040	5,694,855	10,560,855	4,866,000
1869	792	7,631	1,970,250	4,985,734	9,317,108	4,331,374
1859	349	3,562	881,644	1,867,985	3,524,777	1,656,792
1849	449	3,589	799,102	1,167,201	2,514,345	1,347,144

Separate data for each industry for 1909 are given in the next table, and in other tables of the census reports, each establishment being assigned according to its product of chief value.

Table 392

INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	1,282	12,153	\$5,404,233	\$15,578,270	\$29,125,596	\$13,547,328
Brooms.....	898	5,199	2,363,088	8,391,333	14,431,593	6,040,260
Brushes.....	384	6,954	3,041,145	7,186,937	14,694,003	7,507,068

In addition to the products covered by the above table, establishments engaged primarily in the industries "foundry and machine-shop products," "cutlery and tools, not elsewhere specified," "mirrors," "wood, turned and carved," "patent medicines and compounds and druggists' preparations," "mattresses and spring beds," "rubber goods, not elsewhere specified," "wirework, including wire rope and cable," and a few others, made brooms and brushes in 1909 to the value of \$201,673.

Brooms.—Establishments in this classification manufacture brooms for sweeping floors, streets, etc., and for cleaning ceilings and hearths, and whisk brooms for brushing clothes, etc. These are made generally of the tops of broom corn; but some, for example those for brewers' use, are made of bristles, and others, such as street or push brooms, are made of rattan, bass-wood fiber, or split bamboo. Scrub and toy brooms are included.

Separate statistics are shown for the censuses of 1909, 1869, 1859, and 1849 in the following table:

Table 393

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	898	5,199	\$2,363,088	\$8,391,333	\$14,431,593	\$6,040,260
1869.....	635	5,206	1,268,875	3,672,837	6,622,265	2,949,448
1859.....	228	1,184	287,528	874,046	1,428,194	554,148
1849.....	303	1,184	265,642	528,842	940,766	411,924

Brushes.—Brushes for toilet purposes, cleaning, polishing, painting, etc., composed principally of bristles, vegetable fiber, the hair of animals, feathers, wool, and twisted wire, are the chief products of establishments in this classification. They include brushes for artists and painters; sash tools and hair pencils; hairbrushes, military brushes, toothbrushes, nail-brushes, and shaving brushes; clothes, bonnet, and hat brushes; acid brushes; dentists' and platers' brush wheels, of brass, steel, and bristles; machine, mill, and mechanical brushes, including comb cards and loom dusters; and brushes and buffs for jewelers, silversmiths, and metal workers. Feather and wool dusters and dust cloths were also reported. Other products are brush ferules and brush fibers. The dressing of bristles is a branch of the industry.

Separate statistics for the censuses of 1909, 1869, 1859, and 1849 are given the following table:

Table 394

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	384	6,954	\$3,041,145	\$7,186,937	\$14,694,003	\$7,507,068
1869.....	157	2,425	691,405	1,312,897	2,694,823	1,381,926
1859.....	121	2,378	594,116	993,939	2,096,583	1,102,644
1849.....	146	2,405	533,460	638,359	1,573,579	835,229

BUTTONS.

Plain and fancy buttons and appendages to dress for fastenings or for ornamentation are manufactured in all sizes and styles and of many kinds of materials by the establishments under this classification. Among the materials are bone, brass, celluloid, cloth, composition, fresh-water mussel shells, glass, hoof, horn, iron, leather, mother-of-pearl, paper board, steel, and vegetable ivory. An insignificant proportion of the product was reported as made by hand in the homes of the workers.

Table 395

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	444	16,427	\$6,789,177	\$9,541,291	\$22,708,065	\$13,156,774
1904.....	275	10,567	3,680,196	4,144,446	11,133,769	6,989,323
1899.....	238	8,685	2,826,238	2,808,246	7,696,910	4,822,664
1890.....	106	3,831	1,411,089	1,551,603	4,216,796	2,665,192
1879.....	124	5,825	1,645,130	1,792,891	4,449,542	2,656,651
1869.....	64	1,912	580,380	751,183	1,778,993	1,027,710
1859.....	43	1,161	260,206	358,385	949,408	591,023
1849.....	59	1,088	225,120	324,837	964,359	839,322

In addition to the products covered by the above table, buttons to the value of \$1,098,996 were reported for 1909 by establishments engaged primarily in the industries, "brass and bronze products," "clothing, women's," "fancy articles, not elsewhere specified," and others.

COKE.

The principal product of establishments under this classification is coke obtained by the distillation of coal in coke ovens. From the "by-product ovens" a number of valuable by-products are obtained—tar, ammonium sulphate, and ammonia liquors. Establishments engaged primarily in the manufacture of gas, and making coke as a subsidiary product, are not included in Table 396, but are shown in Table 397.

In 1909 nearly three-fourths of the coke was made at the mines, but the data for the coking operations have been segregated from those for mining—in some cases by estimate.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	315	29,273	\$15,454,345	\$64,024,527	\$95,096,622	\$31,672,095
1904.....	278	18,981	9,304,498	29,884,532	51,728,647	21,844,115
1899.....	241	16,999	7,085,736	19,665,532	35,585,445	15,919,913
1889.....	218	8,998	4,072,632	11,509,737	16,498,345	4,988,608
1879.....	126	3,140	1,197,744	2,995,441	5,359,489	2,364,048
1869.....	25	528	288,695	615,268	1,132,386	517,118
1859.....	21	198	61,368	73,552	189,844	116,292
1849.....	4	14	3,444	6,083	15,250	9,167

Almost all the coke made in 1909 was the product of beehive ovens, as shown in the following table:

KIND.	Quantity. ¹		Value. ¹
	Amount.	Unit.	
Total			\$95,078,383
Coke.....	39,315,065	Tons.....	89,965,483
Made in beehive ovens.....	33,080,421	Tons.....	69,530,794
Made in retort or by-product ovens.....	6,234,644	Tons.....	20,434,689
By-products obtained from retort or by-product ovens:			
Gas.....	76,590,763	1,000 cu. ft.....	
Used in process or wasted.....	60,799,543	1,000 cu. ft.....	
Sold.....	15,791,220	1,000 cu. ft.....	2,609,211
Tar.....	60,126,006	Gallons.....	1,408,611
Ammonia sulphate or reduced to equivalent in sulphate.....	123,111,197	Pounds.....	3,227,316
Anhydrous ammonia.....	4,871,014	Pounds.....	448,455
All other.....			419,307

¹ Includes products produced by establishments engaged primarily in the manufacture of chemicals to the value of \$2,381,761. These products comprise retort coke, 415,472 tons, valued at \$1,464,162; tar, 4,398,576 gallons, valued at \$87,639; ammonium sulphate, 9,952,744 pounds, valued at \$235,605; gas sold, 2,160,915,000 cubic feet, valued at \$534,075; and other products to the value of \$80,280.

Gas-house coke to the value of \$5,723,215 was made in 1909 by establishments making illuminating and heating gas.

DAIRYMEN'S, POULTERERS', AND APIARISTS' SUPPLIES.

The dairymen's supplies manufactured by establishments in this classification include, among others, automatic sanitary butter machines, butter workers, vats, colors, packers, ladles, cutters, printers and molds; cheese boxes, presses, and bandages; rennet extract and lactic ferment; cream separators, centrifugal and gravity, and accessories; creamery machinery and supplies; churns, barrel, dash, and other; dairy tin-ware; ice-cream freezers; milk cans, tanks, measures, and coolers; bottle sterilizers and fillers; pasteurizers; portable stalls; skim-milk weighers; washers and sinks; wooden spoons; tanks of steel or cypress; and cow-milkers. Poulterers' supplies, as they have been reported, include incubators and brooders; coops of iron or wood; feeders; crates and chicken shipping boxes; crushed oyster shells; drinking fountains; egg cases and egg-case fillers; feed cookers; insecticides; egg testers; nest eggs; egg markers, and remedies. Among products intended for apiarists' use are bee escapes, comb foundation, hives, and honey boxes and sections.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	233	4,871	\$2,671,297	\$6,088,901	\$15,463,492	\$9,374,591
1904.....	176	2,608	1,167,343	3,203,451	6,545,008	3,341,557

The statistics for 1909 and 1904 are the only figures available, the industry being merged in other classifications prior to 1904.

In addition to the products covered by the above table, establishments engaged primarily in the manufacture of foundry and machine-shop products, patent medicines and compounds and druggists' preparations, of agricultural implements, and other products reported dairymen's, poulterers', and apiarists' supplies at the census of 1909 to the value of \$2,099,011.

DENTISTS' MATERIALS.

Establishments in this classification manufacture principally dental alloys; carborundum disks and wheels; casting machines; cauterizing supplies and cotton pellets; embossing compounds; dental files; filling materials; fine gold and silver plate and anodes; gold caps, plates and crown and bridge work; gold foil, cylinders, and shells; solders and wire; impression materials; linen finishing strips; mandrels; working compounds; nerve broaches; dental plasters; platenoid specialties; platinum plates; polishing cups; porcelain enamel and porcelain teeth; rubber plate work and suction plates and cups; swages; and wax preparations.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	87	1,573	\$744,416	\$8,101,317	\$10,835,583	\$2,734,236
1904.....	80	1,922	949,204	5,509,471	7,809,602	2,300,131
1899.....	68	1,017	508,603	2,109,231	3,721,150	1,611,919
1889.....	24	1,011	542,648	993,855	2,594,888	1,601,033
1879.....	20	490	237,729	247,824	860,753	612,934
1869.....	10	346	242,836	181,908	579,364	397,450
1859 ¹	11	176	67,704	206,410	367,518	161,108

¹ "Teeth, porcelain."

In addition to the products covered by the above table, establishments engaged primarily in the manufacture of other products, principally paint and varnish and wall plaster, at the census of 1909, reported dentists' materials to the value of \$61,171.

ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES.

Dynamos, transformers, motors, storage and primary batteries, carbons, arc and incandescent lamps, telegraph instruments and parts, and telephone instruments and parts are the principal products of the establishments in this classification. Some of these products are reported in very considerable variety, as shown by Tables 401 and 402.

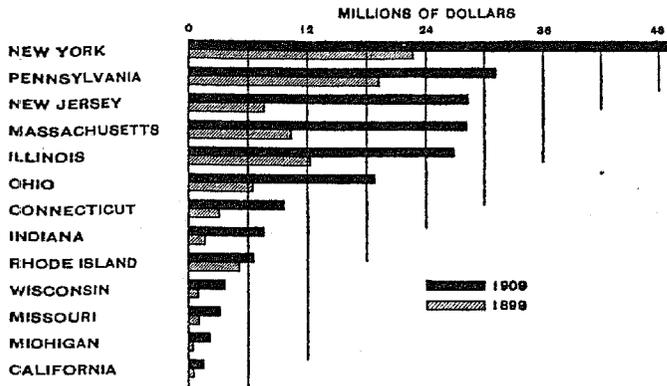
	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,009	87,256	\$49,381,145	\$108,566,404	\$221,308,563	\$112,742,159
1904.....	784	60,466	31,841,521	66,836,926	140,809,369	73,972,443
1899.....	581	42,013	20,579,194	49,458,272	92,434,435	42,976,168
1889.....	189	8,802	4,517,050	8,819,498	19,114,714	10,295,216
1879.....	76	1,271	683,164	1,116,470	2,655,036	1,538,566

In addition to the products for 1909 covered by the above table, establishments engaged primarily in other

industries, such as "wire," "foundry and machine-shop products," and "gas and electric fixtures and lamps and reflectors," reported electrical machinery, apparatus, and supplies to the value of \$22,656,530. On the other hand, establishments in the electrical machinery industry reported many products similar to those made primarily by the industry "gas and electric fixtures and lamps and reflectors."

A considerable quantity of insulated wire is made by wire factories in addition to that made by establishments in the industry now under discussion.

ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899



Motors made in 1909 numbered over half a million. Figures for these and many of the other products of the industry are given in the following table, which includes similar products made by establishments assigned to other industries:

Table 401	KIND.	Number.	Capacity.	Value.
	Dynamometers, motor generators, boosters, rotary converters, and double-current generators.	16,791	Kilowatts. ¹ 1,405,950	\$13,081,048
	Transformers.	2,291	295,079	3,154,733
	Switchboards, panel-boards, and cut-out cabinets.	70,729	1,635,429	8,801,019
				5,971,804
	Motors	504,030	Horsepower.	32,087,482
	For stationary machinery	243,423	2,783,418	18,806,451
	For automobiles	2,796	1,683,877	284,152
	For fans	199,113	12,471	2,450,739
	For elevators	4,988	178,033	1,188,653
	For railways, and miscellaneous services, including value of all motor parts and supplies	53,710	63,585	9,847,487
	Storage batteries, including value of parts and supplies (weight of plates)	23,119,331	795,652	4,678,209
	Primary batteries, including value of parts and supplies	34,333,531		5,934,261
	Arc lamps	123,985		1,706,959
	Incandescent lamps			15,714,800
	Carbon filament	55,038,378		6,157,066
	Tungsten	11,738,619		6,241,133
	Gem, tantalum, glow, and vacuum and vapor lamps			2,715,991
	Decorative and miniature lamps, X-ray bulbs, vacuum tubes, etc.			600,619

¹ A kilowatt is equivalent roughly to 1½ horsepower. ² Pounds.

