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**	**$3,937,617,891**	**$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	185,572	8,200,533	776,875
Canning and preserving, fish and oysters [1]	398	9,926	3,565,034	28,328,293	10,846,253
Lard, refined, not made in slaughtering and meat-packing establishments	7	399	179,666	10,326,471	695,246
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	167,740,317
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	396,864,844	158,831,181
Canning and preserving, fruits and vegetables [1]	3,369	50,042	15,516,809	128,772,908	44,431,889
Chocolate and cocoa products	27	2,826	1,268,613	22,390,222	6,867,162
Coffee and spice, roasting and grinding	607	7,490	3,676,316	110,532,787	27,327,089
Confectionery	1,944	44,638	15,615,388	134,795,913	53,045,140
Cordials and sirups	117	1,095	503,455	9,662,176	4,320,908
Flavoring extracts	420	1,229	557,736	8,828,034	4,369,806
Flour-mill and gristmill products	11,691	39,453	21,464,386	883,584,405	110,007,926
Food preparations	1,213	14,968	7,042,689	125,331,181	41,380,032
Glucose and starch	118	4,773	2,666,483	48,799,311	11,000,540
Peanuts, grading, roasting, cleaning, and shelling	46	1,949	351,254	9,736,551	1,124,487
Rice, cleaning and polishing	71	1,239	563,538	22,371,457	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	5,620,971	248,628,659	22,340,699
Vinegar and cider	963	1,542	723,488	8,447,577	3,483,532

[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	3,560	2,704	1,669,862	39,021,766	44,263,177	5,241,411
Condensed milk	136	4,164	2,170,193	26,877,857	35,295,343	8,417,486

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.

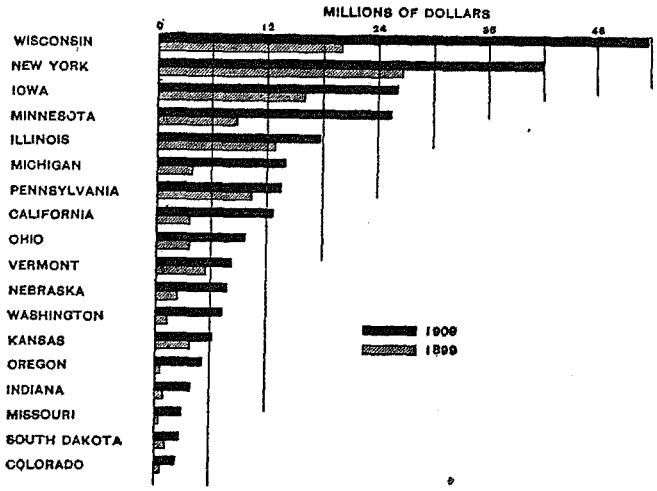
Table 3 KIND.	Quantity (pounds).[1]	Value.[1]
Total	.....	**$274,557,718**
Butter	624,764,653	179,510,619
Packed solid	410,692,616	115,098,056
Prints and rolls	214,072,037	64,412,563
Cheese	311,126,317	43,239,924
Full-cream	287,110,383	40,817,073
Part-cream	10,803,392	1,188,000
Skimmed	7,770,812	429,519
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	352,504,574	929,135
Casein dried from skimmed milk	13,018,208	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.

Table 4	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	7,902	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 cendensed 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.

Table 5	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.

Table 6	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:

Table 7 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	$17,482,040	$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	235,418,713	$17,573,311
Salmon	99,831,528	8,723,565
Sardines	90,694,284	4,931,831
Oysters	28,192,392	2,443,101
All other	16,700,509	1,474,814
Smoked fish	39,814,989	2,900,417
Herring	21,369,856	931,611
Salmon	6,836,099	950,540
Finnan haddie	4,513,222	304,620
All other	7,095,812	713,646
Salted fish	128,539,299	7,174,561
Cod	49,494,338	3,077,612
Mackerel	9,045,469	740,513
Herring	21,718,467	461,287
Haddock	7,873,156	319,248
All other	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	$28,328,293	$10,846,253
1904	379	8,445	2,839,568	14,930,018	22,627,667	7,697,649
1899	333	12,598	3,215,197	12,409,948	19,430,916	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	$179,666	$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	8,630,901	1,134,056
1889	17	888	460,102	12,654,360	15,474,848	2,820,488
1879	26	1,181	546,258	21,948,826	23,195,702	1,246,876

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	$1,650,997
1904	14	522	315,736	4,397,538	5,573,725	1,176,187
1899	24	1,084	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.

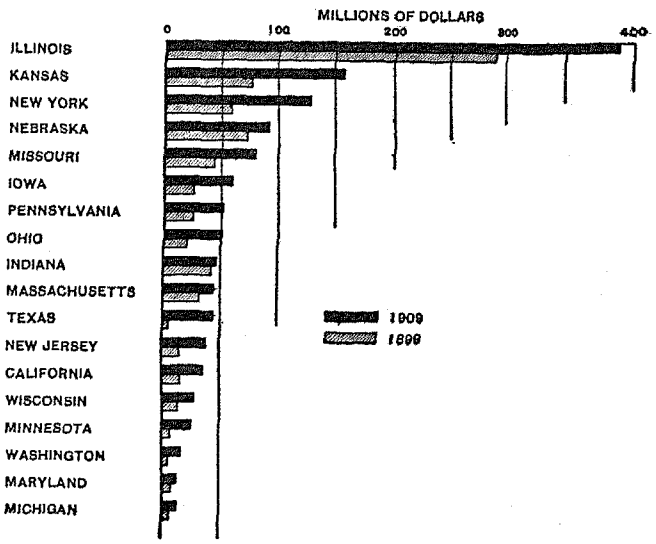
The decrease in the industry between 1879 and 1889 was caused primarily by the enforcement of laws in New York state restricting its production. The value of the product of oleomargarine factories in that state in 1879 amounted to $5,338,753, but no factories were reported in 1899. The decided decrease 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**	**$51,644,720**	**$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	132,201,955	151,295,853	19,093,898
Meat packing	159	4,758	2,824,224	45,094,837	56,212,973	11,118,136
Sausage making	420	1,915	1,240,266	11,389,708	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.
Total		**$1,370,568,101**
Beef	4,235,674,330 pounds	339,742,608
Fresh	4,209,196,668 pounds	327,583,456
Salted or cured	126,477,662 pounds	12,159,152
Veal, fresh	252,997,078 pounds	25,058,886
Mutton, fresh	495,457,894 pounds	50,735,116
Pork	4,377,127,187 pounds	486,845,161
Fresh	1,547,494,184 pounds	158,714,862
Salted	952,130,557 pounds	95,959,048
Hams	789,861,744 pounds	101,089,390
Shoulders	346,294,769 pounds	33,225,458
Bacon and sides	741,345,933 pounds	97,856,403
Sausage, fresh or cured		59,564,582
All other fresh meat	257,809,083 pounds	16,392,768
Canned goods	121,376,837 pounds	15,345,543
Lard	1,243,567,604 pounds	134,396,587
Tallow, or oleo stock	202,844,139 pounds	$13,499,659
Oleo oil	19,692,172 gallons	16,475,726
Other oils	11,343,186 gallons	6,350,745
Oleomargarine	42,912,466 pounds	5,963,981
Stearin	54,957,997 pounds	6,871,935
Glue and gelatine	27,936,035 pounds	1,944,338
Fertilizers and fertilizer materials	362,136 tons (2,000 lbs)	8,726,818
Hides	9,560,138 number; 504,563,930 pounds	68,401,515
Sheep pelts	11,691,308 number	11,404,556
Goat and kid skins	33,359 number	20,679
Wool	21,858,926 pounds	8,327,095
Amount received for custom or contract work		1,329,739
All other products		93,170,064

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.

Table 14

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	$103,960,213	$8,726,818
Glue	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.

Table 15

	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	1,641	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:

Table 16

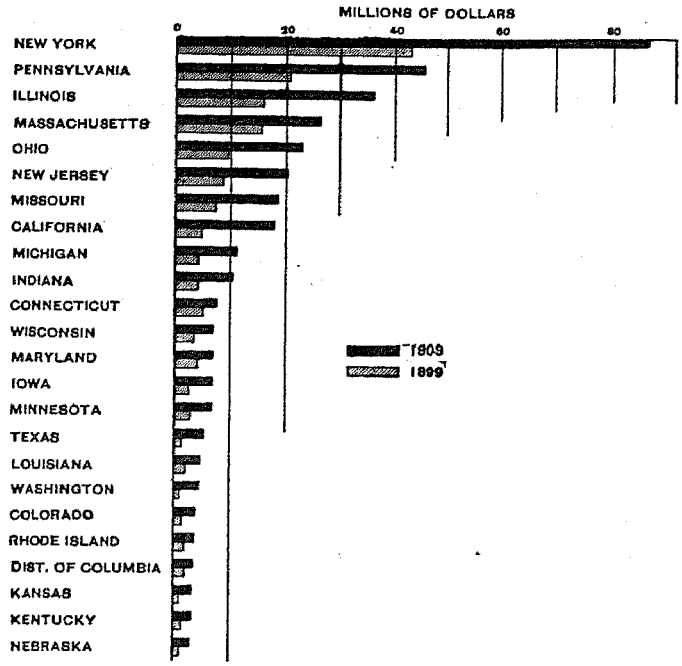
KIND.	Total.	In slaughterhouses.	On farms and ranges.
Total	**88,358,815**	**69,791,543**	**18,567,272**
Beeves	13,611,422	12,202,782	1,408,640
Calves	6,515,976	5,384,376	1,131,600
Sheep and lambs	14,724,699	14,195,173	[1] 529,526
Hogs	53,219,568	37,841,051	15,378,517
Goats and kids	285,553	166,564	[1]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

Table 17	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	128,421,535	55,913,956
1879	6,396	22,488	9,411,328	42,612,027	65,824,896	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	16,980,012	6,345,813
1849	2,027	6,727	1,960,416	8,367,370	13,294,229	4,926,859

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.

Table 18 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**	**$84,341,019**	**$128,772,902**	**$44,431,889**
Canned and dried fruits and vegetables [1]	2,789	40,492	11,771,698	62,543,622	91,439,161	28,895,539
Pickles, preserves, and sauces [2]	580	9,550	3,745,111	21,797,397	37,333,747	15,536,350

[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.

Table 19 KIND.	Quantity.[1]	Value.[1]
	Cases.	
Canned vegetables	**32,752,469**	**$51,568,914**
Tomatoes	12,909,986	18,747,941
Corn	7,451,265	10,332,136
Peas	5,901,703	10,247,363
Beans	3,392,864	6,013,098
Asparagus	228,559	1,975,775
Pumpkin	440,303	576,043
Sweet potatoes	347,286	531,651
All other	2,080,503	3,144,907
Canned fruits	**5,501,404**	**12,938,474**
Peaches	1,467,213	3,753,698
Apples	1,205,742	1,898,720
Apricots	630,185	1,825,311
Pears	637,782	1,833,214
Berries	815,851	1,754,927
Cherries	390,351	1,019,013
All other	354,280	853,591
	Pounds.	
Dried fruits	**400,328,767**	**19,840,395**
Raisins	111,774,767	4,857,933
Prunes	138,498,490	5,130,412
Apples	44,568,244	3,098,095
Peaches	46,843,391	2,423,083
Apricots	29,205,569	2,277,177
All other	29,438,306	2,073,695

[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 $53,159, 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.

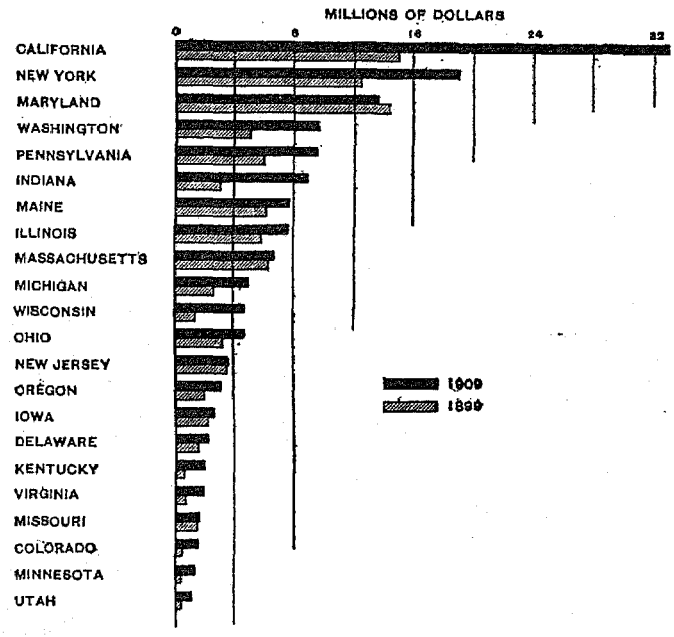
Canned vegetables constituted the most important class, as measured by value of the products of the establishments engaged primarily in canning and drying fruits and vegetables. Dried fruits, among which prunes predominated, ranked second in value among the groups of products, while canned fruits were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

Table 20	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.

Table 21	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	9,666,192	2,789,510
1889	11	893	456,047	2,892,219	4,221,675	1,329,456
1879	7	223	82,258	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	5,959	2,830,243	65,847,335	84,188,391	18,341,056

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	$91,817,162	$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	11,266,423	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.

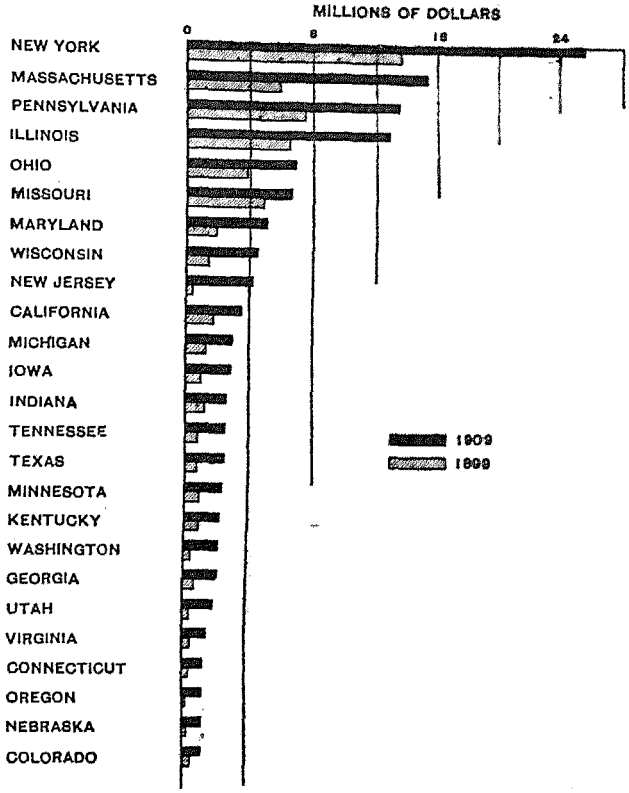
CONFECTIONERY.

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	36,239	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	2,921	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	5,825	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	3,509,758	1,361,210
1899	39	362	116,917	1,505,096	2,107,132	602,036
1889	40	281	111,114	1,231,141	1,903,200	672,059
1879	16	81	42,928	210,506	331,233	120,727
1869	33	258	118,847	505,398	955,271	449,873

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.

Table 26	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value f products.	Value added by manufacture.
1909	420	1,229	$557,736	$4,458,228	$8,828,034	$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	796,049	1,195,637	399,588

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:

Table 27 CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	23,652	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:

Table 28 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	6,644,659
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.