For a considerable number of important products in 1909 only values were returned. These values, however, convey a general idea of the scope of the industry, and are given in the table following, which also

includes similar products made by establishments in other industries:

Table 402	KIND.	Value. ¹
	Total	\$243,985,693
	Searchlights, projectors, and focusing lamps	935,874
	Sockets, receptacles, bases, etc.	4,521,729
	Electric-lighting fixtures of all kinds	6,128,282
	Telegraph apparatus	1,957,432
	Telephone apparatus	14,259,337
	Insulated wires and cables	51,624,737
	Electric conduits	5,098,264
	Annunciators (domestic, hotel, and office)	235,567
	Electric clocks and time mechanisms	352,513
	Fuses	1,001,719
	Lightning arresters	940,171
	Rheostats and resistances	2,674,963
	Heating, cooking, and welding apparatus	1,003,038
	Electric flatirons	931,074
	Electric measuring instruments	7,800,010
	Electric therapeutic apparatus	1,107,858
	Magneto-ignition apparatus, sparks, coils, etc.	6,052,343
	Electric switches, signals, and attachments	5,377,843
	Circuit fittings of all kinds	1,080,287
	Products given in preceding table	81,130,324
	All other products	39,691,708

¹ Includes "electrical machinery, apparatus, and supplies," to the value of \$22,656,530, made by establishments engaged primarily in the manufacture of other products. Among these were establishments in the following industries: "Boots and shoes, rubber;" "brass and bronze products;" emery and other abrasive wheels;" "foundry and machine-shop products;" "furniture and refrigerators;" "gas and electric fixtures and lamps and reflectors;" "glass;" "instruments, professional and scientific;" "iron and steel forgings;" "leather;" "lumber and timber products;" "phonographs and graphophones;" "pottery, terra-cotta, and fire-clay products;" "pumps, not including steam pumps;" "rubber goods, not elsewhere specified;" "signs and advertising novelties;" "surgical appliances and artificial limbs;" "toys and games;" "wire;" and "electroplating."

ENAMELING AND JAPANING.

This classification includes statistics for establishments engaged in enameling and for those engaged in japanning, respectively. Separate data for the two branches of the industry included under this classification for 1909 are given in the following table, each establishment being assigned according to its product of chief value. There is such an overlapping in the products of some of the establishments that combined totals only are shown in most of the tables.

Table 403	ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
	Total	108	2,125	\$921,667	\$1,496,081	\$3,315,694	\$1,819,613
	Enameling	76	1,945	824,611	1,401,710	2,985,189	1,583,479
	Japanning	32	180	97,056	94,371	330,505	236,134

In addition, enameling and japanning to the value of \$47,460 were reported at the census of 1909 by establishments engaged primarily in the manufacture of other products. Enameling and japanning are often done by establishments that manufacture the articles treated. In such cases it is usually impossible to secure separate data as to the value of the enameling and japanning done.

Enameling.—The enameling, under contract, of goods furnished by others and the manufacture of enameled wares are the principal business of the establishments in this subclassification. The kinds of goods enameled include metallic art tile, automobile

parts, badges, bathtubs, bedsteads, bicycles, conduit pipe, cowhides, dice, emblems, goatskins and horsehides, books, ironware, jewelry, wooden goods, wooden handles, and many others. Decorated tin plates are manufactured, together with enameled sheets and enamel coating for plumbers' supplies.

At the censuses of 1899 and 1904 the classification was "enameling and enameled goods," but prior to 1899 there were two classifications, "enameling" and "enameled goods." In 1909 the bureau returned in part to the method of classification used prior to 1899—"enameling" being left by itself as a subgroup under "enameling and japanning" and "enameled goods" being added to "stamped ware," that classification becoming "stamped and enameled ware," now treated as a branch of the industry, "copper, tin, and sheet-iron products" (see Table 340). This change transferred several large establishments enameling their own stamped ware from "enameling and enameled goods," under which they were placed in 1904 and 1899, to "stamped and enameled ware" in 1909, so that the statistics for some of the earlier censuses as shown below are not comparable with those for 1909.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	76	1,945	\$824,611	\$1,401,710	\$2,985,189	\$1,583,479
1904.....	92	9,537	3,042,322	7,152,090	15,709,252	8,557,192
1899.....	129	7,675	2,259,003	5,466,971	9,978,509	4,511,538
1889.....	27	187	104,672	52,999	181,942	128,943
1879.....	19	176	56,836	69,562	182,758	113,196
1869.....	12	274	137,385	718,394	1,070,783	352,389

At the census of 1859 one establishment was reported under "enameling" with products valued at \$10,000.

Japanning.—Most of the work done by establishments in this subclassification is the japanning and decorating of sheet metals, castings, sewing-machine parts, automobile parts, tags, zinc for shoe-lace tips, wood, cloth, and canvas. The work is usually done under contract, the principal materials being generally furnished by others. A few establishments reported the manufacture of japanned tinware, lacquered tin, and varnished cloth.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	32	180	\$97,056	\$94,371	\$330,505	\$236,134
1904.....	32	426	187,736	242,238	607,060	364,822
1899.....	38	160	75,453	55,305	215,506	160,201
1889.....	39	243	105,197	120,184	350,819	239,635
1879.....	30	183	65,562	63,743	190,080	128,337
1869.....	21	158	64,810	83,189	216,145	132,956
1859.....	11	240	63,204	91,621	247,960	156,339
1840.....	9	122	31,668	48,440	127,250	78,810

In 1909 establishments manufacturing lacquered and lithographed tin boxes were included under "boxes, fancy and paper" instead of under "japanning," as in 1904. This difference of classification accounts for the decrease shown.

ENGRAVERS' MATERIALS.

Establishments in this classification are engaged primarily in the preparation of boxwood for engravers' use, cherry for photo-engravers' mounts, chalk plates for illustrators, and color plates; and in the dressing, grinding, finishing, and polishing of lithographic stone for lithographers, and of steel, brass, copper, and zinc plates for the use of engravers, photo-engravers, and etchers. Some establishments reported machine work on photo-engravers', wood engravers', and metal engravers' plates.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	18	129	\$95,505	\$609,053	\$920,727	\$311,674
1904.....	10	49	31,062	95,887	170,710	74,823
1899.....	11	76	44,939	141,785	282,489	140,704
1889.....	16	139	76,450	61,985	203,764	141,779
1879.....	11	70	39,840	26,464	85,764	59,300

In addition to the products covered by the above table, engravers' materials valued at \$87,414 were reported for 1909 by establishments engaged primarily in the manufacture of other products, principally electrical machinery, apparatus, and supplies.

There is some overlapping between this industry and others, such as "engraving, wood," and "photo-engraving," which explains the decreases during the five-year period ending in 1904 and the large increases from 1904 to 1909. In some cases a given establishment was evidently classified at one census with this industry and at another with one of the related industries.

FANCY ARTICLES, NOT ELSEWHERE SPECIFIED.

This classification includes statistics for three branches—"fancy articles, not elsewhere specified," "combs and hairpins," and "ivory, shell, and bone work, not including combs and hairpins." The principal items for the three branches of the industry are given separately for 1909 in the following table. There is so much overlapping in the products, however, that only the totals for all three branches combined are shown in most of the tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	494	12,191	\$5,095,950	\$10,360,714	\$22,632,199	\$12,271,485
Fancy articles, not elsewhere specified.....	361	6,729	2,464,030	5,423,822	12,390,840	6,967,018
Combs and hairpins.....	81	4,355	2,165,529	3,974,613	8,375,932	4,401,319
Ivory, shell, and bone work, not including combs and hairpins.....	52	907	466,421	962,279	1,865,427	903,148

In addition, articles similar in character to those covered by the table to the value of \$3,253,549 were reported at the census of 1909 by establishments assigned to other industries—principally "chemicals,"

"leather goods," "rubber goods, not elsewhere specified," "fertilizers," "signs and advertising novelties," "millinery and lace goods," "needles, pins, and hooks and eyes," "glass, cutting, staining, and ornamenting," "toys and games," "jewelry," and "printing and publishing." No sharp line of distinction is possible between articles properly falling under this classification and under various others, so that this additional item has relatively little significance.

Fancy articles, not elsewhere specified.—A wide variety of articles was reported by establishments assigned to this subclass. A partial list comprises the following: Air-brush and other souvenir post cards; albums made by the photogelatin printing process; aluminum novelties; atomizers; automobile-license tags and figures; bag, purse, and pocketbook frames; bamboo novelties; bath mats; bead, pearl, and glass necklaces; beaded bags, collars, necklaces, and novelties for women's wear; brass and rhinestone ornaments for millinery; burning or pyrographic outfits; burnt-wood novelties; calendars (novelty); candle and electric-light shades of paper and silk; cane mounts; college goods—pennants, pillow tops, etc.; composition ornaments; corkscrews; corn files; cuticle knives; decalcomania; decorative goods covered with moss, bark, leather, etc.; fan handles and fans; fasteners; hand-painted silk novelties; horn goods; jewel bags and powder puffs; lace boxes and lace cards; ladies' belt and bag stands and racks; ladies' belt buckles, purses, bags, etc.; mail boxes; marking tags; marquetry mat board; match scratchers; metal and glass trays; metal-frame pictures; needle and pin books, boxes, and cushions; needle threaders and thread-cutter thimbles; paper weights; passe partouts; pearl handles; photo buttons, medallions, and jewelry; picture puzzles; tally cards; pipe cases; fancy receptacles for ice cream, punches, etc.; rolls and bags for silverware; salt and pepper shakers; sachet cases; satin boxes; theatrical and costumers' supplies; thermometers and novelties for mounting them; thermos bottles; toilet mirrors; tourists' cups; tweezers; and umbrella tassels.

In addition, a number of establishments reported as their chief employment contract work of various sorts on materials furnished by other concerns, including work on purses and scarfs; inlaying for musical instruments; interior decorations; furniture; jewel boxes, etc.; the cutting of coral, shell, and turquoise for ornaments, and the cutting and stamping of mica.

Statistics for the industry for each census from 1879 to 1909, inclusive, are presented in Table 408. Those for 1869 are not at all comparable, and the close relation between this industry and certain others may affect the comparability of the data for the later censuses.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	361	6,729	\$2,464,050	\$5,423,822	\$12,390,840	\$6,967,018
1904.....	327	6,624	2,545,098	4,826,719	11,961,513	7,134,794
1899.....	392	5,718	1,921,578	4,061,400	9,046,342	4,984,942
1889.....	377	3,396	1,234,982	1,844,556	4,810,450	2,965,894
1879.....	151	2,793	1,036,672	1,065,335	2,817,230	1,751,895

Combs and hairpins.—Combs and hairpins for dressing or ornamenting the hair are the principal products of establishments in this subclass. Among the materials of which these combs and hairpins are made are rubber, fiber, bone, horn, tortoise shell, celluloid, aluminum, brass, copper, iron, nickel-plated zinc, and steel. Novelties for ladies' head-dress, barrettes, hair-puff pins, and comb mountings are included.

The manufacture of "hairpins" was combined with "combs" in 1909; except for that year the statistics are for "combs" only, the making of hairpins being included in other classifications.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	81	4,555	\$2,165,529	\$3,974,613	\$8,375,932	\$4,401,319
1904.....	42	1,806	757,657	1,329,627	2,769,399	1,439,733
1899.....	34	1,399	572,467	651,514	1,976,129	1,024,615
1889.....	31	742	364,715	344,120	1,020,835	676,735
1879.....	38	1,026	374,785	341,719	951,395	609,676
1869.....	37	675	221,318	222,587	688,889	456,302
1859.....	66	930	304,716	614,431	1,314,968	790,537
1849.....	151	1,788	494,196	843,482	1,615,860	772,368

It seems probable that many of the comb manufacturers in 1869 and 1879, especially those making combs of rubber, were included in classifications other than "combs," such as "india rubber and elastic goods," "ivory work," and "celluloid and celluloid goods." This may account for a part of the decline in value of products between 1859 and 1869, the decline being particularly large in Connecticut, where the manufacture of rubber goods is a leading industry. Changes of fashion in hairdressing and hair ornamentation have also had an effect upon this branch of the industry. Owing to the overlapping of this industry with others, there is doubt as to the comparability of any of the figures in the table. The increase shown from 1904 to 1909 was due partly to a change in the assignment of certain establishments.

Ivory, shell, and bone work, not including combs and hairpins.—The products of establishments in this subclass include a wide variety of articles of use or ornament, such as bits for pipes and holders for cigarettes; mosaics; hair ornaments; whip handles;

devices for curling hair; knife handles and tips; fobs; collar supporters; novelties of various sorts; napkin rings; pacifier rings for infants; buckles, slides, and other fittings for jewelers' use; pens; letter openers; handles and settings for umbrellas; manicure implements; watch chains; hatpins; stick pins; etc. The chief materials used in the manufacture of these articles are bone, horn, ivory, mother-of-pearl, tortoise shell, and amber, together with imitations of these materials.

The classification was "ivory and bone work" from 1879 to 1904, inclusive.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	52	907	\$466,421	\$962,279	\$1,865,427	\$903,148
1904.....	66	1,769	777,463	1,380,597	2,863,602	1,483,005
1899.....	70	1,334	529,051	930,224	1,873,357	943,133
1889.....	64	1,240	591,867	921,975	1,918,607	996,632
1879.....	55	1,105	414,701	754,654	1,454,901	700,247
1869 ¹	20	272	172,968	635,435	1,080,210	444,775
1859 ²	19	307	88,608	130,155	253,204	123,049
1849 ³	12	171	39,840	61,160	125,680	64,520

¹"Ivory work."

²"Turning, ivory and bone."

³"Turners, bone and horn," and "turners, ivory."

The decrease in value of products from 1904 to 1909 is only apparent. Many important establishments making horn, celluloid, and other combs and hairpins were classified at the census of 1909 under "combs and hairpins," whereas at the census of 1904 they were included with "ivory and bone work."