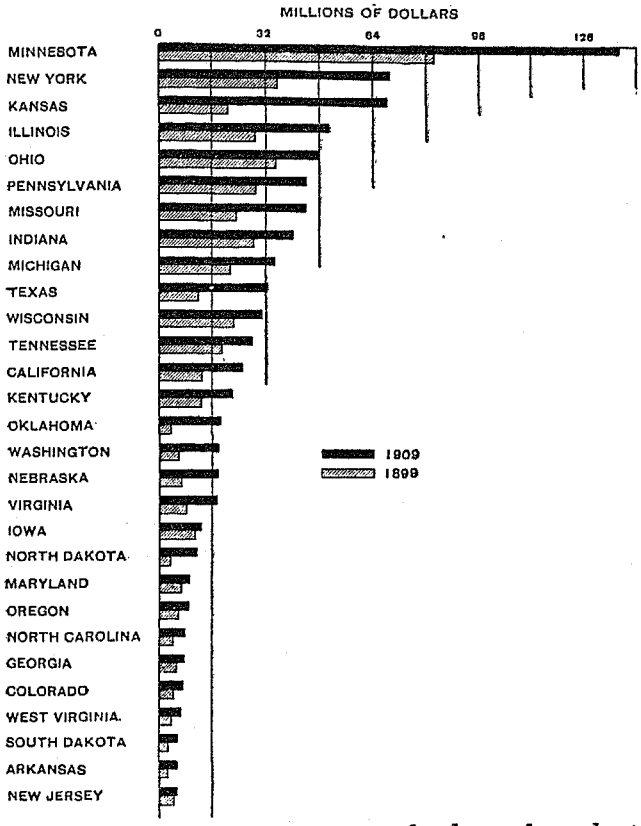
Comparison with earlier censuses.—The following table gives statistics for all flour mills and gristmills, both merchant and custom, for the decennial censuses from 1849 to 1909. Custom mills were not canvassed in 1904, while for censuses prior to that of 1899 it is impossible to segregate the statistics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

Table 29	MERCHANT AND CUSTOM MILLS. Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	23,652	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	77,593,021
1859	13,868	27,682	8,721,391	208,497,309	248,580,365	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 live stock	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	2,098,600
Rye flour	1,532,139 barrels	6,383,538
Buckwheat flour	176,081,891 pounds	4,663,561
Barley meal	28,550,952 pounds	486,000
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 $12,330; feed, 33,765 tons, valued at $907,165; and offal, 627 tons, valued at $15,274.

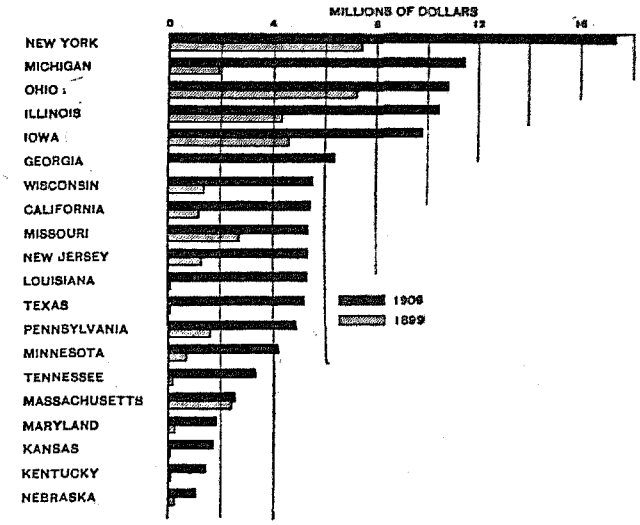
Statistics for the merchant mills at the three censuses from 1899 to 1909 are summarized in the following statement:

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	713,033,395	93,062,234
1899	9,476	32,226	16,285,163	428,116,757	501,396,304	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	$41,389,032
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.

Table 34	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	766	11,333	4,398,348	37,667,862	61,180,416	23,512,554
1899	645	8,214	3,099,343	24,776,625	39,836,882	15,060,257
1889	302	3,478	1,222,913	8,129,925	14,105,485	5,975,560
1879	109	1,333	318,253	1,604,660	2,493,224	888,564
1869	124	1,178	470,599	2,338,717	3,622,464	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.

Table 35 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**	**$36,898,771**	**$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.

Table 36 KIND.	Quantity.	Value.
Total		**$48,799,311**
Starch	677,535,647 pounds	17,514,823
Corn	638,825,366 pounds	15,962,916
Wheat and arrowroot	12,127,686 pounds	626,337
Potato	26,582,595 pounds	925,570
Glucose, including all sirups	769,660,210 pounds	17,922,514
Grape sugar	159,060,478 pounds	3,020,816
Corn oil	8,164,175 gallons	2,802,768
Stock feed		6,013,968
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.

Table 37	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	24,566,932	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	7,756,686	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.

Table 38	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	462,009

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:

Table 39	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	626,089,489	20,685,982
Whole	477,589,004	17,398,736
Broken	148,500,485	3,287,246
Polish	29,821,813	362,052
Bran	91,208,529	736,215
Hulls and waste		166,147
All other products		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	496,807 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		258,949
Sugar and molasses industry (cane sugar)		30,620,738
Vacuum pan sugar	323,180 tons (2,000 lbs.)	25,794,287
Brown (open-kettle process) sugar	3,678 tons (2,000 lbs.)	301,386
Molasses	24,587,581 gallons	2,845,559
Sirup	1,449,860 gallons	365,632
All other products[2]		1,313,874

[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	14,486,876	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	$247,582,804	$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.

Table 45	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	3,134,313	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	3,418,038	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	588,620

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.

Table 46

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**	**$3,054,708,084**	**$1,312,720,689**
Textile fabrics and materials	**5,683**	**908,036**	**350,495,932**	**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	20,105,176
Cotton goods, including cotton small wares	1,324	378,880	132,859,145	628,391,813	257,382,343
Dyeing and finishing textiles	426	44,046	21,226,924	83,556,432	48,295,131
Flax and hemp, dressed	16	164	64,007	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	25,755,309
Hosiery and knit goods	1,374	129,275	44,740,223	200,143,527	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	557,718	3,289,215	1,167,113
Woolen, worsted, and felt goods, and wool hats	985	168,722	72,426,619	435,978,558	153,100,519
Articles from textile fabrics for personal wear	**14,226**	**496,692**	**227,171,622**	**1,175,703,230**	**552,713,793**
Cloth, sponging and refinishing	57	975	651,263	1,543,872	1,458,669
Clothing, men's, buttonholes	146	830	389,032	780,720	676,143
Clothing, men's, including shirts	6,354	239,696	106,277,319	568,076,655	270,561,189
Clothing, women's	4,558	153,743	78,568,261	384,751,649	175,963,423
Corsets	138	17,564	6,464,144	33,257,187	17,616,772
Furnishing goods, men's	900	38,482	15,092,988	87,710,197	38,585,354
Hats and caps, other than felt, straw, and wool	494	6,201	3,421,055	13,699,338	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**	**140,517,131**	**40,335,686**
Awnings, tents, and sails	621	4,242	2,187,651	14,499,020	6,122,239
Bags, other than paper	109	7,968	2,942,309	54,891,622	8,517,154
Carpets, rag	428	1,982	860,460	2,567,569	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	4,304,240
Hammocks	15	272	95,242	578,505	267,259
Mats and mattings	12	937	385,434	2,431,615	1,365,049
Oakum	6	113	42,183	338,497	106,505
Oilcloth and linoleum	31	5,201	2,825,545	23,399,022	7,798,921
Upholstering materials	230	4,067	1,689,191	13,653,561	4,984,867
Waste	53	1,897	715,663	11,396,011	2,561,422
Wool pulling	37	631	386,915	5,180,856	1,077,606

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:

Table 47

	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	23,638,479
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	18,984,877	31,792,802	12,807,925
1869	215	12,098	4,681,718	13,577,993	21,761,573	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.

Table 48

KIND.	Quantity (square yards).[1]	Value.[1]
Total value		**$71,188,152**
Carpets	37,176,729	48,475,889
Axminster and Moquette	12,507,261	13,680,806
Wilton	4,576,368	8,737,768
Brussels	3,960,026	5,216,607
Tapestry velvet	6,927,198	5,514,130
Tapestry Brussels	11,405,514	8,576,906
Ingrain	17,799,762	6,749,672
Rugs woven whole	24,042,152	18,490,449
Axminster and Moquette	3,184,097	3,691,900
Wilton	767,248	1,381,562
Brussels	475,831	333,582
Tapestry velvet	3,732,972	3,513,063
Tapestry Brussels	5,672,962	4,422,427
Ingrain art squares	6,131,862	2,408,960
Smyrna	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.

Table 49 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	954	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.

Table 50 KIND.	Quantity.	Value.[1]
	Pounds.	
Total value		**$61,019,986**
Rope and binder twine	428,204,044	33,930,306
Sisal	225,756,526	15,960,280
Manila	150,169,682	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	3,518,036
Jute	35,516,217	2,557,744
Hemp	8,013,349	1,091,291
Flax	2,967,053	830,969
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	5,486,891	982,742
Other	732,120	89,745
Linen thread	6,530,503	3,407,008
	Square yards.	
Gunny bagging	69,311,288	3,507,482
Jute carpets and rugs	2,206,114	549,221
All other products		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.

Table 51	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	36,095,747	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	24,051,666	33,312,559	9,260,893
1879	165	5,435	1,558,676	9,330,261	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.

Table 52	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	18	4,506	1,181,790	3,015,362	5,383,797	2,368,435
1889	7	1,194	368,585	501,909	1,120,121	618,212
1879	4	525	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	1,140,516	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 principal kinds of goods made in 1909, although yarns made for sale reached nearly the same value.

Table 56 KIND.	Quantity.[1]	Value.[1]
	Square yards.	
Total value		$628,391,813
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	1,484,353,529	88,802,985
Twills and sateens	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
	Pounds.	
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.

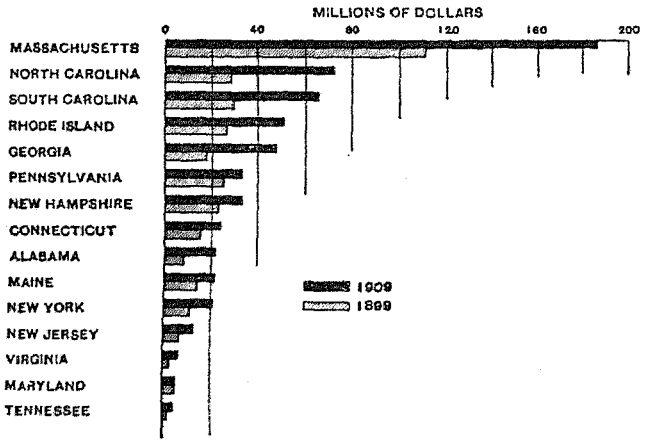
The following table gives comparative statistics for the cotton-goods industry, as a whole, from 1859 to 1909, inclusive:

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	86,689,752	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[1]	756	172,544	42,040,510	102,206,347	192,090,110	89,883,763
1869	956	135,369	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 $2,338,385, 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.

Table 58	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	$83,556,432	$48,295,131
1904	360	35,565	15,469,205	19,621,253	50,849,545	31,228,292
1899	298	29,776	12,726,316	17,958,137	44,963,331	27,005,194
1889	248	19,601	8,911,720	12,385,220	28,900,560	16,515,340
1879	191	16,698	6,474,364	13,664,295	32,297,420	18,633,125
1869	42	8,894	3,438,089	[1] 46,373,358	[1] 54,446,044	8,072,686
1859	29	4,005	1,088,296	3,884,815	7,971,064	4,086,249
1849	42	4,080	1,088,904	[1] 10,462,044	[1] 13,680,805	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:

Table 59	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	342,998
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:

Table 60	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	18,880	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:

Table 61 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:

Table 62 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	128,708	44,526,655	109,416,062	198,571,588	89,155,526
Hand-knit goods	110	567	213,568	824,991	1,571,939	746,948

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

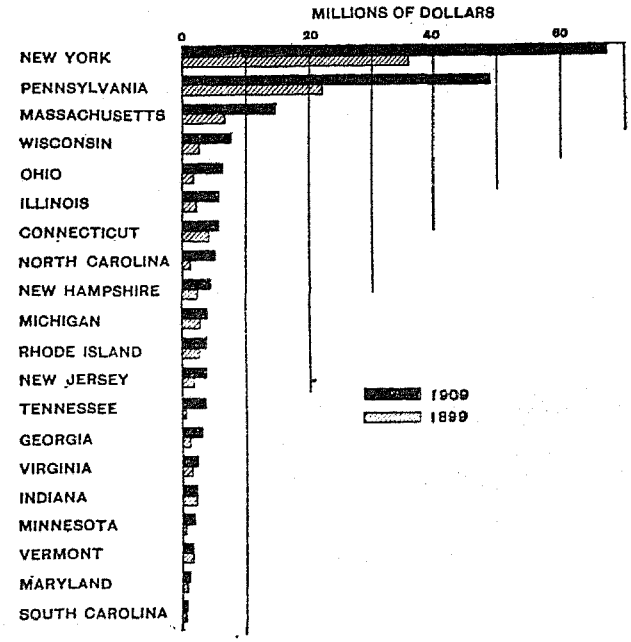
Table 63 KIND.	Quantity.	Value.[1]
Total value		**$200,143,527**
Hosiery	62,825,069 dozen pairs	68,721,825
Cotton, merino, and woolen—		
Hose	34,499,562 dozen pairs	37,903,011
Cotton	32,499,104 dozen pairs	34,078,622
Merino or mixed	834,029 dozen pairs	1,466,253
Woolen or worsted	1,166,429 dozen pairs	2,358,106
Half hose	27,891,093 dozen pairs	27,218,398
Cotton	24,805,917 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	3,217,985
Shawls	218,923 dozens	916,294
Boot and shoe linings	9,726,770 square yards	1,209,464
Yarns, for sale	7,945,734 pounds	1,785,531
Cotton	7,457,412 pounds	1,568,417
Woolen, worsted, and merino	488,322 pounds	217,114
All other products		10,118,371

[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:

Table 64	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	60,287,106
1899	1,006	83,691	24,434,497	51,195,330	95,833,692	44,638,362
1889	824	59,774	16,613,970	35,949,865	67,446,788	31,496,923
1879	393	30,699	6,839,195	15,449,991	29,613,581	14,163,590
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	4,078,289
1849	85	2,325	360,336	415,113	1,028,102	612,989

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.

Table 65	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	748,948	4,875,192	6,730,974	1,855,782
1889	94	2,155	707,099	6,003,035	7,887,000	1,883,965
1879	73	1,282	400,326	3,366,650	4,989,615	1,622,965
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:

Table 66 — 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.

Table 67 — 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	80,086,675
Mills doing throwing, winding, etc.	215	17,646	4,546,891	8,087,916	17,145,992	9,058,076

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

Table 68 — 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—		
All-silk	13,249,090	9,835,345
Silk-mixed	6,043,686	3,473,799
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	226,717	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	1,088,780	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

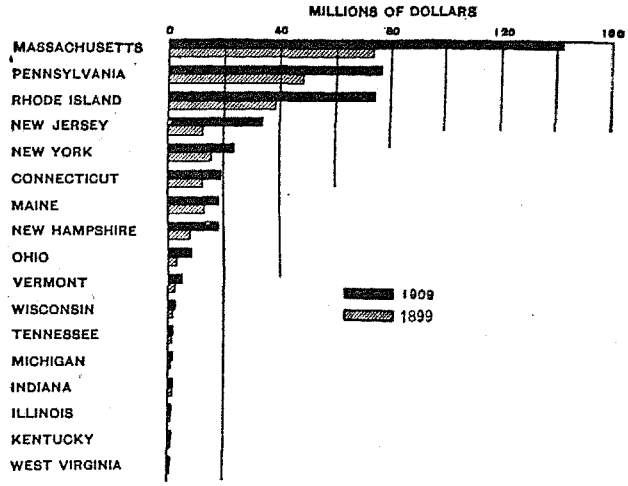
The value of products in some instances represents the amount received for work on materials furnished. In others, however, the wool scoured is owned by the establishment and its cost is included in the value of products. This was especially true of several establishments in 1909, the returns differing 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	$282,878,039	$435,978,558	$153,100,519
Worsted goods	324	111,012	47,151,871	207,786,936	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	11,852,626	4,885,420
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.

Table 72	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	41,084,160	132,977,104	212,772,629	79,795,525
1879	2,066	105,307	31,519,419	122,859,239	194,156,663	71,297,424
1869	2,993	92,973	31,246,432	110,740,799	177,495,689	66,754,890
1859	1,263	43,738	10,153,938	39,029,062	65,596,364	26,567,302

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:

Table 73 KIND.	Quantity.	Value.[1]
	Square yards.	
Total value		$419,743,521
All-wool woven goods	322,944,365	219,853,767
Wool cloths, doeskins, cassimeres, cheviots, etc	40,843,979	29,291,059
Worsted coatings, serges, and suitings	119,655,069	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	29,099,956	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, cheviots, 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	7,063,572	1,308,369
Blankets	1,717,758	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	29,220,252	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
Domett flannels and shirtings	4,571,765	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	2,889,444	1,396,595
All other	327,664	245,389
Upholstering goods and sundries		1,986,330
Woolen and worsted	1,176,542	1,528,648
All other		457,682
	Pounds.	
Partially manufactured products for sale	196,909,513	115,032,485
Yarns—		
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	3,522,812
All other	3,195,553	974,570
Worsted tops and slubbing	11,321,279	8,027,231
Noils	27,479,293	8,938,589
Waste	24,057,580	3,524,912
All other products		3,250,857
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:

Table 74	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	28,487,883
1879	76	18,803	5,683,027	22,013,628	33,549,942	11,536,314
1869	102	12,920	4,368,857	14,308,198	22,090,331	7,782,133
1859	3	2,378	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:

Table 75	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	587	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	54,365,833
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	17,451,554

[1] Not reported separately.

Felt goods.—The products included under this subclassification 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:

Table 76	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	43	3,544	$1,711,880	$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	883,380	2,809,937	4,654,768	1,844,831
1879	26	1,524	439,760	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.

Table 77 KIND.	Quantity.	Value.
Total value		$11,852,626
Felt cloths	3,764,468 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	1,661,090 square yards	514,456
Hair felting	1,159,999 square yards	531,045
All other felts		3,549,876
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.

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	2,527,880
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.

Table 79 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.

Table 80	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	$1,458,669
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.

Table 81	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	380,468	94,857	700,158	605,301
1899	149	944	332,187	98,178	680,502	582,324
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.

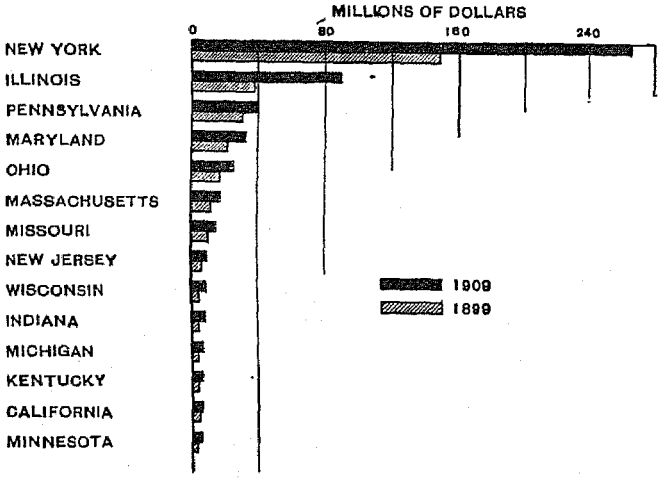
The shirt industry was formerly shown separately, but it was found impossible to make a satisfactory statistical separation, as shirts are frequently made in connection with the manufacture of other clothing for men. In the following table, however, are given the statistics for the two branches of the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

Table 82 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	$297,515,446	$568,076,635	$270,561,189
Men's clothing	5,584	191,183	89,644,921	252,522,567	485,677,493	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:

Table 83 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	249,690,748	439,860,259	190,169,511
Contract shops	3,217	64,987	33,283,969	2,831,819	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.

Table 84	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	131,498,559
1889	4,867	144,926	51,075,837	128,846,857	251,019,609	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	30,746,579	86,794,706	148,660,253	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	25,730,258	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:

Table 85	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	22,950,564	47,121,530	24,170,966
1889	869	31,207	9,193,495	15,704,343	33,638,593	17,934,250
1879	549	25,687	5,403,696	11,306,444	20,130,031	8,823,587

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:

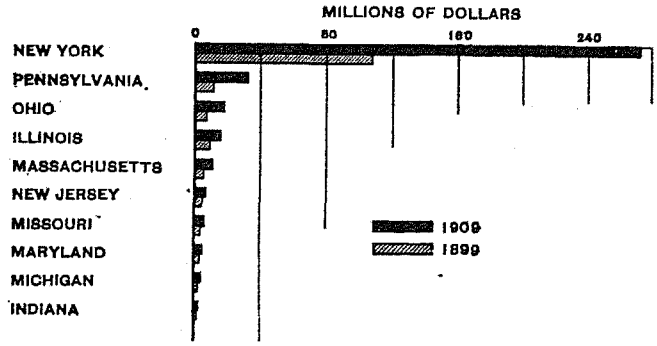
Table 86 CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	4,558	153,743	$78,568,261	$208,788,226	$384,751,649	$175,963,423
Regular factories	3,709	139,721	71,578,317	207,890,779	374,332,945	166,442,166
Contract 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:

Table 87	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	116,941,564
1899	2,701	83,739	32,586,101	84,704,592	159,339,539	74,634,947
1889	1,224	39,149	15,428,272	34,277,219	68,164,019	33,886,800
1879	562	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.



CORSETS.

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:

Table 88	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	138	17,564	$6,464,144	$15,640,415	$33,257,187	$17,616,772
1904	109	10,975	3,600,462	6,135,237	14,862,081	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.

Table 89 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	5,907,370	26,224,090	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	5,988,588	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.

Table 90	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[1]	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	6,078,926	15,280,572	29,870,946	14,590,374
1879	161	11,174	2,644,155	6,503,164	11,506,857	5,003,693

[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, $26,183,305.

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[1]	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	26,258,916	50,777,768	24,518,852
1899	591	16,871	5,817,855	15,654,295	29,469,406	13,815,111
1889	278	11,118	4,526,021	8,588,342	18,047,067	9,458,725
1879	247	6,555	1,661,044	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 waterproof 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	573,473

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	3,152,466
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.

Table 95	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	428	1,982	$860,460	$688,621	$2,567,569	$1,878,948
1904	363	1,736	674,929	489,285	1,918,286	1,429,001
1899	805	1,318	443,380	622,185	1,755,256	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	506,732

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:

Table 96	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:

Table 97 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	$3,809,749	$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:

Table 98	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	156	2,638	$1,170,690	$2,722,523	$6,129,640	$3,407,117
1904	140	2,498	1,012,768	2,019,067	4,753,266	2,734,199
1899	109	1,569	471,114	1,596,875	3,049,481	1,452,606
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 [1]	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.

Table 99	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value addep by manufacture.
1909	55	934	$317,930	$1,087,226	$1,984,349	$897,123
1904	31	374	115,487	486,872	854,692	367,820
1899	36	509	148,933	547,165	1,038,052	490,887
1889	29	321	96,189	195,587	455,849	260,262
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.

Table 100	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	15	272	$95,242	$311,246	$578,505	$267,259
1904	14	271	91,379	189,780	446,815	257,035
1899	13	339	101,626	242,950	480,114	237,164
1889	6	80	14,604	26,535	60,254	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.

Table 101	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	668,828
1899	9	1,197	237,282	516,137	1,165,330	649,193
1889	24	383	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:

Table 102	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	6	113	$42,183	$231,992	$338,497	$106,505
1904	6	142	48,945	240,929	361,198	120,269
1899	7	171	51,343	283,862	440,237	156,375
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.

Table 103 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:

Table 104	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	3,852,948
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	687,288	2,548,768	4,211,579	1,662,811
1859	49	1,538	517,296	2,375,975	3,602,216	1,226,241
1849	56	650	178,854	829,706	1,256,994	427,288

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

Table 105 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 burlaps, 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.

Table 106 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**	**$8,068,694**	**$13,053,561**	**$4,984,867**
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	505,968	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:

Table 107	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	$8,068,694	$13,053,561	$4,984,867
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."

Table 108	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	$11,398,011	$2,561,422
1904	41	1,559	494,565	6,825,261	8,343,328	1,518,067
1899	25	1,091	326,627	3,999,915	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.

Table 109	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	37	631	$386,915	$4,103,250	$5,180,856	$1,077,606
1904	34	681	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 subgroups: (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 subgroups 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 [1]	**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	391,429,283	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	3,963,075	30,886,270	7,944,361
Tin plate and terneplate	31	5,352	3,314,874	47,969,645	6,080,211
Wire	56	18,084	10,315,722	84,486,518	23,943,587
Industries making more highly elaborated products	**16,135**	**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	20,155,860
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	4,095.473
Foundry and machine-shop products	13,253	531,011	321,520,917	1,228,475,148	688,464,009
Locomotives, not made by railroad companies	16	14,909	8,914,266	31,582,302	16,522,319
Pens, steel	5	699	230,030	576,696	481,430
Pumps, not including steam pumps	102	2,136	1,258,224	5,582,962	3,096,360
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	8,785,642	6,081,645
Screws, machine	43	1,667	970,088	3,014,112	1,853,634
Screws, wood	11	3,464	1,453,932	6,198,955	3,890,429
Sewing machines, cases, and attachments	47	19,296	11,102,026	28,262,416	16,807,771
Springs, steel, car and carriage	54	3,196	1,852,917	9,005,362	4,278,092
Stoves and furnaces, including gas and oil stoves	576	37,130	22,944,279	78,853,323	49,515,062
Typewriters and supplies	89	9,578	6,221,423	19,718,767	15,641,421
Vault lights and ventilators	37	327	227,761	956,720	618,390
Wirework, including wire rope and cable	611	12,348	6,331,158	41,937,952	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.

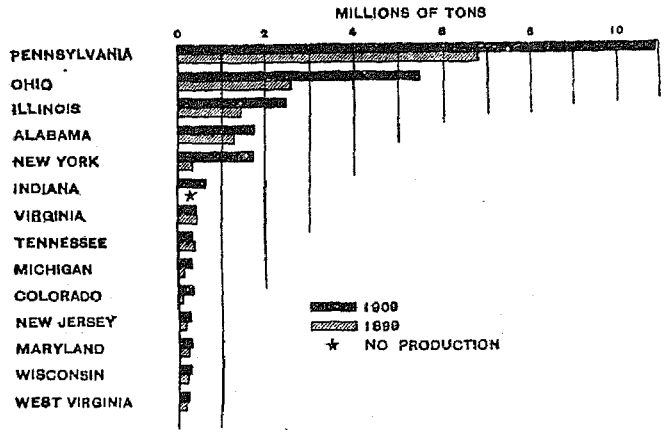
At the census of 1879 the practice with reference to the classification of rolling mills making more advanced commodities from the rolled material appears to have been substantially similar to that pursued in 1899, 1904, and 1909, thus rendering the figures for the industries in question for that census 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:

Table 111 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.

Table 112 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	586,685
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.

Table 113	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	52,880,789
1899	223	39,241	18,484,400	131,503,655	206,756,557	75,252,902
1889	304	33,415	14,614,453	110,098,615	145,643,153	35,544,538
1879	341	41,695	12,655,428	58,619,742	89,315,569	30,695,827
1869	386	27,554	12,475,250	45,498,017	69,640,498	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.

Table 114

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	2,858,599	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 reenforced concrete	191,358	5,588,963
Wire rods	2,295,279	61,947,958
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	64,514,728
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	4,887,796	108,514,747
Rolled forging blooms and billets	84,383	2,247,133
Sheet and tin-plate bars	1,652,761	37,745,269
Muck and scrap bar	174,496	4,986,211
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.

Table 115

	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	$657,500,856	$985,722,534	$328,221,678
1904	415	207,562	122,491,993	441,204,432	673,965,026	232,760,594
1899	445	183,249	102,335,876	390,895,277	597,211,716	206,316,439
1889	415	137,766	74,659,498	217,174,230	333,044,366	115,870,136
1879	451	99,103	42,796,082	132,651,408	207,242,116	74,590,708
1869	422	50,001	27,039,731	90,028,115	137,568,198	47,540,083

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.

Table 116

	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	798,981	543,239
1899	7	231	117,427	210,537	497,619	287,082
1889	4	474	241,894	519,449	1,110,032	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.

Table 117	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	108	11,345	$5,793,243	$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.

Table 118	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	29	1,601	$874,340	$1,282,905	$3,005,685	$1,722,780
1904	24	699	407,390	601,754	1,477,235	875,481
1899	13	117	85,683	115,718	319,629	203,911
1889	7	46	30,764	29,792	88,515	58,723
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.

Table 119	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	$10,053,589
1904	138	5,665	3,428,190	5,752,315	12,110,395	6,358,080
1899	90	4,688	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	4,166,866
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; horseshoe 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.

Table 120	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	$3,972,412	$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	11,266,780
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	6,069,195	9,857,223	3,788,028
1849	87	5,231	1,812,972	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.

Table 121	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.

Table 122 KIND.	Quantity (pounds).[1]	Value.[1]
Total		$47,969,645
Tin plate and terneplate	1,315,313,132	45,815,148
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.

Table 123	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	$41,889,434	$47,969,645	$6,080,211
1904	36	4,847	2,388,070	31,375,714	35,283,360	3,907,646
1899	57	3,671	1,889,917	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	120,585,637
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	6,683,771
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	$84,486,518	$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	$17,581,244	$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	584	11,643	6,048,587	7,249,567	20,407,372	13,157,805
1899	446	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.

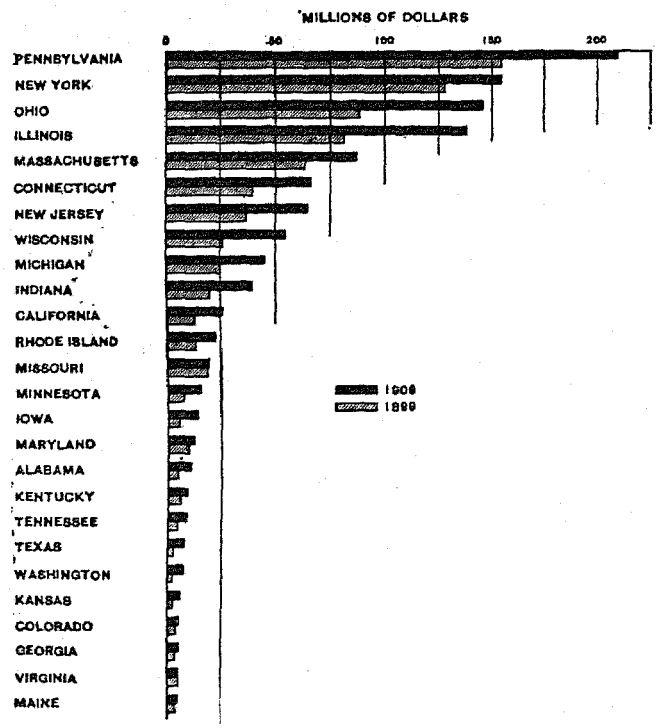
There is no way of measuring statistically the amount of such overlapping. While "foundry and machine-shop products," expressly described as such, were reported in 1909 by many establishments assigned to other classifications, the addition of the value of products so reported to the total for establishments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

Table 131

ESTABLISHMENTS MANUFACTURING PRIMARILY—	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	56,581,953
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.
Lightning 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 machines.
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	$239,802,873	$368,025,308	$883,947,730	$515,922,422
1904	8,992	348,378	196,244,931	278,072,763	685,893,788	407,821,025
1899	9,351	352,574	183,234,449	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:

Table 133	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	1,089	40,234	$26,422,372	$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	17,158	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.

Table 134	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	16,631,214	45,770,171	29,138,957
1899	381	26,463	11,422,758	14,605,244	35,846,656	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	4,402,958	10,903,106	6,500,148
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.

Table 135	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	288	23,378	$13,890,699	$22,534,208	$54,083,505	$31,549,297
1904	176	11,690	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:

Table 136	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	21,542,485	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:

Table 137	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	998	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:

Table 138	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	3,395	1,623,890	1,830,108	4,820,726	2,990,618
1899	80	2,940	1,217,202	1,690,168	4,149,489	2,459,321
1889	102	2,917	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.

Table 139	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	463,377	1,000,220	536,843
1899	23	663	307,991	602,856	1,247,730	644,874
1889	22	372	193,780	389,701	823,010	433,309
1879	20	773	280,169	525,175	1,065,824	540,649
1869	31	389	185,751	512,537	1,023,010	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."

Table 140	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	59,552,092	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.

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	663	204,778	103,005	473,847	370,842
1899	3	473	138,433	52,466	294,340	241,874
1889	3	496	132,032	56,630	268,259	211,629
1879	3	280	88,500	38,950	164,000	125,050
1869	3	257	60,000	49,943	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:

Table 142	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	718,941	1,192,754	2,852,623	1,659,869
1899	130	632	247,193	637,768	1,341,713	703,945
1889	256	1,754	827,574	1,681,275	4,103,410	2,422,135
1879	411	1,731	652,749	2,038,634	3,644,631	1,605,997
1869	465	1,905	663,594	970,547	2,818,457	1,847,910
1859	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," "windmills," 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.