FIRE EXTINGUISHERS, CHEMICAL.

Chemical engines, separate, or in combination with hose wagons or with ordinary fire engines, portable and stationary fire extinguishers operated with chemicals, dry or liquid chemicals for fire extinguishing, and hand grenades are the principal products of establishments under this classification.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	31	195	126,728	\$304,821	\$754,165	\$449,344
1904.....	35	178	107,540	229,003	581,970	352,967
1899.....	17	64	32,828	70,874	217,833	146,959
1889.....	9	66	25,594	57,736	195,834	138,098
1879.....	3	119	84,750	81,840	204,663	122,853

In addition to the products covered by the table, chemical fire extinguishers to the value of \$56,572 were reported at the census of 1909 by establishments engaged primarily in the industries "carriages and wagons and materials;" "wirework, including wire rope and cable;" "electrical machinery, apparatus, and supplies;" and others.

FIREARMS AND AMMUNITION.

This classification includes statistics for establishments manufacturing firearms of all kinds and for those making ammunition. As to the principal items, separate statistics were compiled for the two branches of the industry for 1909, and they are given in the following table; but there is so much overlapping of products in the case of some of the establishments that only the combined totals are shown in most of the tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	66	14,715	\$8,427,249	\$17,020,663	\$34,111,564	\$17,090,901
Ammunition.....	39	8,713	4,508,597	15,451,929	26,053,065	10,601,136
Firearms.....	27	6,002	3,918,652	1,568,734	8,058,499	6,489,765

In addition to the products covered by the above table, firearms and ammunition to the value of \$369,766 were reported at the census of 1909 by establishments assigned to other industries—principally "foundry and machine-shop products," "habbit metal and solder," and "lead, bar, pipe, and sheet."

Ammunition.—Establishments in this subclass manufacture principally cartridges for small arms; blasting caps, electric and other; electric explosives and fuses; safety fusees, miner's squibs, night squibs and rockets, and railway fusees; shot; gunpowder torpedoes and nitroglycerin torpedoes for "shooting" oil and gas wells. Paper linings, paper shotgun shells, wads, and paper caps for toy pistols are additional products. The ammunition for large guns used by the Federal Government is made in steel works and rolling mills and Federal establishments, and the value was not reported separately. Establishments making powder, dynamite, etc., as a chief product are classed under "explosives."

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	39	8,713	\$4,508,597	\$15,451,929	\$26,053,065	\$10,601,136
1904.....	32	7,410	4,032,310	10,600,929	19,930,821	9,329,892
1899.....	33	5,231	2,560,954	7,436,748	13,027,635	5,590,887
1889.....	35	2,158	969,951	2,759,782	6,538,959	3,779,177
1879.....	4	1,066	361,778	1,223,452	1,904,966	681,514
1869.....	17	657	453,770	1,695,084	2,484,720	789,636
1859.....	16	400	114,868	274,570	601,840	327,270
1849.....	7	85	21,460	775,771	1,018,550	242,779

The figures in the table for 1869 include those for "ammunition, cartridges," "lead, shot," and "percussion caps;" for 1859, "ammunition," "fire bomb lances," "powder flasks and percussion caps," and "safety fuse;" and for 1849, "percussion caps" and "shot." The apparent decrease in value of products

from 1869 to 1879 is to be attributed to the exclusion in 1879 of shot factories, which were placed under the classification "lead, bar, pipe, sheet, and shot." It is probable that shot factories in 1859 were included with "lead, manufactures of;" if so, this is the reason for the decrease shown for the decade 1849-1859.

Firearms.—The principal products of establishments under this subclass are single-shot and repeating rifles, revolvers, single and double barreled and repeating shotguns, automatic pistols, and gun and pistol stocks.

Table 414

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	27	6,002	\$3,918,652	\$1,568,734	\$8,058,499	\$6,489,765
1904.....	30	6,224	3,722,850	1,738,012	8,276,560	6,537,548
1899.....	32	4,482	2,542,366	1,306,421	5,444,659	4,139,238
1889.....	34	2,660	1,575,931	485,946	2,922,514	2,436,568
1879.....	39	4,862	2,790,281	1,659,026	5,736,936	3,877,910
1869.....	46	3,297	2,490,774	1,100,999	5,582,258	4,481,260
1859.....	242	2,065	889,222	378,613	2,368,931	1,930,318
1849.....	317	1,547	518,292	269,673	1,173,014	903,341

The decrease between 1879 and 1889 is due to changes in classification from "firearms" to "ammunition," as large concerns make great quantities of both kinds of products.

A supplemental inquiry was made to ascertain the number of the different kinds of firearms manufactured during 1909. The total number reported by the 27 establishments assigned to the industry was 1,638,560, distributed as follows: Rifles, reported by 12 establishments, 666,643; revolvers (including automatic revolvers), reported by 10 establishments, 580,042; and shotguns and miscellaneous firearms, reported by 20 establishments, 391,875. The miscellaneous firearms included combination shotguns and rifles, shoulder and darting guns for use in whaling, and special guns for target practice to the number of 983.

FIREWORKS.

Display fireworks of all kinds are the principal manufactures of establishments in this classification. Among specific products are air torpedoes, bombs, mines, set pieces, shells, wheels, torches, rockets, electric sparklers, firecrackers, paper balloons, and roman candles.

Table 415

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	42	1,403	\$579,001	\$896,190	\$2,269,349	\$1,373,159
1904.....	34	1,480	535,508	769,235	1,986,790	1,217,555
1899.....	46	1,638	506,990	627,761	1,785,271	1,157,510
1889.....	22	518	165,298	188,933	592,542	403,604
1879.....	39	735	216,069	840,877	1,391,132	550,255
1869.....	21	363	196,497	307,369	880,150	572,751
1859.....	12	144	39,900	48,954	177,375	128,421

1 "Explosives and fireworks."

2 "Fireworks," "torpedoes."

Two establishments engaged primarily in the manufacture of confectionery and in making bread and other bakery products, respectively, also made fireworks in 1909, but the data can not be shown without disclosure of individual operations.

The manufacture of explosives, which was included with that of fireworks in 1879, was placed in a separate classification thereafter. The decrease for the decade 1879-1889, therefore, is apparent only.

FOUNDRY SUPPLIES.

The various articles necessary to metal casting are the principal products of establishments in this classification. They include not only the mixed sand and bituminous coal facings, the dry sand and loam facings, the plumbago and sea-coal facings, and the charcoal facings used to keep the metal from contact with the molding sand, but also the "parting" composed of clay and hydrocarbons and used to prevent the mold-halves from adhering; brass flux; brazing compounds; brush wheels; core oil, core flour, and core compound; flasks, sieves, brushes, rammers, ladles, etc.; and foundry flour, plumbago, soapstone, and welding compounds. The grinding of ferromanganese, ferrosilicon, ferrochrome, and other minerals for use in iron and steel foundries was also reported.

It is probable that some foundries make their own facings and other supplies. If so, these are not in general reported separately.

Table 416

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	49	464	\$276,201	\$1,271,886	\$2,297,690	\$1,025,804
1904.....	34	315	156,401	624,812	1,058,834	434,022
1899.....	30	278	135,877	628,160	1,128,856	500,696
1889.....	21	163	81,633	357,874	672,440	314,566
1879.....	15	74	27,303	132,220	215,650	83,430

In 1909 two establishments engaged primarily in the manufacture of patent medicines and compounds and druggists' preparations, and foundry and machine-shop products made foundry supplies to a small extent, but the data can not be given without disclosing individual operations.

The industry was first reported separately, at the census of 1859 as "foundry facings." Seven establishments employed 30 wage earners to whom they paid \$12,900 in wages. The cost of materials was \$44,696 and the value of products \$105,950. The business was included in other classifications in 1869.

FUEL, MANUFACTURED.

Briquettes made of bituminous and anthracite coal dust mixed with tar and pitch as a binder; briquettes of crude carbon, a by-product of oil-gas generators; carriage-heater coal composed of charcoal, pitch, tar, and soda; and smudge fuel, a composition of crude oil

and shavings, are the principal products of establishments in this classification.

This classification first appeared at the census of 1879, when one establishment reported 70 wage earners and products valued at \$102,000. In 1889, two establishments were reported, but no separate statistics could be shown. In 1909 there were 11 establishments with an average of 88 wage earners to whom wages amounting to \$49,874 were paid. The cost of materials was \$154,648, the value of products \$311,010, and the value added by manufacture \$156,362.

FUR GOODS.

Establishments in this classification manufacture principally ladies', misses', and children's fur sets and furs, including boas, capes, collars and collarettes, muffs, scarfs, shawls and stoles, fur cloaks, fur and fur-lined overcoats, and fur hats, caps, gloves, and mittens. Various other minor products were reported. The principal kinds of fur skins used are bear, caracal, coney, ermine, fox, hare, lynx, marmot, marten, mink, muskrat, nutria, opossum, otter, raccoon, sable, seal (Alaska and hair), skunk, squirrel, Angora and Chinese goat, Bulgarian, Chinese, and Persian lamb, calf, dog, horse, kangaroo, kid, Russian pony, sheep, and wolf. The furs used as material are sometimes purchased in a dressed condition, but in a number of instances the establishments tan and dress the skins, thus overlapping with the dressed furs industry.

Table 417

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,241	11,927	\$7,787,845	\$31,776,905	\$55,937,549	\$24,160,644
1904.....	867	9,370	5,122,782	21,201,541	37,118,629	15,917,088
1899.....	734	7,758	3,927,214	14,281,092	25,899,192	11,618,100
1889.....	484	6,947	3,477,148	11,742,508	20,526,988	8,784,480

At the census of 1859, 95 establishments were reported under "furs," and in 1849, 49 under "furriers." No classification approaching "fur goods" appeared either in 1879 or 1869, and such establishments as are now included in this class were probably classed with "clothing, men's," "clothing, women's," or "furs, dressed."

In addition to the products covered by the above table, fur goods to the value of \$532,781 were reported in 1909 by establishments engaged primarily in the manufacture of leather gloves and mittens and men's clothing.

FURS, DRESSED.

The preparation of fur skins is the chief business of establishments in this classification; it involves the scraping, currying and tanning, and bleaching of the pelts. Hatters' fur, dressed hair, and brush manufacturers' supplies are also reported as products. Sheepskins with the wool on are tanned and finished by some establishments.

Table 418

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	93	1,241	\$806,468	\$810,800	\$2,390,959	\$1,580,159
1904.....	85	1,105	754,988	1,641,950	3,215,701	1,573,751
1899.....	92	835	478,190	519,699	1,400,455	880,756
1889.....	26	400	238,890	203,199	651,296	448,097
1879.....	102	4,134	1,389,284	5,338,242	8,238,712	2,900,470
1869.....	182	2,903	1,042,305	4,816,122	8,903,052	4,086,930

In 1909 one establishment engaged primarily in the tanning, currying, and finishing of leather made dressed furs to a small extent, but the data can not be given without disclosing individual operations. As already stated, some establishments in the fur-goods industry dress their own furs, but these did not report separately the value of such work.

The value of products reported for 1869 and 1879 probably covered some establishments manufacturing fur goods who dressed their own materials.

GRAPHITE AND GRAPHITE REFINING.

The refining of graphite, sometimes known also as plumbago or black lead, which is used in making lead pencils, refractory crucibles, lubricants, stove blacking, paint, and foundry facings, is the chief business of establishments in this classification. As a rule, graphite milling or extraction from the ore, unless done at the mine, is also here included. Graphite made by electrical processes, graphitized carbon, and graphite greases are among the products, as well as graphite and carbon from petroleum-coke, retort carbon, liquid graphite, paste, semipaste, and pipe-joint paste.

Table 419

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	9	162	\$88,768	\$405,479	\$1,139,587	\$734,108
1904.....	11	218	107,810	117,300	342,379	225,079
1899.....	11	137	64,376	216,590	429,173	212,613
1889.....	3	18	9,008	26,380	54,605	28,225
1879.....	4	89	35,225	144,100	210,000	65,900

The decrease from 1879 to 1889 was due doubtless to the inclusion in 1879 of the product of a graphite-coal mine in Massachusetts. The mineral was used in the reduction of high-grade iron ore. The great apparent increase from 1904 to 1909 was due largely to changes in the classification of individual establishments. Much of the refining is that of imported graphite. There is some overlapping between this industry and the manufacture of foundry supplies, crucibles, and lead pencils.

HAIR WORK.

Establishments in this classification clean, bleach, curl, and otherwise prepare human hair, yak hair, mohair, and other hairs, and manufacture them into articles of adornment. The products include orna-

mental hair work, puffs, rats, refined yak hair, rolls, theatrical and other wigs, toupees, transformations, turbans and turban pads, waves, and wavy hair for switches and wigs.

	Number of establishments	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	250	3,534	\$1,609,788	\$6,080,610	\$11,216,175	\$5,135,565
1904.....	125	863	334,778	727,688	1,782,491	1,054,803
1899.....	158	820	287,288	496,172	1,406,216	910,044
1889.....	492	1,397	490,254	846,045	2,489,061	1,643,016
1879.....	299	1,172	323,315	667,132	1,467,723	800,591
1869.....	230	1,651	410,294	883,421	1,971,839	1,088,418
1850 ¹	44	155	44,388	78,345	237,012	158,667
1849 ²	25	108	25,680	36,383	90,270	53,887

¹ Wigs and hair work.

² Wigs and curls.

Two establishments engaged primarily in the manufacture of women's clothing, and of models and patterns, not including paper patterns, respectively, also reported hair work at the census of 1909, but the statistics can not be given without disclosure of individual operations.