Table 143	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	$5,048,011
1904	31	3,488	2,162,246	3,211,336	7,861,069	4,649,733
1899	35	2,033	1,017,237	1,689,148	3,927,867	2,238,719
1889	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	3,352,396	1,921,313
1869	65	1,639	917,263	967,810	2,728,336	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; slitters; and hack and other saws for cutting metals.

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

Table 144	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	$6,623,865
1904	83	4,650	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
1889	95	2,676	1,583,526	2,346,401	5,572,992	3,226,591
1879	89	2,566	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.

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	3,183	1,754,789	1,633,150	6,002,638	4,369,488
1899	86	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	956,394
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:

Table 146	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	1,760,973
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.

Table 147	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	$2,308,526	$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.

Table 148 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	$28,262,416	$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.

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	$1,994,589	$3,259,030	$5,751,772	$2,492,742
1904	8	4,450	2,028,933	2,593,141	5,272,547	2,679,406
1899	7	2,653	1,065,180	1,533,880	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	1,946,489	3,786,763	7,723,697	3,936,934

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, copy-holders, 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.

Table 155	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	69	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.

Table 156	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	323,862
1899	14	138	81,184	140,719	338,111	197,392
1889	15	174	115,780	185,529	455,413	269,884
1879	12	115	66,204	108,931	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.

WIREWORK, 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 reenforcement 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.

Table 157 ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	611	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	11,695,811	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:

Table 158	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	10,813,342	19,840,382	9,027,040
1889	569	6,954	3,085,591	8,325,435	15,552,857	7,227,422
1879	305	4,459	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:

Table 159 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	$867,948,552
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	5,695,356	3,359,948
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	11,714,552	60,248,260	23,320,419
Cork cutting	62	3,142	1,098,019	5,909,938	2,505,317
Furniture and refrigerators	3,155	128,452	65,617,975	239,888,506	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	7,950,076
Matches	26	3,631	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	14,971,500	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.

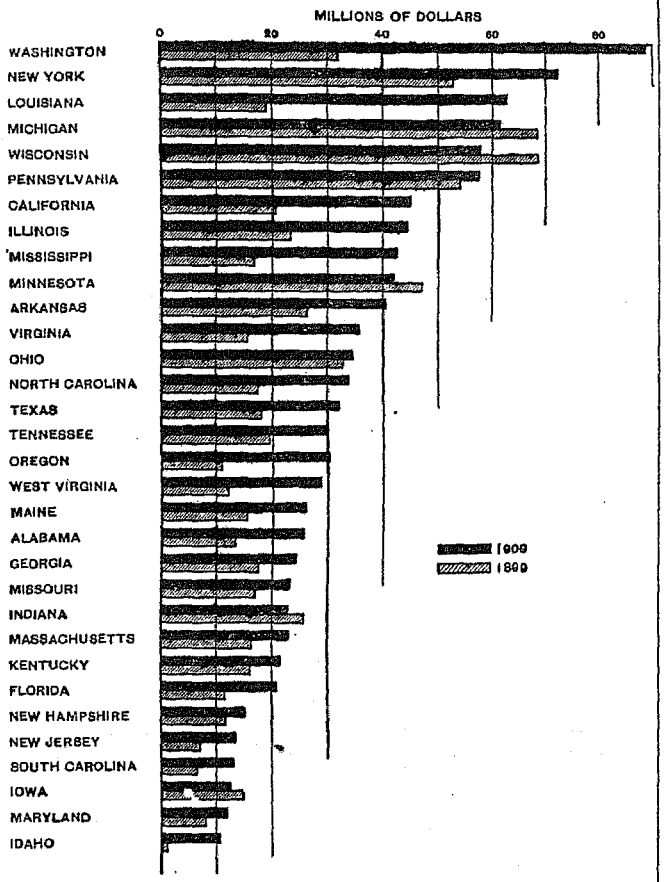
Table 160 CLASS.	Number of establishments.	Wage earners.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	40,671	695,019	$318,739,207	$508,117,579	$1,156,128,747	$648,011,168
Sawmills and logging establishments	33,090	547,178	238,866,806	265,559,595	753,388,368	487,828,773
Planing mills	6,402	112,392	64,536,409	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.

Table 161	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	$487,828,773
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	311,886	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[1]	18,769	55,810	13,787,852	28,323,792	60,413,187	32,084,395

[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:

Table 162 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	30,262,462
All other products		28,682,608

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.

Table 163	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	50,713,607	143,137,662	247,441,956	104,304,294
1899	4,198	73,510	32,621,704	99,568,501	167,786,122	68,217,621
1889	3,670	79,923	42,221,856	104,926,834	183,681,552	78,754,718
1879	2,491	37,187	14,431,654	45,268,462	73,424,681	28,156,219
1869	2,783	34,766	16,716,528	46,946,585	80,277,550	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.

Table 164	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	1,179	35,449	$15,335,992	$46,478,402	$75,342,488	$28,864,026
1904	1,023	30,329	12,171,194	33,478,991	57,047,743	23,568,752
1899	892	21,999	7,821,388	22,777,573	38,163,633	15,386,060
1889	636	13,006	5,615,707	14,244,503	25,513,180	11,268,677
1879	602	7,722	2,769,135	7,674,921	12,687,068	5,012,147
1869	696	5,303	2,068,318	4,590,062	8,964,903	4,374,841
1859	390	2,035	743,357	1,419,643	2,939,917	1,520,274
1849	246	990	308,868	514,738	1,099,936	585,148

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."

Table 165	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	$5,695,356	$3,359,948
1904	436	5,106	1,730,932	1,803,290	5,187,263	3,383,973
1899	454	4,217	1,212,999	1,394,528	3,630,454	2,301,926
1889	403	3,303	1,004,021	1,398,483	3,633,592	2,235,109
1879	304	3,119	657,405	867,031	1,992,851	1,125,820
1869	295	1,779	386,091	391,743	1,105,669	803,926
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."

Table 166	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.

Table 167	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	$8,491,062	$4,178,038
1904	297	6,282	2,120,468	3,809,961	7,786,286	3,976,325
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	104	783	242,130	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.

Table 168	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.

Table 169 ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	1,693	26,269	$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:

Table 170	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	15,273,706
1869	4,961	23,314	7,819,813	12,831,796	26,863,734	14,031,938
1859	2,707	13,750	4,284,704	4,105,203	11,343,221	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 subclassification 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.

Table 171	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	3,878,015	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	2,518,430
1859	229	1,933	619,062	835,273	2,108,656	1,273,383
1849	197	1,360	372,132	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:

Table 172	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	62	3,142	$1,098,019	$3,434,621	$5,939,938	$2,505,317
1904	50	2,895	888,240	2,459,197	4,490,952	2,031,755
1899	62	2,340	687,796	2,403,829	4,392,364	1,988,535
1889	65	2,019	636,869	1,501,902	2,840,359	1,338,457
1879	46	792	232,846	976,274	1,566,555	590,281
1869	27	482	144,518	426,739	754,530	327,791
1859	13	86	21,268	54,911	141,000	86,089
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.

Table 173 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**	**$65,617,975**	**$108,774,842**	**$239,886,506**	**$131,111,664**
Furniture	3,024	123,426	62,935,245	103,863,033	229,197,231	125,334,198
Refrigerators	131	5,026	2,682,730	4,911,809	10,689,275	5,777,466

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 bookcases, bedsteads, dressers, chiffoniers, wardrobes, shirtwaist 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	47,123,488	76,331,792	170,488,252	94,156,460
Store, bar, and office furniture	687	16,955	10,484,663	14,380,195	34,312,602	19,932,407
Metal furniture	152	9,967	5,327,094	12,151,046	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	49,883,235	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	59,304	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	42,861,460
1859	3,594	27,106	8,909,998	8,181,250	25,632,293	17,451,043
1849	4,242	22,010	6,638,568	6,089,546	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	3,271,767	7,347,935	4,076,168
1899	95	3,329	1,287,488	2,476,513	5,317,886	2,841,368
1889	82	2,178	1,033,832	2,377,958	4,513,616	2,135,658
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	$4,158,933	$2,834,478
1904	55	1,208	797,714	767,712	2,519,771	1,752,059
1899	65	1,131	649,654	526,570	1,879,742	1,353,072
1889	52	696	485,743	331,225	1,239,065	907,840
1879	62	537	308,975	221,905	765,296	543,391
1869	60	510	262,212	137,657	665,703	528,046
1859	77	434	134,884	93,818	424,279	330,461
1849	43	284	104,152	38,420	240,936	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	6,625	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	4,764,971
1869	320	3,587	1,623,653	2,466,313	5,962,235	3,495,922
1859	199	1,896	704,274	1,228,831	2,854,132	1,625,301
1849	108	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	$4,598,878	$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	6,005,937	2,585,197
1889	27	1,696	473,556	935,008	2,193,638	1,258,630
1879	37	2,219	535,911	3,298,562	4,668,496	1,369,934
1869	75	2,556	616,714	1,179,666	3,540,008	2,360,342
1859	75	1,252	179,450	229,720	698,566	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.

Table 180	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	$799,169
1904	17	696	283,658	719,161	1,467,407	748,246
1899	22	691	283,835	646,639	1,267,013	620,374
1889	9	252	111,484	122,851	352,582	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.

Table 181	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	9	109	$51,394	$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	16,075	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:

Table 182	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	99	1,331	718,102	1,077,345	2,569,557	1,492,212
1879	93	692	329,230	519,585	1,172,172	652,587
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 parquetry 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 parquetry 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.

Table 183	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	10	184	$138,151	$227,735	$490,389	$262,654
1904	20	373	268,886	350,937	801,266	450,329
1899	31	608	362,112	418,343	1,056,702	638,359
1889	6	309	136,932	210,814	511,700	300,886
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:

Table 184	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	1,050	14,139	$6,213,224	$9,743,696	$22,198,572	$12,454,876
1904	1,097	14,637	6,031,148	8,578,415	20,169,173	11,590,758
1899	1,166	11,558	4,370,713	5,829,996	14,317,573	8,487,577
1889	872	7,402	3,333,553	3,947,227	10,939,647	6,992,420
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	2,468,434	1,521,908
1849	479	1,828	575,572	434,860	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:"

Table 185 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.

Table 186	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.

Table 187	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	50,097	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:

Table 188 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:					
Leather, tanned, curried, and finished	919	62,202	32,102,845	327,874,187	79,595,254
Finished products	4,809	247,564	123,008,033	664,839,135	243,243,550
Belting and hose, leather	139	3,000	1,860,880	23,691,887	8,069,284
Boots and shoes, including cut stock and findings	1,918	198,207	98,462,695	512,797,642	180,059,429
Gloves and mittens, leather	377	11,374	4,753,830	23,630,598	10,422,597
Leather goods	2,375	34,907	17,920,628	104,719,008	44,692,240

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:

Table 189 KIND.	Quantity.[1] Amount.	Quantity.[1] Unit.	Value.[2]
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	718,562
Splits	2,912,964	Number	2,077,420
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	12,236,687
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.

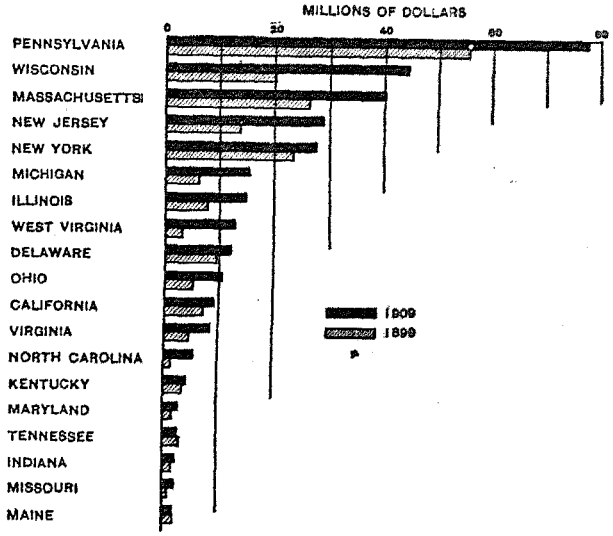
[2] In addition, leather to the value of $6,231,374 was tanned, curried, or finished, and consumed by establishments engaged primarily in the manufacture of the following products: belting and hose, leather; boots and shoes, including cut stock and findings; dyestuffs and extracts; furniture and refrigerators;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

Table 190	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	$79,595,254
1904	1,049	57,239	27,049,152	191,179,073	252,620,986	61,441,913
1899	1,306	52,109	22,591,091	155,000,004	204,038,127	49,038,123
1889	1,787	42,392	21,249,989	122,946,721	172,136,092	49,189,371
1879	5,628	40,282	16,503,828	156,384,117	200,264,944	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	8,175,508	49,812,659	75,628,747	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:

Table 191 KIND.	Hides and skins taken from animals killed. Total.	In slaughter-houses, rendering establishments, etc.	On farms and ranges.
Total	**33,665,169**	**30,476,414**	**3,188,755**
Beeves	13,764,686	12,356,046	1,408,640
Calves	5,196,043	4,064,443	1,131,600
Sheep and lambs	14,274,413	13,744,887	529,526
Goats and kids	287,497	168,508	118,989
Horses and colts	114,834	114,834	.....
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	139	3,096	$1,860,889	$15,622,603	$23,691,857	$8,069,284
1904	117	2,092	1,164,548	9,317,206	14,220,306	4,903,100
1899	104	1,667	913,877	7,499,952	10,622,522	3,122,570
1889	93	1,342	780,615	6,132,704	8,633,634	2,500,930
1879	86	1,227	606,087	5,019,853	6,525,737	1,505,884
1869	91	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	15,208	111,785	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

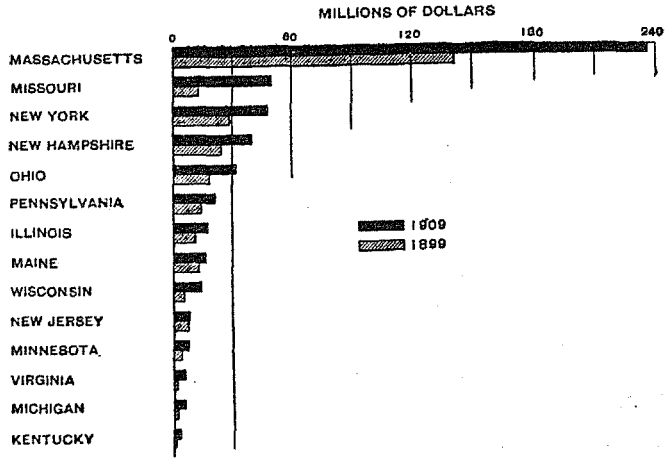
BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.

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**	**138,297**	**$98,462,695**	**$332,738,213**	**$512,797,642**	**$180,059,429**
Boots and shoes	1,343	185,116	92,359,152	277,467,743	442,630,726	165,162,983
Boot and shoe cut stock	232	6,693	3,156,466	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	93,888,892
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	$165,162,983
1904	1,316	149,924	69,059,680	197,363,495	320,107,458	122,743,963
1899	1,599	141,830	58,440,883	168,632,654	258,969,580	90,336,926
1889	2,082	133,690	60,667,145	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	2,230,691	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	2,812,024
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 KIND.	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	17,060,797
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	339	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	7,379,605	3,028,136
1869	221	4,058	980,549	1,884,146	3,998,521	2,114,375
1859	126	1,429	330,419	537,589	1,176,795	639,206
1849	110	1,938	233,496	322,837	708,184	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	$44,692,240
Saddlery and harness	1,347	14,632	8,071,484	33,177,937	54,224,602	21,046,665
Trunks and valises	524	11,122	5,537,329	14,629,065	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	1,698,834

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.

Table 201	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	1,347	14,632	$8,071,484	$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	7,562,622
1849	3,515	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.

Table 202	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	12,428,646	6,473,928
1889	395	6,032	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	3,315,038	7,725,488	4,410,450
1859	154	2,197	701,992	1,408,420	2,890,469	1,482,049
1849	116	1,320	386,160	765,816	1,558,388	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.

Table 203	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	$10,290,439	$18,838,281	$8,547,842
1905	423	7,785	3,137,125	9,626,614	17,655,345	8,028,731
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.

Table 204	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	2,281	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	484,947	930,033	1,769,036	839,003
1869	60	733	293,258	467,922	1,108,380	640,458
1859	46	820	156,996	354,264	706,037	351,773
1849	37	770	142,356	262,778	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.