Previous to 1899 the returns included small local establishments manufacturing chiefly to individual order. This may account for the decrease shown in 1899. Although an extraordinary increase is shown from 1904 to 1909 the figures appear to be substantially comparable.

HAND STAMPS AND STENCILS AND BRANDS.

This classification includes establishments manufacturing hand stamps, and those manufacturing stencils and brands. Separate statistics for 1909 for the two branches of the industry are given in the following table, but there is such an overlapping in the products that only the combined totals are shown in most of the tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY--	Number of establishments	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	361	1,651	\$951,814	\$1,127,303	\$3,673,025	\$2,545,722
Hand stamps.....	266	1,272	727,282	925,478	2,903,809	1,978,391
Stencils and brands..	95	379	224,532	201,825	769,156	567,331

In addition to the products covered by the above table, hand stamps and stencils and brands to the value of \$300,261 were reported at the census of 1909 by establishments engaged primarily in printing and publishing, engraving and diesinking, and the manufacture of flags, banners, regalia, society badges, and emblems, and other products. It is probable that some products of this class made by establishments assigned to other industries were not reported separately.

Hand stamps.—The establishments included in this subclass manufacture principally rubber and metal stamps, dies, seals, and presses, steel letters and

figures, metal badges and checks, check protectors, numbering machines, rubber type, copper and brass stamps for marking textiles, and steel shoe stamps.

	Number of establishments	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	266	1,272	\$727,282	\$925,478	\$2,903,809	\$1,978,391
1904.....	224	976	511,808	564,728	2,017,531	1,452,803
1899.....	268	1,052	490,036	522,659	1,937,628	1,414,909
1889.....	234	705	344,069	432,667	1,583,872	1,151,185
1879.....	46	103	52,895	108,648	318,618	214,870
1869.....	8	29	10,350	10,721	42,700	31,979

Stencils and brands.—Establishments in this subclass manufacture principally stencils, of metal, cardboard, or other material for use in painting and marking or in addressing-machines; and irons to be heated and used in marking casks, boxes, articles of merchandise, etc.

Statistics are available for the census of 1859 and for each subsequent census except for that of 1869.

	Number of establishments	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	95	379	\$224,532	\$201,825	\$769,156	\$567,331
1904.....	103	330	285,458	171,787	793,421	621,684
1899.....	92	418	206,231	140,711	673,784	533,073
1889.....	106	357	209,482	167,590	732,611	565,021
1879.....	104	305	139,639	144,554	472,514	327,960
1859.....	4	8	3,420	1,340	7,675	6,235

HAT AND CAP MATERIALS.

Many articles used by manufacturers of hats and caps are made by establishments in this classification. The products include blown and kettle fur of the hare, mink, muskrat, nutria, and rabbit, hat bindings, clasps, sweatbands, trimmings, wires, fur roundings cut from old fur-felt hats and ground for felt, fur prepared from fur-garment manufacturers' waste, tip printing, satin linings, paper cap-fronts and hat-brims, cloth coated in imitation of leather, coated or waterproof paper, mourning bands, motormen's bands, etc. Other important materials used in making hats and caps, such as cloth, leather, and dressed fur, are not covered by this classification.

	Number of establishments	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	74	2,367	\$946,526	\$5,379,970	\$8,236,319	\$2,856,349
1904.....	65	2,414	848,751	4,216,906	6,440,108	2,223,262
1899.....	70	1,371	434,148	2,797,756	3,549,116	1,631,360
1889.....	73	1,589	698,455	2,059,001	3,465,524	1,406,523
1879.....	64	1,215	463,854	1,325,231	2,217,250	822,019
1869 ¹	62	1,014	537,287	2,074,959	3,225,763	1,150,804
1850 ²	5	22	6,072	13,400	28,200	14,600

¹ "Hat materials." ² "Hatter's trimmings," "hat tips," and "cap fronts."

In addition to the products covered by the table, hat and cap materials valued at \$50,535 were reported for 1909 by establishments engaged primarily in the industries "boxes, fancy and paper," "lumber and timber products," and "hats and caps, other than felt, straw, and wool." Undoubtedly, however, similar materials, which were not reported separately, were made in other establishments, assigned to such industries as "fancy articles, not elsewhere specified," and "fur goods."

The depreciated currency of 1869, which increased nominal values by about one-fifth, is almost wholly responsible for the apparent decrease in value of products from 1869 to 1879.

HATS, STRAW.

The establishments in this classification manufacture principally machine-made and hand-made straw hats for men, women, and children, from various kinds of braided straw; they also bleach, shape, and finish Panama hats. In some establishments hat bodies only are made, the finishing being done by others, so that there is some duplication in the gross value of products of the industry. Statistics for "hats, straw," were not shown separately prior to 1904.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	98	8,314	\$4,470,831	\$11,468,200	\$21,424,255	\$9,956,055
1904.....	68	5,587	2,433,974	5,509,567	10,356,690	4,847,123

In addition to the products covered by the table, straw hats valued at \$1,271,973 were reported for 1909 by establishments engaged primarily in the manufacture of fur-felt and wool-felt hats, millinery and lace goods, and other products.

HOUSE-FURNISHING GOODS, NOT ELSEWHERE SPECIFIED.

Miscellaneous articles for household use are the principal products of establishments in this classification. They embrace aluminum hollow ware, art needlework, baby-carriage robes, bedding, chafing dishes, coffee and tea percolators, copper hollow ware, cot covers, cotton batting, cotton wadding, plain and fancy cushions, cushion tops, decorated leather, desk sets, draperies, dusters, hassocks, interior decorations, lambrequins, laundry bags, mattress covers and protectors, mop wringers, mops, mosquito canopies, novelty bags, novelties for lamps and oil stoves, piano covers and scarfs, pillows and pillow covers, quilts, renovated feathers and down in bulk, sanitary wiping cloths, sheets, slip covers, stair padding, stamped linen and other cloths for various uses, stamped novelties, water coolers, wool dusters, and many others. There is much overlapping between this and other industries,

such as "fancy articles, not elsewhere specified," "furniture and refrigerators," and "wirework, including wire rope and cable."

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	260	4,907	\$2,034,903	\$12,370,808	\$18,508,886	\$6,138,078
1904.....	237	4,778	1,879,869	9,626,519	15,010,628	5,384,109
1899.....	209	5,212	1,837,552	9,187,678	14,278,175	5,080,497
1889.....	133	3,417	1,509,929	4,832,791	8,347,285	3,514,494
1879.....	48	592	216,890	812,361	1,332,183	519,827

In addition to the products covered by the above table, "house-furnishing goods, not elsewhere specified" were reported for 1909 to the value of \$2,419,852 by establishments engaged primarily in the manufacture of mattresses and spring beds, millinery and lace goods, furniture and refrigerators, and other products, but there is no reason to suppose that this amount covers the value of all products of this character made in other industries.

ICE, MANUFACTURED.

Ice produced artificially, generally by the evaporation of liquefied ammonia, is the product of establishments under this classification. Can ice is made in metal cans placed in tanks containing chilled brine, and plate ice in tanks having parallel hollow partitions through which the refrigerating fluid runs, the water solidifying in plates on the outer surfaces of the partitions.

The statistics represent the production of ice for sale, but ice is often manufactured for sale as well as for their own use by breweries, creameries, and meat-packing establishments.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	2,004	16,114	\$9,778,970	\$11,317,498	\$42,953,055	\$31,635,557
1904.....	1,320	10,101	5,549,182	6,011,325	23,790,045	17,778,720
1899.....	775	6,880	3,402,745	3,312,393	13,730,978	10,468,585
1889.....	222	2,826	1,095,996	940,669	4,900,983	3,960,284
1879.....	35	447	140,885	158,112	544,763	386,651
1869.....	4	97	40,600	82,165	258,250	176,085

Very little plate ice was reported in 1909, the great bulk of the product being can ice, as is shown in the following table:

	KIND.	Quantity (tons). ¹	Value. ¹
Total value.....			
Ice.....		12,647,949	\$42,953,055
Can.....		11,671,547	39,889,263
Plate.....		976,402	37,085,533
All other products.....			2,803,730
			3,063,792

¹ In addition, 1,582,259 tons of ice valued at \$4,249,790 were reported as made for sale by establishments engaged primarily in other industries, including "butter, cheese, and condensed milk;" "butter, reworking;" "canning and preserving;" "chemicals;" "flour-mill and gristmill products;" "foundry and machine-shop products;" "liquors, malt;" "malt;" "mineral and soda waters;" "oil, cottonseed, and cake;" "oleomargarine;" "salt;" and "slaughtering and meat packing."

INSTRUMENTS, PROFESSIONAL AND SCIENTIFIC.

Establishments in this classification manufacture all kinds of anthropometrical, astronomical, physiological, chemical and physical apparatus for educational and commercial purposes; engineering, surveying, and nautical instruments; and optical, surgical, dental, orthopedic, and veterinary instruments. The products include, among others, wind gauges; aseptic hospital furniture; auriphones; automobile speed indicators; barometers; Bunsen burners; coal-testing apparatus; combustion furnaces; dental mirrors, dental-engine equipments, and other dental appliances; embalming instruments; eye, ear, and nose instruments; gauge dials; glass syringes; head mirrors; high-frequency vacuum electrodes; hydrometers; hypodermic syringes and needles; marine compasses, binnacles, and binnacle lamps; mercury testing-columns; micrometers and micrometer gauges; ophthalmoscopes; optical projection apparatus; oven indicators; oxygenators; perimeters; physicians' electrical instruments; pitometers and photo-pitometers; platinum burner points, needles, etc.; prisms; pyrometers; range-finder telescopes; rifle telescopes; retinascopes; speed indicators (for machinery); saccharometers; spectroscopes; taximeters; telescopes; textile microscopes (thread-counting instruments); thermometers; throat mirrors; vulcanizers; weights and measures; wireless telegraph apparatus; and X-ray tubes.

Table 429

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	263	4,817	\$2,925,087	\$2,917,984	\$10,503,601	\$7,585,617
1904.....	225	3,437	1,823,205	1,350,153	5,377,755	4,027,602
1899.....	261	2,775	1,428,885	1,362,581	4,853,335	3,490,754
1889.....	233	1,978	1,191,598	698,352	3,271,616	2,573,264
1879.....	171	1,099	588,751	444,425	1,639,094	1,194,669
1869.....	135	1,173	649,921	417,165	1,724,267	1,307,092
1859.....	118	742	294,228	239,787	1,026,133	786,346
1849 ¹	129	968	356,356	248,103	988,250	720,147

¹ "Electromagnetic instruments," "mathematical instruments," and "surgical instruments."

In addition to the products covered by the table, professional and scientific instruments valued at \$299,149 were reported for 1909 by establishments engaged primarily in the manufacture of foundry and machine-shop products, optical goods, scales and balances, and other products, but there is doubtless some overlapping between this industry and others which is not brought out by the returns of the individual establishments.

There are so many classifications—some of which are mentioned in the preceding paragraph—to which establishments making articles similar to those manufactured by the establishments here included may be assigned, that the decrease in value of products for the decade ending in 1879 can easily be attributed to a change in the classification of certain establishments.

JEWELRY AND INSTRUMENT CASES.

Establishments in this classification manufacture principally leather, metal, and wooden boxes, cases, and trays, lined with plush, satin, silk, etc., and in some cases covered with satin, silk, velvet, and other cloths. They are intended for containing such articles as cigarettes, combs, compasses, cutlery, instruments of all kinds, jewelry, eyeglasses, razors, toilet sets, scissors, files, and silverware.

Table 430

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	120	2,070	\$953,669	\$1,221,277	\$3,116,519	\$1,895,242
1904.....	97	1,676	623,887	842,955	2,291,645	1,448,660
1899.....	63	818	322,565	435,712	1,156,977	721,260
1889.....	76	910	440,927	433,441	1,454,653	970,612
1879.....	17	138	51,000	48,550	131,670	83,130
1869.....	29	133	65,108	65,061	216,997	151,936
1859.....	14	82	26,876	23,120	83,816	60,666

In addition to the products covered by the above table, jewelry and instrument cases to the value of \$215,571 were reported at the census of 1909 by establishments engaged primarily in the industries "silverware and plated ware," "pens, fountain, stylographic, and gold," "electrical machinery, apparatus, and supplies," and a few others, but it can not be supposed that all such products made in other industries, even when made for separate sale, were distinguished in the reports, much less those made to contain other articles produced by the same establishment. Because of the overlapping between this industry and others, comparisons between the returns for different censuses are of doubtful significance.

LAPIDARY WORK.

The cutting and polishing of coral, diamonds, sapphires, rubies, emeralds, opals, tourmaline, topaz, chalcedony, amethyst, and other precious and semi-precious stones are the operations reported by the establishments in this classification. In many cases this work is done for jewelry concerns which furnish the material. Recutting and setting are also done largely for the trade. In addition, jewels are prepared for surveyors' and electrical instruments and for watches and chronometers, and real and imitation stones for emblems.

Table 431

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	77	627	\$889,485	\$6,500,440	\$9,172,832	\$2,612,383
1904.....	54	507	659,627	6,223,675	7,646,814	1,423,199
1899.....	60	498	493,715	4,655,765	5,786,281	1,130,516
1889.....	29	92	58,642	124,852	315,604	190,752
1879.....	55	252	142,075	226,277	544,089	317,812
1869.....	13	83	38,800	37,184	107,300	70,116
1859.....	7	29	14,700	14,004	36,850	22,846

It is probable that some jewelry manufacturers cut stones for their own use without reporting the value of such lapidary work separately, and diamond cutting may not have been included under this classification prior to the census of 1899.

Two establishments engaged primarily in the manufacture of jewelry also reported a small amount of lapidary work for 1909, but the data can not be shown without disclosing individual operations.