Table 205 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	63,380,435
Bags, paper	74	3,212	1,306,342	15,697,959	5,343,367
Boxes, fancy and paper	949	39,514	14,015,383	54,450,015	28,733,774
Card cutting and designing	68	525	237,775	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	55,170,564	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	2,249,861	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	6,825,896

In this table the group is divided into four subgroups, 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.

Table 206 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	129,381,198	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:

Table 207	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	188,715,189	77,463,711
1899	763	49,646	20,746,426	70,530,236	127,326,162	56,795,926
1889	649	31,050	13,204,828	44,228,480	78,937,184	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	30,058,563	48,849,285	18,790,722
1859	555	10,911	2,767,212	11,602,266	21,216,802	9,614,536
1849	443	6,785	1,497,792	5,555,929	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.

Table 208 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	84,537	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, jute, tag, etc.)	73,731	6,989,436
Heavy (mill 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	2,639,496
Straw	171,789	3,750,851
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	4,431,514
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	444,255	17,955,748
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.

Table 209	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	$5,343,367
1904	62	2,473	930,171	6,594,976	10,086,863	3,491,887
1899	63	1,989	628,033	4,499,416	6,799,425	2,300,009
1889	56	1,200	399,714	3,167,717	5,023,793	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	1,483,963	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-

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.

Table 210	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	32,062	10,207,827	16,685,826	36,866,589	20,180,763
1899	729	27,653	8,151,625	11,765,424	27,316,317	15,550,893
1889	588	18,949	5,827,099	7,893,941	18,805,330	10,911,389
1879	369	9,678	2,373,948	3,578,827	7,665,553	4,086,726
1869	249	4,632	1,258,652	1,592,976	4,029,659	2,436,683
1859	110	1,601	358,658	467,350	1,162,777	695,427
1849	82	718	139,764	187,796	434,104	246,308

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.

Table 211	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	76,548	88,186	243,070	154,884
1879	9	64	18,215	15,610	51,670	36,060
1869	13	377	156,240	422,000	754,000	332,000
1859	5	184	55,776	115,845	485,700	369,855

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.

Table 212	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	$4,669,965	$2,759,626
1904	67	1,348	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	288,960	402,371	1,048,304	645,933
1879	19	328	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.

Table 213 — 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	5,886,526
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	9,415,643
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	1,551,781

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	10,222,366	4,247,418
1899	51	2,984	1,150,463	3,665,275	6,299,330	2,634,055
1889	41	2,325	812,544	2,530,793	4,855,680	2,324,887
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 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	$3,779,080	$1,111,225
1904	4	586	234,490	929,964	1,564,303	637,339
1899	5	626	264,427	705,527	1,270,416	564,889
1889	5	206	104,772	701,764	1,070,805	369,041
1879	8	345	116,410	637,971	959,145	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	2,265,125	1,928,103
1899	15	835	262,259	124,804	562,353	437,549
1889	27	409	108,526	85,269	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.

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**	**$164,628,189**	**$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	406,090,122	308,730,517
Printing and publishing, book and job	10,708	108,687	66,521,316	77,650,547	250,925,934	173,275,387
Printing and publishing, music	178	738	438,928	986,202	5,575,903	4,589,701
Lithographing	318	15,073	10,202,184	11,930,731	34,109,233	22,178,502
Bookbinding and blank-book making	1,054	19,938	9,676,270	11,629,906	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 principal industries in which such work is incidentally done are "boxes, fancy and paper," "stationery goods, not elsewhere specified," and "cash registers

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:

Table 219 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:

Table 220	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	96,857	59,821,488	70,354,474	309,301,854	238,947,380
1899	15,305	94,604	50,333,051	50,214,904	222,983,569	172,768,665
1889	12,362	85,975	50,824,359	38,955,322	179,859,750	140,904,428
1869	1,199	13,130	8,168,515	8,709,632	25,393,029	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.

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	40,822,965
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	29,523,777
Agricultural, horticultural, dairy, stock raising, etc.	316	11,327,253
Commerce, finance, insurance, railroads, etc.	264	1,411,738
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	228,828	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	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	3,468	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	336	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	2,849,371
History	613	954	2,923,187
Humor and satire	208	211	885,262
Juvenile	4,167	4,202	10,184,030
Law	535	862	1,496,194
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	1,980,824
Political and social science	658	689	1,862,429
Scientific and similar associations	1,082	1,141	1,258,562
Sports and amusements	412	423	2,430,074
Theosophy and religion	5,096	6,539	23,608,230
Useful arts	512	538	1,104,599
Works of reference	1,560	1,927	7,799,590

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	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	4,147,783	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	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	318	15,073	$10,202,184	$11,930,731	$34,109,233	$22,178,502
1904	248	12,614	8,198,676	8,349,823	25,345,266	16,895,443
1899	263	12,994	6,882,168	7,886,045	22,240,679	14,354,634
1889	219	9,656	5,855,330	6,265,464	17,988,157	11,722,693
1879	167	4,322	2,307,302	2,755,264	6,912,338	4,157,074
1869	91	1,399	837,732	735,810	2,515,684	1,779,874
1859	53	786	338,868	229,206	848,230	619,024
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.

Table 228	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	20,790,858	13,088,315
1889	805	12,473	5,508,483	6,007,417	17,067,780	11,060,363
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	14,077,309	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	1,665,348

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:

Table 229	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	$7,214,880
1904	215	3,580	2,227,850	1,553,618	5,943,080	4,389,462
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.

Table 230	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	$1,399,097
1904	305	1,573	1,032,232	376,409	2,422,487	2,046,078
1899	277	964	543,004	203,046	1,468,202	1,265,156
1889	382	1,168	696,651	434,506	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	566,005	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.

Table 231	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	63,007	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:

Table 232	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	4,190,002	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:

Table 233	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	$6,383,694	$4,618,592
1904	146	2,679	1,993,067	1,032,053	5,005,338	3,973,285
1899	140	2,408	1,458,977	766,603	3,772,025	3,005,422
1889	81	1,289	823,885	500,744	2,183,909	1,683,165
1879	45	642	312,208	200,491	724,689	524,198
1869	36	766	446,532	220,774	1,075,080	854,306
1859	41	305	120,840	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:

Table 234 — 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 typewriting 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.

Table 235	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	883,595	746,176	2,727,759	1,981,583
1899	22	1,424	803,470	863,689	2,842,384	1,978,695
1889	38	1,920	1,121,511	1,434,092	3,916,904	2,482,812
1879	48	1,986	958,693	669,748	2,330,298	1,660,550
1869	31	1,331	729,105	819,938	2,180,001	1,360,063

Printing materials.—Establishments included under this subclassification manufacture principally printer's rules, sticks, chases, quoins, galleys, rollers, blocks, and blankets.

Table 236	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	239,036	372,480	1,207,163	834,683
1899	70	560	232,799	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	230,963

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.

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	6,072,809	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.

Table 238 INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total	7,347	77,827	$53,501,779	$674,311,051	$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	374,730,096	278,134,460
Liquors, vinous	290	1,911	971,502	13,120,846	6,495,313
Malt	114	1,760	1,348,067	38,252,233	7,787,934
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.

Table 239	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	805	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	81,648,318
1889	440	4,762	2,246,064	14,909,173	104,197,869	89,288,696
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	12,198,053	56,836,500	101,058,385	44,221,885
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	5,693,394	11,097,853	5,404,459
1899	359	1,163	446,055	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	828,564
1869	398	1,486	230,650	1,203,172	2,225,238	1,022,066
1859 [1]	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 increasing 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	23,620,984	30,288,984	6,668,000
1899	146	1,990	1,182,513	14,816,741	19,373,600	4,556,859
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	3,951,679
1869	208	1,640	700,624	9,002,094	12,016,515	3,014,421
1859	85	589	189,800	2,365,299	3,228,857	863,558
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	387	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.

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**	**237,988**	**$113,548,929**	**$1,430,901,954**	**$563,882,428**
Axle grease	38	176	88,318	1,480,811	652,698
Baking powders and yeast	144	2,155	1,045,544	20,774,588	11,436,603
Blacking and cleansing and polishing preparations	501	2,417	1,146,112	14,679,120	7,716,728
Bluing	82	313	113,812	1,074,231	580,489
Bone, carbon, and lamp black	27	228	149,327	1,093,494	643,886
Calcium lights	10	15	11,422	52,216	28,323
Candles	16	539	246,290	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	86	6,274	4,304,370	40,139,661	17,328,113
Fertilizers	550	18,310	7,477,179	103,960,213	34,438,293
Gas, illuminating and heating	1,296	37,215	20,930,697	166,814,371	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	36,738,694	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	9,363,359	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	38	176	$88,318	$828,113	$1,480,811	$652,698
1904	25	119	61,598	368,074	879,483	511,409
1899	29	127	55,238	360,411	718,114	357,703
1889	31	126	61,642	401,897	846,459	444,562
1879	16	72	41,407	209,152	365,048	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.

This page was inadvertently omitted during scanning.

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	203,396	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	107,565	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:

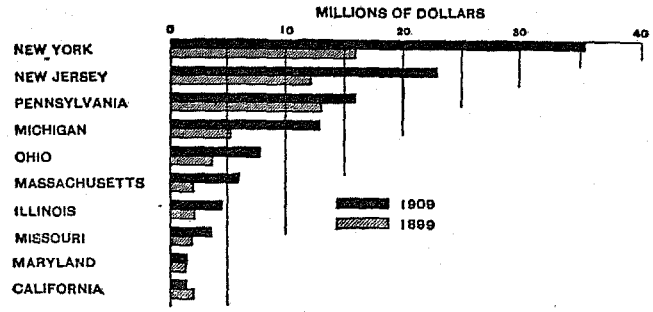
Table 253	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	511	28,687	$17,042,243	$75,383,215	$137,309,942	$61,926,727
1904	448	24,525	13,361,972	51,883,219	92,088,378	40,205,159
1899	433	19,020	9,393,236	34,545,862	62,637,008	28,091,146
1889	563	15,038	7,308,411	33,694,927	59,352,548	25,657,621
1879	595	9,724	4,222,663	24,665,766	38,640,458	13,974,692
1869	408	5,119	2,252,856	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	$117,688,887	$53,567,351
1904	275	19,806	10,789,780	42,062,611	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] Amount.	Quantity.[1] Unit.	Value.[1]
Total value			$117,688,887
Acids			11,926,380
Acetic	51,963,788	Pounds	1,136,134
Boric	5,554,414	Pounds	295,739
Citric	2,102,206	Pounds	777,200
Hydrofluoric	4,790,963	Pounds	214,657
Muriatic	123,394,736	Pounds	1,171,082
Oleic	13,337,717	Pounds	680,015
Phosphoric	25,702,606	Pounds	505,791
Other			7,145,771
Sodas			21,417,982
Soda ash	646,007	Tons	10,361,756
Sal soda	76,285	Tons	977,712
Bicarbonate of soda	82,800	Tons	1,515,031
Caustic soda	112,152	Tons	4,230,954
Borax	20,154	Tons	1,766,910
Other			2,565,619
Potashes	1,866,570	Pounds	88,940
Alums			2,578,842
Alum cake	26,884,880	Pounds	273,711
Potash alum	7,939,702	Pounds	123,623
All other			2,176,508
Coal-tar products			2,675,327
Coal-tar distillery products			2,462,330
Chemicals made from coal-tar distillery products			212,997
Cyanides			1,941,393
Yellow prussiate of potash	3,510,208	Pounds	463,983
All other			1,477,910
Bleaching materials			1,635,046
Hydrogen peroxide	9,403,717	Pounds	850,417
Bisulphites	14,528	Tons	202,504
All other			582,125
Chemical substances produced by the aid of electricity			$17,963,277
Calcium carbide	121,946,967	Pounds	2,984,001
Caustic soda	19,423	Tons	1,032,647
Chlorates	11,568,915	Pounds	904,525
Hypochlorites	45,976	Tons	1,506,831
All other			11,540,273
Plastics			7,180,172
Pyroxylin plastics			5,389,819
All other	10,234,928	Pounds	1,790,353
Compressed or liquefied gases			4,969,805
Anhydrous ammonia	11,802,076	Pounds	2,503,315
Carbon dioxide	47,238,267	Pounds	2,317,808
Laughing gas	72,675	Pounds	33,689
Oxygen	4,777,977	Gallons	98,150
All other			16,843
Fine chemicals			10,956,666
Alkaloids	3,482,492	Ounces	3,188,691
Gold salts	42,544	Ounces	430,944
Silver salts	2,027,719	Ounces	726,222
Platinum salts	1,561	Ounces	19,123
Chloroform	1,861,435	Pounds	472,759
Ether	1,177,886	Pounds	199,448
Acetone	6,927,886	Pounds	719,895
All other			5,199,584
Chemicals, not elsewhere specified:			
Glycerin	33,986,974	Pounds	4,838,826
Epsom salts	47,785,318	Pounds	357,728
Blue vitriol	810,958	Pounds	37,626
Copperas	24,199,526	Pounds	71,081
Phosphates of soda	35,178,354	Pounds	634,292
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 $9,105,458 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 rosin; and in others of minor importance.

These products include the following:

	Quantity.	Value.
Total value		$9,105,458
Acids:		
Acetic ... pounds	4,959,985	200,740
Hydrofluoric ... pounds	2,051,951	79,722
Muriatic ... pounds	74,805,743	587,253
Oleic ... pounds	2,959,346	165,091
Stearic ... pounds	5,094,774	399,386
Other [a]		49,520
Sodas:		
Sal soda ... tons	10,822	184,297
Other [b] ... tons	75,902	1,835,292
Potashes ... pounds	14,293,552	525,054
Alums ... pounds	49,450,260	443,513
Coal-tar distillery products		1,610,792
Bleaching materials:		
Hydrogen peroxide ... pounds	521,851	20,124
Bisulphites ... tons	1,531	23,650
Other		20,703
Pyroxylin plastics		$292,560
Compressed or liquefied gases:		
Anhydrous ammonia [c] ... pounds	167,770	40,923
Corbon dioxide ... pounds	454,354	19,262
Laughing gas ... pounds	24,500	4,900
Oxygen ... gallons	23,826,325	79,319
Other		9,072
Chloroform ... pounds	8,250	4,779
Acetone ... pounds	2,007,560	210,287
Glycerin [d] ... pounds	1,022,920	123,472
Blue vitriol ... pounds	37,185,585	1,495,645
Copperas ... pounds	3,031,556	53,372
Phosphates of soda ... pounds	310,558	27,034
Zinc salts ... pounds	4,312,988	103,503
Other chemicals		495,183

[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 46,896,021 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	$1,404,894	$5,385,828	$9,884,057	$4,498,229
1904	32	2,447	1,505,406	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.

Table 257 KIND.	Quantity.[1] Amount.	Unit.	Value.[1]
Total			$9,884,057
Acids			7,567,274
Sulphuric, total, reduced to 50° Baumé	855,191	Tons	5,629,496
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	8,396,326	Pounds	499,303
Mixed	45,361,626	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, mucilage 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:

Table 258	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	$5,875,851	$9,736,998	$3,861,147
1904	141	2,272	1,066,786	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.

Table 259	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	25	922	$464,128	$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.

Table 260	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	6,500,928	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	539,727
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:

Table 261 KIND.	Quantity (pounds).	Value.[1]
Total		$15,954,574
Artificial dyestuffs	12,267,399	3,462,436
Extracts:		
Hemlock	12,588,078	280,487
Logwood	22,317,248	991,974
Oak and chestnut	287,908,285	6,061,162
Sumac	3,148,790	107,456
Ground sumac	554,032	24,531
Ground bark	25,142,076	176,510
Ground and chipped wood	15,046,954	143,720
Gums and dextrins	16,148,931	610,999
Iron liquors	3,079,418	30,282
Mordants	1,735,887	69,515
Sizes	54,054,711	1,735,600
Tannic acid	5,085,748	249,297
Turkey-red oil	1,048,719	72,053
Other tanning liquors	9,285,048	365,304
All other products [2]		1,573,248

[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.

Table 262	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	29,602,884	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:

Table 263 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	1,736,427
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 guncotton 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, 70,289,667 pounds; sulphuric acid, 42,555 tons; nitric acid, 31,484 tons; charcoal, 737,884 bushels; and nitrate of ammonia, 10,904,319 pounds.