MATTRESSES AND SPRING BEDS.

The manufacture of quilted, or otherwise fastened, mattresses filled with cotton, curled hair, excelsior, feathers, felt, fiber, leather tufts, shoddy, tow, etc., and the fabrication of wire springs, either plain or woven, for use on beds, are the principal lines of industry followed by establishments in this classification. Spiral springs and spring cushions for chairs, for carriages, and for hospital use, were also reported, together with renovated mattresses, feather pillows, and cots.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	930	11,322	\$5,771,334	\$20,482,508	\$35,783,154	\$15,300,046
1904.....	716	10,427	4,815,007	15,325,931	27,755,288	12,429,357
1899.....	539	7,649	3,102,013	10,227,096	17,955,578	7,728,482
1880.....	696	6,318	2,763,953	8,727,350	15,683,932	6,956,552
1879.....	357	2,394	868,325	3,116,471	5,288,234	2,171,763

In addition to the products covered by the table, mattresses and spring beds valued at \$1,408,649 were reported for 1909 by establishments engaged primarily in the manufacture of furniture and refrigerators, house-furnishing goods, upholstering materials, and other products.

At the census of 1859 under "beds, spring," 15 establishments were reported, with products valued at \$313,300, and under "mattresses and beds," 36, with products valued at \$104,499. At the census of 1869 the manufacture of "mattresses and spring beds" was not reported separately.

MODELS AND PATTERNS, NOT INCLUDING PAPER PATTERNS.

Establishments in this classification manufacture principally patterns or models for making matrices or cavities into which molten metal is poured for casting; and also both miniature and full-sized representations of the castings or other objects to be made, forms on which to display textiles, hair work, or other goods, etc. These products are made for the most part of various metals, papier-mâché, plaster, rubber, wax, and wood.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	709	4,171	\$2,929,252	\$2,876,230	\$8,868,166	\$5,991,936
1904.....	547	2,780	1,788,184	922,081	4,545,004	3,622,923
1899.....	530	2,607	1,564,948	824,852	3,834,498	3,009,646
1889.....	456	1,627	1,005,145	510,036	2,734,395	2,223,759
1879.....	233	815	421,857	223,906	1,020,650	796,744
1869.....	165	867	408,248	235,933	1,211,191	975,258
1859.....	48	240	111,732	32,221	236,080	203,859
1849.....	6	31	11,604	3,965	22,210	18,245

1 "Patterns."

In addition to the products covered by the above table, models and patterns other than those made of paper to the value of \$401,683 were reported for 1909 by establishments engaged primarily in the manufacture of foundry and machine-shop products, brass and bronze products, and other products.

MOVING PICTURES.

This is the first census at which separate statistics for this industry have appeared. The establishments included in the classification manufacture machines for taking and for projecting moving pictures, including double dissolvers and machines for the home. They also make the picture films, many of which are leased, and not sold. The blank films used in the industry are, however, a product of the photographic supplies industry. Other products of the moving-picture industry are steel grips, film titles, and cleaned films; and some concerns report the mounting of films on reels of galvanized or cast iron as a separate branch of their work.

The statistics for the census of 1909 embrace 16 establishments, with 506 wage earners, to whom \$334,794 was paid in wages. The cost of materials was \$2,192,125, the value of products \$4,206,448, and the value added by manufacture \$2,014,323.

One establishment engaged primarily in the manufacture of electrical machinery, apparatus, and supplies in 1909 made moving picture films to a considerable extent, but the value can not be given without disclosing individual operations.

MUCILAGE AND PASTE.

Sticking and gumming preparations, made for the most part of gum arabic, dextrin, glue, or other adhesive materials, or of flour and water boiled and sometimes strengthened with starch, and various kinds of adhesive cements are the principal products of establishments in this classification. Among products not clearly indicated by this description are sealing wax of various sorts, pneumatic-tire fillers, sizing, and roach paste. The general manufacture of glue is not included (see Table 268).

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	127	538	\$285,627	\$3,283,441	\$4,918,341	\$1,634,900
1904.....	111	470	237,349	2,300,625	3,556,423	1,255,798
1899.....	116	458	193,082	1,613,442	2,556,499	945,057
1889.....	55	309	119,782	755,034	1,276,611	521,577
1879.....	4	9	3,090	8,770	16,700	7,930
1869.....	7	21	8,900	81,887	125,850	43,963

In addition to the products covered by the table, mucilage and paste to the value of \$659,736 were reported for 1909 by establishments engaged primarily in the industries of "ink, writing," "boots and shoes, including cut stock and findings," "glue," and others.

It is probable that the decrease in value of products for the decade ending in 1879 was due to changes in the classification of individual establishments.

MUSICAL INSTRUMENTS AND MATERIALS, NOT SPECIFIED.

Various kinds of wind, percussive, and stringed musical instruments and materials therefor are the principal products of establishments in this classification. The instruments include, among others, banjos; bones; castanets; cornets, trombones, tubas, and other brass instruments for band and orchestral use; cymbals; drums; dulcimers; flageolets, flutes and piccolos; guitars; harps; jew's-harps; lutes; lyres; mandolins; mechanical musical instruments; musical bells; sonnettes of wood and metal; talking-machine horns; violins, violoncellos, and all other instruments of the violin type; xylophones and accessories; and zithers. Parts of these instruments, such as strings (including also strings for tennis rackets), drumheads, violin bridges, etc., are also produced for sale as such direct to musicians or to manufacturers of complete instruments. There is thus some duplication within the industry. Music racks, cardboard music, and other accessories were also reported.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	187	1,822	\$992,275	\$889,600	\$3,228,108	\$2,338,508
1904.....	181	2,139	1,162,068	1,129,939	3,481,710	2,351,771
1899.....	229	2,405	1,232,039	1,205,337	3,394,734	2,189,397
1889.....	293	1,056	605,110	510,664	1,888,613	1,377,949
1879.....	84	573	293,062	385,776	853,746	457,970
1869 ¹	83	1,059	631,634	932,657	2,019,464	1,086,807
1859.....	78	560	257,008	270,949	735,086	461,137

¹ "Musical instruments, not specified."

In addition to the products covered by the table, establishments engaged primarily in the manufacture of pianos, whips, and other products, and in printing and publishing, reported similar musical instruments and materials to the value of \$72,434 for 1909.

The difference between values in depreciated currency and in gold does not wholly account for the great decrease in value of products for the decade ending in 1879. Differences in methods of classification probably had much to do with the apparent decline in the industry.

MUSICAL INSTRUMENTS, PIANOS AND ORGANS AND MATERIALS.

This classification includes statistics for three classes of establishments engaged in the manufacture of pianos, of organs, and of piano and organ materials, respectively. Separate data for the three branches for 1909 are given in the following table, each establishment being classed according to its product of chief value. There is such an overlapping in the products of some of the establishments that only the combined totals are shown in most of the tables, but in these combined totals there is considerable duplication in value of products, due to the use of products of one establishment as materials for another.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	507	38,020	\$22,761,568	\$43,764,737	\$89,789,544	\$46,024,807
Pianos.....	294	25,497	15,737,277	32,818,770	66,589,273	33,750,503
Piano and organ materials.....	127	10,140	5,595,650	9,223,044	18,474,616	9,251,573
Organs.....	86	2,383	1,428,641	1,722,923	4,745,655	3,022,732

The products for 1909 are shown in the following table:

KIND.	Number.	Value. ¹
Total value.....		\$89,789,544
Pianos.....	374,154	59,501,225
Upright.....	365,413	55,462,556
Without player attachment.....	330,918	45,187,555
For or with player attachment.....	34,495	9,275,001
Grand.....	8,741	4,039,669
Player attachments made separate from pianos.....	10,896	1,474,630
Organs.....	65,335	5,309,016
Pipe.....	1,224	2,713,587
Reed.....	64,111	2,595,429
Parts and materials.....		20,417,762
All other products.....		3,089,911

¹ In addition, parts and materials to the value of \$690,183 were made by establishments engaged primarily in the manufacture of billiard tables and materials; buttons; foundry and machine-shop products; lumber and timber products; sewing machines, cases, and attachments; stoves and furnaces, including gas and oilstoves; and wood, turned and carved; and in shipbuilding, including boat building.

² Includes a few pianos with player attachments.

The statistics for the different branches of the piano and organ industry for some of the earlier censuses are not comparable with those for 1904 and 1909, particularly because establishments manufacturing only materials for pianos and organs were not always segregated from those manufacturing the complete instruments. For 1859, however, the statistics are substantially comparable for the piano branch and for the organ branch, but the manufacture of parts for pianos and organs was included under the general heading "musical-instrument materials."

Statistics for the combined piano and organ industry for each census from 1849 to 1909, inclusive, are given in the following table. It should be stated, however, that for 1849 establishments manufacturing musical instruments other than pianos and organs were included and that at the census of 1859 establishments making only parts and materials were apparently excluded.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	507	38,020	\$22,761,568	\$43,764,737	\$89,789,544	\$46,024,607
1904.....	444	33,081	18,527,078	27,986,627	66,092,030	38,106,003
1899.....	390	21,309	11,542,863	17,370,685	41,024,244	23,053,559
1889.....	381	17,040	11,043,538	13,925,499	34,979,556	21,054,057
1879.....	345	10,777	6,805,732	7,075,451	18,400,993	10,425,542
1869.....	254	6,108	4,476,057	3,901,895	11,886,444	7,984,549
1859.....	170	4,198	2,272,780	2,054,260	6,232,032	4,178,372
1849.....	204	2,331	1,054,728	698,168	2,580,715	1,882,547

Pianos.—Establishments in this subclass manufacture principally upright and grand pianos with and without player attachments, separate player attachments, and self-playing pianos. Other products are silent pianos and claviers for schools, and perforated music rolls.

Comparable statistics for the piano industry are available for three censuses only—those of 1909, 1904, and 1859.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	204	25,497	\$15,737,277	\$32,818,770	\$66,509,273	\$33,750,503
1904.....	249	21,002	12,170,251	19,587,770	46,922,471	27,334,701
1859.....	110	3,482	1,929,664	1,727,885	5,290,907	3,533,022

Piano and organ materials.—Various parts used in the manufacture of pianos and organs and "players" are made by establishments in this subclass. These include piano actions and piano-player actions; cases; all kinds of piano hardware; ivory, celluloid, and ebony keys; pneumatic and spring motors for self-playing pianos and pianolas; sounding-board lumber; tuning pins; adjustable stools and benches; felt washers; leather nuts; strings; perforated music rolls for use in electric and other piano players, etc. Special parts for organs include pipes, pipe-organ actions, pipe feet, knobs, stems and tablets, organ keyboards, reed boards and reeds, pedals and pumping pedals, tremolos, etc. Statistics are available for the last two censuses only.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	127	10,140	\$5,595,650	\$9,223,044	\$18,474,616	\$9,251,572
1904.....	101	8,456	4,322,268	6,330,219	13,128,315	6,798,096

Organs.—Pipe and reed organs and self-playing organs are the principal products of establishments in this subclass. Among the varieties are orchestrions, vocalions, hand organs, and automatic organs, including the pipe and reed organs used with merry-go-rounds. Dummy keyboards, perforated music rolls, and various parts, materials, and supplies made for sale as such, were also reported.

Statistics for the censuses of 1909, 1904, and 1859 are given in the following table:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	86	2,383	\$1,428,641	\$1,722,923	\$4,745,655	\$3,022,732
1904.....	94	3,023	2,034,559	2,068,638	6,041,844	3,973,206
1859.....	60	716	343,116	326,375	971,725	645,350

OPTICAL GOODS.

The establishments in this classification are those of manufacturing opticians. While some of them make complete spectacles and eyeglasses of various kinds, the manufacture is generally divided between the grinding of the lenses in certain plants and the production of the frames in others. Artificial human eyes and glass eyes for taxidermists' use are also manufactured. Other products include automatic eyeglass holders, automobile eye protectors, eye shields and shades, field glasses, goggles, microscopes, opera glasses, optometers, photographic lenses and shutters, rough slabs for eyeglasses, springs and clips, stereoscopes, and eye-testing sets. There is considerable overlapping between this industry and "jewelry," "instruments, professional and scientific," and "photographic apparatus and materials."

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	217	6,398	\$3,394,340	\$4,187,457	\$11,734,811	\$7,547,354
1904.....	122	4,330	1,923,225	2,319,949	6,116,910	3,796,961
1899.....	91	3,715	1,599,072	2,100,622	5,211,432	3,110,810
1889.....	191	2,507	1,010,374	1,324,305	3,505,973	2,181,668
1879.....	62	1,088	450,897	417,472	1,182,142	764,670
1869.....	32	261	134,155	184,030	432,859	248,829

¹ "Spectacles and eyeglasses" and "artificial eyes."

In addition to the products covered by the above table, optical goods to the value of \$307,771 were reported for 1909 by establishments engaged primarily in the manufacture of jewelry, professional and scientific instruments, and other products, but it is not likely that this figure indicates the full extent to which optical goods are made by establishments in other industries.

At the census of 1859 one establishment was reported under "artificial eyes" with products valued at \$6,000. Two wage earners were employed, receiving \$1,800 in wages, while the cost of materials was \$590.

PAVING MATERIALS.

All kinds of paving blocks, and paving materials, mixed and unmixed, for streets or floors, are produced by establishments in this classification. The blocks are made of asphalt, bitumenized brick, cedar, hardwood, creosoted wood, bluestone, cement, concrete, copper ore, granite, and limestone. The unmixed paving materials reported include crushed furnace slag, granite, and limestone, distillates, dry natural asphalt, and pitch, tar, and coal-tar oil. The mixtures include artificial asphalt, asphalt paving mixture for top coat and binder, bituminous and other cements, liquid asphalt, and tar concrete.