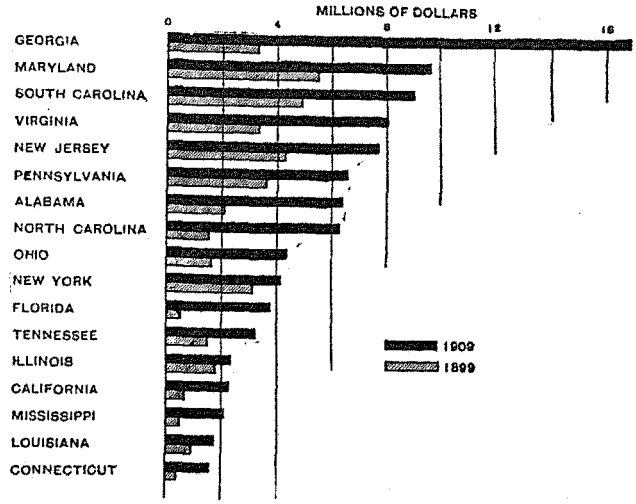
FERTILIZERS.

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.

Table 264	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	11,581	4,185,289	28,958,473	44,657,385	15,698,912
1889	390	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	3,808,025	5,815,118	2,007,093
1859	47	308	95,016	590,816	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:

Table 265 KIND.	Quantity (tons).[1]	Value.[1]
Total		**$163,960,213**
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		10,055,802

[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 superphoephates, 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.

Table 266	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	17,057,917	37,180,066	125,144,945	87,964,879
1899	877	22,459	12,436,296	20,605,356	75,716,693	55,111,337
1889	742	12,996	8,499,625	14,037,087	56,987,290	42,950,203
1869	390	8,723	6,546,734	10,869,373	32,048,851	21,179,478
1859	221	5,730	2,321,536	3,667,630	12,016,353	8,348,723
1849	30	952	390,684	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:

Table 267 KIND.	Quantity.[1] Amount.	Quantity.[1] Unit.	Value.[1]
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	[2] 78,339,880	Gallons	1,875,549
All other products [3]			13,556,908
Receipts from rents and sales of lamps			7,043,390

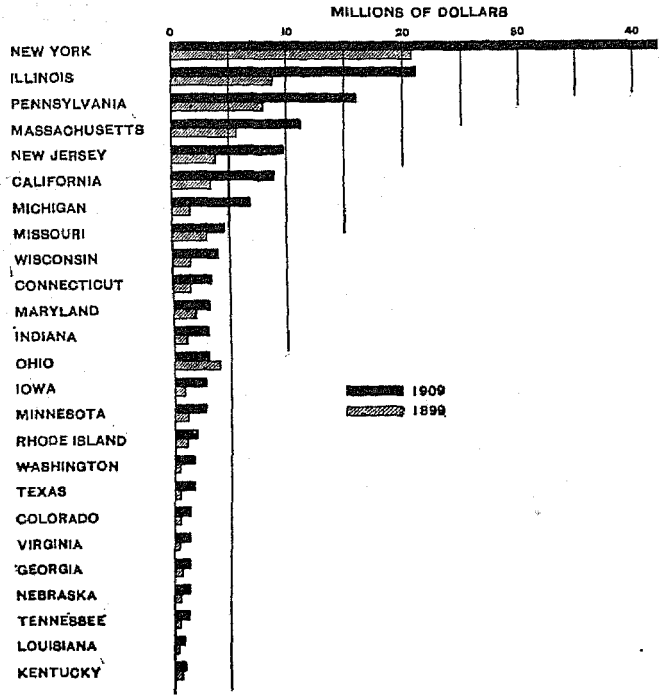
[1] In addition, products of gas manufacture to the value of $261,802 were reported by establishments engaged primarily in the manufacture of cotton goods, foundry and machine-shop products, ice, and lumber and timber products. The specific items reported were 27,558,000 cubic feet of coal gas, valued 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.

Table 268	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	5,389,006	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.

Table 269	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	184,787	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	1,881,038	1,022,734
1899	44	285	113,979	573,226	1,292,759	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	66	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	28,256	487,292	642,665	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	108	44,714	384,890	653,900	269,010
1869	6	94	46,950	537,250	757,700	220,450
1859	8	97	41,196	239,840	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	$119,833,475	$147,867,894	$28,034,419
1904	715	15,540	4,837,604	80,029,863	96,407,621	16,377,758
1899	369	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	183	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.

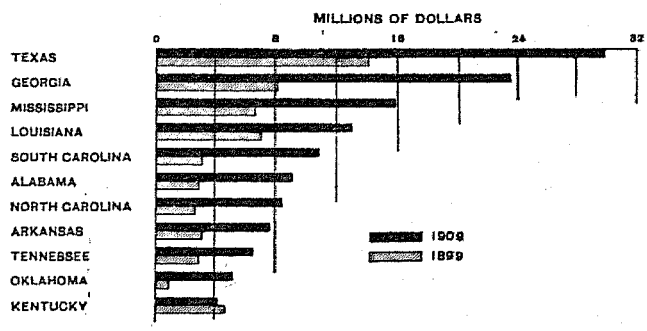
The quantity of cotton seed crushed by establishments in this industry in 1909 was 3,798,549 tons.

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.

[1] In 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.



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.

Table 275	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	255,847	126,112
1879	124	278	24,030	125,167	248,858	123,691
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:

Table 276 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 $117,489 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.

Table 277	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	2,788,556
1889	62	1,886	977,344	19,374,543	23,534,306	4,159,763
1879	81	1,416	681,677	12,874,294	15,393,812	2,519,518
1869	77	945	458,387	7,216,414	8,881,962	1,665,548
1859	94	814	284,694	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 manufacture 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.

Table 278	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	574,166	6,859,492	11,176,543	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.

Table 279 — 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	$8,270,713	$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:

Table 280 — KIND.	Quantity. Amount.	Quantity. Unit.	Value.[1]
Total			$124,889,422
Pigments			16,985,588
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	162,499,565	Pounds	6,874,333
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	11,279,459
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	3,481,231	Gallons	2,836,341
Spirit varnishes not turpentine	1,181,746	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	3,477,004	Gallons	1,912,594
Bleached shellac	3,014,195	Pounds	578,650
All other products			12,281,481

[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 copperas, 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.

Table 281	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	67,277,910	20,971,727
1899	419	8,151	3,929,787	33,799,386	50,874,995	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.

Table 282	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	190	1,852	1,200,431	13,520,491	23,561,699	10,041,208
1899	181	1,546	995,803	10,939,131	18,687,240	7,748,109
1889	140	1,145	732,715	7,805,663	13,795,510	5,989,847
1879	81	573	366,716	3,699,684	5,721,174	2,021,490
1869	59	415	252,059	3,311,097	4,991,405	1,680,308
1859	48	315	126,024	1,549,413	2,402,790	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.

Table 283 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	26,894,628	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.

Table 284	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	$26,894,628	$83,771,154	$56,876,526
1904	2,245	10,980	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
1889	1,127	7,058	2,955,383	11,030,916	32,620,182	21,589,266
1879	563	4,025	1,651,596	6,704,729	14,682,494	7,977,765
1869	319	2,436	1,017,795	7,319,752	16,257,720	8,937,968
1859	173	1,059	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.

Table 285	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	2,006,540	10,814,432	22,714,889	11,900,457
1889	1,805	2,031	839,686	2,411,861	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.

Table 286	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	568,646	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	1,001,595
1869	64	727	260,415	892,219	2,029,582	1,137,363
1859	33	535	146,076	460,194	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.

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	175,005,320	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	17,082,475
1879	86	9,869	4,381,572	34,999,101	43,705,218	8,706,117
1869	170	1,870	1,184,559	21,450,189	26,942,287	5,492,098
1859	78	1,473	556,284	3,062,227	6,397,680	3,335,453

The quantity and value of the various kinds of products are given in Table 288 for the census of 1909.

Table 288 KIND.	Quantity.[1] Amount.	Quantity.[1] Unit.	Value.
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, 48,580 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.

Table 289	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	$6,124,480
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	3,657,848
1879	268	4,289	1,260,023	2,074,049	4,829,566	2,755,517
1869	282	2,921	1,147,910	1,760,670	4,890,629	3,129,959
1859	399	2,213	371,954	1,054,780	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:

Table 290 KIND.	Quantity. Amount.	Quantity. Unit.	Value.[1]
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.

Table 291	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	5,056,611	46,536,823	72,164,062	25,627,239
1899	558	9,487	3,754,767	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	5,289	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.

Table 292	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	$39,178,359
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.

Table 293 KIND.	Quantity (pounds).[1]	Value.[1]
Total		$111,357,777
Hard soap	1,736,740,466	88,550,830
Soft soap	44,052,615	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, 527,370,128 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:

Table 294	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	$954,419
1904	17	816	293,935	2,911,215	3,889,362	978,147

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.

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.

Table 295	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	23,937,024	20,162,387
1899	1,503	41,864	8,393,483	6,186,492	20,344,888	14,158,396
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	2,638	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	2,855,657	1,371,339

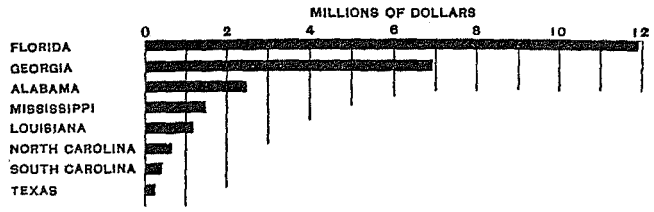
The decrease shown in value of products during the decade 1859–1869 was due primarily to the Civil War.

The values of turpentine and of rosin as reported for 1909 are shown in the following table:

Table 296 KIND.	Quantity.[1]		Value.[1]
	Amount.	*Unit.*	
Total			$25,295,017
Turpentine	28,988,954	Gallons	12,654,228
Rosin	3,263,857	Barrels (280 pounds).	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.

Table 297 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	11,552,746
Cement	135	26,775	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	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	786,293	475,176
Crucibles	12	335	180,216	1,849,326	760,144
Kaolin and ground earths	119	1,990	897,458	4,680,548	2,638,737
Pottery, terra-cotta, and fire-clay products	822	56,168	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	73,496,480
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 draintile, 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.

Table 298	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	$7,042,942	$18,595,688	$11,552,746
1904	477	2,506	1,402,858	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."

Table 299	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	29,873,122	17,658,009
1869	45	1,632	631,993	773,192	2,033,893	1,260,701
1859	14	740	206,460	262,920	767,080	504,160
1849	35	407	117,924	238,157	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.

Table 300 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.

Table 301	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	$6,710,666	$4,059,351
1904	34	801	451,016	705,220	2,062,120	1,356,900
1899	34	546	303,091	508,753	1,381,675	872,922
1889	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	102,460

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.

Table 302	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	274,748	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 [1]	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.

Table 303	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	47,804
1879	25	225	52,961	92,461	224,130	131,669
1869	39	286	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	1,936,150	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	15,741,801	10,073,938
1879	615	5,669	1,579,313	2,649,189	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	65,603	$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	22,248,395	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, bluestone, 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	59,155,327	41,342,218
1899 [1]	1,687	31,072	16,607,300	13,655,673	43,344,253	29,688,580
1889	1,321	21,950	15,314,598	16,232,430	41,924,264	25,691,834
1879 [2]	2,846	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	13,282,002
1859	1,806	15,379	5,672,211	5,345,526	16,244,044	10,898,518

[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.

Table 307	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	$38,404,579	$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	20,322,981	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."

Table 308	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	10,164,185	5,438,266
1869	321	1,513	533,407	1,430,140	2,691,851	1,261,711
1859	307	866	232,500	522,836	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.

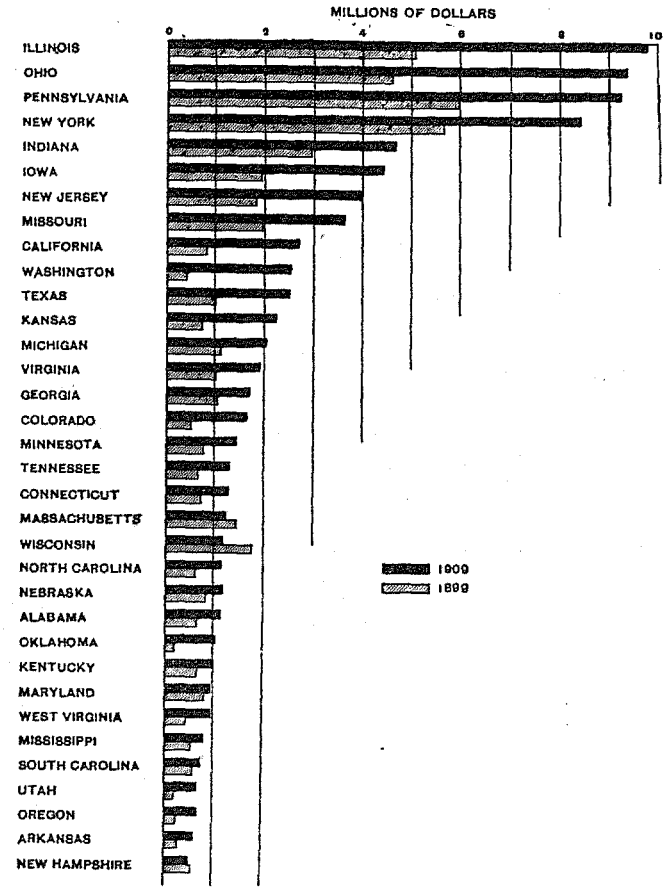
The figures for 1909 cover the entire quarrying and manufacturing operations of certain establishments which quarried gypsum and made wall plaster from it.

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.

Table 309	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	4,215	76,528	$37,138,584	$23,736,102	$92,776,504	$69,040,402
1904	4,634	66,021	28,646,005	16,316,499	71,152,062	54,835,563
1899	5,423	61,979	21,883,333	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.

Table 310	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	$786,293	$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.

Table 311	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	580,865
1899	11	671	250,654	1,673,290	2,607,308	934,018
1889	10	230	110,250	396,296	726,708	330,412
1879	11	694	284,169	955,841	1,445,641	489,800
1869	10	119	127,188	538,712	1,117,463	578,751
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.

Table 312	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	119	1,990	$897,458	$2,041,811	$4,680,548	$2,638,737
1904	131	2,157	898,700	1,868,901	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	1,516,572
1879	63	898	310,909	697,006	1,455,757	758,751
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.

Table 313	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	822	56,168	$29,753,495	$21,910,905	$76,118,861	$54,207,956
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	44,263,386	32,348,150
1889	707	18,980	8,869,032	5,618,401	22,057,090	16,438,689
1879	752	10,221	3,600,727	2,909,063	8,977,333	6,068,270
1869	777	6,116	2,247,173	1,702,705	6,045,536	4,342,831
1859	589	3,628	1,170,605	798,323	3,218,081	2,419,758
1849	518	2,456	655,334	294,351	1,578,628	1,284,277

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.

Table 314	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	194	1,699	$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.

Table 315	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	363	68,911	$39,299,624	$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	8,028,621	21,154,571	13,125,950
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.

Table 316 KIND.	Quantity. Amount.	Quantity. Unit.	Value.
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	9,182,060	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	1,124,485	Gross	
Battery jars and other electrical goods	9,981	Gross	
Patent and proprietary	1,637,798	Gross	
Packers and preservers	1,237,175	Gross	
Demijohns and carboys	122,570	Dozen	
All other products			2,369,987

GLASS, CUTTING, STAINING, AND ORNAMENTING.

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.

Table 317	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	$9,854,685
1904	453	8,379	4,359,199	4,845,393	13,137,653	8,292,260
1899	411	4,914	2,393,711	3,534,990	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	268,803	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.

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	8,004,301	3,008,630
1889	45	1,404	842,497	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	488,800	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."

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 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	23,677,383	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	9,144,930	1,733,397
Smelting and refining, copper	38	15,628	13,395,719	378,805,974	45,274,336
Smelting and refining, lead	28	7,424	5,430,652	157,405,650	15,442,628
Smelting and refining, zinc	29	6,655	4,210,341	34,205,894	8,975,893
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	35,196,842	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	18,861	10,393,078	45,057,372	24,590,015
Gold and silver, leaf and foil	88	1,383	636,967	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	2,064,378	6,694,095	4,365,421
Silverware and plated ware	183	16,610	10,281,761	42,228,547	23,896,440
Tin foil	10	683	303,711	3,418,818	1,142,245
Related industries	**507**	**4,164**	**2,439,111**	**11,847,889**	**4,924,005**
Electroplating	461	2,717	1,652,315	4,509,559	3,304,374
Galvanizing	46	1,447	786,796	7,338,330	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	569	337,507	10,863,752	13,099,838	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."