The statistics for the industry at the census of 1889 included street construction work, and therefore are not given here.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	49	1,419	\$749,572	\$3,477,606	\$6,229,400	\$2,751,794
1904.....	54	1,919	952,884	2,685,987	5,033,086	2,367,099
1899.....	99	2,436	1,143,799	1,582,373	3,935,593	2,353,220
1879.....	46	757	244,339	576,301	1,024,243	447,942
1869.....	8	189	119,400	219,075	447,080	228,005

In addition to the products covered by the above table, paving materials to the value of \$94,359 were also made in 1909 by establishments engaged primarily in the manufacture of roofing materials, of lime, and of brick and tile.

PENCILS, LEAD.

Graphite is the principal material used in the manufacture of pencils by the establishments in this classification. Crayons and indelible pencils are reported, as well as the ordinary writing and drawing pencils.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	11	4,134	\$1,711,981	\$3,595,633	\$7,378,744	\$3,783,111
1904.....	8	3,065	1,059,076	1,803,534	4,425,896	2,622,862
1899.....	7	2,162	683,281	1,030,917	2,222,276	1,191,359
1889.....	5	1,388	450,450	796,378	1,687,560	891,182
1879.....	4	399	102,233	97,344	279,427	182,063
1869.....	8	160	51,180	57,510	180,800	123,290

A single establishment engaged primarily in the manufacture of stationery goods also made lead pencils in 1909 to a comparatively small extent, but the value can not be given without the disclosure of individual operations.

PENS, FOUNTAIN, STYLOGRAPHIC, AND GOLD.

This classification includes establishments engaged in the manufacture of fountain and stylographic pens and of gold pens, respectively. These two branches of manufacture, however, are frequently conducted by the same factory, and for that reason only the combined totals are presented in most of the tables, but

separate statistics for the two were compiled for 1909, and are given in the table below, each establishment being assigned according to its product of chief value.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	65	1,225	\$711,795	\$2,246,454	\$4,738,693	\$2,492,239
Pens, fountain and stylographic.....	50	817	456,347	1,668,108	3,541,748	1,873,640
Pens, gold.....	15	408	255,448	578,346	1,196,945	618,599

In addition to the products covered by the above table, fountain, stylographic, and gold pens to the value of \$77,629 were reported at the census of 1909 by establishments assigned to the industries "rubber goods, not elsewhere specified" and "jewelry."

Pens, fountain and stylographic.—Establishments included in this subclass manufacture principally complete fountain pens. A few reported stylographic pens, either as their sole product or in addition to the ordinary fountain pens. Some manufacture gold pen points for their own use and for separate sale. Other establishments make the rubber holders and other parts exclusively.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	50	817	\$456,347	\$1,668,108	\$3,541,748	\$1,873,640
1904.....	33	624	307,688	892,206	2,082,005	1,189,799
1899.....	23	318	141,012	351,032	906,454	555,422
1889.....	15	162	73,897	123,214	351,775	228,561

Pens, gold.—Gold pens are the principal products reported for establishments included under this subclass.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	15	408	\$255,448	\$578,346	\$1,196,945	\$618,599
1904.....	16	309	225,454	274,235	692,029	417,794
1899.....	22	378	229,679	312,537	799,078	456,541
1889.....	18	301	155,545	235,628	718,070	482,442
1879.....	16	264	172,207	190,906	533,061	342,155
1869.....	21	242	133,556	181,740	467,380	285,640

¹ "Pens and pencils, gold."

Changes in the classification of individual establishments account doubtless for the decrease shown in value of products for the five-year period 1899-1904.

PHONOGRAPHS AND GRAPHOPHONES.

Mechanical devices, by whatever names known, for registering and reproducing speech, music, and other sound, are the principal products of establishments in this classification. Records, blanks, horns, needles, matrices, multiplex attachments, and other supplies are also among the products.

The statistics for 1909, 1904, and 1899, the only censuses for which separate figures were shown, are as follows:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	18	5,199	\$2,840,503	\$3,099,391	\$11,725,996	\$8,626,605
1904.....	14	3,397	1,683,903	4,161,136	10,237,075	6,075,939
1899.....	11	1,267	608,490	827,529	2,246,274	1,418,745

Two establishments were reported at the census of 1889—one from Connecticut and one from New York; they were included under "all other industries."

KIND.	Number.	Value. ¹
Total value.....		\$11,725,996
Phonographs and graphophones.....	344,681	5,408,684
Records and blanks.....	27,183,959	5,007,104
All other products.....		1,312,208

¹ In addition, records and phonograph parts to the value of \$31,889 were made by establishments assigned to the industries, "bicycles, motorcycles, and parts;" "fancy articles, not elsewhere specified;" "foundry and machine-shop products;" and "needles, pins, and hooks and eyes."

PHOTOGRAPHIC APPARATUS AND MATERIALS.

This classification includes statistics for establishments engaged in the manufacture of photographic apparatus and of photographic materials, respectively. Separate data for the two branches of the industry for 1909 are given in the following table, but there is so much overlapping in the products of some of the establishments that only the combined totals are shown in most of the tables.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	103	5,195	\$3,037,077	\$6,707,632	\$22,561,341	\$15,853,709
Photographic materials.....	69	4,531	2,643,882	6,338,843	21,377,621	15,038,778
Photographic apparatus.....	34	664	393,195	368,789	1,183,720	814,931

In addition to the products covered by the above table, establishments engaged primarily in the manufacture of electrical machinery, apparatus, and supplies, iron and steel, doors and shutters, and other products, reported photographic apparatus and materials for 1909 to the value of \$24,048. There is some overlapping between this industry and "optical goods" (see Table 442), but the extent of it can not be determined.

Photographic apparatus.—Establishments in this subclass manufacture cameras of all kinds; blue-printing machines; flash-light apparatus; lenses for photographic and surveying instruments; tripods; and other parts for sale as such.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	34	664	\$393,195	\$368,789	\$1,183,720	\$814,931
1904.....	40	1,751	872,963	785,817	3,479,317	2,693,500
1899.....	48	1,961	779,890	595,925	2,026,063	1,430,133
1889.....	25	506	262,755	164,620	624,342	459,722
1879.....	10	104	41,314	40,658	104,305	63,647
1869.....	10	196	103,000	174,253	831,975	657,722

The apparent decrease in value of products between 1904 and 1909 is due to changes in the classification of individual establishments. The most important change was in the case of one large establishment in New York state, which in 1909 was placed wholly under "photographic materials," while at the census of 1904 the business was in part assigned to "photographic apparatus." The decrease from 1869 to 1879 may perhaps be accounted for also by changes in classification and the currency values that were reported for the former census.

Photographic materials.—Sensitized products, chemicals for photographic use, and other photographic supplies are the principal products of establishments in this subclass. These include, among others, sensitized paper of many varieties, sensitized cards and novelties, developing and other chemicals, dry plates, photograph mounts and frames, films, flash-light materials, lantern slides, sensitized ferrotype plates, and sheet gelatin.

No census statistics for the industry were shown for 1869. The following table gives the general statistics for the census of 1859 and for each census from 1879 to 1909, inclusive:

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	69	4,531	\$2,643,882	\$6,338,843	\$21,377,621	\$15,038,778
1904.....	90	2,061	923,252	3,375,713	9,543,980	6,168,267
1899.....	105	1,483	662,958	2,782,235	5,773,325	2,991,049
1889.....	45	783	420,248	1,107,269	2,121,387	1,014,118
1879.....	5	63	25,310	89,900	142,000	52,100
1859.....	12	551	123,900	175,821	468,280	292,459

Probably changes in classification account for the decrease in value of products from 1859 to 1879. The very great increase from 1904 to 1909 is due partly to the change in classification already mentioned.

PIPES, TOBACCO.

A great variety of pipes are made by establishments in this class. The materials of the pipe bowls include apple and brier wood, clay, corncobs, hazlewood, hickory, meerschaum, and rosewood; those for the stems include various woods, reeds, rubber, and composition; and those for the bits or mouthpieces include amber, black composition, bone, celluloid, horn, ivory, meerschaum, rubber, wood, etc.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	62	2,775	\$1,254,842	\$2,458,655	\$5,311,900	\$2,853,245
1904.....	68	1,947	830,801	1,354,348	2,834,406	1,480,148
1899.....	98	1,585	737,647	1,106,299	2,471,908	1,385,609
1889.....	69	1,206	571,815	626,668	1,881,262	1,284,594
1879.....	37	645	226,306	209,518	628,688	419,170
1869.....	31	481	214,924	93,899	447,330	353,431

Establishments engaged primarily in the industries "umbrellas and canes," and "wood, turned and carved," also made tobacco pipes in 1909 to the value of \$3,880.

ROOFING MATERIALS.

Waterproof substances for use upon roofs are the principal products of establishments in this classification. They embrace asbestos shingles and sheets; asphalt; asphalt paint and shingles; various kinds of roofing and building paper; roofing cement; corrugated steel; crushed furnace slag; galvanized iron or steel sheets, shingles, and trimmings; other metal shingles; plaster board of paper and stucco; purified pine tar; tarred and other saturated felts; shingle stains; waterproofed cotton duck; tarpaulins; mastic; and roofing pitch. The work of placing these materials upon roofs, being a building rather than a manufacturing process, is not included. The figures for 1889 included such construction work and therefore are not comparable.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	117	2,465	\$1,338,697	\$12,458,177	\$19,204,423	\$6,746,246
1904.....	307	8,819	4,007,699	10,842,307	19,870,953	9,028,646
1899.....	267	7,593	3,072,317	6,886,006	13,690,540	6,804,534
1879.....	493	3,082	1,411,133	3,882,354	6,227,284	2,844,930
1869.....	198	1,919	883,341	1,293,116	3,257,403	1,964,287
1859.....	56	554	195,996	533,155	1,024,019	490,864

Roofing materials, not covered by the above table, to the value of \$3,019,842 were reported at the census of 1909 by establishments engaged primarily in the manufacture of other products. The larger part of this was returned by manufacturers of paper and wood pulp, although establishments making chemicals and paving materials as their chief products were also represented.

The decrease from 1904 to 1909 is only apparent. A large number of establishments included under this heading in 1904 were otherwise classified in 1909, including some slate quarries in Vermont which reported roofing slate in 1904. These establishments, which reported products to the value of \$1,899,747, were classified in 1909 under "marble and stone work."

RUBBER GOODS, NOT ELSEWHERE SPECIFIED.

Establishments in this classification manufacture a great variety of articles of india rubber. These embrace solid tires and pneumatic casings and inner tubes for automobiles; tires for carriages, bicycles, and motorcycles; tire reinforcements and accessories; hard and soft rubber goods; and rubberized cloth and clothing. In detail, the list includes automobile-top material; air cushions and mattresses; rubber bands; bath brushes; bumpers; card cloth; carriage cloth; collars, cuffs, etc.; rubber-covered wire; diaphragms; disks; dip-rubber goods, including gloves, finger stalls, balloons, and other specialties; doormats; dress shields; ear cushions; erasers; fountain-pen fillers; friction cloth; horseshoe pads; gaskets; hard-rubber bowling balls; hard-rubber razor handles; hospital sheeting; house balls; insulating paint and tape; fruit-jar rings; nursing bottles and nipples; oil-well caps; rubber linings; sheet rubber; shoe soles; specialties for plumbers, and for the drug, surgical, and dental trade; stopples; rubber thread; toys; water bottles; and many other products.

The statistics for 1904 and prior censuses shown in the following table include elastic woven goods, and are therefore not strictly comparable with those for 1909, when such goods were covered by a separate classification.

The slight apparent decrease in value of products for the decade ending in 1879 is due wholly to the fact that the values in 1869 were given in a depreciated currency, which should be reduced about one-fifth for purposes of comparison.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	227	26,521	\$14,119,848	\$82,191,821	\$128,435,747	\$46,243,926
1904 ¹	224	21,184	9,412,368	38,912,226	62,995,909	24,053,683
1899.....	261	20,404	8,081,803	33,482,314	52,621,830	19,139,516
1889.....	139	9,183	3,663,975	11,113,628	18,708,917	7,595,389
1879.....	93	6,763	2,450,872	9,641,167	14,513,924	4,877,757
1869.....	56	6,025	2,559,877	7,434,742	14,566,374	7,131,632
1859.....	29	2,802	816,170	3,125,360	5,768,450	2,643,090
1849.....	34	2,568	537,828	1,608,728	3,024,335	1,415,607

¹ At the census of 1904, as at previous censuses, establishments manufacturing elastic woven goods were included under the classification "rubber and elastic goods," which at the census of 1909 was succeeded by "rubber goods, not elsewhere specified," elastic woven goods being separated and designated as "suspenders, garters, and elastic woven goods." To make the statistics for 1909 and 1904 more closely comparable, the principal statistics of establishments manufacturing primarily elastic woven goods in 1904 have been segregated. This can not be done for the earlier censuses. The revised 1904 figures for "rubber goods, not elsewhere specified," show 172 establishments and an average of 16,070 wage earners, to whom \$7,479,695 were paid in wages, the cost of materials being \$34,641,236, the value of products \$54,408,756, and the value added by manufacture \$20,367,460.

In addition to the products covered by the table, rubber goods of similar character to the value of \$6,975,504 were reported at the census of 1909 by establishments engaged primarily in the manufacture of other products, principally rubber belting and hose and rubber boots and shoes.

SAND AND EMERY PAPER AND CLOTH.

The coating of paper and of cotton twills, drills, duck, and other cloth with abrasives is the principal business of establishments in this classification. The abrasives employed include adamite, carborundum, corundum, emery, flint, garnet, and quartz; and glue is used to fasten them to the various bases used.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	10	611	\$369,603	\$2,382,458	\$4,357,792	\$1,975,334
1904.....	8	305	182,518	1,054,605	1,477,003	422,398
1899.....	9	274	144,183	681,240	1,175,895	494,655
1889.....	9	206	104,226	781,505	1,249,647	468,142
1879.....	6	82	30,970	148,477	262,374	113,897
1869.....	4	82	45,450	146,165	349,068	202,903
1859 ¹	3	21	7,368	24,760	54,350	23,590

¹ "Sandpaper." Two establishments appear under "sandpaper" for 1849.

A change in classification accounts for the decrease from 1889 to 1899 and for the very large increase from 1904 to 1909. One establishment classified under "glue" in 1899 made sandpaper to a very large extent, and one very large establishment classified under "glue" in 1904 was placed under "sand and emery paper and cloth" in 1909 because its most important product in that year was sandpaper.

SHIPBUILDING, INCLUDING BOAT BUILDING.

The statistics for this industry cover establishments engaged in the construction or repair of iron and steel and wooden vessels and boats—large and small—rowboats and canoes as well as large steamships. Some establishments make only parts of boats, such as hulls, stems, keels, knees, rudder posts, spars, masts, sails,

and rigging, and others make some parts of this character for sale as such in addition to making complete vessels. A considerable proportion of the total value of products consists of charges for dry-docking and for repairs. A large number of rowboats, small sailboats, small power boats, house boats, scows, and similar craft are built by carpenters, fishermen, sportsmen, and establishments having boats for hire; these operations were not covered by the census, and therefore the statistics do not represent the entire production of the craft of this character.

The two main branches, iron and steel shipbuilding and wooden shipbuilding, are distinguished in the statistics for 1909. For the second of these two branches of the industry establishments were divided into four subclasses: (a) Shipyards engaged chiefly in the construction of new vessels of 5 tons or more; (b) shipyards engaged in repair work exclusively; (c) establishments constructing chiefly boats of under 5 tons; and (d) establishments making a specialty of masts, spars, oars, and the rigging of vessels. In respect to iron and steel shipbuilding, two subclasses were distinguished: (a) Yards doing new construction work and (b) yards doing only repair work.

Separate data were compiled for these two main branches and for the subbranches of the industry and are presented in the following table; but on account of the overlapping of the products, and the fact that in many states disclosure of individual operations would result from the publication of separate data for iron and steel shipbuilding—there being only a few establishments—only the combined statistics for the entire industry are shown in most of the tables.

The data in Table 457, and, except as specified, in all other tables, relate only to private establishments.

ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	1,253	40,506	\$25,267,686	\$31,214,358	\$73,360,315	\$42,145,957
Iron and steel shipbuilding:						
New construction on vessels of 5 tons and over.....	38	24,242	14,756,081	19,583,525	42,722,549	23,139,024
Repair work only ¹	15	3,901	2,459,095	2,132,885	6,894,729	4,761,844
Wooden shipbuilding and boat building:						
New construction on vessels of 5 tons and over.....	369	6,613	4,664,492	5,817,434	13,494,947	7,677,513
Repair work only.....	134	3,065	1,758,202	1,417,606	4,458,128	3,049,822
Making boats under 5 tons.....	767	2,554	1,549,833	2,118,462	5,457,763	3,339,301
Making masts, spars, and oars, and rigging vessels.....	30	131	79,983	144,546	332,199	187,653

¹ Includes 1 establishment making boats under 5 tons.

In addition ships and boats of steel and of wood to the value of \$776,706 were reported for 1909 by establishments engaged primarily in the manufacture of other products. The names of the industries reporting these subsidiary products, and the number and tonnage of the vessels, are given in a footnote to Table 460. The statistics of value of products shown in Table 457 and other tables are designed to represent the work done during the year and not the value of the vessels launched during the year.

In addition to the statistics presented in this table, reports were received for 12 Government shipyards. The value of the vessels launched and of the repairs made at these yards during the year 1909 amounted to \$25,872,033.

The comparative summary following presents the general statistics for the shipbuilding industry (both branches combined, but exclusive of Government shipyards) for each census from 1849 to 1909, inclusive.

Table 458

	Number of establishments	Wage earners (average number)	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,353	40,506	\$25,267,686	\$31,214,358	\$73,360,315	\$42,145,957
1904.....	1,097	50,754	29,241,087	37,463,179	82,769,239	45,306,060
1899.....	1,107	49,747	24,824,738	33,474,896	74,532,277	41,057,381
1899.....	1,006	22,143	13,083,949	16,521,246	38,065,410	21,544,164
1899.....	2,188	21,345	12,713,813	19,736,358	36,800,327	17,063,969
1899.....	904	13,915	7,073,400	9,379,980	21,453,967	12,103,887
1899.....	675	10,071	4,539,313	5,783,076	13,424,037	7,635,361
1849.....	953	12,976	6,055,884	7,420,496	16,937,525	9,517,029

Table 459 shows that the increases in the industry as a whole from 1899 to 1904 and the decreases from 1904 to 1909 were due almost entirely to the fluctuation in the construction and repairs of iron and steel craft.

Table 460 shows that about three-fifths of the steel vessels launched in 1909 were steam vessels, while the wooden craft were almost wholly gasoline motor boats or sail boats, and unrigged boats.

Table 459
ESTABLISHMENTS ENGAGED PRIMARILY IN—

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Shipbuilding, iron and steel:						
1909.....	53	28,143	\$17,215,176	\$21,716,410	\$49,617,278	\$27,900,698
1904.....	54	36,742	20,809,908	27,601,824	58,433,314	30,831,490
1899.....	44	30,906	16,231,311	23,585,549	50,367,739	26,782,190
Shipbuilding, wooden, including boat building:						
1909.....	1,300	12,363	8,052,510	9,497,948	23,743,037	14,245,069
1904.....	1,043	14,012	8,431,179	9,861,355	24,335,925	14,474,570
1899.....	1,063	15,841	8,593,427	9,599,347	24,164,538	14,275,191

Table 460

KIND.	Number.	TONNAGE.	
		Gross.	Net.
Vessels of 5 gross tons and over launched during the year ¹	2,154	467,219	381,198
Steel vessels.....	158	254,986	193,144
Steam.....	96	219,617	159,237
Motor.....	15	2,466	2,078
Sail, with and without auxiliary.....	3	2,046	1,735
Unrigged.....	44	30,857	30,034
Wooden.....	1,426	212,233	188,054
Steam.....	85	15,016	9,662
Motor.....	430	6,923	5,146
Sail, with and without auxiliary.....	116	15,413	12,855
Unrigged.....	795	174,881	160,291
Boats of less than 5 gross tons ²	4,577		

¹ Not including 3 steel vessels having a total of 350 gross tons and 28 wooden vessels with a total of 1,709 gross tons launched in Government shipyards.
² In addition, 8 steel vessels having a total of 5,429 gross tons were launched by establishments engaged primarily in the manufacture of foundry and machine-shop products, and 14 wooden vessels of 7,106 gross tons were launched by establishments engaged primarily in the manufacture of steam-railroad cars and of lumber and timber products, respectively.
³ Not including 53 boats built in Government shipyards.
⁴ In addition, 412 gasoline motor boats were built by establishments engaged primarily in the manufacture of automobiles; cooperage and wooden goods, not elsewhere specified; furniture and refrigerators; lumber and timber products; and foundry and machine-shop products.

SIGNS AND ADVERTISING NOVELTIES.

Establishments in this classification make signs and novelties of wide variety.

The instructions to special agents concerning the manufactures census of 1909 directed that certain classes of establishments, among them those engaged in "painting (house, sign, theatrical scenes, etc.)," must not be reported. This rule excluded from the canvass local establishments doing custom sign painting, whether for offices, stores, or billboards.

The signs made by establishments in this classification are principally of brass, cardboard, celluloid, cloth, fibroid, glass, porcelain-enameled iron, silver, tin, wire, and wood. They include electric and other illuminated signs, "talking signs," triple signs, those used on electric street cars to show their destination, and painted and decorated show cards. The manufacture of gold-plated, metallic, enameled-wood, and other letters was also reported. The advertising nov-

elties include many tools, utensils, and conveniences marked with advertising notices; for example, corkscrews, match boxes, diaries, pencils, bottle openers, etc. Celluloid devices for advertising purposes and colored cards and wood samples for paint manufacturers were also reported. The manufacture of printed advertising matter is not here included, but appears as part of the printing and publishing industry.

"Signs and advertising novelties" is a classification used for the first time at the census of 1909. The establishments making the products here specified were, at previous censuses, divided among several classifications, such as "electrical machinery, apparatus, and supplies," "house-furnishing goods, not elsewhere specified," "leather goods," and "stationery goods, not elsewhere specified." There is some overlapping between this new class and those specified, "as well as others.

There were 288 establishments reported for 1909, with an average of 5,540 wage earners. The total wages paid amounted to \$3,104,593, the cost of materials was \$4,708,915, the value of products \$13,546,385, and the value added by manufacture \$8,837,470. In addition, establishments engaged primarily in other industries, principally "printing and publishing" and "leather goods," also reported signs and advertising novelties in 1909 to the value of \$695,470, but this figure probably does not indicate the full extent of the overlapping between this and other industries.

SODA-WATER APPARATUS.

The various devices used to charge water with carbonic acid gas, to store the water and the sirups used with it, and to draw and serve it are manufactured by establishments in this classification. The process of charging water is not included (see "mineral and soda waters," Table 243).

Table 461

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	63	1,797	\$1,239,450	\$2,442,538	\$6,555,597	\$4,113,059
1904.....	37	1,469	834,705	1,923,835	4,634,265	2,710,430
1899.....	30	963	549,939	997,436	3,015,493	2,018,057
1889.....	12	339	547,080	1,016,202	2,711,879	1,695,677
1879.....	8	332	169,235	565,538	1,075,569	510,931
1869.....	13	307	140,751	304,246	813,075	508,829

In addition to the products covered above, soda-water apparatus to the value of \$400,221 was reported in 1909 by establishments engaged primarily in the industries "mineral and soda waters," "brass and bronze products," "billiard tables and materials," and others.

SPORTING AND ATHLETIC GOODS.

Among the sporting goods reported by establishments assigned to this classification are artificial flies and baits, air rifles, canvas goods, clay-pigeon traps, fishing tackle of all sorts, dice, fish nets, fish spears and tongs, gun cases, holsters, hunters' clothes, oars and paddles, shell boxes, shooting-gallery targets, etc. The manufacture of firearms and ammunition falls under a separate classification.

Athletic goods are represented by baseballs and bats, gloves, mitts, and uniforms for baseball; basketball supplies; boxing gloves; bowling balls; cricket bats; exercisers; footballs and football supplies; golf clubs, balls, and bags; gymnasium goods and apparatus; hockey sticks; polo balls and mallets; roller skates; punching bags and punching-bag platforms; tennis rackets, balls, and supplies; track suits; and many other products.

Table 462

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	180	5,321	\$2,165,434	\$5,564,766	\$11,052,286	\$5,437,520
1904.....	152	4,260	1,641,436	2,963,138	7,032,224	4,069,086
1899.....	143	2,225	809,687	1,801,929	3,628,496	1,826,567
1889.....	136	2,008	705,911	1,119,806	2,709,449	1,589,643
1879.....	86	1,401	411,854	682,616	1,556,258	863,642

In addition to the products covered by the table, sporting and athletic goods to the value of \$239,266 were reported in 1909 by establishments engaged primarily in the industries "foundry and machine-shop products," "wirework, including wire rope and cable," and others.

STATIONERY GOODS, NOT ELSEWHERE SPECIFIED.

Manufacturers of various articles used in writing and in connection therewith, in manifolding, and filing written matter, and for miscellaneous purposes, are included in this classification. Among the products are albums; copying baths; binders for loose leaves and all sorts of loose-leaf devices; blackboard slating, erasers, and supplies; blotters; boxes for documents;

card files and indexes; cardcases; chalk and other crayons; coin wrappers and currency straps; desk calendars and pads; devices for books and ledgers; duplicators made from gelatin or glue, and glycerin; engraved envelopes and stationery; envelope openers; paper clips and fasteners; filing devices; inkstands and inkstand bases and inking pads; labels and label cabinets; letter copying presses; library and bank supplies; paper and twine holders and cutters; paper tablets; pencil-sharpeners; portfolios; ruled papers; ruling pens; school globes, maps, tablets, erasers, and slates; stencil duplicators; waxed stencil sheets; printing machines using inked ribbons; stenographers' copyholders; thumb tacks; and tin plates for mounting. There is much overlapping between this industry and others, such as "printing and publishing," "paper goods, not elsewhere specified," "silverware and plated ware," "brass and bronze products," "jewelry," "paint and varnish," "pencils, lead," and others.

"Stationery goods, not elsewhere specified," does not appear at the census of 1869, but the statistics for 1859 covered 32 establishments classed as "stationery." In these establishments 392 wage earners were employed, receiving \$106,380 in wages. The materials used cost \$81,167 and the value of products was \$325,338. The table gives statistics for each census from 1879 to 1909, inclusive:

Table 463

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	153	6,206	\$2,735,860	\$7,743,636	\$16,647,223	\$8,903,587
1904.....	143	4,295	1,499,803	3,920,421	8,887,457	4,947,036
1899.....	113	3,032	958,471	2,128,445	5,065,869	2,937,424
1889.....	206	4,315	1,684,868	5,328,252	9,456,467	4,128,215
1879.....	159	3,117	1,159,893	3,501,426	5,898,322	2,396,896

In addition to the products covered by the above table, stationery goods to the value of \$1,505,600 were specifically reported in 1909 by establishments engaged primarily in other industries, principally "paper goods, not elsewhere specified," "silverware and plated ware," "furniture and refrigerators," "pencils, lead," and "jewelry," but this can not be considered as representing the full extent of the overlapping between this and other industries. Because of such overlapping and the subsequent uncertainty as to the classification of certain establishments, comparisons for this industry for different censuses are of doubtful value.