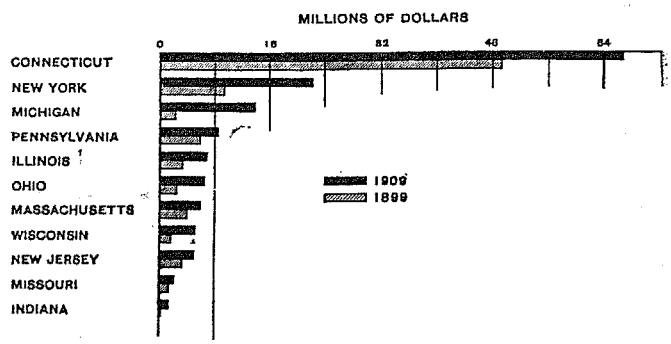
BRASS AND BRONZE PRODUCTS.

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	9,198,404
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.

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	12,094,827
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. Fireplace, 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.

Table 324	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	229	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	941,105

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.

Table 325	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	695,485	1,165,163	469,678
1879	7	153	64,072	498,470	670,912	172,442
1869	9	187	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.

Table 326	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	$492,310
1904	12	78	46,496	363,720	700,772	337,052
1899	10	162	98,796	1,152,635	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.

Table 327	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	$1,628,055
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	178,696	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.

Table 328	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	383,188	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	199	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 materials 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.

Table 329 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[1]	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.

Table 330	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	196,736,986	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.

Table 331 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	2,758	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.

Table 332	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	185,826,839	16,868,763
1899	39	8,319	5,088,684	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.

Table 333	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	$25,230,901	$34,205,894	$8,975,893
1904	31	6,528	3,856,466	17,028,418	24,791,299	7,762,881
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 copper ingots; 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.

Table 334	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	532,068	5,899,935	7,784,695	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.

Table 335 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	10,684	6,085,700	2,185,825	11,771,065	9,585,240
Watchcases	29	4,569	2,428,262	5,034,377	10,514,854	5,480,477
Watch and clock materials	26	643	287,863	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
1889	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	712,882
1849	23	800	278,508	456,834	1,181,500	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	$6,085,700	$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
1889	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	4,569	$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
1889	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	428,692	321,331
1899	20	331	152,234	105,549	345,347	239,798
1889	36	547	258,422	326,398	831,348	504,950
1879	22	324	101,050	149,315	350,695	201,380
1869	30	322	152,074	244,367	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	8,675,257	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.

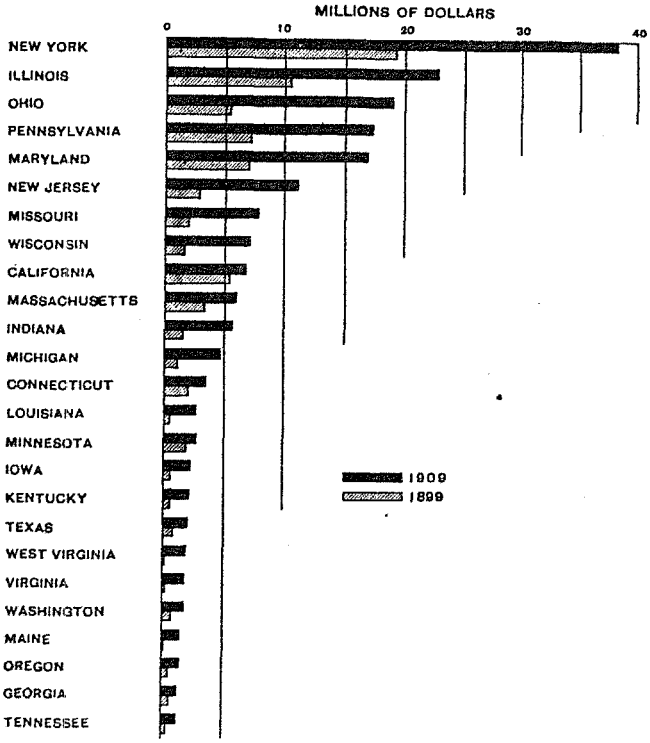
In addition to the products covered by the above table, establishments engaged primarily in the manufacture of stoves and furnaces, including gas and oil stoves, foundry and machine-shop products, and other products, and in canning and preserving reported, for 1909, copper, tin, and sheet-iron products 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
1889	7,002	31,377	15,610,265	31,217,522	66,653,746	35,436,224
1879	7,693	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	5,660,459	10,524,880	21,958,049	11,433,169
1899	139	10,002	3,730,241	7,333,028	14,546,191	7,213,163
1889	123	8,018	3,451,532	5,624,291	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.

Table 345	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	17,560,386	10,165,179
1899	221	6,513	3,111,083	4,464,729	11,479,960	7,015,231
1889	108	5,014	2,879,813	2,208,124	7,825,672	5,617,548
1879	35	3,069	1,469,287	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	162,756

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."

Table 346	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	2,066	1,035,960	1,542,092	4,039,359	2,497,267
1879	74	1,730	742,423	1,852,906	3,357,829	1,504,923
1869	40	558	286,843	403,295	995,289	591,994
1859	30	374	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.

Table 347	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	1,219,187
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	602,248
1869	51	613	264,408	621,773	1,411,431	789,658
1859	23	226	77,592	299,696	481,072	181,376

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.

Table 348	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	$36,674,859	$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	10,643,887	22,234,634	46,128,659	23,894,025
1889	783	13,880	8,038,327	16,110,219	34,761,458	18,651,239
1879	739	12,697	6,441,683	10,324,990	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	358,669	446,062	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	5,821,952	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	13,505,583	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	1,130,560	2,517,561	1,387,001
1869	55	815	542,113	1,222,428	2,344,357	1,121,929
1859[1]	106	1,344	556,140	2,266,784	3,571,654	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	6,281	3,360,425	5,448,619	12,138,886	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	932,756	1,738,806	3,676,460	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	907,083
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.

Table 354	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	461	2,717	$1,052,315	$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	46	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	$416,695,104	$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	156,606,871	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	57,828,255	159,958,811	102,130,556
1889	10,956	87,000	36,475,060	50,298,960	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	$156,606,871	$82,141,045
Chewing and smoking tobacco only	373	24,338	7,719,471	66,038,065	136,497,598	70,459,533
Snuff only	40	1,698	742,141	5,940,345	15,034,369	9,094,024
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 "tobacconists." 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	7,109,821	35,038,287	103,754,362	68,716,075
1889	395	29,790	6,947,158	29,192,249	65,843,587	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	21,820,535	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:

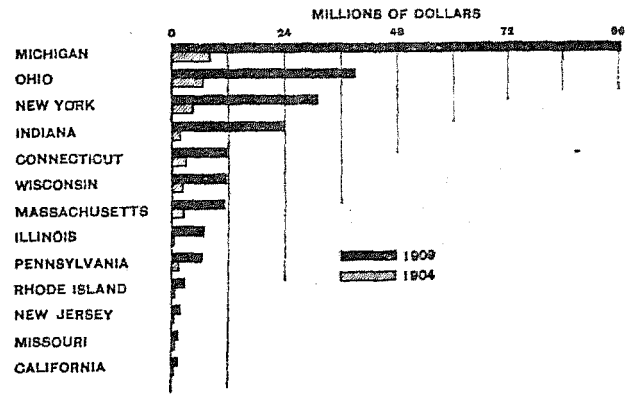
Table 361 INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total	**6,562**	**202,719**	**$121,047,239**	**$561,763,289**	**$255,226,614**
Automobiles, including bodies and parts	743	75,721	48,693,867	249,202,075	117,556,339
Carriages 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	3,549,396
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	4,676,255
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.



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."

Table 362 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	$48,693,867	$131,645,736	$249,202,075	$117,556,339
1904	178	12,049	7,158,958	13,151,365	30,033,536	16,882,171
1899	57	2,241	1,320,658	1,804,287	4,748,011	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	11,658,138	26,645,064	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	980,008	1,493,227	3,388,472	1,895,245

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.

Table 363 KIND.	Number.[1]	Value.[1]
Total		$249,202,075
Automobiles	126,593	164,269,324
Gasoline	120,393	153,529,653
Electric	3,826	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	387,526
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		[2] 78,584,753
Amount received for custom work and repairing		6,347,998

[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; foundry 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.

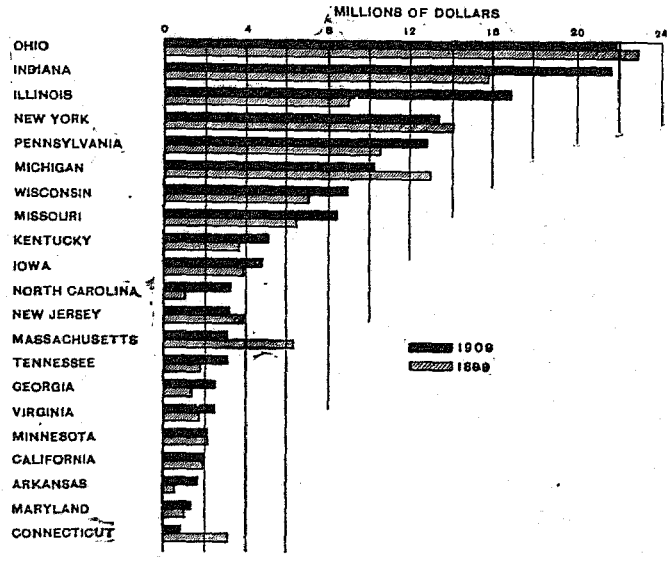
It is probable that the statistics here given for 1899 do not represent the extent of the industry as fully as do those for 1909 and 1904. The figures for 1909 by no means represent the full value of automobile parts and supplies made by establishments in other industries, since products of this character 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 $2,093,288; 104 public conveyances, valued at $5,615; 8,209 sleighs and sleds, valued at $165,917; 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	56,525	28,972,401	46,022,769	102,680,341	56,657,572
1879	3,841	45,394	18,988,615	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	14,223,190
1899	588	15,387	5,987,267	13,048,608	25,627,173	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	376,334
1859	8	25	8,436	12,884	29,790	16,906

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,

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:

Table 368	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	34,058	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	44,674,486	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:

Table 369. 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	2,023,922
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:

Table 370	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	$7,809,866	$3,549,396
1904	14	4,730	2,839,579	5,341,444	10,844,196	5,502,752
1899	20	3,585	1,950,876	3,966,863	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:

Table 371	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	$5,615,998
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	15,123,857
1889	27	1,797	982,014	718,848	2,568,326	1,849,478

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.

Table 372 KIND.	Number.[1]	Value.[1]
Total		$10,698,567
Bicycles	168,824	2,436,996
Motorcycles	18,628	3,015,988
All other products, including parts		5,245,583

[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;" "dairymen'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.

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.

Table 373	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	$4,676,255
1904	78	4,003	1,782,984	2,840,462	6,370,911	3,530,449
1899	77	2,726	1,090,296	1,996,070	4,289,695	2,293,625
1889	87	2,726	1,154,905	1,900,907	4,094,255	2,193,348
1879	67	1,310	462,852	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.

Table 374	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	$910,601
1904	26	584	295,959	494,313	1,177,780	683,467
1899	15	321	127,398	180,036	454,441	274,405
1889	26	567	251,189	637,720	1,185,565	547,845
1879	22	239	72,489	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.

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.

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.

Table 375 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.

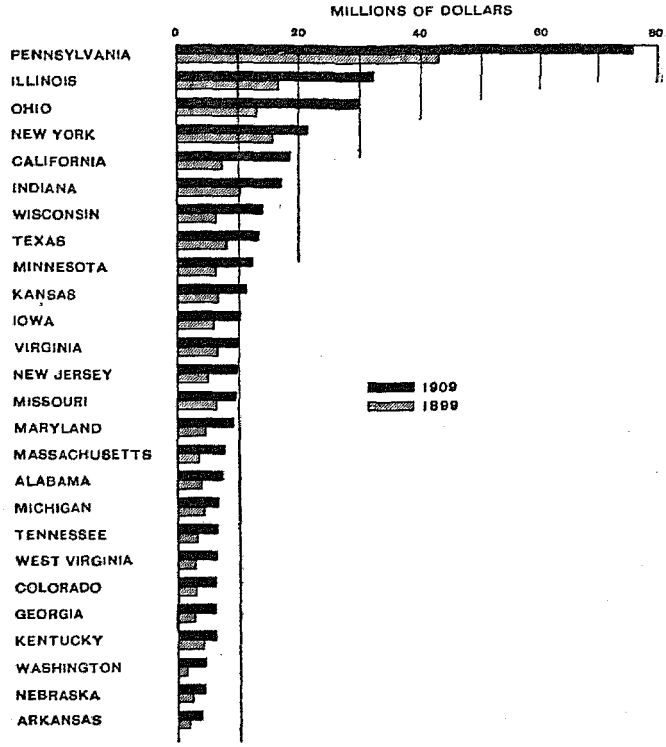
STEAM-RAILROAD REPAIR SHOPS.

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.

Table 376	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	142,152,748	151,104,801	309,775,089	158,670,288
1899	1,292	173,595	96,006,570	109,472,353	218,113,658	108,641,305
1889	716	106,632	60,213,433	66,561,526	129,461,698	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.

Table 377 KIND.	Number.	Value.
Total		$405,600,727
Motive power and machinery department		184,971,870
Locomotives built	215	3,289,140
Repairs to locomotives, motors, etc.		127,928,773
Work for other corporations		4,735,004
All other products or work		49,018,953
Car department		199,768,939
Cars built		13,326,171
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		46,496
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:

Table 378	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	7,012,798	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:

Table 379 KIND.	Number.	Value.
Total		**$31,962,561**
Motive power and machinery department		4,510,332
Repairs to motors, etc		4,004,336
Work for other corporations		85,470
All other products or work		[1] 417,526
Car department		25,835,463
Cars built		526,732
Passenger	127	498,700
Freight	63	59,102
Other	51	68,941
Repairs to cars of all kinds		22,869,777
Work for other corporations		624,805
All other products or work		1,714,129
Bridge and building department (shopwork)		330,946
Repairs and renewals		273,581
Work for other corporations		5,093
All other products or work		52,274
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 miscelloneous 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.