STEAM PACKING.

Establishments in this classification manufacture principally the materials used in the stuffing boxes of the cylinders and steam chests of steam engines to render impervious the joints through which the piston rods and valve stems move; in the boxes or journals in which shafts revolve, to assist in lubrication; in

pipe joints of many kinds; in air compressors; in gas, oil, and other engines; and substances for the covering of boilers and steam pipes to prevent the radiation of heat.

These packings and coverings are of vegetable, animal, and mineral origin. The vegetable materials include duck cloth, flax, hemp, rubber, and cotton waste; the animal materials include wool and leather; and the mineral embrace antimony, asbestos, brass, graphite, cast iron, lead, lead wool, magnesia, mineral wool from slag and limestone, mica, and tin.

Table 464

	Number of establishments	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	153	3,648	\$1,811,421	\$6,650,293	\$12,159,989	\$5,509,096
1904.....	100	2,734	1,273,144	3,896,317	8,951,705	5,035,338
1899.....	97	1,147	525,332	1,546,398	3,493,710	1,847,312
1889.....	34	315	151,982	357,819	1,093,372	645,553

In addition to the products covered by the above table, steam packing to the value of \$876,425 was reported for 1909 by establishments engaged primarily in the manufacture of paper and wood pulp, belting and hose, mucilage and paste, and of other products.

SURGICAL APPLIANCES AND ARTIFICIAL LIMBS.

Separate data for 1909 for the two branches of this industry are given in the following table; but, as there is much overlapping in some of the establishments, only the combined statistics are given in most of the tables:

Table 465

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	324	4,241	\$2,128,927	\$5,371,656	\$12,399,314	\$7,027,658
Surgical appliances.....	194	3,809	1,814,349	5,092,735	11,075,297	5,932,562
Artificial limbs.....	130	432	314,578	278,921	1,324,017	1,045,096

In addition to the products covered by the above table, surgical appliances and artificial limbs to the value of \$219,609 were reported for 1909 by establishments assigned to other classifications, such as "boots and shoes, rubber," "patent medicines and compounds and druggists' preparations," and "furnishing goods, men's."

Surgical appliances.—Establishments included in this subclass manufacture all kinds of surgical appliances, bandages, and dressings, except surgical instruments and dental appliances, which fall under the classifications "instruments, professional and scientific" (see Table 429), and "dentists' materials" (see Table 399). The products embrace, among others, trusses, elastic hosiery, braces, extension shoes, arch supports for insteps, obesity belts, surgical gauze, and douches.

Table 466

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	194	3,809	\$1,814,349	\$5,092,735	\$11,075,297	\$5,932,562
1904.....	180	2,811	1,154,563	2,729,271	6,385,293	3,656,622
1899.....	219	1,539	620,801	1,291,580	3,932,558	2,040,778
1889.....	155	612	300,894	524,438	1,650,035	1,125,545
1879.....	71	477	265,372	286,720	906,303	619,533

Artificial limbs.—Artificial legs, arms, hands, and feet are the principal products of the establishments included in this subclass. Crutches, extension soles, and artificial-leg wood, prepared for sale as such, were also reported.

Table 467

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	130	432	\$314,578	\$278,921	\$1,324,017	\$1,045,096
1904.....	104	342	221,913	136,645	883,731	747,086
1899.....	87	249	146,020	126,062	749,854	423,792
1889.....	59	162	102,438	93,795	475,977	382,182
1879.....	33	72	43,833	31,370	137,024	105,654
1879.....	24	78	36,079	59,894	166,416	106,522
1859.....	5	39	23,544	10,550	53,000	42,950
1849.....	3	15	5,880	1,400	14,300	12,900

¹ "Legs, artificial."

The decrease in value of products from 1869 to 1879 was due doubtless to changes in the classification of individual establishments.

TOYS AND GAMES.

The articles made by establishments assigned to this class are numerous. They include indoor ball games; children's vehicles and swings; checkers; dominoes; dolls; stuffed animals; stereoscopic views; toy furniture and utensils; various card and other games; playground goods; toy building blocks; children's driving reins; rattles and floor-rolling chimes; cribbage boards; croquet sets; toy drums; jig-saw and other puzzles; hobbyhorses and rocking-horses; kites; magic lanterns and slides; magical apparatus, tricks, and novelties; masks; mechanical toys; toy railways, engines, and cars; toy savings banks; etc.

Table 468

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	226	5,305	\$2,227,412	\$3,554,238	\$8,264,135	\$4,709,897
1904.....	161	4,330	1,614,706	2,289,439	5,577,693	3,288,254
1899.....	169	3,316	1,119,253	1,665,449	4,009,999	2,344,550
1889.....	139	3,148	1,075,429	1,453,738	3,749,755	2,296,017
1879.....	106	2,196	512,786	595,833	1,562,513	956,680
1869.....	49	615	182,255	159,946	579,865	419,519
1859.....	12	176	44,688	70,635	184,000	113,365

In addition to the products covered by the above table, toys and games to the value of \$1,156,411 were reported for 1909 by establishments in other industries—principally "foundry and machine-shop prod-

ucts" and "printing and publishing." On the other hand, there is considerable overlapping between "toys and games" and such industries as "paper goods, not elsewhere specified," "leather goods," "fancy articles, not elsewhere specified," "boxes, fancy and paper," "carriages and sleds, children's," and "wood, turned and carved," the amount of which was not always disclosed by the returns.

UMBRELLAS AND CANES.

Establishments in this classification manufacture, besides ordinary umbrellas and parasols and canes and parts thereof, baby-carriage canopies and toy parasols. Some establishments make only parts which others purchase and assemble, and some do contract work on materials furnished by others. There is thus some duplication in value of products within the industry.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	256	5,472	\$2,252,858	\$10,055,915	\$15,864,122	\$5,808,207
1904.....	204	5,386	1,826,043	8,250,246	13,296,046	5,045,800
1899.....	202	5,640	1,868,514	8,381,216	13,668,986	5,287,770
1889.....	435	6,022	2,435,860	7,562,921	13,771,927	6,209,006
1879.....	172	3,608	1,158,682	4,502,777	6,917,463	2,414,686
1869 ¹	93	3,196	1,057,062	2,219,603	4,822,066	2,602,463
1859 ²	72	2,170	477,360	2,057,600	3,082,402	1,024,802
1849 ³	80	2,576	433,548	1,399,607	2,505,622	1,106,015

¹ "Umbrella furniture" and "umbrellas and canes."

² "Umbrella furniture" and "umbrellas and parasols." Canes included under "whips and canes." (See "whips," Table 471.)

³ "Umbrellas." Canes included under "whips, whip lashes, sockets, and canes." (See "whips," Table 471.)

In addition to the products covered by the above table, umbrellas and canes to the value of \$61,216 were reported at the census of 1909 by establishments assigned to other classifications, such as "silk and silk goods, including throwsters," "copper, tin, and sheet-iron products," and "hats and caps, other than felt, straw, and wool."

The decrease in value of products from 1889 to 1899 was due, in part at least, to the fact that prior to the census of 1899 statistics of small neighborhood shops were included in the returns. The decrease from 1899 to 1904 may be attributed to changes in the classification of individual establishments.

WASHING MACHINES AND CLOTHES WRINGERS.

Establishments in this classification manufacture principally machines for washing clothing, table linen, bed linen, etc. They are operated by hand or by steam, water, electric, or other power. Machines for wringing, for drying, and for ironing clothes were also reported.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	100	1,835	\$903,789	\$2,837,361	\$5,824,889	\$2,987,528
1904.....	92	1,622	684,252	2,213,390	3,838,624	1,625,234
1899.....	118	1,509	548,707	2,174,782	3,735,243	1,560,481
1889.....	163	1,030	430,888	1,354,550	2,489,175	1,134,625
1879.....	61	476	176,287	587,643	1,182,714	585,071
1869.....	64	462	200,912	454,562	1,379,827	925,265
1859.....	29	85	29,124	24,824	87,505	62,741

In addition to the products covered by the above table, washing machines and clothes wringers to the value of \$233,611 were reported at the census of 1909 by establishments assigned to other industries, principally "stoves and furnaces, including gas and oil stoves," "cooperage and wooden goods, not elsewhere specified," "shipbuilding, including boat building."

The slight decrease in value of products from 1869 to 1879 is more than accounted for by the high prices due to the depreciated currency of 1869, which increased nominal values about one-fifth.

WHIPS.

Establishments in this classification manufacture whips and parts of whips of rattan, rawhide, reed, whalebone, wood, and iron.

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	57	1,546	\$703,527	\$1,584,743	\$3,948,643	\$2,363,900
1904.....	58	1,554	603,203	1,253,118	3,147,328	1,894,210
1899.....	60	1,287	478,176	1,278,324	2,734,471	1,456,147
1889.....	81	944	403,142	821,614	2,153,818	1,332,204
1879.....	88	1,056	415,007	701,225	1,698,633	997,498
1869 ¹	103	961	384,544	503,502	1,243,118	739,616
1859 ²	71	1,179	240,658	223,708	852,150	628,442
1849.....	70	1,051	195,984	237,643	575,271	337,628

¹ "Whips and canes."

² "Whips, whiplashes, sockets, and canes."

In addition to the products covered by the above table, establishments engaged primarily in the manufacture of brooms and brushes, cooperage and wooden goods, not elsewhere specified, leather goods, and other products, reported whips at the census of 1909 to the value of \$114,306.

WINDMILLS.

The principal products of establishments in this classification are the wind motors used chiefly on farms to pump water, cut fodder for stock, turn grindstones, etc. Not only are the vanes or sails that catch the wind manufactured by these establishments, but also the towers, cylinders, and tanks.

The first census at which "windmills" were reported separately was the census of 1859, when five establishments reported products valued at \$28,750. The

next census at which a separate presentation was made was that of 1879.

Table 472

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	34	2,337	\$1,403,147	\$3,331,363	\$6,676,599	\$3,345,236
1904.....	53	1,929	968,650	2,307,579	4,795,048	2,437,460
1899.....	68	2,045	940,474	2,172,035	4,354,312	2,182,214
1889.....	77	1,110	555,775	1,123,847	2,475,050	1,351,103
1879.....	69	596	244,197	523,594	1,010,542	486,948

In addition, windmills to the value of \$1,033,787 were reported at the census of 1909 by establishments engaged primarily in the manufacture of foundry and machine-shop products, agricultural implements, carriages and wagons and materials, and other products.

WINDOW SHADES AND FIXTURES.

Window shades of cotton, linen, muslin, or holland cloth, paper, or of opaque cloth or paper, are the principal products of establishments in this classification. The barrel-spring and other rollers, brass rods, wooden poles and slats, hardware, and other fixtures used with shades are included, and various other incidental products.

At the census of 1859, 15 establishments were reported under "window blinds and shades." The products were valued at \$134,620. In 1879 the classification was "window blinds and shades" and in 1889 "window shades." Comparable statistics are presented in Table 473 for the censuses 1879 to 1909, inclusive.

Table 473

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	219	3,930	\$1,917,692	\$12,652,607	\$18,570,932	\$5,918,325
1904.....	144	2,624	1,086,232	5,946,478	8,930,630	2,984,152
1899.....	96	1,801	752,144	5,575,126	8,071,854	2,496,728
1889.....	182	2,025	1,016,255	5,341,874	9,239,669	3,807,795
1879.....	131	1,279	479,133	1,635,700	2,826,518	1,190,818

In addition to the products covered by the above table, establishments engaged primarily in the manufacture of awnings, tents, and sails, umbrellas and canes, and mattresses and spring beds, reported window shades and fixtures at the census of 1909 to the value of \$200,665.

ALL OTHER INDUSTRIES.

Millstones.—Only one establishment appears under this classification, but this statement furnishes no accurate idea of the extent of the industry, which is conducted largely at the places where the material is quarried. The statistics, therefore, appear in the returns for the census of mines and quarries under the classification "buhrstones and millstones." Fourteen establishments are there reported as having quarried, or quarried and dressed, millstones to the value of \$34,441. Of these establishments, nine were situated in the state of New York. Millstones are used extensively for grinding cement, talc, quartz, and mineral paints, as well as for grinding grain. This industry belongs in the group "stone, clay, and glass products."

Ordnance and accessories.—Only two establishments are classified under this designation, and no statistics can be shown separately, without the disclosure of individual operations. One, in Massachusetts, made subtarget rifle machines, safety-range machines, intrenching tools, rifle-practice rods, and devices for fire control. The other, in Pennsylvania, made special ordnance. Ordnance is for the most part manufactured in steel works and rolling mills (the value of products not being reported separately) and in establishments operated by the Government. This industry belongs in the group "iron and steel, and their products."

Pulp, from fiber other than wood.—Only two establishments, both in Philadelphia, reported the products covered by this classification, so that no separate figures can be given.

Straw goods, not elsewhere specified.—Only two establishments are included in this classification and therefore no statistics can be shown separately. One establishment is in Massachusetts and one in Wisconsin. They manufacture principally dyed straw and chip braids, and hay packing for furniture.

Whalebone cutting.—In this classification there is only one establishment; its product is whalebone cut for corsets, dresses, whips, etc. The plant is situated in New York City. No statistics can be presented separately.