Table 380 INDUSTRY.	Number of establishments.	Wage earners (average number).	Wages.	Value of products.	Value added by manufacture.
Total	**16,974**	**526,351**	**$284,182,372**	**$1,470,855,852**	**$721,905,441**
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	10,353,163
Artists' materials	46	658	307,040	2,339,935	979,445
Belting and hose, woven and rubber	46	6,319	2,956,211	24,729,221	10,223,814
Boots and shoes, rubber	22	17,612	8,544,252	49,720,567	20,143,361
Brooms	898	5,199	2,363,083	14,431,593	6,040,260
Brushes	384	6,954	3,041,145	14,604,003	7,507,060
Buttons	444	16,427	6,789,177	22,708,035	13,166,774
Coke	315	29,273	15,454,345	93,606,622	31,672,095
Dairymen's, poulterers', and apiarists' supplies	233	4,871	2,071,297	15,463,492	9,374,591
Dentists' materials	87	1,573	744,416	10,835,553	2,734,236
Electrical machinery, apparatus, and supplies	1,009	87,256	49,381,145	221,305,563	112,742,159
Enameling and japanning	108	2,125	921,667	3,315,694	1,819,613
Engravers' materials	18	129	95,505	920,727	311,674
Fancy articles, not elsewhere specified	494	12,191	5,095,989	22,632,199	12,271,485
Fire extinguishers, chemical	31	195	126,728	754,165	449,344
Firearms and ammunition	66	14,715	8,427,249	34,111,564	17,690,961
Fireworks	42	1,403	579,661	2,203,349	1,373,159
Foundry supplies	49	464	270,291	2,297,609	1,625,904
Fuel, manufactured	11	88	49,874	311,010	156,302
Fur goods	1,241	11,927	7,787,543	55,937,549	24,160,644
Furs, dressed	93	1,241	806,468	2,399,959	1,580,159
Graphite and graphite refining	9	162	88,708	1,139,587	734,108
Hair work	250	3,534	1,609,788	11,216,173	5,135,565
Hand stamps and stencils and brands	361	1,651	951,814	3,673,025	2,545,722
Hat and cap materials	74	2,367	946,526	8,236,319	2,856,349
Hats, straw	98	8,814	4,470,831	21,424,235	9,556,655
House-furnishing goods, not elsewhere specified	260	4,907	2,034,903	18,508,886	6,138,073
Ice, manufactured	2,004	16,114	9,775,270	42,553,055	31,695,517
Instruments, professional and scientific	203	4,817	2,925,087	10,503,061	7,583,615

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	15,300,646
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
Phonographs and graphophones	18	5,199	2,840,503	11,725,996	8,026,605
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	2,853,245
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	1,975,334
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	8,837,470
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	11,052,286	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	12,159,989	5,509,696
Surgical appliances and artificial limbs	324	4,241	2,128,927	12,399,314	7,027,658
Toys and games	226	5,305	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	5,824,889	2,987,528
Whips	57	1,546	703,527	3,948,643	2,303,900
Windmills	34	2,337	1,403,147	6,676,599	3,345,236
Window shades and fixtures	219	3,930	1,917,692	18,570,932	5,918,325
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.
Implements of cultivation:	
Cultivators—	
Beet	3,172
Small	469,696
Wheeled	435,429
Cotton scrapers	20,180
Harrows—	
Disk	193,000
Spring-tooth	112,832
Spike-tooth	394,988
Plows—	
Disk	22,132
Gang	91,686
Shovel	254,737
Steam	2,355
Sulky or wheel	134,936
Walking	1,110,006
Seeders and planters:	
Seeders—	
Broadcast	38,007
Combination	23,963
Corn planters—	
Hand	96,465
Horse	122,780
Listers	44,840
Cotton planters	79,271
Potato planters	23,092
Drills—	
Corn	20,137
Disk	21,292
Grain	68,611
All other	32,507
Seed sowers	7,847
Harvesting implements:	
Grain cradles	22,635
Harvesters—	
Bean	1,409
Corn	19,693
Grain	129,274
Harvesters and thrashers, combined	543
Other	1,707
Hay carriers	45,064
Hay forks, horse	43,675
Hay loaders	34,795
Hayrakes, horse	266,260
Haystackers	17,212
Hay tedders	34,396
Mowers	359,264
Potato diggers, horse	25,632
Reapers	58,294
Seed separators:	
Clover hullers	437
Corn huskers	372
Corn huskers and shredders	1,240
Corn shellers—	
Hand	74,223
Power	9,049
Fanning mills	33,805
Thrashers—	
Horsepower	822
Steam power	23,586

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	34,508,131
Seed separators	11,030,412
All other products	48,690,082
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, poulterers', 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

	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	648	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
1889	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	4,396,846

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	5,246,822	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; airbrushes 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	$2,339,935	$979,445
1904	28	274	136,658	687,283	1,139,353	452,070
1899	21	200	79,267	249,107	497,046	247,939
1889	39	242	102,196	190,850	531,785	340,935
1869	8	50	20,062	21,680	94,150	72,470
1859	8	43	15,500	11,966	44,800	32,834

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:

Table 387 ESTABLISHMENTS MANUFACTURING PRIMARILY—	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.

Table 388	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	883,020	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.

Table 389	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	692	252,061	1,697,515	2,836,699	1,139,184
1899	7	254	64,102	452,430	717,137	264,707
1889	9	273	123,524	427,865	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.

Table 390	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.

Table 391	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	3,299,393	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	1,960,280	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	$13,547,326
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	7,507,066

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, basswood 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	6,622,285	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, nailbrushes, 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	$7,507,066
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	935,220

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	$13,166,774
1904.....	275	10,567	3,680,196	4,144,446	11,133,769	6,989,323
1899.....	238	8,085	2,826,238	2,803,246	7,695,910	4,892,664
1889.....	106	3,831	1,411,089	1,551,603	4,216,795	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	1,778,893	1,027,710
1859.....	43	1,161	260,206	358,385	949,408	591,023
1849.....	59	1,088	225,120	324,837	864,359	539,522

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.

Table 396	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	$95,696,622	$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:

Table 397 KIND.	Quantity.[1]		Value.[1]
	Amount.	*Unit.*	
Total			$98,078,383
Coke	39,315,065	Tons	89,965,483
Made in beehive ovens	33,060,421	Tons	69,530,794
Made in retort or by-product ovens	6,254,644	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 $60,280.

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 tinware; 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.

Table 398	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.

Table 399	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	$10,835,553	$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	860,758	612,934
1869	10	346	242,836	181,908	579,364	397,456
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.

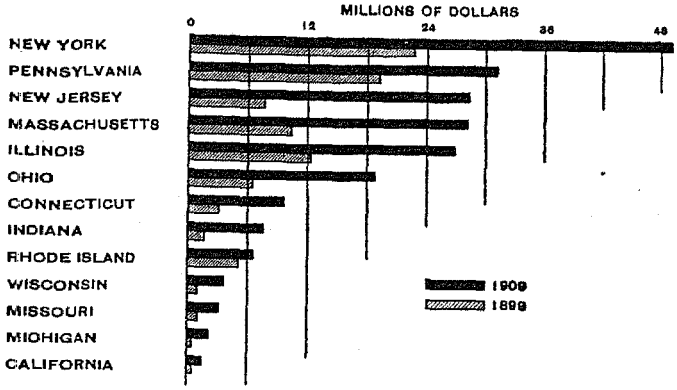
Table 400	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	1,009	87,256	$49,381,145	$108,566,404	$221,308,563	$112,742,159
1904	784	60,466	31,841,521	66,836,926	140,809,369	73,972,443
1899	581	42,013	20,579,194	49,458,272	92,434,435	42,976,163
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.
		Kilowatts.[1]	
Dynamos	16,791	1,405,950	$13,081,048
Dynamotors, motor generators, boosters, rotary converters, and double-current generators	2,291	295,079	3,154,733
Transformers	76,729	1,635,429	8,801,019
Switchboards, panel-boards, and cut-out cabinets			5,971,804
		Horsepower.	
Motors	504,030	2,733,418	32,087,482
For stationary machinery	243,423	1,683,677	18,306,451
For automobiles	2,796	12,471	294,152
For fans	199,113	178,033	2,450,739
For elevators	4,988	63,585	1,188,653
For railways, and miscellaneous services, including value of all motor parts and supplies	53,710	795,652	9,847,487
Storage batteries, including value of parts and supplies (weight of plates)	[2] 23,119,331		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			15,714,809
Carbon filament	55,038,378		6,157,066
Tungsten	11,738,619		6,241,133
Gem, tantalum, glower, 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	$243,965,093
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	14,259,357
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	1,601,719
Lightning arresters	940,171
Rheostats and resistances	2,674,963
Heating, cooking, and welding apparatus	1,003,038
Electric flatirons	951,074
Electric measuring instruments	7,800,010
Electric therapeutic apparatus	1,107,858
Magneto-ignition apparatus, sparks, coils, etc	6,092,343
Electric switches, signals, and attachments	5,377,843
Circuit fittings of all kinds	1,080,287
Products given in preceding table	91,130,324
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 JAPANNING.

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.

Table 404	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	3,642,322	7,152,090	15,709,282	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.

Table 405	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	230,635
1879	30	183	65,562	63,743	190,080	126,337
1869	21	158	64,810	83,189	216,145	132,956
1859	11	240	63,204	91,621	247,960	156,339
1849	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.

Table 406	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.

Table 407 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**	**$5,095,980**	**$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	4,555	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.

Table 408	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	361	6,729	$2,464,030	$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.

Table 409	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	2,769,380	1,439,753
1899	34	1,399	572,467	951,514	1,976,129	1,024,615
1889	31	742	364,715	344,120	1,020,835	676,715
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	700,537
1849	151	1,758	494,196	843,482	1,615,850	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.

Table 410	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.

Table 411	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	56	25,594	57,736	195,834	138,098
1879	3	119	84,750	81,840	204,693	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.

Table 412 — 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," "babbitt 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."

Table 413	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	8,275,560	6,537,548
1899	32	4,482	2,542,366	1,305,421	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	2,700,281	1,859,026	5,736,936	3,877,910
1869	46	3,297	2,490,774	1,100,999	5,582,258	4,481,259
1859	242	2,065	889,222	378,613	2,368,931	1,990,318
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	188,938	592,542	403,604
1879[1]	39	735	216,069	840,877	1,391,132	550,255
1869[1]	21	363	196,497	307,369	880,150	572,781
1859[2]	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	91,633	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	192	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	216,560	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.

Table 420	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	416,294	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.

Table 421 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	2,903,869	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.

Table 422	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	$2,903,869	$1,978,391
1904	224	976	511,868	564,728	2,017,531	1,452,803
1899	268	1,052	490,036	522,659	1,937,628	1,414,969
1889	234	795	344,089	432,687	1,583,872	1,151,185
1879	46	163	82,895	103,648	318,618	214,970
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.

Table 423	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	530	285,458	171,787	793,421	621,634
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	6,335

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 capfronts 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.

Table 424	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	2,223,202
1899	70	1,371	434,148	2,797,756	3,849,116	1,051,360
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	892,019
1869 [1]	62	1,014	537,287	2,074,959	3,225,763	1,150,804
1859 [2]	5	22	6,072	13,400	28,200	14,800

[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.

Table 425	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	98	8,814	$4,470,831	$11,468,200	$21,424,255	$9,956,055
1904	68	5,567	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."

Table 426	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	9,197,678	14,278,175	5,080,497
1889	133	3,417	1,506,929	4,832,791	8,347,285	3,514,494
1879	48	592	216,890	812,361	1,332,188	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.

Table 427	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	5,549,162	6,011,325	23,790,045	17,778,720
1899	775	6,880	3,402,745	3,312,393	13,780,978	10,468,585
1889	222	2,826	1,095,996	940,699	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:

Table 428 KIND.	Quantity (tons).[1]	Value.[1]
Total value		**$42,953,055**
Ice	12,647,949	39,889,263
Can	11,671,547	37,085,533
Plate	976,402	2,803,730
All other products		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; opthalmoscopes; 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	1,724,257	1,307,092
1859	116	742	294,228	239,787	1,026,133	786,346
1849[1]	129	968	356,356	248,103	968,250	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	$953,666	$1,221,277	$3,116,519	$1,895,242
1904	97	1,676	623,887	842,988	2,291,648	1,448,660
1899	63	819	322,566	435,717	1,156,977	721,260
1889	76	910	446,927	483,441	1,454,053	970,612
1879	17	138	51,000	48,550	131,670	83,120
1869	29	183	65,108	65,061	216,997	151,936
1859	14	82	26,876	23,120	83,816	60,696

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	$6,560,449	$9,172,832	$2,612,383
1904	54	507	656,627	6,223,675	7,646,814	1,423,139
1899	60	498	498,715	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	88	38,800	37,184	107,300	70,116
1859	7	29	14,760	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.

Table 432	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	$15,300,646
1904	716	10,427	4,815,907	15,325,931	27,755,288	12,429,357
1899	589	7,649	3,102,013	10,227,096	17,955,578	7,728,482
1889	696	6,318	2,763,953	8,727,380	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.

Table 433	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	510,636	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 [1]	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).

Table 434	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	943,057
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.

Table 435	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	467,970
1869[1]	83	1,059	631,634	932,657	2,019,464	1,086,807
1859	78	560	257,008	270,949	735,086	464,137

[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.

Table 436 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	66,569,273	33,750,503
Piano and organ materials	127	10,140	5,595,650	9,223,044	18,474,616	9,251,572
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:

Table 437 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	46,187,555
For or with player attachment	34,495	9,275,001
Grand	[2] 8,741	4,038,669
Player attachments made separate from pianos	10,898	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		3,086,911

[1] In addition, parts and materials to the value of $680,188 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 oil stoves; 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.

Table 438	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	$46,024,807
1904	444	33,081	18,527,078	27,986,627	66,092,630	38,106,003
1899	390	21,309	11,542,863	17,370,685	41,024,244	23,653,559
1889	381	17,040	11,043,538	13,925,499	34,979,556	21,054,057
1879	345	10,777	6,805,732	7,975,451	18,400,993	10,425,542
1869	254	6,108	4,475,657	3,901,895	11,886,444	7,984,549
1859	170	4,198	2,272,780	2,054,260	6,232,632	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.

Table 439	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909	294	25,497	$15,737,277	$32,818,770	$66,569,273	$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	5,260,907	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, tremulos, etc. Statistics are available for the last two censuses only.

Table 440	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:

Table 441	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	3,623	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."

Table 442	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 [1]	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.

Table 443	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	2,665,987	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.

Table 444	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	2,622,362
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	182,083
1869	8	160	51,150	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.

Table 445 — 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.

Table 446	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	152	73,897	123,214	351,775	228,561

Pens, gold.—Gold pens are the principal products reported for establishments included under this subclass.

Table 447	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	486,541
1889	18	301	185,545	235,628	718,070	482,442
1879	16	264	172,207	190,906	533,061	342,155
1869 [1]	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:

Table 448	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."

Table 449 KIND.	Number.	Value.[1]
Total value		$11,725,996
Phenographs and graphophones	344,681	5,406,684
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.

Table 450 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.

Table 451	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	1,430,138
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:

Table 452	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	2,782,285	5,773,325	2,991,040
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.

Table 453	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	2,834,496	1,480,148
1899	98	1,585	737,647	1,106,299	2,471,908	1,365,609
1889	69	1,206	571,815	626,668	1,881,262	1,254,594
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.

Table 454	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	4,007,669	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	3,382,354	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 reenforcements 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.

Table 455	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	24,083,683
1899	261	20,404	8,081,803	33,482,314	52,621,830	19,139,516
1889	139	9,183	3,663,976	11,113,528	18,708,917	7,595,389
1879	93	6,763	2,450,672	9,641,167	14,518,924	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 $34,041,296, 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.

Table 456	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	29,590

[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.

Table 457 ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total	**1,353**	**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	1,417,506	4,458,128	3,040,622
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	46,747	24,824,738	33,474,896	74,532,277	41,057,381
1889	1,006	22,143	13,083,949	16,521,246	38,065,410	21,544,164
1879	2,188	21,345	12,713,813	19,736,358	36,800,327	17,063,969
1869	964	13,915	7,073,400	9,379,980	21,483,967	12,103,987
1859	675	10,071	4,539,313	5,788,676	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	$27,900,868
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	14,245,089
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	9,889,347	24,164,538	14,275,191

Table 460 KIND.	Number.	TONNAGE. Gross.	TONNAGE. Net.
Vessels of 5 gross tons and over launched during the year[1]	[2] 1,584	467,219	381,198
Steel vessels	158	254,986	193,144
Steam	96	219,617	159,297
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	12,955
Unrigged	795	174,881	160,291
Boats of less than 5 gross tons[3]	[4] 8,577	.....	.....

[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, fiberoid, 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 novelties 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	839	547,080	1,016,202	2,711,879	1,695,677
1879	8	332	169,235	565,538	1,075,569	510,031
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; basket-ball 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	$5,487,520
1904	152	4,260	1,641,486	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	692,616	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	8,867,457	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	$5,509,696
1904	106	2,734	1,273,144	3,896,317	8,951,705	5,055,388
1899	97	1,147	525,332	1,546,398	3,493,710	1,947,312
1889	34	315	151,982	357,819	1,003,372	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	5,982,562
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	$5,982,562
1904	180	2,811	1,154,563	2,729,271	6,385,293	3,656,022
1899	219	1,539	620,801	1,291,580	3,932,358	2,640,778
1889	155	612	300,804	524,488	1,650,033	1,125,545
1879	71	477	265,372	286,720	906,303	619,583

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	146,620	126,062	749,854	623,792
1889	59	162	102,428	93,796	475,977	382,182
1879	33	72	43,833	31,370	137,024	105,654
1869	24	78	36,079	59,894	166,416	106,522
1859	5	39	23,544	10,050	53,000	42,950
1849[1]	3	15	5,880	1,400	14,200	12,800

[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	966,680
1869	49	615	182,255	159,946	579,865	419,919
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.

Table 469	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.

Table 470	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	2,174,762	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	595,071
1869	64	462	200,912	454,562	1,379,827	925,265
1859	29	85	29,124	24,824	87,565	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.

Table 471	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	997,408
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[1]	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	968,850	2,307,579	4,795,048	2,487,469
1899	68	2,045	940,474	2,172,098	4,354,312	2,182,214
1889	77	1,110	555,775	1,123,947	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	3,897,795
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.